



EUROPEAN HANDBOOK FOR

SDG Voluntary Local Reviews

2022 EDITION



This publication is a Science for Policy report by the Joint Research Centre (JRC), the European Commission's science and knowledge service. It aims to provide evidence-based scientific support to the European policymaking process. The scientific output expressed does not imply a policy position of the European Commission. Neither the European Commission nor any person acting on behalf of the Commission is responsible for the use that might be made of this publication. For information on the methodology and quality underlying the data used in this publication for which the source is neither Eurostat nor other Commission services, users should contact the referenced source. The designations employed and the presentation of material on the maps do not imply the expression of any opinion whatsoever on the part of the European Union concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.

Contact information

Alice Siragusa

European Commission, Joint Research Centre

Address: Edificio Expo, Calle Inca Garcilaso, 3, 41092 Sevilla, ESPAÑA

Email: JRC-URBAN2030@ec.europa.eu

Tel: +34 9544 89017



EU Science Hub

<https://joint-research-centre.ec.europa.eu/>

The online version of this report is available at: <https://urban.jrc.ec.europa.eu/sdgs/en>

JRC129381

EUR 31111 EN

PDF ISBN 978-92-76-53389-4

ISSN 1831-9424

doi:10.2760/355330

KJ-NA-31111-EN-N

Print ISBN 978-92-76-53390-0

ISSN 1018-5593

doi:10.2760/218321

KJ-NA-31111-EN-C

Luxembourg: Publications Office of the European Union, 2022

© European Union, 2022



The reuse policy of the European Commission is implemented by the Commission Decision 2011/833/EU of 12 December 2011 on the reuse of Commission documents (OJ L 330, 14.12.2011, p. 39). Except otherwise noted, the reuse of this document is authorised under the Creative Commons Attribution 4.0 International (CC BY 4.0) licence (<https://creativecommons.org/licenses/by/4.0/>). This means that reuse is allowed provided appropriate credit is given and any changes are indicated. For any use or reproduction of photos or other material that is not owned by the EU, permission must be sought directly from the copyright holders.

All content © European Union, 2022, except: p. 235 ©KS and Statistics Norway

Graphic project: FOM Studio S.r.l.s., Milan, Italy - Geng, K., Terrizzi, M., Huang, Q., Segura, A., Avramescu, E.

How to cite this report: Siragusa, A., Stamos, I., Bertozzi, C. and Proietti, P., European Handbook for SDG Voluntary Local Reviews - 2022 Edition, EUR 31111 EN, Publications Office of the European Union, Luxembourg, 2022, ISBN 978-92-76-53389-4, doi:10.2760/355330, JRC129381.

JRC SCIENCE FOR POLICY REPORT

EUROPEAN HANDBOOK FOR

SDG Voluntary Local Reviews

2022 EDITION

*ALICE SIRAGUSA, IRAKLIS STAMOS,
CECILIA BERTOZZI, PAOLA PROIETTI*

TABLE OF CONTENTS

ABSTRACT	1
ACKNOWLEDGEMENTS	3
EXECUTIVE SUMMARY	5
INTRODUCTION	7

1

THE VOLUNTARY LOCAL REVIEWS HAVE PROVED TO BE POWERFUL TOOLS FOR LOCALISING THE 2030 AGENDA IN AN EFFECTIVE WAY	13	1.1 WHAT IS A VOLUNTARY LOCAL REVIEW?	14
		1.2 THE VLR AS A PROCESS	18
		1.3 VOLUNTARY LOCAL REVIEWS AROUND THE WORLD	22
		1.4 THE VLR BUILDING BLOCKS	28

2

THE EUROPEAN HANDBOOK DEMONSTRATES THAT LOCAL GOVERNMENTS CAN MONITOR SDGS WITH INDICATORS THAT ARE LOCALLY RELEVANT BUT ALSO COMPARABLE	31	2.1 METHODOLOGY FOR THE SELECTION OF THE INDICATORS	32
		2.2 CHARACTERISTICS OF THE INDICATORS PRESENTED IN THIS SECOND EDITION OF THE <i>EUROPEAN HANDBOOK</i>	33
		2.3 SDG TARGETS ADDRESSED IN THE 2022 EDITION	36
		2.4 GOALS AND RELATED EXAMPLE INDICATORS	38
		2.5 READER'S GUIDE FOR PART 2	39
		Goal 1: No Poverty	45
		Goal 2: Zero Hunger	57
		Goal 3: Good Health and Well-Being	65
		Goal 4: Quality Education	77
		Goal 5: Gender Equality	85
		Goal 6: Clean Water and Sanitation	97
		Goal 7: Affordable and Clean Energy	107
		Goal 8: Decent Work and Economic Growth	115
		Goal 9: Industry, Innovation and Infrastructure	127
		Goal 10: Reduce Inequalities	139
		Goal 11: Sustainable Cities and Communities	149
		Goal 12: Responsible Consumption and Production	169
		Goal 13: Climate Action	179
		Goal 14: Life Below Water	191
		Goal 15: Life on Land	197
		Goal 16: Peace, Justice and Strong Institutions	205
		Goal 17: Partnerships for the Goals	215

3

THE VLR AS A DOCUMENT	221	3.1 DATA SELECTION AND PUBLICATION	222
		3.2 DATA ANALYSIS AND INTERPRETATION	229
		3.3 TRANSFORMATIVE MEASURES FOR THE SDGS	235
		3.4 NEXT STEPS – HOW TO TAKE ACTION	240
CONCLUSIONS	246	REFERENCES	247
		LIST OF ABBREVIATIONS	277
		LIST OF TABLES AND BOXES	280
		ANNEX 1 - LIST OF PROPOSED INDICATORS	281
		ANNEX 2 - GOALS AND TARGETS	287
		ANNEX 3 - PUBLISHED VLRS	303
		ANNEX 4 - COMPARISON OF VLR RECOMMENDED BUILDING BLOCKS IN GUIDES AND PUBLICATIONS	309

ABSTRACT

The *European Handbook for SDG Voluntary Local Reviews – 2022 edition* provides policy makers, urban practitioners and experts with a consolidated method and examples of indicators that European local and regional governments can use to monitor the achievement of the Sustainable Development Goals (SDGs). The Voluntary Local Reviews (VLRs) are processes that encompass both the monitoring and the analysis of the achievements with respect to the SDGs at local level.

The 2022 edition builds on the first one published in 2020 and it includes an updated analysis of the VLRs published globally and in Europe, their evolution over time and space in terms of use, main characteristics, and building blocks.

The *European Handbook* includes detailed and updated information on 72 indicators and related data sources, which can enable cities to measure their progress toward the 2030 Agenda for Sustainable Development. The set of indicators includes examples of both official and experimental indicators, coming from international and European institutions, but also regional and local governments and research institutes.

Finally, the *European Handbook* provides new insights into local SDG monitoring, including reference to new challenges and opportunities.

The *European Handbook for SDG Voluntary Local Reviews – 2022 edition* represents a step forward in the support for European local and regional governments in localising the SDGs using the Voluntary Local Reviews (VLRs).



ACKNOWLEDGEMENTS

The authors would like to acknowledge for their support to the URBAN2030 project Lewis Dijkstra, Wallis Goelen, and Laura Liger from the Directorate General for Regional and Urban Policies - European Commission.

The authors thank all the experts who participated in the workshops organised in partnership with UN-HABITAT in the frameworks of the URBAN2030 project as well as Annika Lenz and Paulius Kulikauskas (UN-HABITAT), and in particular Monika Kuffer, Daria Denti and Andrea Ciambra, for their contribution to the URBAN2030-II project.

The authors thank Mark Boden – JRC Territorial Development for the comments on the Introduction and the following persons for their valuable comments and suggestions on the different Goals and indicators:

Goal 1

Elena Bárcena Martín - University of Malaga, Emanuele Belotti - University of Venice, Francesco Figari - University Insubria, Aaltonen Mikko - Tampere City Council

Goal 2

Anna Oggioni - European Food Banks Federation, Sandra Caldeira - JRC.F1, Carolina Perpiña - JRC.B3

Goal 3

Ana Sarasa Renedo - JRC.F1

Goal 4

Nikoleta Giannoutsou - JRC.B4

Goal 5

Rosa Barotsi - Università Cattolica del Sacro Cuore, Martynas Savincius - EIGE, Cristina Fabre Rosell - EIGE, Sara Grubanov Boskovic - OECD

Goal 6

Bernd Gawlik - JRC.D4, Ine Vandecasteele - EEA

Goal 7

Daniele Paci - JRC.C2

Goal 8

Ilze Burkevica - ESTAT.F.5, Silvia Crintea Rotaru - ESTAT.F.5, Laura De Dominicis - REGIO, Paolo Veneri - OECD, MONTAIGNE Fabienne - ESTAT, Claire Hoffmann - OECD

Goal 9

Patrizia Sulis - JRC.B3, Angela SARCINA - JRC.A3, Robert SZUCS - MOVE

Goal 10

Guido Tintori - JRC.E6, Jasper Hesse - OECD, Lukas Kleine-Rueschkamp - OECD, Cem Ozguzel - OECD, Paolo Veneri - OECD

Goal 11

Enrico Pisoni - JRC.C2, Josep Salanova - CETH, Natalia Konstantinidou - CETH, Robert Szucs - MOVE, Iuliana Lupu - MOVE, Piotr Rapacz - MOVE, Thomas Kemper - JRC.E1, Michele Melchiorri - JRC.E1, Enrico Pisoni - JRC.C5, Hugo Poelman - REGIO, Piotr Rapacz - MOVE, Marcello Schiavina - JRC.E1, Pilar Vizcaino - REA, Chris Jacobs-Crisioni - JRC.B3, Mert Kompil - JRC.B3, Iuliana Lupu - MOVE

Goal 12

Aristide Athanassiadis - EPFL - Elena Gambarino - EDA - Filipe Batista - JRC.B3, Laura Pacheco - Universidad Oporto, Serenella Sala - JRC.D1

Goal 13

Tiberiu-Eugen Antofie - JRC.E1, Christina Corbane - JRC.E1, Moran Daniel - Norwegian University of Science and Technology, Daniele Di Rigo - JRC.E1, Ine Vandecasteele - EEA, Pieralberto Maianti - JRC.E1, Iuliana Lupu - MOVE

Goal 14

Ine Vandecasteele - EEA, Iria Enrique Regueira - Instituto de Estadística y Cartografía de Andalucía

Goal 15

Alana Tucker - Arbor Day Foundation, Carolina Perpiña - JRC.B3

Goal 16

Tessa Dunlop - JRC.H1, Francisco Caravaca Sanchez - Universidad Pablo de Olavide, Sevilla, España, Guido Tintori - JRC.E6, Benedikt Herrmann - JRC.B3, Maria Pacheco - Universidad Oporto

Goal 17

Andrea Ciambra - Universidad A Coruña, Niels De Jager - City of Haarlem, Valentina Schippers-Opejko - City of Haarlem

The authors warmly thank Alessandro Rainoldi, Mark Boden, Margarita Vega, Francesca Murolo, Pilar Moreno and Monika Schmidt for their constant support to the *Localisation of the SDGs* project portfolio.

EXECUTIVE SUMMARY

Policy context

Following the adoption of the 2030 Agenda in September 2015, the EU has worked on mainstreaming the 17 Sustainable Development Goals (SDGs) across its policies and projects. In 2016, the EC adopted the Communication on *Next steps for a sustainable European future* (COM/2016/0739), which presented the strategic approach towards the implementation of the UN 2030 Agenda and the SDGs. The EC has developed a number of actions and specific projects to achieve the SDGs, also supporting their monitoring, and remains committed to the 2030 Agenda (SWD (2020)400).

The availability of a coherent and comprehensive monitoring framework with a related set of indicators, such as the SDGs, is key to designing better policies able to foster sustainable development. In addition, the COVID-19 pandemic has shown how important it is to use timely and accurate data to monitor these indicators over time and across space to also understand the impact of possible disturbances to the achievement of the SDGs.

Having comparable and robust local outcome indicators able to inform policy decision at different levels is key to achieving sustainable development and leaving no one and nowhere behind.

Key conclusion

Monitoring is a key element of the localisation of SDGs. Support and guidance to local and regional governments on how to produce SDG Voluntary Local Reviews (VLRs) has proven to be relevant for fostering the localisation of SDGs. This evidence is supported by the fact that in recent years several institutions have started to propose new guidelines on how to prepare VLRs, better tailored to the needs of local governments. Moreover, different clusters of local and regional governments across Europe preparing VLRs have emerged, in line with national strategies, stimulating the involvement of local authorities (as in Finland). In addition, the existence of horizontal networks of local governments (as in Spain) and the leadership of SDG-oriented knowledge brokers (as in Germany and more recently in Italy) has been observed.

VLRs were considered reporting tools in their first years of publication, especially from the perspective of the frontrunner cities that published the first reviews in 2017-18. However, over time, local and regional governments (LRGs) started to consider VLRs more as a process. Along these lines, the 2022 edition of the *European Handbook* analyses the different perspectives of this evolution. This edition expands the definition of the VLR, starting from considering the VLR as an **output** and evolving to a **process** that is expected to produce **outcomes**.

Main findings

Thanks to the work carried out with a number of pilot cities, the set of indicators proposed in the first edition of the *European Handbook* was widely tested in order to formulate a consolidated set. As result of this work, most of the indicators of the 2020 edition have been retained, while 17 indicators have been deleted, 10 have been replaced, and 20 new indicators have been added. With the 72 example indicators presented in this edition, European cities can monitor 54 targets from the SDG official list. Among these 72 indicators, 53 are sourced from official statistics, while 19 are experimental indicators calculated by the JRC and other research institutions.

This edition of the *European Handbook* also includes indications on how to select transformative actions to include in the VLRs, reflections on the data challenges related to SDG monitoring and links to other tools useful for localising the 2030 Agenda.

Related and future JRC work

Building on the existing work carried out in the framework of the cooperation with DG REGIO on the localisation of SDGs (URBAN2030), the JRC will develop a new project - REGIONS2030 - with the support of the European Parliament. Starting from the *European Handbook* and building on the indicators included therein, the project will identify SDG indicators at regional level and test them with the support of selected pilot regions. The resulting framework of indicators will be proposed as a reference for other EU regions, and the resulting database will shed light on the progress of European regions towards the achievement of SDGs. This project supports the engagement of another tier of government in the localisation and achievement of SDGs, with the idea of broadening the ecosystem of stakeholders engaged in this endeavour to coordinate and magnify impact.

Quick guide

There are three main parts to the 2022 edition of the *European Handbook*.

Part 1 includes an updated analysis of the VLRs published in Europe and globally and of their evolution over time, space and concept.

Part 2 proposes an updated list of 72 indicators for monitoring SDGs in European cities, along with their definition and methodology of calculation, relevance and trends in Europe, comments and limitations, and metadata.

Part 3 includes reflections and recommendations on the selection and use of local indicators and the framework of the SDGs for achieving sustainable development.

INTRODUCTION

This is the second edition of the *European Handbook for SDG Voluntary Local Reviews* (hereafter *European Handbook*). The JRC published the first edition in February 2020 (Siragusa et al. 2020), produced as a key output of the URBAN2030 project, developed with the support of the European Commission Directorate General for Urban and Regional Policies (DG REGIO).

This edition of the *European Handbook* represents a step forward in the support for European cities and regions in conducting Voluntary Local Reviews. It is one of the main outputs of the URBAN2030-II project. It aims to offer an updated reference for the SDG Voluntary Local Reviews in Europe. These reviews allow cities and regions to make the best use of knowledge and practical activities that are part of the process of the localisation of the 2030 Agenda.

The localisation of the 2030 Agenda for Sustainable Development and the Sustainable Development Goals (SDGs)

Localisation is a key aspect for the achievement of the 2030 Agenda for Sustainable Development and the Sustainable Development Goals (SDGs) (United Nations 2015). In 2015, all 193 UN Member States jointly committed to achieving 17 Goals with 169 specific targets, but local and regional governments (LRGs) are called to action as well.

Localisation is translating the 2030 Agenda for Sustainable Development into local measures and impacts that contribute to the global achievement of the SDGs. Localisation is described as *‘the process of defining, implementing and monitoring strategies at the local level for achieving global, national, and sub-national sustainable development goals and targets’* (Open Working Group of the General Assembly on Sustainable Goals 2014). More specifically, it includes the *‘process of taking into account sub-national contexts in the achievement of the 2030 Agenda, from the setting of goals and targets, to determining the means of implementation and using indicators to measure and monitor progress’* (UCLG 2019).

The 2030 Agenda emphasises the need for an inclusive and localised approach to the SDGs. It addresses the need to integrate all level of governments and stakeholders in the elaboration of strategies, the use of transformative means of implementation and sound methods for monitoring and reporting.

Compared to the Millennium Development Goals (MDGs) approved

in 2000 (United Nations 2000), local governments have gained a prominent role in the implementation of the global sustainable agenda. A bottom-up movement of cities and regions started to publish SDG Voluntary Local Reviews (VLRs) in 2018. Since then, knowledge brokers, international and intergovernmental organisations, and national and regional institutions in Europe have welcomed and supported the efforts of LRGs to use the monitoring of SDGs to raise awareness on the 2030 Agenda, to foster cooperation among city departments and stakeholders, to design ad-hoc action, and to accelerate their implementation.

SDG monitoring includes data collection, analysis, and dissemination of results. It should be noted that SDG local monitoring and VLRs have proved to be among the main tools for localising the 2030 Agenda for Sustainable Development. Local SDG monitoring, the assessment of the main challenges and shortcomings, and the recognition of achievements can stimulate local governments and their partners to set specific targets and be more effective, in terms of implementation.

The SDG framework takes into account interlinkages among global challenges and encompasses several dimensions of sustainability: social, economic, environmental and institutional. Therefore, the SDG framework is able to adjust to the need of local governments to navigate global issues, including climate change, threats to biodiversity, inequality and extreme poverty, the gender gap and energy poverty. Cities and their governments are indeed assuming key roles in responding to global crises, as witnessed by the ongoing migration crises and the COVID-19 pandemic.

The SDG Voluntary Local Reviews

VLRs started as an adaptation of the process of the Voluntary National Reviews (VNRs) conducted by national governments to the local dimension. In short, VLRs are reports prepared by local governments on their achievements, shortcomings, strategies and measures for sustainable development, using the SDG framework (goals, targets and indicators). However, VLRs are also tools which enable the identification of interlinkages and relations, and foster the design, implementation, monitoring and evaluation of local measures that consider the various dimensions of sustainability (environmental, social, economic and institutional).

The first VLR published was the regional monitoring report of the Basque Country in Spain (Euskadi Basque Country 2017). This was followed by New York City, the first city to present a VLR to the High-Level Political Forum (HLPF) on Sustainable Development, the UN Forum which discusses progress towards the SDGs every year (The City of New York 2018).

The first generation of VLRs was characterised by the will of cities

to assume an active role in global sustainable development and to increase their influence on this global movement.

Since 2018, however, the VLR movement has grown and became more diverse: with the surge of specific clusters of cities and regions with similar approaches across Europe, in particular in Germany, Finland, and Spain (Ciambra 2021). Support frameworks and programmes, or political commitment has fostered the development of these clusters of VLRs.

Since 2020, there has been further expansion of this global movement. At the time of writing, more than 100 local governments have published a VLR and many more are committed to doing so in the near future¹.

Therefore, this edition of the *European Handbook* also considers the wide range of approaches, methods, data and indicators, output, scope, governance and links with local policies and strategies that have emerged from the VLRs published in the period 2020-2022.

The first edition of the *European Handbook* presented the following definition of the VLR: *“A Voluntary Local Review is a tool that allows cities to assess their achievement of the SDGs and their contribution to the 2030 Agenda. It also enables cities to prioritise measures and raise awareness about sustainability in the administration and local community”* (Siragusa et al. 2020).

As explained more thoroughly in the following chapters, this definition has now been expanded, starting from considering the VLR as an **output** (a written document on the localisation of SDGs) to a **process** (incremental, reiterative, retrofitting, and interactive), which is expected to produce **outcomes**.

¹ New York City launched the Voluntary Local Review (VLR) Declaration to commit to report its local progress toward the Sustainable Development Goals. More info is available at <https://www1.nyc.gov/site/international/programs/voluntary-local-review-declaration.page>

² Major urban tourism destinations lost around three-quarters of guest nights in 2020, for example: Rome (-78.0%), Barcelona (-75.6%) or Prague (-73.5%). (Source: <https://ec.europa.eu/eurostat/web/products-eurostat-news/-/ddn-20211216-2>)

What has happened since the previous edition?

The first *European Handbook* was launched at the 10th session of the World Urban Forum, held in Abu Dhabi in February 2020 (UN-Habitat 2020). Shortly afterwards, the first European countries started to impose social distancing and mobility measures in an effort to contain the spread of SARS-CoV-2. By mid-March 2020, most of the EU Member States had imposed severe lockdowns, curfews and quarantines.

Local and regional governments have held key roles in addressing the health crisis, assuming responsibility for the implementation of the restrictions, and also on the frontline, providing services for addressing the emerging health, social and economic crisis.

European cities have experienced changes in urban life: reduced presence of tourists in cities for 2020 – 2021², a reduction in the use of public transport and an increase in the use of bikes (Lozzi et al. 2020), urban public spaces, etc. The effects and mid- and long-terms consequences of the COVID-19 pandemic cannot be ignored when discussing local measures for achieving a sustainable future. However, long-term effects are hard to predict with precision.

According to the findings of the survey conducted by the Organisation for Economic Co-operation and Development (OECD) and the Committee of the Regions (CoR) among local and regional governments in the OECD regions in 2021 (OECD 2021), the 2030 Agenda offers a framework for the COVID-19 recovery that respondents declare they use or will use to design programmes and measures.

While the COVID-19 pandemic changed the world, the clock counting the time left to achieve the 2030 Agenda continued to tick.

The debate on SDG localisation has advanced quickly since 2020. A number of local and regional governments published VLRs, as discussed in Part 1. Moreover, international organisations published a number of guidebooks, guidelines and publications to support local and regional governments when monitoring SDGs (inter alia UCLG and UN-Habitat 2020; UN-Habitat and UCLG 2021; OECD 2020a).

At the end of 2020, the United Nations Department of Economic and Social Affairs (UNDESA) published the *'Global Guiding Elements for Voluntary Local Reviews (VLRs) of SDG implementation'* (UNDESA 2020a), a short document prepared after consulting a number of international experts and stakeholders. The document recalls the need for VLRs to be consistent with the principles of the 2030 Agenda, proposes a structure and content for VLRs, and provides indications on how local governments should present VLRs and implement follow-up measures.

Regional UN Economic Commissions have also established regional guidelines for Asia and the Pacific (ESCAP 2020a), and Africa (UNECA, UN-Habitat, and UCLG Africa 2022). In 2021, the United Nations Economic Commission for Europe, via its Committee on Urban Development Housing and Land Management, also published the *'Guidelines for the Development of Voluntary Local Reviews in the ECE Region'* (Economic Commission for Europe Committee on Urban Development Housing and Land Management 2021). The document suggests a series of general principles for preparing VLRs. According to these guidelines, the VLRs should: *'develop practical action-oriented planning documents well integrated with local or regional government planning and financing systems; include both long-term strategies and short-term plans; be well-coordinated with national plans, promote sustainable development at the local level through the creation of shared value, promote a participatory approach; ensure no one is left behind; and remain evidence-based'*.

The various elements (or building blocks) recommended in these guidelines are discussed in Part 1, which also offers a brief presentation of specific national cases. Moreover, Ciambra explored European VLRs and related approaches via a more systematic comparison, in particular regarding local indicators (Ciambra 2021).

3 https://knowledge4policy.ec.europa.eu/event/training-european-handbook-sdgs-voluntary-local-reviews_en

Why a second edition of the Handbook?

The first *European Handbook* represented one of the first attempts of intergovernmental organisations to provide local governments willing to monitor their achievements and identify urgent issues to be addressed to achieve the 2030 Agenda, with guidance on how to select local SDG indicators (Part 1).

Compared to other relevant guides published in the same year (inter alia OECD 2020d; Global Task Force of Local and Regional Governments 2020; Ortiz-Moya et al. 2020), it also provided detailed information on paradigms of indicators collected and disseminated for a relevant number of European cities (Part 2). For each indicator, a two-page fiche was developed to provide information on the definition and calculation of the indicator, its relevance in the European context, and its limitations, including elements to be considered in the analysis.

Finally, the first edition of the *European Handbook* also included some reflections on VLRs which had already been published before 2020, and suggestions on specific technical aspects to consider in the preparation of the VLRs (Part 3).

The publication has been used by several LRGs as reference since its launch at the 10th session of the World Urban Forum in Abu Dhabi (UN-Habitat 2020b) and discussed broadly in the community. Specific training sessions have been organised to disseminate the *European Handbook*³ and, in late 2020, the JRC launched a cooperation scheme with six European cities to pilot the use of the first edition.

The results of that cooperation (Siragusa et al. 2021) and of additional research activities (Hidalgo Simón 2021a; Ciambra 2021a; Gea Aranoa 2021) suggested the need for a second edition of the *European Handbook*.

This edition aims to refine the method, update and replace the paradigms of indicators that were found to be problematic or complex for cities to use, and also include additional reflections and considerations that have emerged in the last two years.

The objectives of this edition of the *European Handbook* are:

1. To review the method and significance for the elaboration of VLRs, as proposed in the first edition in light of the changes that have occurred in the last two years.
2. To update the indicators proposed for European cities for

measuring their progress towards the SDGs.

3. To provide new insights into local SDG monitoring, including the related challenges and opportunities.
4. To expand the definition of VLRs from output-oriented to process-oriented.

What will the reader find in this edition of the Handbook?

This *European Handbook* is structured in three parts.

- **Part 1:** explores the evolution of the VLR from being an **output** (a written document on the localisation of the SDGs) to a **process** (incremental, reiterative, retrofitting, and interactive), expected to produce **outcomes**. Starting from the definition of the VLR as a process, Part 1 recalls and discusses the definition of the VLR.
- **Part 2:** revisits the methodology for the selection of the indicators to measure the SDGs in European cities. It includes some introductory paragraphs to guide the readers through the main part of the *European Handbook*. It illustrates which indicators have been excluded and replaced in comparison with the first edition and why. Part 2 contains a short presentation of all the SDGs, and a series of indicators which cities can use to measure SDGs, starting from those proposed in 2020, with the necessary updates and replacements. Part 2 also briefly discusses how cities should choose which transformative measures to include in the VLRs, and what characteristics these should have.
- **Part 3:** tackles issues related to objective three, to provide new insights into local SDG monitoring, including the related challenges and opportunities. Part 3 discusses several technical and methodological issues related to the local monitoring of the SDGs, including: the implementation of the Leave-no-one-Behind principle and the decarbonisation approach; the role and impact of the work performed by third parties in the VLR movement; the potential use of proximity index; the taxonomy for SDG indicators; and the various tools available.

01

The Voluntary Local Reviews have proved to be powerful tools for localising the 2030 Agenda in an effective way

This part of the *European Handbook* aims at informing readers about the evolution of Voluntary Local Reviews, from being output-oriented to process-oriented and also to discuss their change content-wise and in numerical terms, both over time and space.

Part 1 starts from the definition of the VLRs and in particular their evolution from being an **output** (a written document on the localisation of the SDGs) to becoming a **process** (incremental, reiterative, retrofitting, and interactive), expected to produce **outcomes**.

Starting from the definition of the VLR as a process that encompasses both the monitoring and analysis of the achievement of the SDGs at local level, Part 1 describes the different elements that shape it.

Part 1 also includes a description of the evolution of VLRs in the world and their geographical distribution, with a specific focus on Europe.

Finally, the VLR building blocks suggested in the different guidelines published in recent years are discussed.

1.1

What is a Voluntary Local Review?

¹ Global indicator framework adopted by the General Assembly in A/RES/71/313 (Annex), annual refinements contained in E/CN.3/2018/2 (Annex II), E/CN.3/2019/2 (Annex II), 2020 Comprehensive Review changes (Annex II) and annual refinements (Annex III) contained in E/CN.3/2020/2 and annual refinements (Annex) contained in E/CN.3/2021/2.

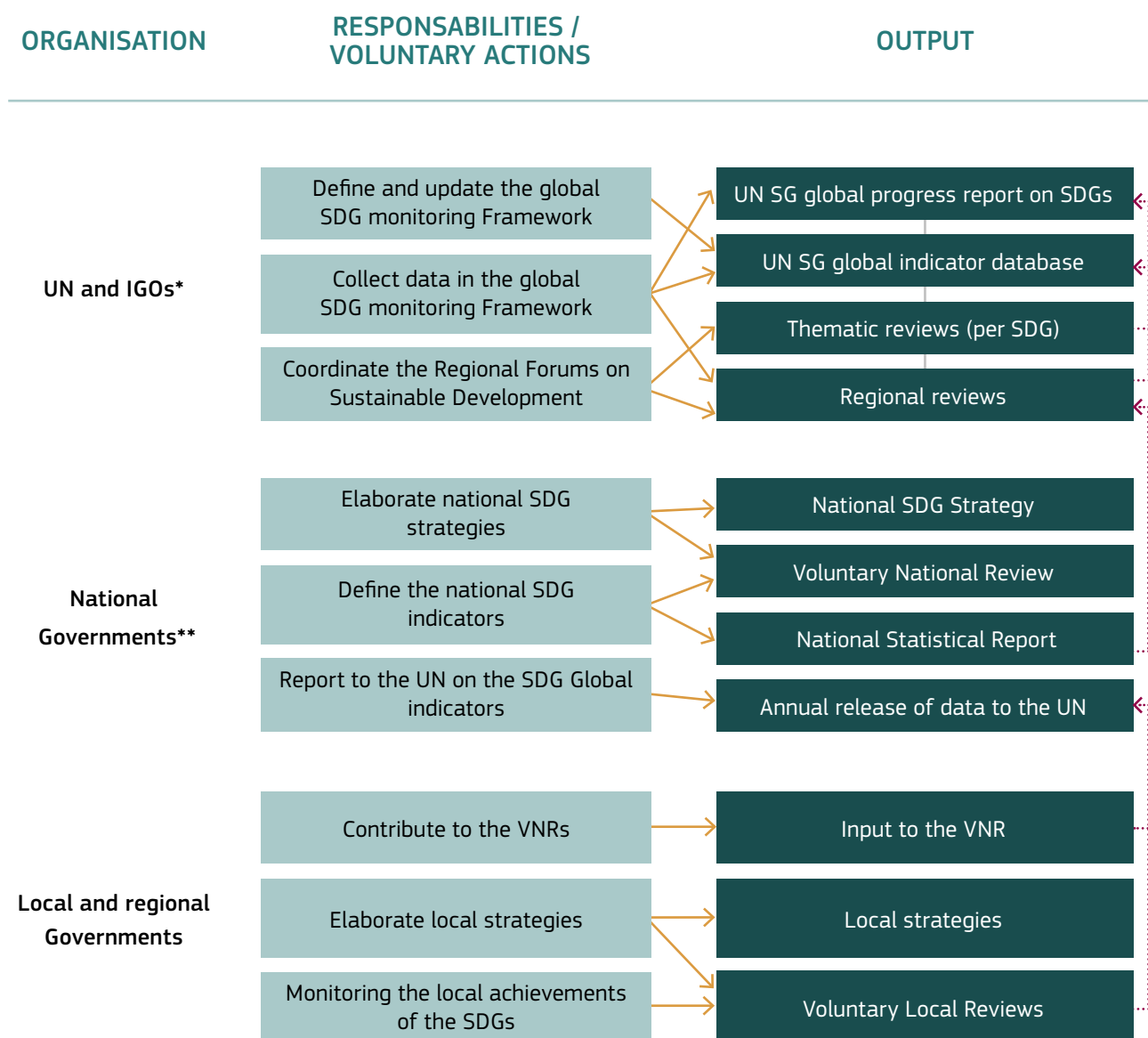
One of the key points of the 2030 Agenda for Sustainable Development (United Nations 2015b) (hereafter 2030 Agenda) is its strong emphasis on a holistic approach to sustainability, especially when compared to its predecessor, the Millennium Declaration and its Millennium Development Goals (MDGs).

One distinguishing aspect of the MDGs was that, for the first time in history, the international community made specific commitments to work together on urgent issues and priorities (United Nations 2000). National governments also committed to periodically assess their achievements, steps back, and shortcomings in regard to the achievement of the MDGs. Indeed, the approval of the MDGs and the related targets by the UN General Assembly came with a framework of indicators for monitoring their achievement.

Along with the discussion on the SDGs and the structure of the 2030 Agenda, built around the principle of “leave no one behind” and the five Ps (People, Planet, Prosperity, Peace, and Partnership), the debate on the monitoring framework took a step forward. The negotiations on the 2030 Agenda mark a specific turning point in the debate: they expand the traditional concept of sustainable development elaborated in the Brundtland Report (Brundtland 1987) based on sustainable economy, society and the conservation of the environment, to a broader concept that also encompasses institutional sustainability and peace. With the passage from MDGs to SDGs, the importance of the monitoring and review of the goals and respective targets was also enhanced. In particular, national governments committed to producing periodic SDG Voluntary National Reviews (VNRs) on the implementation of the 2030 Agenda (United Nations 2015b). They also committed to reporting on indicators aligned with the UN SDG indicator framework¹ every year (United Nations 2015b). Also based on countries’ individual input, every year the United Nations compile a report for the Secretary General and publish a global report on progress towards the Goals (United Nations 2016b; 2017; 2019; 2020a; 2021b).

The last report, published more than one year after the beginning of the COVID-19 pandemic, highlights that the *global extreme poverty rate rose for the first time in over 20 years* and that, according to data, about 120 million people were pushed back into extreme poverty in 2020. The report also states that: “*the availability of high-quality data is also critical, helping decision makers to understand where investments can have the greatest impact; but improved data collection will not happen without increased data financing, from both international and domestic resources.*” (United Nations 2021b).

Monitoring and evaluating the achievement of the SDGs is far more than a mere statistical exercise. It helps to create awareness, knowledge



*UNDESA, UN custodian agencies and/or international organisations, UN regional commissions.

**NSOs, Other members of the NSS, Other national government departments and agencies involved in the production of data, National government departments and agencies that are users (rather than producers) of official statistics, Subnational government departments and agencies, especially municipalities, Civil society organizations, Academic and research organizations, Businesses, Households.

Direct output

Contributes to

Figure 1 Organisation and stakeholders involved in the SDG measurement and monitoring (Source: Authors' own)

and responsibility and involves a number of stakeholders. Figure 1 provides an overview of the stakeholders involved in the measurement and monitoring of SDGs, in relation to their responsibilities, possible voluntary measures and related output².

² In 2021, UNECE published a report to examine the process of measuring and monitoring the SDGs that involve multiple stakeholders, providing specific recommendations (UNECE 2021).

³ The term “VLR” has been used for reviews published by all types of sub-national authorities, depending on the institutional organization of the countries, i.e., municipalities, provinces and regions, etc.

⁴ REDS is the Spanish chapter of the Sustainable Development Solutions Network (SDSN)

⁵ Italian Alliance for Sustainable Development

Since 2017, **Local and Regional Governments (LRGs) have also started to produce monitoring reports on the achievement of the SDGs in their territories, called SDG Voluntary Local Reviews (VLRs)**³ linked to local SDG strategies (also called local 2030 strategies) with examples that can be found all over Europe (inter alia Gobierno de Navarra 2019; Madrid 2021; Città Metropolitana di Firenze 2022; Mannheim 2019; Euskadi Basque Country 2018b).

In some cases, LRGs have been called to contribute to the VNRs, as for example in the case of Finland (Prime Minister’s Office 2020). However, as highlighted in the survey on the localisation of the SDGs run by the Council of European Regions and Municipalities (CEMR) among its members, the involvement of local and regional governments’ associations in the production of VNRs is still weak (CEMR-CCRE and Platforma 2020). Some countries started to consider the subnational level when reporting on the 2030 Agenda. In specific cases, international or national stakeholders have started to support these efforts, such as the Red de Soluciones para el Desarrollo Sostenible (REDS)⁴ and Alleanza Italiana per lo Sviluppo Sostenibile (ASviS)⁵ in Spain and Italy (REDS - Red Española para el Desarrollo Sostenible 2018; 2020; Cavalli et al. 2020), and also the Association of Flemish Cities and Municipalities (VVSG) in Belgium (Association of Flemish Cities and Municipalities 2020) or the Cabot Institute for the Environment at the University of Bristol (Fox and Macleod 2019b).

1.1.1 Several definitions – different models

VLRs were considered a reporting tool in their first years of publication, especially from the perspective of the frontrunners. In 2019 Fox and Macleod defined the Voluntary Local Review as “a tool to report sub-national progress towards achieving the SDGs” (Fox and Macleod 2019b). Similarly, Deininger et al. define a Voluntary Local Review as “a vehicle for state and local governments to report their progress on the SDGs” (Deininger et al. 2019). While the former focuses on the local level only, the latter also considers the local review as an instrument for the national government to report on progress in achieving the 2030 Agenda.

As stated in the Introduction, VLRs were also defined as tools in the first edition of the *European Handbook*. More specifically the VLR was defined as “a tool that allows cities to assess their achievement of the SDGs and their contribution to the 2030 Agenda” (Siragusa et al. 2020).

Since then, several additional and refined definitions of VLRs have been proposed. The lack of a harmonised definition is not considered a problem for the global community because VLRs are meant for local governments which, by nature, operate in different geographical, social, economic and institutional contexts. On the contrary, this heterogeneity is viewed positively as stated by UCLG and UN-Habitat,

since “VLRs represent an aspirational statement and the commitment of a community to a global endeavour: the Sustainable Development Goals” (UCLG Community of Practice on VLRs and UN-Habitat 2020).

In its first instance, the term VLR has been adapted from the VNR, identified in the 2030 Agenda for Sustainable Development itself, where in paragraph. 77, signatory Member States “commit to fully engage in conducting regular and inclusive reviews of progress at the subnational, national, [world] regional and global levels” (United Nations 2015b).

Also, in paragraph 79, the 2030 Agenda encourages Member States to conduct regular and inclusive reviews of progress at national and subnational levels. These reviews should be country-led and country-driven.

Two main elements are translated from national to local level: the reviews are **voluntary**, since there is no legal obligation to conduct them. Also, they should be **city-led and city-driven** (or region-led and region-driven).

However, until recently and as illustrated in 1.4, a clear definition and guidelines for VLRs were lacking. On the one hand, this implies a weakness because of the lack of harmonisation and sufficient methodological development of these processes. On the other hand, this shortcoming implies that the governments that dedicate time and resources to the production of the VLR are truly committed to sustainable development and really believe in the value of using the SDG framework as reference.

Over time, VLRs started to be considered a process rather than a tool. In 2019, Deininger et al. were among the first to sustain this change of paradigm. For instance (Deininger et al. 2019) mention that “cities will find that both the VLR as a product and the process of producing a VLR are valuable for mapping local strategies and priorities against the global goals and identifying gaps and opportunities to accelerate local progress”. Later, Pipa and Bouchet defined the VLR as “a process in which local governments confirm their commitment to the SDGs and voluntarily assess their progress towards specific targets in the 2030 Agenda” (Pipa and Bouchet 2020), highlighting the aspect of commitment to an exercise that is neither compulsory nor a legal obligation.

Similarly, in 2020 the UN Economic and Social Commission for Asia and the Pacific (ESCAP) defined a VLR as “a process through which subnational Governments (SNGs) undertake a voluntary review of their progress towards delivering the 2030 Agenda and the SDGs” (ESCAP 2020b).

More recently, the UN Economic Commission for Africa (ECA) also stated clearly that “VLRs are a tool for telling your local story”, and that “VLRs represent a process, not just a product” (UNECA, UN-Habitat, and UCLG Africa 2022).

Going one step further, Hidalgo highlights that the VLR should be part of what has been defined as an SDG ecosystem. The SDG ecosystem has been defined as *‘the co-ordinated design, implementation and monitoring of multilevel, multi-stakeholder strategies, initiatives and actions for the achievement of the Sustainable Development Goals on the ground. An SDG ecosystem contributes to better policymaking by establishing a coherent, consistent, and mutually reinforcing collaborative framework with a strong territorial approach.’* (Hidalgo Simón 2021).

1.2

The VLR as a process

The VLR is a process that encompasses both the monitoring and analysis of the achievement of the SDGs at local level.

More specifically, when analysing the experiences of European and non-European VLRs, it can be observed that they have been considered to be:

- **Incremental processes**, because their scope, objectives, resources, output and outcome can improve and change over the course of the process itself. For example, they may first include only priority SDGs and then all the SDGs, or indicators to measure the Goals, and also to measure targets (i.e. in the case of Helsinki (City of Helsinki 2019, 2021)).
- **Reiterative processes**, because they can be repeated over time to monitor improvements, achievements and missed steps. (i.e. the Basque county published several editions of VLRs (Euskadi Basque Country 2017; 2018a; 2019; 2021)).
- **Retrofitting processes**, because they can benefit, inform, and shape measures that then impact the results and the data, indicators and performance (in the case of Barcelona (Gabinet Tècnic de Programació and Oficina Municipal de Dades 2019)).
- **Interactive processes**, because several stakeholders engage and interact to shape the process itself (i.e. in the case of Espoo (City of Espoo 2020)).

1.2.1 Elements that shape the VLR

VLRs can serve different purposes and are used to achieve different objectives. In addition, VLRs have assumed and raised different expectations regarding the potential outcome, from being part of a global movement, to increasing the public's awareness and

accountability, from better identifying priority actions to designing a full cycle of knowledge-driven policy making. To produce a VLR and make the best use of it, some elements and prerequisites should be in place. These elements represent entry points to start the process of the VLR. This section describes some of these elements, based on the knowledge, experiences and information of the VLR processes gathered during the work carried out in the last years by the JRC with several municipalities across Europe and with several partner organisations.

6 Unless English is the local language

Clear understanding of why a VLR should be conducted

In some cases, being part of a global movement can be the driving element to produce a VLR. This is usually the case if the VLR is released only in English and is not available on the government website.

According to data collected by the JRC on the published VLRs, out of 107 LRGs that published at least one VLR until 2022, 56 did so in English. The second language with more VLRs is Spanish (24), followed by French (seven) and Portuguese (five). Only six LRGs published both in English and in another language (these being German, Chinese, Finnish, French, and Spanish). However, when the VLR is not published in the local language, it can hardly be argued that this can be easily used by the local community as a tool for ensuring the accountability and transparency of the local administration⁶.

The opposite happens when a VLR is published only in the local language. This may be driven by a lack of resources for the translation, but it also hinders comparability with other cities. It might also be a sign that the core audience of the document is its own community or other cities in the same country. Therefore, the aim of this kind of VLR might be more related to internal accountability and the improvement of local policies or comparability, but limited to the national context.

Support from the political leadership

National and international organisations attempted to promote political commitment to conduct VLRs, among others in New York City with the Declaration on the VLRs (New York City and United Nations Human Settlements Programme (UN-HABITAT) 2022). City networks, national and international organisations suggest to mayors that they should promote the creation of a VLR for their city. The mayor, or city leaders, if they consider the VLR to be a tool for analysing, disseminating, and promoting the success or efforts of the local government may give the mandate to the administration (to one or more departments) to conduct the VLR. When there is political leadership supporting the effort of creating a VLR, it is more probable that the VLR is actually pursued and published.

The VLR process can be shaped according to the available resources

According to the resources available, different organisational models can be applied to the VLR process. Resources needed for the VLRs might include: (i) financial resources to task experts, access data, produce, edit and publish the VLRs; (ii) human resources, because usually a team from the cities is tasked to lead the VLR process and this has to be part of the work plan of the employees; (iii) technical resources, including software and hardware to manage, store and disseminate data and information; (iv) time, because local governments are linked to political cycles and administrative elections. A specific timeline could be set to ensure that the VLR is published on time before the change of administration.

Different management models will result in different types of VLRs

The VLR is a process that can be managed in different ways and involve different partners. According to the institutional local context and resources available, different management models can be used and stakeholders involved:

1. Completely centralised process managed within the mayor's office – the hub-and-spoke model– identified by (Deininger et al. 2019, 14).
2. SDG task force or working group within the local administration. This is the method suggested by (Koike et al. 2020).
3. City and external partnership-led, tasking external experts, researchers, university centres, as identified in (UNECA, UN-Habitat, and UCLG Africa 2022, 18).

It should be noted that in some cases there is mixed use of these models and that they are not exclusive. Some parts or specific tasks of the VLR need internal leadership and deep knowledge of the structure and functioning of the public administration. Other more technical tasks require skills and technical knowledge, such as data collection and analysis, and might be outsourced more easily than others.

VLRs are processes that enable a solid data collection in all fields covered by the SDGs, and they also **constitute a process for the construction of collective knowledge**. This process of knowledge management can have positive long-term impacts on the way the different city departments work.

Partners and stakeholders can be involved at different stages of the preparation

Partners and stakeholders can take part in the VLR process in different procedures and at different stages. They may be part of the design of the VLR, therefore fully engaged in the definition of the objective, methods, strategy and desired output. Or they may provide specific inputs based on the requests of the working group, e.g., review the draft. Finally, they may be consulted to provide feedback on the presentation delivered in public hearings. For example, the structure of Los Angeles's VLR was designed to encourage groups of residents not only to participate in the process of analysis, but also in adapting the set of indicators chosen. This made it possible to use indicators that were more representative of the realities of the different neighbourhoods involved. (Bilsky et al. 2021).

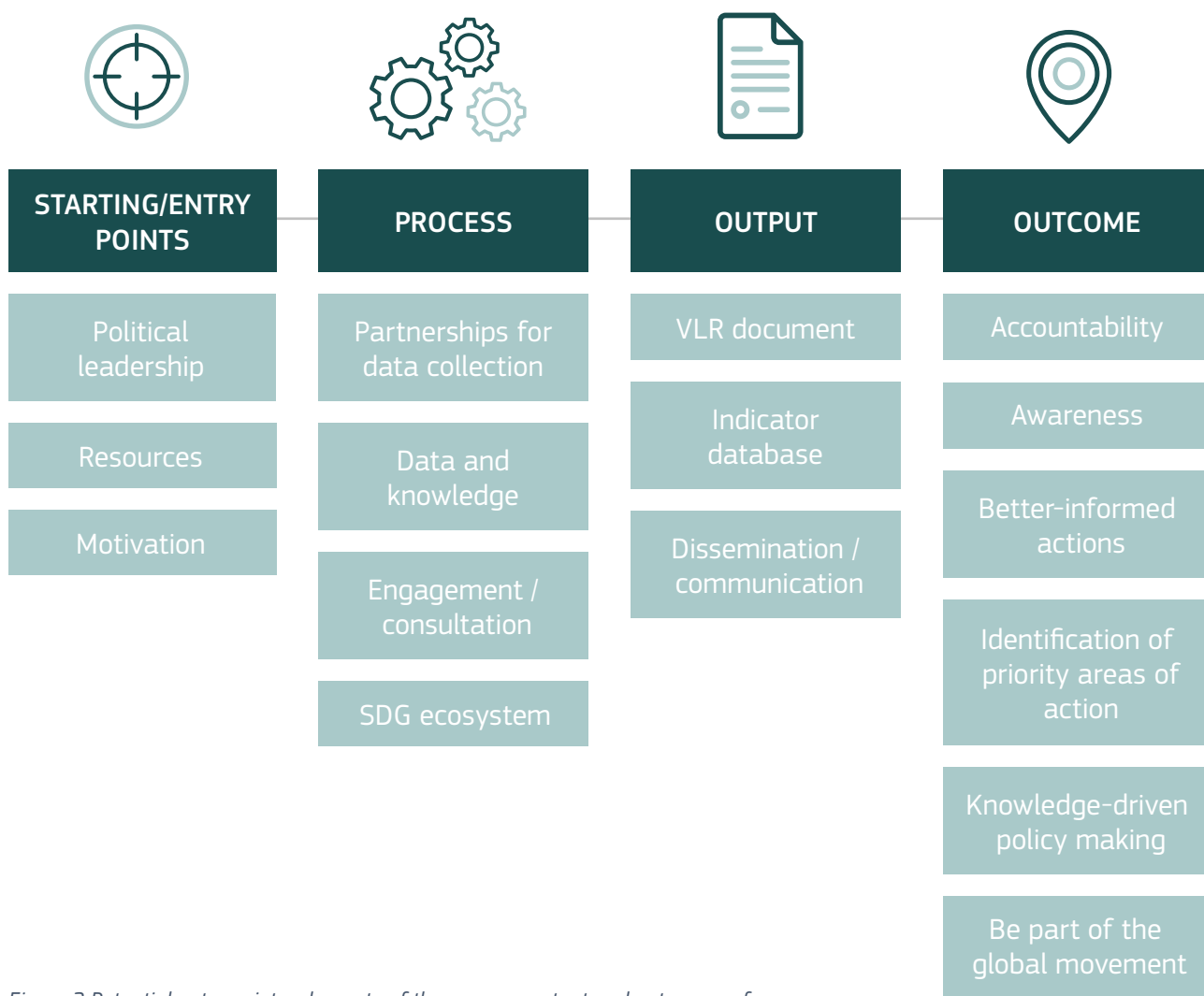


Figure 2 Potential entry points, elements of the process, output and outcomes of VLRs (Source: Authors' own)

1.3

Voluntary Local Reviews around the world

1.3.1 The evolution of VLRs in the world

⁷ <https://sdg.iisd.org/news/new-york-city-presents-first-ever-voluntary-local-review-at-hlpf/>

⁸ For examples: UNDESA <https://sdgs.un.org/topics/voluntary-local-reviews>; Institute for Global Environmental Strategies (IGES) <https://www.iges.or.jp/en/projects/vlr>

The first local government in the world to publish a VLR was the Basque country in 2017 (Euskadi Basque Country 2017), while the first city to ever present a VLR to the High-level Political Forum on Sustainable Development was New York (USA) in 2018 (The City of New York 2018b)⁷. Since then, a total of 125 VLRs have been published between 2016 and 2022 by 107 LRGs, to the best of the authors' knowledge. It is indeed complex to obtain a complete picture of the published VLRs. Some LRGs share the VLRs with international organizations⁸ that compile online databases. However, many VLRs are not in English or are not disseminated in international forums. This makes it harder to keep track of them. Therefore, the following figures might be an underestimation.

According to data collected by the JRC, 39 VLRs were published in 2020 and 36 in 2021, with a slight decrease compared to the positive trend started in 2016, the year after the approval of the 2030 Agenda (Figure 3). However, the number of local governments that published a VLR for the first time has been continuously increasing in the last years (Figure 4).

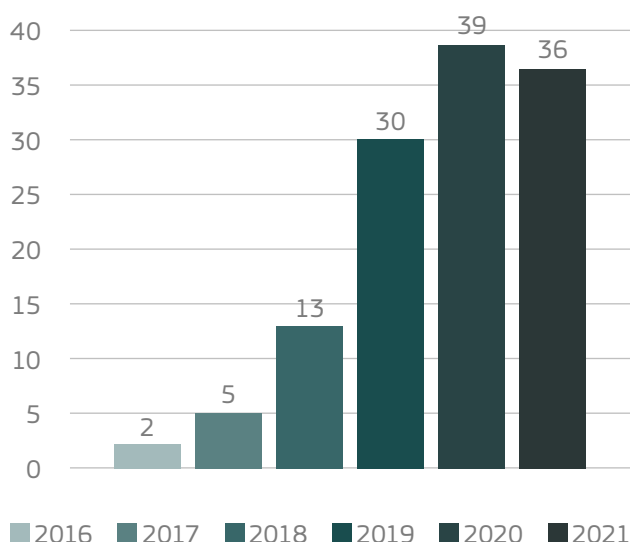


Figure 3 VLRs published per year (Source: Authors' own)

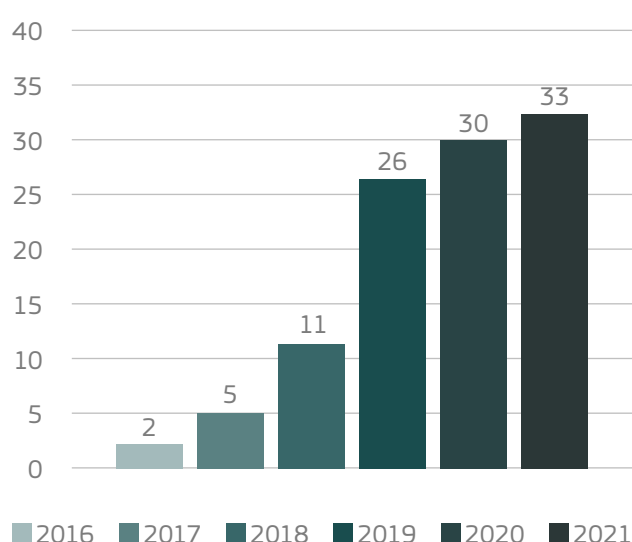


Figure 4 Number of VLRs published for the first time in each year (Source: Authors' own)

VLRs have been published by megacities like Tokyo (Tokyo 2021), but also by the Greek island of Skiathos which has about 6,000 inhabitants (Skiatos 2020). A full list of VLRs published is included in Annex 3.

The different types of governments that have published a VLR are presented in Table 1, with a predominance of cities (78), followed by regions/states (18), provinces/counties (nine), and two by metropolitan areas, according to the different institutional settings. Only two metropolitan cities have published a VLR, but it is worth noting that the internal administrative organisation in the different countries makes it difficult to compare this information. However, more VLRs can be expected to be published by regions in the near future, as many countries have started to propose sets of subnational indicators and encourage the production of regional reviews.

Table 1 Types of LRGs that published VLRs

	City	Metropolitan city	Region/State	Province/County	Total
Type of LRGs	78	2	18	9	107

1.3.2 Geographical distribution of the VLRs

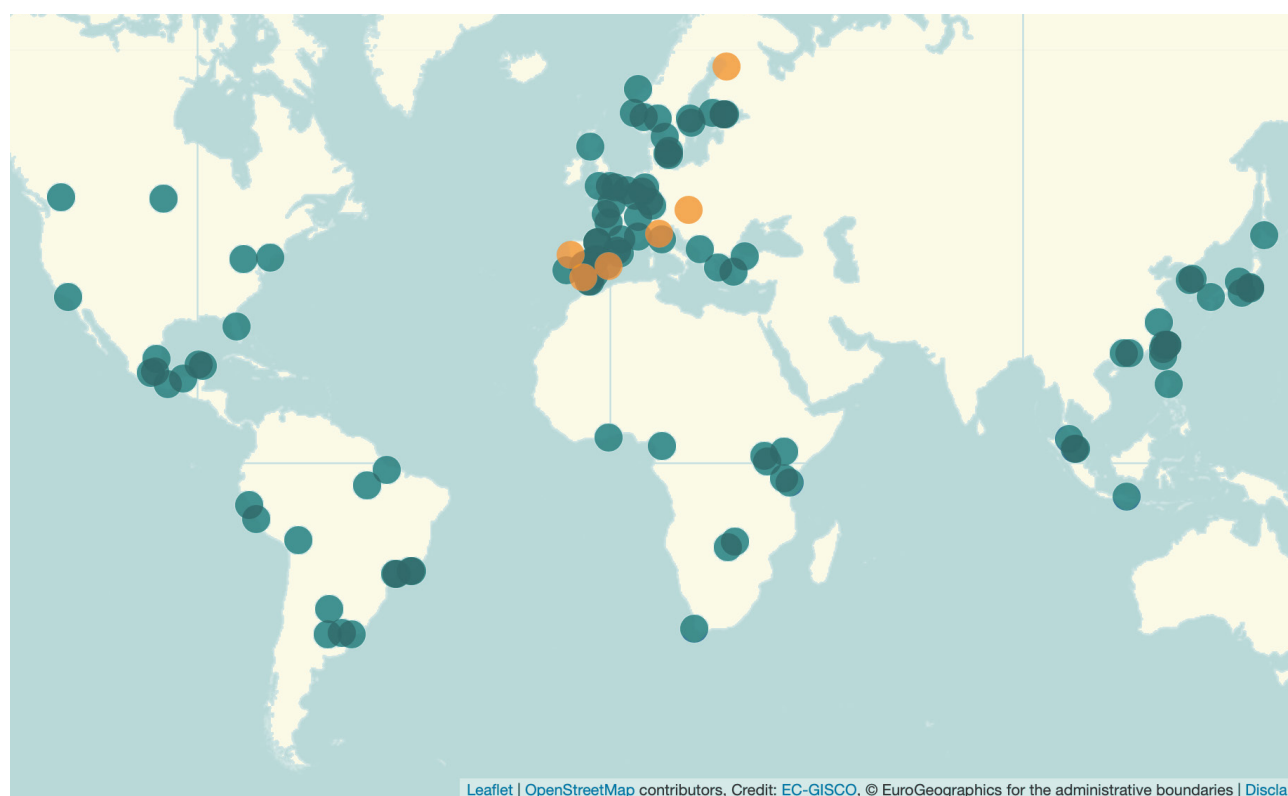


Figure 5 Map of the VLRs published (Source: <https://urban.jrc.ec.europa.eu/sdgs/>)

⁹ Geographical classification according to <https://unstats.un.org/unsd/methodology/m49/>

¹⁰ <https://aliautonomie.it/>

¹¹ <https://www.comunisostenibili.eu/>

¹² The Alliance brings together almost 300 member organisations and it aims to raise awareness among civil society, economic stakeholders and institutions about the importance of the Sustainable Development Goals (SDGs).

¹³ <https://sdg-portal.de/en/ueber-das-projekt>

Looking at the global geographical distribution of the VLRs published since 2017 (Figure 5 and Table 2), Europe leads in number (44 VLRs) with a fairly even distribution among its sub regions (Northern, Southern, Western), and a gap in Eastern Europe⁹. The Americas follow with 30 VLRs in total.

It is important to highlight that between 2021 and 2022 the United Nations' Economic Commissions for Africa, Asia-Pacific and Europe have launched regional guidelines for VLRs and this should increase the visibility of the tool and its implementation (ESCAP 2020).

According to the data collected by the JRC and updated in April 2022, the country with the most LRGs to have officially published a VLR is Spain (10), followed by Mexico (nine), Brazil, China, France, and Japan with six, Sweden and the United States with five, and Finland, Germany, Norway, the United Kingdom of Great Britain and Northern Ireland with four. Moreover, Porto, Valencia, Madrid and Seville are preparing their VLRs which are expected to be published by the end of 2022, therefore increasing the number of VLRs that should soon be published in Portugal and Spain.

Also, in several countries strategies and measures have been implemented to support cities and regions in monitoring the SDGs. This is particularly relevant in the case of countries such as Spain and Germany. But it should also be noted that in other cases, these activities have not been developed by the national government or its agencies, but by non-governmental stakeholders, such as cities' networks, foundations, and institutes of different types. This is the case, for example of the Italian network ALI – Autonomie Locali Italiane. In 2020, ALI – Autonomie Locali Italiane – Lega delle Autonomie Locali (ALI – Autonomie Locali Italiane¹⁰), established the Italian Network of Sustainable Municipalities (Rete dei Comuni Sostenibili)¹¹. The network defined a set of 101 indicators for municipalities to measure the building on the *European Handbook* for SDG Voluntary Local Reviews (VLRs) reference methodology. Currently, more than 50 municipalities are working on this adapted set of indicators with the aim of starting and improving their SDG monitoring and possible related transformative measures. The Network works in collaboration with the Italian Alliance for Sustainable Development (ASviS)¹².

One other example of support offered to municipalities is the German Bertlesmann Foundation, which established the German SDG-Portal¹³, the municipal demographic data repository 'Guide for Municipalities', and the "SDG Indicators for Municipalities" handbook (Assmann et al. 2018). This initiative has supported the construction of a community of practise. However, three years after its launch, only four German municipalities have published a VLR.

Table 2 Number of LRGs that published VLRs in 2016-2022 by country, grouped by world region and subregion (Source: Authors' own)

Americas	30
Latin America and the Caribbean	23
Argentina	3
Bolivia (Plurinational State of)	1
Brazil	6
Mexico	9
Peru	3
Uruguay	1
North America	7
Canada	2
United States of America	5

Asia	23
Eastem Asia	16
China	8
Japan	6
Republic of Korea	2
South-eastern Asia	5
Indonesia	1
Malaysia	3
Philippines	1
Western Asia	2
Turkey	2

Africa	10
Sub-Saharan Africa	10
Kenya	4
South Africa	1
Zimbabwe	2
Ghana	1
Uganda	1
Cameroon	1

Europe	44
Northern Europe	18
Denmark	1
Finland	4
Norway	4
Sweden	5
United Kingdom of Great Britain and Northern Ireland	4
Southern Europe	14
Albania	1
Greece	1
Italy	1
Portugal	1
Spain	10
Western Europe	12
Belgium	2
France	6
Germany	4

1.3.3 A zoom in on Europe

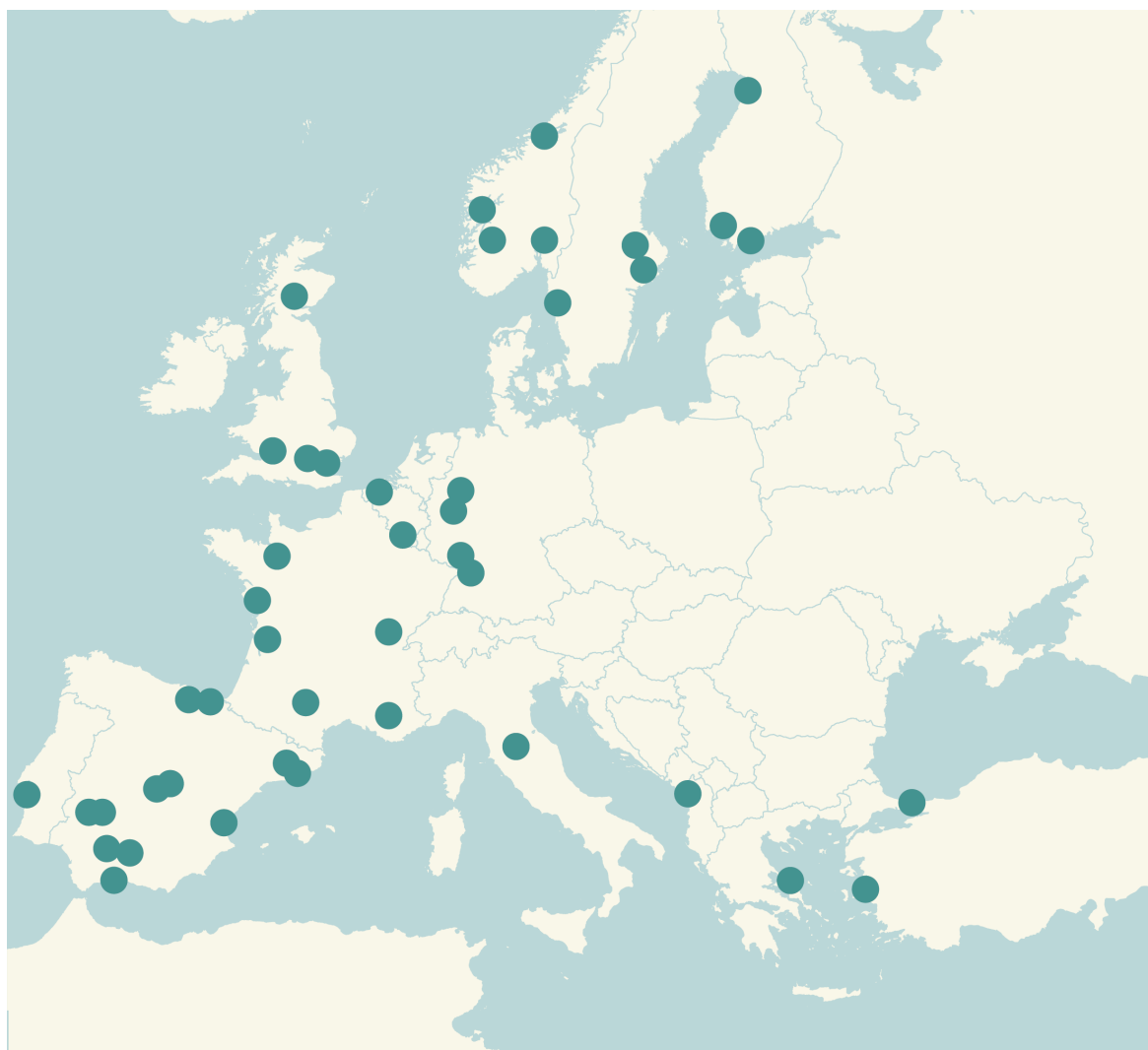


Figure 6 Map of the VLRs published in Europe (Source: <https://urban.jrc.ec.europa.eu/sdgs/>)

As presented in Table 2, the world sub region with the most LRGs to have officially published a VLR is Northern Europe (18) followed by Southern Europe (14) and Western Europe (12), amounting to a total of 44 VLRs in Europe, 35 of which are in the EU-27 countries. No local government in the Eastern European countries has published or disseminated a VLR, to the best of the authors' knowledge. As discussed in (Ciambra 2021a) there are three main clusters of LRGs engaged in the monitoring of the SDGs: Finland, Germany and Spain.

Table 3 lists all 44 LRGs that have published a VLR, even if under a different technical name in Europe, for a total of 58 VLRs, as few LRGs have published more than one VLR over time. The table also includes the competent institutional authority, the country, the number of SDGs included in the review, the language/s, and the year/s of publication.

Table 3 European LRGs that have published VLRs (Source: Authors' own)

	Authority	Level of government	Country	Language	Year/s
1	Alhaurín de la Torre	City	Spain	ES	2019
2	Asker	City	Norway	ES	2021
3	Barcelona	City	Spain	ES, EN	2019, 2020
4	Basque Country	Region/State	Spain	ES	2017, 2018, 2019, 2020
5	Bergen	City	Norway	NO	2020
6	Besançon	City	France	FR	2018, 2019, 2020
7	Bonn	City	Germany	EN	
8	Bristol	City	United Kingdom of Great Britain and Northern Ireland	EN	2019
9	Canterbury	City	United Kingdom of Great Britain and Northern Ireland	EN	2019
10	Cascais, Portugal	City	Portugal	PT	2020
11	Castilla-La Mancha	Region/State	Spain	ES	2019
12	Catalonia	Region/State	Spain	ES	2018
13	Cordoba	Province/County	Spain	ES	2020
14	Espoo	City	Finland	EN, FI	2020
15	Florence	Metropolitan city	Italy	IT	2021
16	Ghent	City	Belgium	EN	2020, 2021
17	Gladsaxe	City	Denmark	EN	2021
18	Gothenburg	City	Sweden	EN	2019
19	Helsingborg	City	Sweden	EN	2021
20	Helsinki	City	Finland	EN	2019, 2020
21	Jaén	Province/County	Spain	ES	2019
22	London, UK	City	United Kingdom of Great Britain and Northern Ireland	EN	2021
23	Madrid	City	Spain	ES	2021
24	Málaga	City	Spain	ES	2018, 2019, 2020, 2021
25	Malmö	City	Sweden	EN	2021
26	Mannheim	City	Germany	EN	2019
27	Møre og Romsdal	City	Norway	NO	2021
28	Niort	City	France	FR	2018,2019,2020
29	Normandie	Region/State	France	FR	2020
30	NR-Westfalen	Region/State	Germany	EN	2016
31	Occitanie	Region/State	France	FR	2020
32	Pays de la Loire	Region/State	France	FR	2020
33	Provence-Alpes-Côte d'Azur	Province/County	France	FR	2021
34	Scotland	Region/State	United Kingdom of Great Britain and Northern Ireland	EN	2020
35	Shkodra	City	Albania	SQ	2021
36	Skiathos	City	Greece	EN	2020
37	Stockholm	City	Sweden	EN	2021
38	Stuttgart	City	Germany	DE, EN	2019
39	Turku	City	Finland	EN	2020
40	Uppsala	City	Sweden	EN	2021
41	Valencian Community	Region/State	Spain	EN	2016
42	Vantaa	City	Finland	EN	2021
43	Viken	Region/State	Norway	NO	2020
44	Wallonia	Region/State	Belgium	FR	2017, 2020

1.4

The VLR building blocks

14 In the last year a number of international and national organisations have published relevant guides and publications to support local governments in localising the SDGs (inter alia Ciambra 2021b; UCLG and UN-Habitat 2020b; Famsi 2020). However, in this table, only the documents that specifically propose a structure of VLRs are reported.

15 It has to be noticed that these building blocks are recommendations, but none of these elements are compulsory in the guidelines.

Every VLR is different and the output documents have different types of structure and content. In the first *European Handbook*, the building blocks suggested by (Deininger et al. 2019) were reported (Siragusa et al. 2020). The first VLRs replicated the structure of the VNRs. However, in more recent years it became clear that this structure, derived from the official guidelines (United Nations Department of Economic and Social Affairs 2020) was not suitable for local governments.

Therefore, several institutions started to propose new guidelines on how to prepare VLRs, more tailored to the needs of local governments.

Among these, the Cabot Institute for the Environment at the University of Bristol in partnership with the City Office of Bristol City Council, in 2019 published a handbook for UK cities (Fox and Macleod 2019b) based on the experience of Bristol, which published its first VLR that year (Fox and Macleod 2019a).

In 2020 UNDESA released the 'Global Guiding Elements for Voluntary Local Reviews (VLRs) of SDG implementation' (UNDESA 2020), a short document whose goal was to provide a blueprint for VLRs that would, in principle, enable a crosscutting reading of the documents, as is the case for the VNR. The document has been presented at several public meetings and suggestions were collected from number of stakeholders, experts and international, national and local organisations.

In 2020 as well, the ESCAP published the 'Asia-Pacific Regional Guidelines on Voluntary Local Reviews' (ESCAP 2020), which proposes a structure largely inspired by other documents, and in particular the Shimokawa Method based on the successful case of Shimokawa (small town in Japan) (Koike et al. 2020).

Finally, in 2021 the United Nations Economic Commission of Europe adopted the specific guidelines for the ECE region (Economic Commission for Europe Committee on Urban Development Housing and Land Management 2021).

Annex 4 illustrates the elements/building blocks suggested in the different publications and guides published since 2019¹⁴. According to the different guides and publications considered in the Annex, the recurring elements in the VLRs should be¹⁵:

- **Opening Statement**, which might include the forewords, with specific commitment of the Mayor or the representatives of the administration on the objectives and motivation behind the VLR.
- **Highlights** which usually include the main findings and key messages from the analysis.

- **Introduction** that provides an overview of the context, the path towards sustainability of the city and how the VLR is integrated in the bigger picture of the policy measures and strategies of the city.
- **Organizational alignment and institutional process that** illustrates the institutional and organizational aspects of the VLR process, including the level of engagement of the stakeholders and different city departments.
- **Structural issues and challenges** according to the national context and the specific nature of the territory.
- **Methodology** which presents the method followed to organise the process of selecting, collecting and analysing the indicators and respective data, and of identifying the transformative measures that contribute to the achievement of the Goals.
- **Policy** and enabling environment which illustrates the institutional, political and intergovernmental setting and environment in which the review took place.
- **Review of the Goals** which is usually the core of the VLR, where the progress towards the Goals and/or the specific targets are illustrated, including both qualitative and quantitative information. In most cases, LRGs use the Goals, while in others, they identify alignment to localise specific objectives included in the local strategy towards 2030. Some LRGs have gone a step further, assessing specific SDG targets or identifying their own. This part of the VLR usually contains both examples and a list of transformative measures and flagship projects that contributed to one or more Goals or targets¹⁶.
- **Means of implementation** which highlights the challenges, bottlenecks and possibility of mobilising resources to tackle specific shortcomings and issues identified in the review.
- **Discussion and recommendations** which summarise the measures and follow-up measures to be performed by the LRG and its partners.
- **Conclusions** which usually contain reflections on the process of the VLRs, potential commitment to perform another one in the future.
- **Annexes** which usually include the statistical and technical annexes, templates of used surveys, or any other tools or methods used in the VLR.

¹⁶ For an in-depth discussion of the use of indicators in published VLRs see (Ciambra 2021a).

02

The European Handbook demonstrates that local governments can monitor SDGs with indicators that are locally relevant but also comparable

This part of the *European Handbook* aims at reviewing the method for the elaboration of VLRs and updating the framework of indicators proposed to European cities for measuring their progress towards the achievement of the SDGs.

Part 2 starts by describing the proposed method for the selection of the indicators and discusses the characteristics of the indicators proposed and the SDG targets addressed, including considerations on the difference both in the method and the indicators' list between the first and the second edition of the *European Handbook*.

Then, the readers find a detailed guide on how to use this Part in practical terms.

Each of the 17 SDGs is introduced with a two-page description that is divided in three sections: description of the Goal, and European and local dimension.

Finally, each indicator is presented in two-pages as well: the textual part aims at describing the indicator's definition and method of calculation, the European context and the comments and limitations; the graphical elements present in a simple way the key characteristics of the indicator such as coverage, source, frequency while the metadata include all information needed to retrieve the database indicated as a source.

2.1

Methodology for the selection of the indicators

The main scope of the *European Handbook* is to demonstrate that cities and local governments can monitor SDGs with a set of indicators that allows the monitoring of aspects which are locally relevant but also allows comparability over time and with other cities. To do so, the authors have browsed through a great number of databases looking for indicators at local level that could be used to measure different SDGs and related targets to propose a compilation of these.

The rationale for the selection of the indicators includes different steps and different elements, as illustrated in Figure 7.

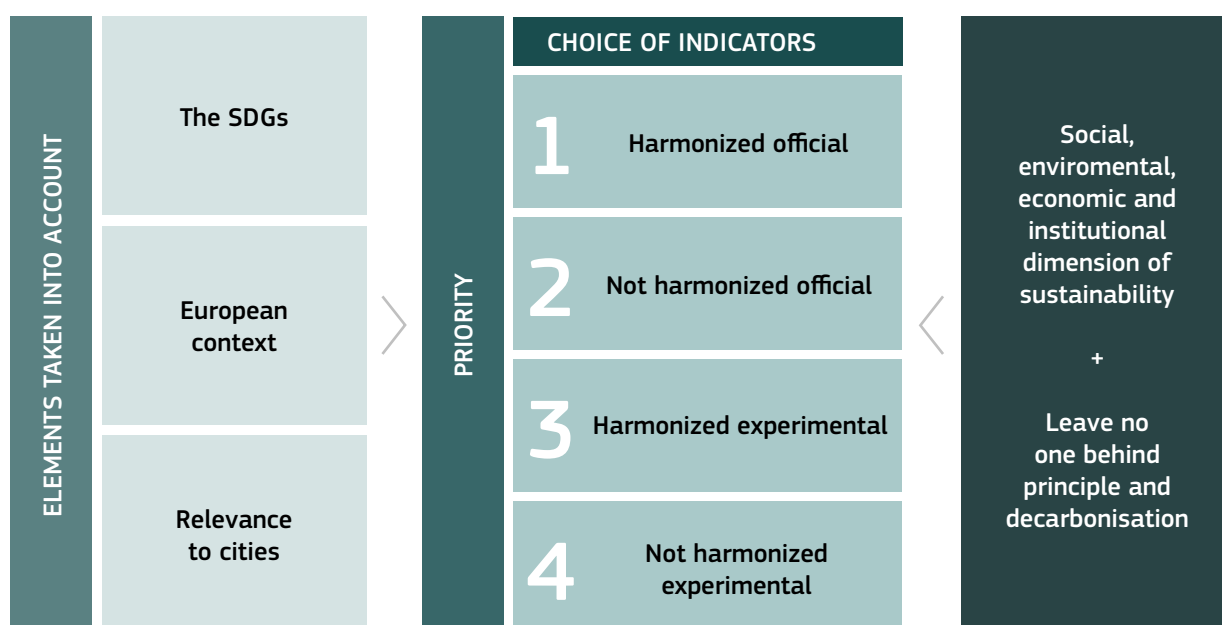


Figure 7 Rationale for the selection of the indicators

The elements taken into consideration to initiate the indicator selection process are:

- First, the Goal is analysed highlighting the importance of the topic and its relevance seven years after the approval of the 2030 Agenda, and also in the context of the COVID-19 pandemic and recovery.
- Second, a reflection on the relevance of the Goal in the European context is developed (i.e. differences in achieving good education for all in Europe) also taking into consideration EU related policies and initiatives that address the specific Goal.
- Third, the local dimension of the Goal is explored: why and to what extent is the Goal relevant at local scale, what is the capacity of cities to take action, what characterises the challenges of this Goal in the urban context.

The elements discussed above are briefly presented in the pages that introduce each Goal (see 2.5).

The authors have prioritised indicators in the following order:

- **Official indicators that are harmonised and included in European databases.** This is the case of indicators collected, harmonised, and disseminated by European institutions, such as Eurostat, the European Environment Agency (EEA), or international organisations, for example the OECD. The authors acknowledge that in many cases, national, regional or local databases might include more timely and updated information and data points and suggest referring directly to these, where relevant.
- **Official indicators that are not harmonised.** These indicators are elaborated and disseminated according to the Fundamental Principles for Official Statistics from local statistical offices or administrations for few cities, regions or countries according to their specific situations (United Nations 2014). In this case, some of these indicators produced from a Member State or local/regional authority are included in this Handbook as examples. This category also includes indicators that only a few LRGs made available but that all municipalities should be able to collect for example from administrative data. Examples of these indicators are the “Positions held by women in management” or “Eco-friendly municipal vehicles”. It can be assumed that information on the number of employees by gender and on the city eco-friendly fleet should be available for reporting in all municipalities.
- **Experimental and harmonised indicators included in European or global databases.** These are the cases where official indicators are not available, but research centres, universities, international institutions and organisations collect or model and disseminate harmonised data providing information on the data collection and methodology.
- **Experimental and not-harmonised indicators.** These are the few cases where indicators that are considered relevant for specific European municipalities are not suitable for monitoring through official data. In this case, municipalities or third parties can try to collect information to feed these indicators in a more experimental way.

2.2

Characteristics of the indicators presented in this second edition of the *European Handbook*

After the release of the first edition of the *European Handbook* in 2020, the method proposed in that publication has been used by several cities in Europe. It has also been tested, in particular, with a structured collaboration with six European cities, namely Bratislava (SK), Reggio

¹ For each pilot city, the JRC tasked one expert to perform a data analysis for each URBAN2030 pilot city: Eloina Coll (Valencia), Serena Foracchia (Reggio Emilia), Andrej Irving (Bratislava), Suvi Monni (Oulu), Maria Oliveira Pacheco (Porto) and Raffaele Sisto (Seville).

Emilia (IT), Oulu (FI), Porto (PT), Seville (ES), and Valencia (ES). The test of the framework provided a number of valuable insights into the local monitoring of the SDGs and the use of the indicators included in the first edition of the *European Handbook*.

As summarised in (Siragusa et al. 2021a), from this testing exercise it emerged that the approach and methodology proposed in the first edition of the *European Handbook* were considered easy to follow. The indicators proposed were found to be appropriate and sufficient for covering the range of the 17 SDGs, and were clearly presented. With some exceptions, the indicators of the first edition were available for calculation or could be retrieved from national statistics or local databases. However, the experts¹ that have been working with the JRC have also highlighted specific challenges in the use of the *European Handbook* that the authors tried to improve in this second edition. More specifically:

- European sources were relatively easy to browse but in some cases there was a lack of timely data in these databases, i.e. data for specific cities was not available for the desired period. For these indicators, this edition indicates alternative data sources.
- Data for certain indicators was irregularly collected. These indicators have been replaced, when possible, or alternative sources are indicated.
- Indicators that require specific technical knowledge to be calculated, such as the ability to create, manage, analyse, or map geographic data or composite indicators. These indicators have been replaced or removed from the original list of indicators, but they can still be included if specific cities have the technical knowledge to manage them. In some cases, to facilitate the inclusion of these relevant indicators in the monitoring framework of European cities, the JRC has calculated them and made them available at municipal, city or metropolitan level.
- Indicators that have to be requested from a specific organisation or researcher, or where related data is proprietary. These indicators have been replaced, when possible.

2.2.1 Changes in the indicator set

As a result of the recommendations of the pilot cities, and the advancement/evolution in several fields or in data collection, this edition of the *European Handbook* presents an update of the indicators that European cities can use to monitor their progress towards the achievement of the SDGs.

Compared to the 2020 edition of the *European Handbook*, the following indicators have been deleted (17) or replaced (10):

- Goal 2 - *Organic food purchased for schools* (deleted) and *Soup kitchens for people who cannot afford food* (deleted)
- Goal 3 - *Daily smokers in 1st and 2nd year of upper secondary school* (deleted)

- Goal 4 – *Adults with less than primary, primary and lower secondary education* (replaced) and *Non-native students graduating from upper secondary schools* (deleted)
- Goal 5 – *Satisfaction with life by sexual identity for 15-year-old children* (deleted)
- Goal 6 – *Drinking water consumption* (replaced), *Recycled water used for open spaces* (deleted) and *Blue City Index (BCI)* (deleted)
- Goal 7 – *New Buildings* (replaced) and *Technical Photovoltaic Potential* (deleted)
- Goal 9 – *Enterprises in Industry, construction and services* (deleted) and *New Start-ups over 1,000 inhabitants* (replaced)
- Goal 10 – *Graduates by field and gender* (deleted) and *Population with migrant background* (replaced)
- Goal 11 – *Housing cost overburden rate* (replaced), *Bicycle traffic* (replaced) and *Cultural Creative Cities index - C3 index* (deleted)
- Goal 12 – *Greenhouse gas emissions* (replaced), *Urban Flood Risk* (replaced) and *Heat vulnerability* (deleted)
- Goal 14 – *Participation of local governments in Community-Led Local Development (CLLD) projects* (deleted)
- Goal 15 – *Urban greenness* (deleted) and *Tree Cover Density* (replaced)
- Goal 16 – *Level of trust toward other people in the city* (deleted) and *Satisfaction with the administrative services of the city* (deleted)
- Goal 17 – *Remittances as a proportion of GDP* (deleted) and *VLR indicators from official statistics* (replaced)

The reasons for excluding or replacing these indicators are as follows:

- Due to no update being planned in the respective database before 2023 (considered a threshold year) (e.g. for *Cultural Creative Cities index*).
- Due to the database becoming obsolete with no visibility of future update (e.g. *New Buildings*).
- Due to no database being available meeting the criteria of the 2nd edition of the *European Handbook* (e.g. *Non-native students graduating from upper secondary schools*).
- Due to requirement of specific tool, software and technical skills to calculate the indicator (e.g. for *Tree cover density* or *Urban greenness*) or high complexity of calculation as evidenced by the implementation of the first *European Handbook* framework by the six pilot cities (e.g. *Blue City index* or *Technical Photovoltaic Potential*).

- Due to the availability of data only at NUTS3 level and replacement with other indicators was possible (e.g. for *Remittances as a proportion of GDP*).
- Due to the availability of an indicator that better addresses the respective SDG and target (e.g. in the case of *Enterprises in Industry, construction and services, VLR indicators from official statistics or Drinking water consumption*).

Compared to the 2020 edition of the *European Handbook*, the following indicators (20) have been added:

- Goal 2 – *Land used for agriculture* and *Food commodity prices*
- Goal 3 – *Illicit drug consumption* and *Medical doctors*
- Goal 5 – *Positions held by women in management*
- Goal 6 – *Quality of water for human consumption* and *Population connected to a drinking water system*
- Goal 7 – *Inability to keep house adequately warm*
- Goal 8 – *Employment among different migrant/ethnicity backgrounds*
- Goal 9 – *Access to high speed broadband* and *City startup attractiveness*
- Goal 11 – *Registered private vehicles* and *Premature deaths attributed to PM_{2.5}*
- Goal 13 – *Population exposed to wild fires* and *Eco-friendly municipal vehicles*
- Goal 14 – *Pollution load of urban effluents discharged to the coastline*
- Goal 15 – *Surface waters with high ecological status* and *Newly planted trees*
- Goal 17 – *Municipal council debt* and *VLR disaggregated indicators*

2.3

SDG Targets addressed in the 2022 edition

Indicators in the *European Handbook* often address more than one target at the same time. This information has been captured and is presented in the indicator information sheet yet practitioners are encouraged to associate these indicators with other SDG Targets, where relevant, based on the local context. In total in the second edition of the *European Handbook* 54 targets (out of 169) of the SDG official list are addressed as presented in Table 4.

Table 4 SDG targets addressed in the European Handbook

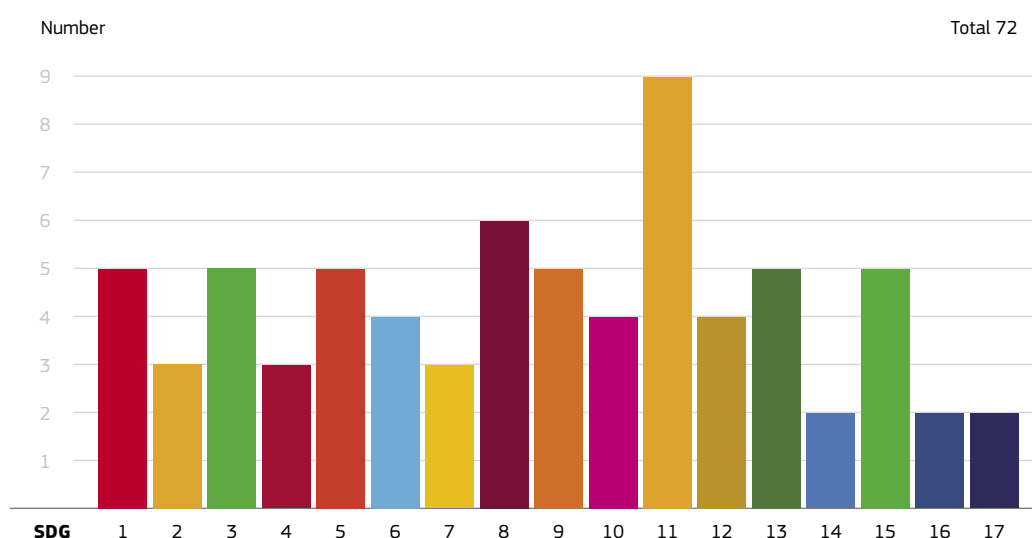
SDG	Targets addressed by the indicators in the European Handbook				
1	1.1 (extreme poverty)	1.1 (extreme poverty)	1.3 (social protection)	1.4 (access to basic services)	
2	2.2 (end malnutrition)	2.4 (sustainable food production)	2.c (proper functioning of food markets)		
3	3.2 (end preventable deaths of newborns)	3.5 (narcotic drug abuse)	3.6 (road accidents)	3.7 (family planning)	3.c (health workforce)
4	4.2 (childhood education)	4.3 (tertiary and vocational education)	4.6 (literacy and numeracy)		
5	5.1 (end gender discrimination)	5.2 (end gender violence)	5.5 (women participation and leadership)		
6	6.1 (universal access to water)	6.3 (improve water quality)	6.4 (increase water-use efficiency)		
7	7.1 (access to energies)	7.3 (energy efficiency)			
8	8.1 (economic growth)	8.2 (economic productivity)	8.5 (productive employment)	8.8 (safe and secure working environments)	
9	9.1 (reliable infrastructure)	9.2 (manufacturing employment)	9.3 (access to financial services)	9.4 (upgrade infrastructure)	9.5 (encourage innovation)
10	10.2 (inclusion irrespective of status)	10.4 (greater equality)	10.7 (migration and mobility)		
11	11.1 (access to housing)	11.2 (access to transport systems)	11.3 (land consumption)	11.6 (reduce environmental impact)	11.7 (public space)
12	12.4 (chemical management)	12.5 (reduce waste generation)	12.b (sustainable tourism)		
13	13.1 (exposure to disasters)	13.2 (climate change measures into policy)	13.10 (Greenhouse gas emissions)		
14	14.1 (reduce marine pollution)				
15	15.1 (terrestrial ecosystems)	15.3 (land degradation)			
16	16.1 (reduce death rates)	16.6 (efficient and transparent institutions)	16.7 (participatory and representative decision-making)		
17	17.4 (debt sustainability)	17.18 (increase data capacity)			

2.4

Goals and related example indicators

As result of the process illustrated in the previous paragraph, the present edition of the European Handbook includes 72 indicators, allocated in the 17 Goals, as described in Table 5.

Table 5 Indicators included in the European Handbook by SDG



Among the indicators presented in this Part:

- 44 indicators are collected every year and 13 with a periodic, non-systematic frequency.
- 30 indicators are available at city (or cities and greater cities) level and 25 at municipality level.
- 41 indicators are sourced from databases for the EU-27, 19 are sourced from specific EU countries, four are sourced from global databases, two are sourced from OECD countries, one comes from regional databases and one from local databases.

Other main characteristics include:

Type

- 53 official
- 19 experimental

Alignment

- 13 indicators are aligned with the Global indicator Framework for the SDGs (UN).
- 12 indicators are aligned with the EUSDG Indicator Set 2022 (Eurostat).

- One indicator is aligned with both the Global indicator Framework for the SDGs (UN) and the EUSDG Indicator Set 2022 (Eurostat).

Sources

- 21 indicators from Eurostat, City Statistics Database.
- 18 indicators are from European Institutions including European Commission – DG REGIO and Joint Research Centre, European Environment Agency (EEA), European Monitoring Centre for Drugs and Drug Addiction (EMCDDA).
- 33 indicators from other sources, i.e. national statistical offices, agencies, ministries, etc..

2.5

Reader's guide for Part 2

Every Goal is introduced by a two-page information sheet that includes the following three sections:

- 1. Description of the goal**, where the focus of the goal is introduced, together with insights on its targets and their relevance to sustainable development; and the Goal's pressing issues in light of e.g. health and climatic crises.
- 2. European Dimension**, which highlights the relevance of the Goal in the European context, how it is being monitored at European and national level and latest advances in this regard also in terms of policies.
- 3. Local Dimension**, which discusses how the Goal is relevant for European cities and what measures local governments could take to achieve the goal.

After the Goal's introduction, all indicators are presented in two-page information sheet. The indicator information sheet is composed of graphic elements and textual sections. For each graphic element, a brief explanation is provided.

The **bookmark** on the left side of the information sheet includes:

- **The official SDG icon**: depending on the SDG for which the indicator is provided as an example.
- **Type**: this could be official or experimental. Official indicators are extracted from databases produced by statistical offices or governments, including agencies, departments and in general refer to administrative data. Experimental indicators are those produced by research and other institutions with innovative methodologies, for which they publish the respective scientific methodology of calculation.

- **Link to other SDGs:** indicates other Goals for which this indicator is relevant (up to four).
- **SDG target/s:** up to two targets (as identified in the 2030 Agenda) directly linked to the indicator.
- **Alignment:** indicates the correspondence of the indicators with those included in the Global indicator Framework for the SDGs (UN) or the EUSDG Indicator Set 2022 (Eurostat), indicated as UN list and EU list.
- **Geographical coverage:** this refers to the geographical coverage of the indicator itself. This is usually EU-27, EU-27 plus others, OECD, global, specific countries, regions or cities.
- **Availability:** refers to the number of units for which the indicator is available (entry points). For some indicators, the number of entry points varies over time. Usually the authors indicate the year with more entry points from 2018 onwards, even if more entry points are available for previous years. This information is dynamic and subject to update by the respective entity publishing the indicator (be it official or experimental).
- **Source:** briefly indicates the entity that publishes the source and the database, e.g. Eurostat, Cities Statistics Database; OECD, Metropolitan database; national statistical offices; research centres; international institutions, etc.

The **core section** of the information sheet includes three textual parts:

- **Definition of the indicator:** that explains what the indicator measures, how it is computed, what is not included, its coverage, etc.
- **European context:** refers to the relevance of the indicator in the specific EU context, including information on time trends in EU MS and some related EU policies and initiatives that address the issue.
- **Comments / Limitations:** includes key elements of the data collection, for example possible limitations due to formulation and interpretation; potential improvement or integration of the indicator; use and development of the indicator; relation with other factors, as identified in the literature; key references and examples of published VLRs that include this indicator. This section also provides insights on possible/suggested/useful disaggregation, for example by sex, gender, age, disability, income, ethnicity, migratory status (where relevant) and ethnicity, according to the UN Statistical principles. It is here noted that sex is used instead of gender only for statistical purposes and only for the cases where databases provide disaggregated information only on women and men.

The **metadata section** on the right hand of the information sheet includes:

- **Source:** indicates the entity (also in the original language,

where relevant) that publishes the indicator and the database, table, variable code, etc.

- **Hyperlink (availability of API):** provides the link to the online databases, or data repositories, cloud, etc., and indicates when API is available (yes).
- **Visualisation:** where available, this field contains the link to map and/or visualise the indicator (in some cases in different web sources to the original data source).
- **Availability and geographical coverage:** details the number of units for which the indicator is available (entry points) in the reference year and details the countries, regions or cities covered by the indicator.
- **Unit of measurement:** describes the unitary format of the indicator, for example *absolute number* (any number in any metric that is absolute), *decimal number*, *rate* (when the two terms compared are in different units, comparing different quantities), *Ratio* (relation of size between two quantities where the numerator is not a component of the denominator) or *share* (when the ratio refers to part of the whole).
- **Level of aggregation:** refers to the availability of the indicator at a specific geographical level.
- **Time coverage and frequency:** indicates the year/s for which the indicator is available and the time frequency of collection and/or dissemination. These characteristics are key for calculating trends.

How to read the indicator information sheet

TYPE

OFFICIAL

1

2

LINK TO OTHER SDGs

2 ZERO HUNGER

3 GOOD HEALTH AND WELL-BEING

10 REDUCED INEQUALITIES

11 SUSTAINABLE CITIES AND COMMUNITIES

3

ALIGNMENT

UN list

EU list

4

5

GEOGRAPHICAL COVERAGE

FINLAND

6

SDG TARGET/S

1.1 (extreme poverty)

1.4 (access to basic services)

7

AVAILABILITY

223

8

FINISH MUNICIPALITIES

SOURCE

Housing Finance and Development Centre of Finland

9

43

GOAL 1

HOMELESS PEOPLE 10

Definition of the indicator 11

This indicator measures the number of homeless people. Homeless people in this data collection are defined as people who do not have a home (rented or owner-occupied) and who live in one of the following conditions:

1. outside, in stairways or temporary shelters;
2. in dormitories or hostels;
3. in welfare home-type housing units, rehabilitation units, hospitals or other institutions;
4. temporarily with friends or relatives due to lack of housing;

Since no harmonised data are available across Europe at the local level, the case of Finland is presented as an example.

Data are sourced from the Housing Finance and Development Centre homelessness surveys addressed to Finnish municipalities, which in turn collect data from social welfare and housing service registers and from the housing applicant registers of municipal rental housing companies. Data are provided at municipality level.

European context 12

Coming to a true picture of homelessness in Europe is difficult because data are not harmonised as they are collected using different definitions of homelessness, methodologies and reference periods. Moreover, in recent years most of the evidence on homelessness across European countries has confirmed a worsening of the situation in some countries and a stabilisation in others (Fondation Abbé Pierre and FEANTSA 2021).

To the contrary, in the last eight years, the number of homeless people has been continuously decreasing in Finland, making the country a unique virtuous case in the EU27.

Improving the condition of the homeless population is the target of two measures mentioned in the European Pillar of Social Rights' Action Plan (European Commission 2020) which seeks to build a fairer and more inclusive European Union: the European Platform on combating homelessness and the Affordable Housing Initiative.

13 Comments / Limitations

- Despite its apparent accuracy, persons presented in this data collection are defined as homeless based on criteria that differ from each other across municipalities in different years. Further details are available in the Housing Finance and Development Centre of Finland report.
- It is recommended that data be collected as far as possible using the same methodology (FEANTSA 2007) and is hard to implement targeted and long-term life conditions of the individual.
- More information should be collected on entering a condition of homelessness and prevention policies.
- In the Eurostat City Statistics, the number of people in accommodation is presented, but the dimensions of homelessness are not covered by the data available directly from Eurostat. Finland is an example for this source might also be used in the Eurostat (Eurostat 2022) presents one of the data collections on homelessness.
- Regarding the database presented in the November 2020) the last statistics show that the number of people living alone and 203) the number of long-term homeless people under 25 years of age came from the database and immigrants 963.
- In the database, The number of homeless residents is available, as well as the number of homeless, women, young, and couples experiencing a

Side bookmark

Main information on the indicator and potential use and interpretation

<p>cy, the data on the number of homeless ata collection is indicative, as the gathering information and assessment er. Also, the data presented by one ars may vary in terms of its accuracy. e in (The Housing Finance and and (ARA) 2021).</p> <p>ca concerning homelessness is gathered e ETHOS or ETHOS light definition ndled cautiously and instrumentally to ng-term policy responses to improve the duals concerned.</p> <p>so be gathered on people at risk of lessness to implement more effective</p> <p>cs database the indicator "Number n for the homeless" measures one of sness. Data is usually older compared om national statistical institutes (e.g. his) and covers few countries, but sed. (S Van Heerden, Proietti, and of the most recent and extended data s across European cities.</p> <p>posed here as an example, (Finland, urvey accounted for 4,341 homeless L homeless families and couples. The less people was 1,054, while those e to 854, women amounted to 1065,</p> <p>er of homeless people per 1,000 ell as the number of long-term migrants, families, families with children condition of homelessness.</p>	<h2>Metadata 14</h2> <p>Source: The Housing Finance and Development Centre of Finland - (Asumisen rahoitus- ja kehittämiskeskus ARA)</p> <p>Hyperlink (availability of API): https://www.ara.fi/en-US/Materials/Homelessness_reports/Report_2021_Homelessness_in_Finland_2020(60242)</p> <p>Visualisation:-</p> <p>Availability and geographical coverage: 223 Finish municipalities in 2020.</p> <p>Unit of measurement: Absolute number</p> <p>Level of aggregation: Municipality</p> <p>Time coverage and frequency: 2012-2020. Data collected every year</p>
--	---

Key Metadata

- 1 Type:** Experimental / Official
- 2 SDG icon**
- 3 Link to other SDGs:** indicates other Goals for which this indicator is relevant (up to four).
- 4 Alignment** with the UN SDG Global Indicator Framework
- 5 Alignment** with the EU SDG Indicator Set 2022
- 6 Geographical coverage**
- 7 SDG target/s:** up to two targets (as identified in the 2030 Agenda) directly linked to the indicator.
- 8 Availability:** refers to the number of units for which the indicator is available (entry points). For some indicators, the number of entry points varies over time.
- 9 Source:** briefly indicates the entity that publishes the source and the database.
- 10 Indicator name**
- 11 Definition of the indicator:** that explains what the indicator measures, how it is computed, what is not included, its coverage, etc.
- 12 European context:** refers to the relevance of the indicator in the specific EU context, including information on time trends in EU MS and some related EU policies and initiatives that address the issue.
- 13 Comments / Limitations:** includes key elements of the data collection, for example possible limitations due to formulation and interpretation; potential improvement or integration of the indicator; use and development of the indicator; relation with other factors, as identified in the literature; key references and examples of published VLRs that include this indicator.
- 14** This section includes the essential **metadata:** source, hyperlink (availability of API), visualisation, availability and geographical coverage, unit of measurement, level of aggregation, time coverage and frequency.



GOAL 1

END POVERTY IN ALL ITS FORMS EVERYWHERE

Description of the Goal

The aim of this goal is to eradicate poverty in all its forms as this is recognised as the greatest challenge and an essential requirement for sustainable development. Poverty limits people's opportunities to achieve their full potential, with consequences both in terms of social cohesion and sustainable growth. Poverty is a multidimensional concept relating to economic, social, environmental, cultural and political aspects and with the tendency to persist over time. Targets of this goal focus on: eradicating extreme poverty; halving poverty in all its forms; ensuring everyone enjoys a basic standard of living and social protection benefits; and building the resilience of the poor against economic, social and environmental shocks.

European dimension

In the EU context, fostering social inclusion and combating poverty are core values.

The EU aims to reduce the number of people at risk of poverty and social exclusion (PSE) by 15 million, including five million children. After the 2012 peak in poverty, there has been a downward trend in the share of people at risk of PSE. However, the 2020 social target of a reduction of 20 million people was not met and evidence suggests that the COVID-19 pandemic is further worsening the situation (Eurostat 2021a). In 2020, the most recurrent form of PSE in the EU27 was income poverty (16.7%), followed by low work intensity (8.5) and severe material deprivation (5.9%). However, there were individuals suffering from more than one form of PSE at the same time. Lone parent private households experience a much higher at-risk rate than other types of households, as do migrants, people with disabilities, women and people with a low education level (Eurostat 2021a).

To this end, the NextGenerationEU recovery instrument will contribute to the implementation of the European Pillar of Social Rights while the European Social Fund+ will be the EU's main instrument for supporting the implementation of the Social Pillar.

Local dimension

Local authorities are usually the ones responsible for providing social welfare and for identifying vulnerable groups, especially regarding hard-to-measure populations such as homeless people. Therefore, the municipal level could be the best informed one for alleviating the condition of poverty experienced by individuals, with the coordination and support of higher levels of government.

To this end, the Urban Agenda for the EU Partnership on Urban Poverty (Futurium - European Commission 2017) has established four priorities of action: child poverty, deprived neighbourhoods and urban regeneration, homelessness, and vulnerability of Roma people (Urban Agenda for the EU 2018). During the 2014-2020 European programming period, around 17 billion of ERDF have been allocated directly to cities to develop strategies of Sustainable Urban Development, together with locally-led development strategies and Integrated Territorial Investments (Fioretti et al. 2020). Among the priorities mentioned in the strategies, some were linked to social inclusion, poverty, discrimination and quality employment. Also in the 2021-2027 programming period, funds will be allocated directly to cities to continue progressing towards these objectives.

Some related European policies and legislations

EU Strategy on the Rights of the Child (2022)
Platform on Combating Homelessness (2021)
Affordable Housing Initiative (2021)
Strategy for the Rights of Persons with Disabilities 2021-2030 (2021)

Five indicators address Goal 1 (all at city level):

One indicator focuses on extreme poverty (Target 1.1) and access to basic services (Target 1.4)
two indicators address reduction of poverty (Target 1.2) and social protection (Target 1.3)
two indicators regards reduction of poverty (Target 1.1) and access to basic services (Target 1.4)



LINK TO OTHER SDGs

2 ZERO HUNGER**3** GOOD HEALTH AND
WELL-BEING**10** REDUCED INEQUALITIES**11** SUSTAINABLE CITIES
AND COMMUNITIES

ALIGNMENT

UN list
EU list

GEOGRAPHICAL COVERAGE

FINLAND

SDG TARGET/S

1.1 (extreme poverty)
**1.4 (access to basic
services)**

AVAILABILITY

223**FINNISH
MUNICIPALITIES**

SOURCE

**Housing Finance and
Development Centre
of Finland**

HOMELESS PEOPLE

Definition of the indicator

This indicator measures the number of homeless people. Homeless people in this data collection are defined as people who do not have a home (rented or owner-occupied) and who live in one of the following conditions:

1. outside, in stairways or temporary shelters.
2. in dormitories or hostels.
3. in welfare home-type housing units, rehabilitation units, hospitals or other institutions.
4. temporarily with friends or relatives due to lack of housing.

Since no harmonised data are available across Europe at the local level, the case of Finland is presented as an example.

Data are sourced from the Housing Finance and Development Centre homelessness surveys addressed to Finnish municipalities, which in turn collect data from social welfare and housing service registers and from the housing applicant registers of municipal rental housing companies. Data are provided at municipality level.

European context

Coming to a true picture of homelessness in Europe is difficult because data are not harmonised as they are collected using different definitions of homelessness, methodologies and reference periods. Moreover, in recent years most of the evidence on homelessness across European countries has confirmed a worsening of the situation in some countries and a stabilisation in others (Fondation Abbé Pierre and FEANTSA 2021).

To the contrary, in the last eight years, the number of homeless people has been continuously decreasing in Finland, making the country a unique virtuous case in the EU-27.

Improving the condition of the homeless population is the target of two measures mentioned in the European Pillar of Social Rights' Action Plan (European Commission 2020I) which seeks to build a fairer and more inclusive European Union: the *European Platform on combating homelessness* and the *Affordable Housing Initiative*.

Comments / Limitations

- Despite its apparent accuracy, the data on the number of homeless persons presented in this data collection is indicative, as the municipalities' methods of gathering information and assessment criteria differ from each other. Also, the data presented by one municipality in different years may vary in terms of its accuracy. Further details are available in (The Housing Finance and Development Centre of Finland (ARA) 2021).
- It is recommended that data concerning homelessness is gathered as far as possible using the ETHOS or ETHOS light definition (FEANTSA 2007) and is handled cautiously and instrumentally to implement targeted and long-term policy responses to improve the life conditions of the individuals concerned.
- More information should also be gathered on people at risk of entering a condition of homelessness to implement more effective prevention policies.
- In the Eurostat City Statistics database the indicator "Number of people in accommodation for the homeless" measures one of the dimensions of homelessness. Data is usually older compared to data available directly from national statistical institutes (e.g. Finland is an example for this) and covers few countries, but this source might also be used. (Van Heerden, Proietti, and Iodice 2022) presents one of the most recent and extended data collections on homelessness across European cities.
- Regarding the database proposed here as an example, (Finland, November 2020) the last survey accounted for 4,341 homeless people living alone and 201 homeless families and couples. The number of long-term homeless people was 1,054, while those under 25 years of age came to 854, women amounted to 1,065, and immigrants 963.
- In the database, the number of homeless people per 1,000 residents is available, as well as the number of long-term homeless, women, young, migrants, families, families with children and couples experiencing a condition of homelessness.

Metadata

Source:

The Housing Finance and Development Centre of Finland - (Asumisen rahoitus- ja kehittämiskeskus ARA)

Hyperlink (availability of API):

[https://www.ara.fi/en-US/Materials/Homelessness_reports/Report_2021_Homelessness_in_Finland_2020\(60242\)](https://www.ara.fi/en-US/Materials/Homelessness_reports/Report_2021_Homelessness_in_Finland_2020(60242))

Visualisation:-

Availability and geographical coverage:

223 Finnish municipalities in 2020

Unit of measurement:

Number

Level of aggregation:

Municipality

Time coverage and frequency:

2012-2020. Data collected every year



LINK TO OTHER SDGs

2 ZERO HUNGER**3** GOOD HEALTH AND
WELL-BEING**4** QUALITY EDUCATION**10** REDUCED INEQUALITIES

ALIGNMENT

UN list
EU list

GEOGRAPHICAL COVERAGE

EU-27 PLUS OTHERS

SDG TARGET/S

1.2 (reduce poverty)**1.3 (social protection)**

AVAILABILITY

145**CITIES AND GREATER
CITIES**

SOURCE

**Eurostat, City
Statistics database**

PEOPLE AT RISK OF INCOME POVERTY AFTER SOCIAL TRANSFERS

Definition of the indicator

This indicator measures the share of people with an equivalised disposable income below the risk-of-poverty threshold which is set at 60% of the national median equivalised disposable income after social transfers.

The total disposable household income is calculated by adding together the personal income received by all of the household members, the income received at household level diminished by regular taxes on wealth, regular inter-household cash transfer paid and the tax on income and social insurance contributions. To take into account the impact of differences in household size and composition, the total disposable household income is divided by an 'equalisation factor' to give the equivalised income attributed to each member of the household. Equalisation factors can be determined in various ways. More details are available in (Eurostat 2017).

This indicator measures one of the dimensions of the AROPE (At Risk Of Poverty or social Exclusion), which is the headline composite indicator for measuring poverty within Europe, together with indicators concerning low work intensity and material deprivation (Siragusa et al. 2020b).

Data harmonised by Eurostat are sourced from cities and greater cities statistics and are provided at city level.

European context

In the period 2010–2020, the share of persons at risk of poverty after social transfers has been alternatively increasing and decreasing across European countries, with an overall increasing trend going from 16.5% in 2010 to 17.1% in 2020 on average.

In 2020, the European countries with the highest share of persons at risk of poverty after social transfers in the EU-27 were Bulgaria (23.8%), Romania (23.4%), Latvia (21.6%), Spain (21%) and Lithuania (20.9%).

In 2018, data at municipal level were only available for 145 municipalities in Germany and Bulgaria, where Giessen (41%), Aachen (31%) and Flensburg (30%) had highest share of persons at risk of poverty after social transfers, while Sindelfingen (7%) and Sankt Augustin (10%) were those with the lowest. These cities are all in Germany.

Comments / Limitations

- The 2018 Eurostat City Statistics Database for this indicator only includes data points for the following countries: BE, BG and FR.
- Leaving no one behind (LNOB) constitutes a central, crosscutting focus of the entire 2030 Agenda for Sustainable Development. Therefore, a number of approaches are being developed in order to define who are the people left-behind, to quantify the extent of this gap (Klasen and Fleurbaey 2019), and to move from aspirational language to the implementation of targeted measures. One such approach uses the three dimensions of the AROPE to do so (Barcena-Martín, García-Pardo, and Pérez-Moreno 2021; García-Pardo, Bárcena-Martín, and Pérez-Moreno 2021).
- It would be useful to have this indicator disaggregated by sociodemographic characteristics, to better tackle local issues.
- Looking at the share of people with an equivalised disposable income below the risk-of-poverty threshold before and after social transfers would enable an understanding of their impact in alleviating poverty.

Metadata

Source:

Eurostat, City Statistics Database (data collected from national statistics), table urb_clivcon, code: EC3065V

Hyperlink (availability of API):

https://ec.europa.eu/eurostat/databrowser/view/URB_CLIVCON__custom_2894462/default/table?lang=en (API yes)

Visualisation:

https://ec.europa.eu/eurostat/databrowser/view/URB_CLIVCON__custom_2894462/default/map?lang=en

Availability and geographical coverage:

145 Cities and Greater Cities in 2018 in EU-27 plus Switzerland, Norway, United Kingdom and Turkey

Unit of measurement:

Share

Level of aggregation:

City and Greater City

Time coverage and frequency:

1989-2020. Data collected every year



LINK TO OTHER SDGs

3 GOOD HEALTH
AND WELL-BEING

11 SUSTAINABLE CITIES
AND COMMUNITIES

ALIGNMENT

UN list
EU list



GEOGRAPHICAL COVERAGE

EU-27 PLUS OTHERS

SDG TARGET/S

1.2 (reduce poverty)
1.3 (social protection)

AVAILABILITY

117

**CITIES AND GREATER
CITIES**

SOURCE

**Eurostat, City
Statistics database**

HOUSEHOLDS IN SOCIAL HOUSING

Definition of the indicator

This indicator measures the number of households that are in social housing.

Social housing is supplied at prices that are lower than the general housing market as it is subsidized by the state (United Nations 2015). It is assigned through administrative processes (UNECE 2006).

Data harmonised by Eurostat are sourced from cities and greater cities statistics and are provided at city level.

European context

The affordability of housing generally refers to the cost of housing services and shelter often relative to a given individual's or household's disposable income (Caturianas et al. 2020). Housing affordability is necessary to face societal challenges in the EU due to an increasing number of individuals with precarious jobs, or with jobs that do not provide sufficient financial resources to access housing in the private market, or households with single parents. At the same time, challenges to housing affordability stem from a continuous decline in public investment in housing, which has been observed in the last decade in Europe with very few exceptions (Housing Europe 2021c).

In this context, the pandemic has served to bolster the importance of adequate and affordable homes. Most countries were quick in responding to the crisis with measures to mitigate the risk of people losing their homes (e.g. by supporting incomes, implementing bans on evictions, or deferring mortgage payments). Nevertheless, these measures were mostly temporary and the long-term effects of the economic crisis might have a strong impact on housing affordability.

The EU has no direct competence over housing policy, but EU policies can impact housing conditions in the Member States indirectly (Doling 2006). For example, Structural Funds in the 2014-2020 period were also used to improve the quality of life of households both with ERDF and ESF (Housing Europe 2021b) and this will continue in the 2021-2027 period.

Recently, the European Union has made commitments in the context of the European Pillar of Social Rights (European Commission 2021) to favour access to social housing or housing assistance of good quality for those in need and to promote a fair energy transition and decarbonisation of the building stock in the context of the European Green Deal (European Commission 2021, Housing Europe 2021a).

Comments / Limitations

- Although the definition of social housing differs between MS, the main premise is that social housing is organised to meet the housing needs of those who cannot “afford to be homeowners or rent decent housing in the private market” (United Nations 2015).
- The 2018 Eurostat City Statistics Database for this indicator only includes data points for the following countries: DE, EE, HR, LV, HU, SI and FI.
- This indicator is available in several local or regional databases (e.g. Bratislava). Some of these also provide disaggregated data as for the typologies of households requesting social housing (e.g. Porto) a reference is included in (Siragusa et al. 2021).
- Social rented housing is not simply an indispensable tool for providing affordable homes for low-income households, but the existing literature on housing studies suggests that social housing (when it is not residual) and state involvement in the provision of rental housing have also general positive impacts on the quality and prices of the overall rental system (Kermeny 1995; Hoekstra 2009).

Metadata

Source:

Eurostat, City Statistics Database, table urb_clivcon, code SA1012V

Hyperlink (availability of API):

https://ec.europa.eu/eurostat/databrowser/view/URB_CLIVCON__custom_2210160/default/table?lang=en (API yes)

Visualisation:

https://ec.europa.eu/eurostat/databrowser/view/URB_CLIVCON__custom_2210160/default/map?lang=en

Availability and geographical coverage:

117 Cities and Greater Cities in 2018 in EU-27 plus Switzerland, Norway, United Kingdom and Turkey

Unit of measurement:

Number

Level of aggregation:

City and Greater City

Time coverage and frequency:

1989-2020. Data collected every year



LINK TO OTHER SDGs

5 GENDER EQUALITY

8 DECENT WORK AND
ECONOMIC GROWTH

10 REDUCED INEQUALITIES

ALIGNMENT

UN list
EU list

GEOGRAPHICAL COVERAGE

EU-27 PLUS OTHERS

SDG TARGET/S

1.2 (reduce poverty)
1.4 (access to basic
services)

AVAILABILITY

145

CITIES AND GREATER
CITIES

SOURCE

Eurostat, City
Statistics database

PEOPLE LIVING IN HOUSEHOLDS WITH VERY LOW WORK INTENSITY

Description of the indicator

This indicator measures the share of people living in households where working-age people have worked 20% or less of their total work potential during the past year.

A working-age person is a person aged 18-59 years, with the exclusion of students in the age group between 18 and 24 years.

The work intensity of a household is calculated as the ratio of the total number of months that all working-age (18-59 years) household members have worked during the income reference year and the total number of months the same household members could have theoretically worked in the same period. Households composed only of children, of students aged less than 25, and/or people aged 60 or more are completely excluded from the indicator calculation.

This indicator measures one of the dimensions of the AROPE (At Risk Of Poverty or social Exclusion), which is the headline composite indicator to measure poverty together with indicators concerning income poverty and material deprivation (Siragusa et al. 2020b).

Data harmonised by Eurostat are sourced from cities and greater cities statistics and are provided at city level.

European context

The share of people living in households with very low work intensity increased in the period 2010-2014 and then decreased in the period 2014-2020 across European countries going from 9.9% in 2010 to 8.5% in 2020 on average, with an overall decreasing trend.

All Member States, apart from Denmark and Poland, have experienced a fall in hours worked per employed person since the start of COVID-19, much more severe than the decline in employment. In the same period, the number of NEET also increased (European Commission 2021g).

In 2020, the European countries with the highest share of people living in households with low work intensity in the EU-27 were Greece (12.6%), Ireland (11.3%), Belgium (11.9%), Italy (10.0%), Finland and Spain (9.9%) (Eurostat 2022b).

Comments / Limitations

- The 2018 Eurostat City Statistics Database for this indicator only includes data points for the following countries: BE, BG and FR.
- In 2018, Cayenne and Saint-Louise (37%), and Perpignan and Saint-Denis (32%) had the highest share of people living in households with very low work intensity, while Sindelfingen (4%) had the lowest.
- The definition of working age in the calculation of the indicator should take into consideration that 'Working age' is usually defined as 15 to 64 years (European Commission 2021c).
- The indicator does not provide information concerning the reasons for the low work intensity. These might be related to the presence of people not in education, employment or training (NEET), the need to provide care to another member of the household and also to involuntary part-time employment or to the presence of informal working activities.
- Leaving no one behind (LNOB) constitutes a central, crosscutting focus of the entire 2030 Agenda for Sustainable Development. Therefore, a number of approaches are being developed in order to define who are the people left-behind, to quantify the extent of this gap (Klasen and Fleurbaey 2019), and to move from aspirational language to the implementation of targeted measures. One such approach uses the three dimensions of the AROPE to do so (Barcena-Martín, García-Pardo, and Pérez-Moreno 2021; García-Pardo, Bárcena-Martín, and Pérez-Moreno 2021).
- A related but different indicator is that of the "In-work at-risk-of-poverty rate", which refers to the percentage of people in the total population who are declared as working (employed or self-employed) but who are at-risk-of-poverty (i.e. with an equivalised disposable income below the risk-of-poverty threshold, which is set at 60 % of the national median equivalised disposable income after social transfers.

Metadata

Source:

Eurostat, City Statistics Database (data collected from national statistics), table urb_clivcon, code ec3064v

Hyperlink (availability of API):

https://ec.europa.eu/eurostat/databrowser/view/URB_CLIVCON__custom_2894529/default/table?lang=en (API yes)

Visualisation:

https://ec.europa.eu/eurostat/databrowser/view/URB_CLIVCON__custom_2894529/default/map?lang=en

Availability and geographical coverage:

145 Cities and Greater cities in 2018 in EU-27 plus Switzerland, Norway, United Kingdom and Turkey

Unit of measurement:

Share

Level of aggregation:

City and Greater City

Time coverage and frequency:

1989-2020. Data collected every year



LINK TO OTHER SDGs

5 GENDER EQUALITY**8** DECENT WORK AND
ECONOMIC GROWTH**10** REDUCED INEQUALITIES

ALIGNMENT

UN list
EU list

GEOGRAPHICAL COVERAGE

EU-27 PLUS OTHERS

SDG TARGET/S

1.2 (reduce poverty)
1.4 (access to basic services)

AVAILABILITY

266**CITIES AND GREATER
CITIES**

SOURCE

**Eurostat, City
Statistics database**

LONE PARENT PRIVATE HOUSEHOLDS

Definition of the indicator

This indicator measures the number of households with only one adult and at least one child under 18 years old.

A one-person household is a person that lives alone in a separate housing unit or who occupies, as a lodger, a separate room of a housing unit but does not join with any other occupants of the housing unit to form part of a multi-person household.

A multi-person household is a group of two or more individuals that join to occupy the whole or part of a housing unit and to provide themselves with food and possibly other essentials for living. Members of the group may pool their incomes to a greater or lesser extent.

This concept does not assume that the number of private households is necessarily equal to the number of housing units. The adult is not necessarily a biological parent but an adult of the family nucleus.

Data harmonised by Eurostat are sourced from cities and greater cities statistics and are provided at city level.

European context

The alterations caused by the COVID-19 pandemic to family life in the last couple of years included changes to employment situations and working conditions (such as layoffs, temporary unemployment and home-based work) and the need to arrange home-schooling and childcare. Lone parents who remained employed faced the greatest time pressures in this period, although their experiences varied significantly depending on the adaptability of their work schedules, as well as the child(ren)'s age(s) and degree of autonomy (Sánchez-Mira et al. 2021).

In addition, during the pandemic the gap in loneliness prevalence between those who lived alone or with children only and those with a partner widened, compared with levels observed before COVID-19 (Baarck et al. 2021).

Initiatives in favour of lone parent private households and their children are included in the European Pillar of Social Rights (General Secretariat of the Council 2017) and its Action Plan (European Commission 2020k). These include the Strategy on the Rights of the Child and European Child Guarantee (European Commission 2022b).

Comments / Limitations

- The number of missing values changes from year to year. The database for this indicator includes data points for the following countries: BE, BG, DE, EE, ES, FI, HR, LV and NL.
- The indicator informs about the risk of social and economic poverty and the need for care facilities.
- The Eurostat City Statistics database also includes an indicator on the 'Proportion of households that are lone-parent households' (Table: urbclivcon, Code: de3005i).
- Households with one working adult and a child older than 18 years old but still in education might experience similar challenges.
- Looking at those European cities for which information is available, Madrid (ES), Barcelona (ES), Hamburg (DE) have the highest number of lone-parent private households, due to the fact that these same cities are among those with the highest number of private households. Over the 2018-2020 period, it was possible to observe an increase in the number of lone-parent private households, followed by a downwards trend in the 2019-2020 period. The cities with the highest increase over the 2018-2020 period include Tallinn (EE), Siegen (DE) and Leeuwarden (NL).

Metadata

Source:

Eurostat, City Statistics Database (data collected from national statistics), table urb_clivcon, code de3005v

Hyperlink (availability of API):

https://ec.europa.eu/eurostat/databrowser/view/URB_CLIVCON__custom_2761358/default/table?lang=en (API yes)

Visualisation:

https://ec.europa.eu/eurostat/databrowser/view/URB_CLIVCON__custom_2761358/default/map?lang=en

Availability and geographical coverage:

266 cities and greater cities in 2018 in EU-27 plus Norway, Switzerland, United Kingdom and Turkey

Unit of measurement:

Number

Level of aggregation:

City and Greater City

Time coverage and frequency:

1989-2020. Data collected every year



GOAL 2

END HUNGER, ACHIEVE FOOD SECURITY AND IMPROVED NUTRITION AND PROMOTE SUSTAINABLE AGRICULTURE

Description of the Goal

The aim of the goal is to tackle all forms of malnutrition and ensure equitable access to food for all, but also promote sustainable food production and ease the environmental impacts of agricultural production.

Goal 2 is positively interlinked with Goals 1 and 3 as co-benefits on ending poverty and ensuring good health can be harnessed when meeting Goal 2 targets. At the same time, attention has to be paid to trade-offs with Goal 6 and 12 related to the excessive nutrient inputs that might be threatening the environment and water quality (World Health Organization 1941b).

European dimension

In the EU context, Goal 2 focus on issues of malnutrition and overweight and on ensuring agricultural production practices that restrain negative impacts on the environment.

In Europe, the malnutrition-induced overweight presents the most serious nutrition-related health issue. As more than half of the EU population has overweight, and every seventh person has obesity, achieving healthy diets is a key challenge. Policies concerning healthy nutrition in the EU are mainly targeted towards children and adolescents, as the benefits of such measures can be seen over a longer time span and therefore have a stronger impact on society as a whole.

Agricultural production has strong interlinkages with the social, economic and environmental dimensions of sustainability, and as such, is key to making food systems fair, healthy and environmentally friendly. To this end, organic farming in the EU has been on the rise for the last 8 years (at 8.5%) yet still far from the Union's 2030 target of 25% (Eurostat 2021l). Although agriculture provides undoubted environmental benefits, the significantly increased productivity has partially contributed to the degradation of environmental conditions and to climate change. In recent years, the EU has experienced a rise in both ammonia emissions from agriculture due to the excessive use of nutrient inputs and in the amount of nitrates in EU groundwater (Eurostat 2021l). Other negative effects of the intense agricultural practices in Europe regard the GHG emissions from agriculture; the harmed biodiversity; and land abandonment that may lead to multiple negative ecological, economic and social consequences along with the expected decrease of agricultural land in most of the EU regions (Perpiña Castillo et al. 2021).

Some related European policies and legislations

Long-Term Vision for the EU's Rural Areas and Rural Observatory (2021)

New Common Agriculture Policy (2021)

Farm to Fork strategy (2019)

White Paper on Nutrition, Overweight, and Obesity-related health issues (2007)

Local dimension

Cities can contribute towards Goal 2 through the provision of services, including meals for those who cannot afford it; the promotion of healthy diets and healthy food environments; and the creation of procurement processes that consider the need for supporting the consumption of safe and healthy food with a low environmental impact.

In urban areas, local governments can actively reduce food waste and improve food security. Cities can also promote sustainable urban agriculture practices both at individual level and through community projects.

Three indicators address Goal 2 (two at city level and one at regional level):

one indicator addresses issues of malnutrition (Target 2.2)

one indicator deals with sustainable food production (Target 2.4)

one indicator touches upon the proper functioning of food markets (Target 2.c)



LINK TO OTHER SDGs

1 NO POVERTY**3** GOOD HEALTH AND WELL-BEING

ALIGNMENT

UN list
EU list

GEOGRAPHICAL COVERAGE

SWEDEN

SDG TARGET/S

2.2 (end malnutrition)

AVAILABILITY

ALL

SWEDISH MUNICIPALITIES

SOURCE

Public Health
Agency of Sweden

OVERWEIGHT RATE

Definition of the indicator

The indicator measures the percentage of population aged 16 to 84 that is overweight (pre-obesity and obesity) based on their Body Mass Index (BMI).

A Body Mass Index is calculated as a person's weight in kilograms divided by the square of their height in meters (kg/m²). The main adult BMI classifications are:

1. underweight (under 18.5)
2. normal weight (18.5 to 24.9)
3. pre-obesity (BMI 25-29.9)
4. obesity (BMI>30)

People with a BMI>25 fall within the overweight category.

The indicator is aligned with the Eurostat 2022 indicator set where obesity rate is measured as the share of population aged 18 or over who have an overweight (>25), pre-obese (25-30) or obese (>30) BMI.

Since no harmonised data are available across Europe at local level, the case of Sweden is presented as an example.

Data are sourced from Swedish national public health surveys and filtered by the Public Health Agency of Sweden.

European context

According to the World Health Organisation, worldwide obesity has nearly tripled since 1975 (World Health Organisation 2018). In 2016, 39% of adults aged 18 years and over had overweight and 13% had obesity. In Europe, 52.7% of adults in 2019 fell within the BMI overweight category (36% pre-obesity and 17% obesity) (Eurostat Statistic Explained 2021d).

Overweight is associated with chronic diseases, such as cardiovascular disease, type-2 diabetes, hypertension, and certain cancers. These put a substantial strain on direct and indirect associated healthcare and social resources. To this end, the EC established a coherent and comprehensive Community Strategy to address the issues of overweight and obesity, by adopting the White Paper Strategy for Europe on nutrition, overweight, and obesity-related health issues focusing on measures that can be taken at local, regional, national and European levels (Commission Of The European Communities 2007).

Comments / Limitations

- The dataset is sourced from the Swedish national public health survey, which is a sample survey among the population aged 16-84. In order to obtain a sufficiently large dataset, multi-year averages are reported in the dataset. The period of multi-year averages covers four years and is based on surveys within the period (from 2004 to 2021).
- The indicator in this dataset is further disaggregated based on sex (women, men). Although, there was no systematic difference between the sexes as regards the share of women and men with obesity in 2019, across all EU Member States the proportion of men in the pre-obesity BMI category was consistently higher than the one for women (Eurostat Statistic Explained 2021d).
- Child and adolescent obesity (<16 years of age) is an issue of growing concern for several European countries (Spinelli et al. 2019). As such, it should be studied and examined separately from adult age groups in order to allow targeted policymaking and directed measures to address it.
- There is a clear pattern between education level and overweight. According to the 2019 European Health Interview Survey (EHIS) findings (European Commission 2018b), the proportion of people in the overweight category falls as the educational level rises: from 59% of overweight adults with a low education level, to 54% for those with a medium level and 44% for those with a high level. Similarly, the obesity rate also decreases with the education level: from 20% of adults with obesity with a low education level, to 17% for those with a medium level and 11% for adults with a high level.
- The rate of obesity is relatively higher among people of lower income compared to those of higher income. Among the several factors likely contributing to this relationship, is the cost of a reasonable diet (e.g. eating fruit and vegetables instead of high-energy and high-sugar products). This in turn leads to the consumption of calorie-dense food (such as fried and processed food) that costs less, and limited access to sports facilities or fitness clubs (Pigeyre et al. 2016; Krzysztozek, Laudańska-Krzemińska, and Bronikowski 2019; Marques et al. 2018).
- Overweight and obesity is increasingly more prevalent in European urban areas where people are more prone to a sedentary lifestyle (Samouda et al. 2018; Peralta et al. 2018).

Metadata

Source:

Public Health Agency of Sweden
- Folkhälsomyndigheten

Hyperlink (availability of API):

<https://www.folkhalsomyndigheten.se/kommunfakta/> (API yes)

Visualisation:

<https://www.folkhalsomyndigheten.se/kommunfakta/>

Availability and geographical

coverage: All Swedish municipalities

Unit of measurement:

Share

Level of aggregation:

Municipality

Time coverage and frequency:

2004-2021. Data updated every 4 years



LINK TO OTHER SDGs

1 NO POVERTY

15 LIFE ON LAND

ALIGNMENT

UN list
EU list

GEOGRAPHICAL COVERAGE

EU-27

SDG TARGET/S

2.4 (sustainable food
production)

AVAILABILITY

1,155

NUTS3

SOURCE

European Commission,
Joint Research Centre

LAND USED FOR AGRICULTURE

Definition of the indicator

The indicator provides the estimated share of land occupied by agriculture in 2018 and the expected evolution until 2050.

It is computed by simulating the regional land demand for agricultural activities at national, regional (NUT2/NUTS3) and grid level within the EC-JRC LUISA Territorial Modelling Platform (JRC 2022). The regional land demand for agricultural activities is specified according to the CAPRI 2016 baseline projections, and is thus consistent with the EU Agricultural Outlook 2016- 2026 (Perpiña Castillo et al. 2018).

The indicator does not include information on the sustainability dimension of the agricultural production systems in use.

Data harmonised by the JRC are aggregated and provided at regional (NUTS3) level.

European context

Land is a finite resource and its use directly connects human activities and the natural environment. Many socio-economic activities, production and ecological systems co-exist simultaneously in the same area. The continuously increasing demand for land from various sides does not only exacerbate the competition for land, but it also alters the natural state and functions of land (Perpiña Castillo et al. 2019).

Cities are large consumers of goods, materials and energy, for which they often depend on import, sometimes from far-away locations. The reduction of the urban footprint (i.e. reduction of demand) and the preservation and increase of local production are both essential goals for reducing emissions, increasing resilience, and sustaining the creation of local economies.

The preservation and support of local food production systems is key to improving local resilience and achieving food security. Local food chains should aim to provide seasonal and affordable food for local communities, enhancing a virtuous relation with the territory, for example through the creation of food-organic waste loops.

The preservation of agricultural land is the first step towards this objective: by helping to track the evolution of land-use related to agriculture, this indicator can inform specific policies with a particular focus on the preservation or creation of areas devoted to food and livestock production within the local administration's boundaries.

Comments / Limitations

- Agricultural areas comprise arable land (including rice production), mixed crop-livestock, pasture/livestock grazing, permanent crop production systems and bioenergy crops.
- The JRC database provides information on population, built-up areas, forests and other natural vegetated areas, and agricultural land abandonment.
- The CAPRI 2016 Baseline projections provide an aggregation of the individual crop projections into eight production system classes: arable land; mixed crops; livestock; vineyards; fruit trees; olive trees; bioenergy crops; and rice (Perpiña Castillo et al. 2018).
- Further to this indicator, it is recommended that the production methods are also analysed: intensive farming can have a considerable environmental impact and, among other issues, it may lead to an increase in greenhouse gas emissions or soil erosion, or result in habitat and biodiversity loss, deforestation and water contamination.
- If locally available, data could be disaggregated according to the sustainability of the agricultural production methods and crops.
- Further details and methodological insights on this indicator can be found in (Perpiña Castillo et al. 2019).

Metadata

Source:

Joint Research Centre, Urban Data Platform Plus

Hyperlink (availability of API):

<https://urban.jrc.ec.europa.eu/trends/en?is=Default&ts=EU&tl=3&d-type=udpp&i=18&db=30&it=download>

Visualisation:

<https://urban.jrc.ec.europa.eu/trends/en?is=Default&ts=EU&tl=3&d-type=udpp&i=18&db=30&it=outline>

Availability and geographical coverage:

1,155 NUTS3 in 2018 in all EU Member states

Unit of measurement:

Share

Level of aggregation:

NUTS3 aggregation from grid level (100-metres resolution)

Time coverage and frequency:

2018 (2020 - 2030 - 2040 - 2050 modelled). Data updated periodically



LINK TO OTHER SDGs

1 NO POVERTY

ALIGNMENT

UN list
EU list

GEOGRAPHICAL COVERAGE

EU-27 PLUS OTHERS

SDG TARGET/S

2.c (proper functioning of
food markets)
1.2 (reduce poverty)

AVAILABILITY

139

CITIES

SOURCE

Numbeo
Crowdsourced
Platform

FOOD COMMODITY PRICES

Definition of the indicator

The indicator measures the price of 14 basic food commodities. Food commodities include any commodity that is derived from an animal or an agricultural crop that is intended for human consumption in its raw or processed state. This indicator monitors the following commodities: meat (chicken, beef), dairy (milk, cheese), cereals (rice, bread), poultry (eggs) and vegetables (apples, banana, oranges, tomatoes, potatoes, onions and lettuce). Country imposed taxes (VAT) are included in the listed prices.

Data filtered and harmonised by the Numbeo platform are sourced from user inputs, manually collected data from authoritative sources (e.g. websites of supermarkets, newspaper articles, other surveys, etc.) and manually collected data from established sources (twice per year). Data are provided at city level.

European context

Food commodity price changes are attributed to a combination of structural (global population growth, emerging economies, and rise in global demand) and temporary factors (adverse weather conditions, trade or export restrictions, exchange rate developments, speculative activity and energy prices). As a result of these factors, variations in prices may become problematic, as when extensive in range and over time, they cannot be forecast. This creates a level of uncertainty which increases the risks for producers, traders, consumers and local governments. Food commodity price volatility has been identified by the EC as a social disruption factor that reduces the EU's household purchasing power (Boto and Lopes 2011). This is particularly evident in European cities.

In response to observed volatilities in Europe, the EC proposed better monitoring of developments in food commodity prices; analysing the impact of speculation on agricultural commodity prices; and investigating the functioning of the food supply chain. As a result, in 2008 Eurostat developed the European Food Prices Monitoring Tool initiative (Commission Of The European Communities 2008). The tool aims to increase transparency in the food supply chain and improve its resilience to price volatility by collecting data at national level on price developments for agricultural commodities, food industry products and consumer goods.

Comments / Limitations

- Crowdsourced data involves obtaining quantitative and qualitative information, or opinions from a large group of people who submit their data via the Internet, and social media. The reliability and validity of crowdsourced data has been studied in the literature in regard to different sectors, see for example elections (Aranha, Ribeiro, and Paraense 2016), anger behaviour (Lutz 2015), alcohol use (Strickland and Stoops 2018), job satisfaction (Landers, Brusso, and Auer 2019), performance of mobile networks (Seufert et al. 2021), linguistics (Harel et al. 2017), urban mobility (Lieske et al. 2019), and energy (Peltonen et al. 2015). Findings report a moderate to good correlation with on-the-ground reality, i.e. crowdsourced data can be used as an input to decision-making processes.
- All prices in the database refer to a defined volume, weight or quantity of each respective food commodity.
- The 14 different food commodities can be further grouped into larger categories, e.g. meat (of all animals), dairy, and vegetables, to ease the monitoring process and the development of targeted measures by category.
- There is a strong connection between this indicator and SDG Target 1.2 (reduce poverty), as low-income households are more severely impacted by food commodity price volatility.
- Measures to reduce and manage food commodities price volatility, should take into account that some price volatility is an inherent characteristic of commodity markets (e.g. due to mismatch between timing of supply, which is seasonal and timing of demand, which is less seasonal) (Food and Agriculture Organization of the United Nations et al. 2011).
- According to Food and Agriculture Organization of the United Nations (FAO), measures to reduce the costs associated with price volatility can be categorised into (i) measures that reduce price volatility, (e.g. improving market information) and (ii) measures that accept price volatility and attempt to address it via mechanisms before or after the fact (e.g. trade controls). Measures can occur at either the international, national or sub-national level (Food and Agriculture Organization of the United Nations 2011).

Metadata

Source:

Numbeo crowdsourced platform

Hyperlink (availability of API):

https://www.numbeo.com/cost-of-living/prices_by_city.jsp (API yes)

Visualisation:

https://www.numbeo.com/cost-of-living/prices_by_city.jsp

Availability and geographical coverage: 139 cities in 2021 in Europe

Unit of measurement:

Number

Level of aggregation:

City

Time coverage and frequency:

2021. Data updated every year



GOAL 3

ENSURE HEALTHY LIVES AND PROMOTE WELL-BEING FOR ALL AT ALL AGES

Description of the Goal

The aim of the goal is to ensure health and well-being for all and at all ages by addressing child mortality and improving reproductive and maternal health; preventing, treating and curing non/communicable diseases (including mental); ending epidemics and pandemics; and reducing human-induced and environmental health-risk factors.

The World Health Organization (WHO) defines health as *'a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity'* (World Health Organization 1941a). Health is thus not only relevant to the individual as a cornerstone of life quality, well-being and social participation, but also a determinant aspect of societal, economic and environmental development and balanced growth.

At the time of writing, the world is facing several global health emergencies; among those, the COVID-19 pandemic is directly threatening the health and well-being of billions of people, and indirectly destabilising the global capacity of health services, the economy and society to address it. As such, achieving Goal 3 is more urgent than ever, particularly for cities, where the pandemics hit with high intensity.

European dimension

In the EU context, Goal 3 focuses on topics of healthy lives, determinants of health and causes of death, and access to health care.

EU health policies complement national policies, supporting the efforts of MS to ensure the health of their people and safeguard the accessibility, effectiveness and resilience of their health systems. In this context, in the EU, life expectancy has improved (81.3 years in 2019 as compared to 80.9 years in 2016), but also the number of years a European could expect to live in a healthy condition has increased to 64.6 years in 2019 (as compared to 64 years in 2016). Among other reasons, this is partly because smoking, the most preventable cause of illness and death, fell to 25% in 2020 (from 31% in 2006). Also, exposure to air pollution by fine particulate matter (PM2.5) has fallen by almost 20% since 2014. Preventable and treatable causes of mortality have also decreased. Nevertheless, the COVID-19 pandemic has influenced life expectancy, as in 2020 approximately 0.6 million excess deaths were registered as compared to the 2016-2019 periods. As a result of and according to provisional data estimates, life expectancy fell by 0.9 years in 2020 (Eurostat 2021m).

The COVID-19 pandemic has also highlighted the disparities of EU countries' abilities to provide health services, cope and recover from the crisis. It has become clear that more efforts are needed to provide increased and more efficient funding of health systems, improved sanitation and hygiene, and increased access to physicians.

Local dimension

Cities have an important role to play in addressing health challenges as evidence suggests that differences exist in health status in relation to the place of residence, whether it is urban, rural or remote. For instance, local measures such as urban, environmental and transport planning and design, can strongly influence risk exposures (Giles-Corti et al. 2016).

Moreover, the built quality, level of overcrowding and related cost of the housing might have a direct impact on health. Poor quality housing is associated with increased prevalence of allergic and inflammatory lung diseases, such as asthma.

Some related European policies and legislations

State of health in the EU initiative (2010)

Tobacco products directive (2016)

EU Directive on Patients' Rights in Cross-border Health Care (2012)

EU Health Strategy "Together for Health" (2007)

Five indicators address Goal 3 (all at city level):

one indicator deals with access to healthcare services (Target 3.c)

two focus on the causes of and preventable deaths (Target 3.2 and 3.5)

one addresses road accidents (Target 3.6)

one covers aspects of family planning (Target 3.7)



LINK TO OTHER SDGs

1 NO POVERTY**10** REDUCED INEQUALITIES

ALIGNMENT

UN list
EU list


GEOGRAPHICAL COVERAGE

EU-27 PLUS OTHERS

SDG TARGET/S

**3.2 (end preventable
deaths of newborns)**

AVAILABILITY

714
**CITIES AND GREATER
CITIES**

SOURCE

**Eurostat, City
Statistics database**

INFANT MORTALITY

Definition of the indicator

The indicator measures the number of deaths of infants born alive aged less than one year per 1,000 births of live infants. Causes of infant mortality include: birth defects, prematurity/low birth weight, sudden infant death syndrome, maternal complications during pregnancy and respiratory distress syndrome.

Data harmonised by Eurostat are sourced from cities and greater cities statistics and are provided at city level.

European context

Poor living conditions and other socio-economic factors affect the health of mothers and newborns. However, the quality of health care can greatly reduce the number of infant deaths, particularly by addressing life-threatening issues during the neonatal period. Over the past few decades, all EU countries have achieved notable progress in reducing infant mortality rates over the past few decades (Euro-Peristat Project 2018).

During the 10 years from 2009 to 2019, the infant mortality rate in the EU fell from 4.2 to 3.4 deaths per 1,000 live births. Extending the analysis to the last 20 years, the infant mortality rate has almost halved (6.2 deaths per 1,000 live births in 1999). The most significant reductions in infant mortality were generally observed in the EU Member States that recorded higher levels of infant mortality in earlier years, compared with the EU average (Eurostat Statistic Explained 2021f).

In 2019, the highest infant mortality rates in the EU were registered in Malta (6.7 deaths per 1,000 live births), Romania (5.8) and Bulgaria (5.6), and the lowest were recorded in Estonia (1.6) and Slovenia, Finland and Sweden (2.1).

Comments / Limitations

- The 2018 Eurostat City Statistics Database for this indicator does not include data points for the following countries: DK, EL, HR, CY, LU, MT, NL and AT.
- Infant mortality rates were particularly low in EFTA countries in 2019 (from a minimum of zero deaths per 1,000 live births in Lichtenstein to a maximum of 3.3 in Switzerland). EU candidate countries registered infant mortality rates ranging from a minimum of 2.4 deaths per 1,000 live births in Montenegro to a maximum of 10.3 in Albania (Eurostat Statistic Explained 2021f).
- Infant mortality is usually considered to be an indicator of living conditions and of coverage and quality of health care. This figure may hide inequalities that exist across different groups of the population.
- Addressing infant mortality is not only of medical nature, as a part of it might be related to socio-economic factors such as poverty, housing, lack of supervision, access to healthcare or benefits to parents.

Metadata

Source:

Eurostat, City Statistics Database, (data collected from national statistics). Table: urb_cfermor, Code: sa2004v

Hyperlink (availability of API):

https://ec.europa.eu/eurostat/databrowser/view/URB_CFER-MOR__custom_1729359/default/table?lang=en (API yes)

Visualisation:

https://ec.europa.eu/eurostat/databrowser/view/URB_CFER-MOR__custom_1729359/default/map?lang=en

Availability and geographical coverage:

714 cities and greater cities in 2018 in EU-27 plus Norway, Switzerland, United Kingdom and Turkey

Unit of measurement:

Number

Level of aggregation:

City and greater city

Time coverage and frequency:

1989–2020. Data collected every year


[LINK TO OTHER SDGs](#)

ALIGNMENT

UN list
EU list



GEOGRAPHICAL COVERAGE

EU-27 PLUS OTHERS

SDG TARGET/S

3.5 (narcotic drug abuse)

AVAILABILITY

91

CITIES

SOURCE

**European Monitoring
Centre for Drugs
and Drug Addiction
(EMCDDA)**

ILLICIT DRUG CONSUMPTION

Definition of the indicator

This indicator measures the quantity of illicit drug use per 1,000 population for 5 different drugs: cocaine, cannabis, amphetamine, methamphetamine and MDMA. It is computed based on the analysis of wastewater for urinary biomarkers (i.e. measurable characteristics) and urinary metabolites (i.e. substances produced when the body breaks drugs down) of the parent drug.

Data harmonised by the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) is sourced from cities participating in illicit Drug use studies since 2011 and is provided at city level.

European context

Around 83 million or 28.9% of adults (aged 15-64) in the EU are estimated to have used illicit drugs at least once in their lifetime, with use more frequently reported by men (50.6 million) than women (32.8 million). Drug use in Europe encompasses a wide range of substances, yet the most commonly tried drug is cannabis – about five times more than use of cocaine, MDMA and amphetamines. While the use of heroin and other opioids remains relatively rare, these continue to be the drugs most commonly associated with the more harmful forms of use (opioids were involved in 76% of the fatal overdoses in 2019) (European Monitoring Centre for Drugs and Drug Addiction 2021a).

The COVID-19 pandemic did not significantly affect the EU drug market, which has remained resilient, adapting to the imposed restrictions on movement by increasing the use of encrypted messaging services, social media applications, online sources and mail and home delivery services. This has since raised concerns that a possible long-term impact of the pandemic will be to further digitally enable drug markets (European Monitoring Centre for Drugs and Drug Addiction 2021a).

In 2020 the European Commission put in place its new EU Drugs Strategy 2021 -2025, aiming to protect and improve the well-being of society and of the individuals, offer a high level of security, increase health literacy and address the drugs phenomenon in Europe with an evidence-based approach, incorporating a gender equality and health equity perspective (Council of the European Union 2021b).

Comments / Limitations

- Analysing communal wastewaters for drugs and their metabolic products in order to estimate their consumption in the community is a developing field, involving scientists working in different research areas. Wastewater-based epidemiology has been successfully applied in recent years to provide information on alcohol (Brandeburová et al. 2020), tobacco (Asicioglu et al. 2021) and medicine use in a specific population (Rodrigues et al. 2021). The approach has been most recently put into use for identifying COVID-19 contamination levels in European cities (Randazzo et al. 2020).
- Other methodologies for monitoring illicit drug use can be deployed at local level to also cover other types of drugs (e.g. opioids, including heroin, which cause most of the drug-related harm to the population).
- In addition to the type of substance used per year, the datasets are disaggregated by daily or weekend drug use, and can thus detect fluctuations in weekly patterns (for example more than 75% of cities show higher loads of cocaine and MDMA in wastewater over the weekend (Friday to Monday) than on weekdays).
- The dataset includes data derived from wastewater analysis of raw 24-hour composite samples collected for one week in the month of March for all cities. Because of the impact of the COVID-19 pandemic, for the 2020 wastewater monitoring campaign, samples were collected during a single week between March and May 2020. While the dataset provides insights on illicit drug use during the COVID-19 pandemic, it should be noted that comparability with previous years requires additional and complementary data, as different lockdown periods and restrictive measures were in place in each EU city (European Monitoring Centre for Drugs and Drug Addiction 2021b).
- In several countries, cannabis-based medicines have been legalised under certain conditions because of their immense prospects in medicinal applications (Kumar et al. 2021).
- The wastewater analysis approach is limited in regard to the disaggregation of the data it can provide, as no information can be included in regard to the prevalence and frequency of use, main classes of users and purity of the drugs. Moreover, wastewater analysis can be used as a monitoring tool to spot trends, but cannot be easily deployed to relate to individual drug consumption and related harm.

Metadata

Source:

European Monitoring Centre for Drugs and Drug Addiction (EMCDDA)
Each data table (per drug and per year) is available to view in HTML and as a download (CSV format).

Hyperlink (availability of API):

2020 cocaine: <https://europa.eu/!fbGGk9> (API yes)
2020 cannabis: <https://europa.eu/!G6Jvcv> (API yes)
2020 amphetamine: <https://europa.eu/!MrjVFp> (API yes)
2020 methamphetamine: <https://europa.eu/!8mNyCH> (API yes)
2020 MDMA/ecstasy: <https://europa.eu/!DvCDkC> (API yes)

Visualisation: -

Availability and geographical coverage:

91 cities in 2020 in EU-27 plus Norway and Turkey

Unit of measurement:

Rate

Level of aggregation:

City

Time coverage and frequency:

2011-2020. Data collected every year



LINK TO OTHER SDGs

9 INDUSTRY, INNOVATION
AND INFRASTRUCTURE

10 REDUCED INEQUALITIES

ALIGNMENT

UN list
EU list



GEOGRAPHICAL COVERAGE

EU-27 PLUS OTHERS

SDG TARGET/S

3.6 (road accidents)

AVAILABILITY

640

**CITIES AND GREATER
CITIES**

SOURCE

**Eurostat, City
Statistics database**

DEATHS IN ROAD ACCIDENTS

Definition of the indicator

The indicator measures the number of deaths caused by road accidents and which occur within 30 days from the date of the accident.

The indicator includes fatalities of drivers and passengers, in motorised vehicles and on bicycles, as well as pedestrians involved in road accidents. Data harmonised by Eurostat are sourced from cities and greater cities statistics and are provided at city level.

European context

In Europe, there has been a downward trend over the last 10 years in the number of road traffic victims. Compared to 2009, the number of road deaths has fallen by more than 10,000 persons (-31%), from almost 33,000 to less than 23,000 in 2019, of which 44% were passenger car occupants, 20% pedestrians, 16% on motorcycles, 9% on bicycles and 11% in other categories (including light and heavy goods vehicles, buses and coaches, mopeds and other vehicles) (Eurostat 2021e).

However, road safety remains a major societal issue. In response to the growing concern of the European public over road safety, the EU made this issue a priority of its common transport policy over the years. As such, the 2011 Transport White Paper set out 40 practical measures in order to cut road deaths in Europe in half between 2010 and 2020. While the initial target was not entirely met, the White Paper includes a mix of initiatives, at European and national level, focusing on improving vehicle safety, the safety of infrastructure and road users' behaviour (European Commission 2011). Nevertheless, further efforts will be needed to meet the target of halving the number of fatalities compared to 2010.

Comments / Limitations

- The 2018 Eurostat City Statistics Database for this indicator does not include data points for the following countries: CZ, DK, EL, CY, LU, NL, AT and RO.
- Data are collected by Eurostat from Member States. All Member States should follow the international standard of 30 days established by the ECMT (European Conference of Ministers of Transport, an OECD body). In order to ensure the geographical comparability, the recommended data source is the police data integrated by the hospital data (Eurostat 2017).
- In the Eurostat City Statistics database, Table URBCTRAN, code TT1060I provides data on the number of people killed in road accidents per 10,000 people, which can be analysed together with the absolute number.
- The CARE (Community database on Accidents on the Roads in Europe) managed by DG MOVE offers accident data (deaths and injuries) at national level that can be further disaggregated by sex, road user, age class, type of road and type of vehicle. This high level of disaggregation is relevant in order to intervene in the most recurrent causes of deaths and accidents.
- The increasing popularity of cycling is reflected in the increasing number of cyclists killed per million inhabitants, despite efforts to create safer bicycle lanes and dedicated bicycle roads. The Netherlands, renowned for being bicycle-friendly and for investing in bicycle infrastructure, recorded a relatively high ratio of deaths among cyclists of 8.6 per million inhabitants in 2019, up from 7.1 the previous year (Eurostat Statistic Explained 2021g).
- Indicative measures by local administration to improve the traffic safety of vulnerable road users (pedestrians, cyclists and other users of non-motorised transport), include, but are not limited to, the improvement of sidewalks, the control of private vehicle speeds with infrastructural (narrower streets, vegetation at street-level) soft measures (speed limits, limitation of vehicle circulation), and the improvement and greater coverage of sufficient street lighting (Eisenman, Coleman, and LaBombard 2021; Cieřla 2021; Ben et al. 2015).

Metadata

Source:

Eurostat, City Statistics Database (data collected from national statistics). Table: urb_ctrans, Code: tt1060v

Hyperlink (availability of API):

https://ec.europa.eu/eurostat/databrowser/view/URB_CTRAN__custom_1728844/default/table?lang=en (API yes)

Visualisation:

https://ec.europa.eu/eurostat/databrowser/view/URB_CTRAN__custom_1728844/default/map?lang=en

Availability and geographical coverage:

670 cities and greater cities in 2018 in EU-27 plus Norway, Switzerland, United Kingdom and Turkey

Unit of measurement:

Number

Level of aggregation:

City and greater city

Time coverage and frequency:

1989-2020. Data collected every year.



LINK TO OTHER SDGs

1 NO POVERTY**4** QUALITY EDUCATION**5** GENDER EQUALITY**10** REDUCED INEQUALITIES

ALIGNMENT

UN list
EU list


GEOGRAPHICAL COVERAGE

EU-27 PLUS OTHERS

SDG TARGET/S

3.7 (family planning)

AVAILABILITY

483
**CITIES AND GREATER
CITIES**

SOURCE

**Eurostat, City
Statistics database**

ADOLESCENT BIRTHS

Definition of the indicator

The indicator measures the number of live births from adolescent mothers aged 10-19 years old. Adolescence is the period of life between 10-19 years old, which is considered to be the transition from childhood to adulthood.

Data harmonised by Eurostat are sourced from cities and greater cities statistics and are provided at city level.

European context

In the EU, adolescent pregnancy rates have declined since 2001, although progress has been uneven across regions and countries. In 2019, the highest shares of births of first children to teenage mothers were recorded in Bulgaria (with 13% of total births of first children) and Romania (11.3%). These were followed by Slovakia (8.3%), Hungary (7.8%), Latvia (4.9%) and Malta (4.2%). On the other hand, teenage mothers accounted for less than 1% of first births in Denmark (0.7%), and Italy (0.9%).

Reducing adolescent pregnancies and adolescent birth rates is an important priority for many EU governments (Alemán-Díaz et al. 2018; World Health Organization. Regional Office for Europe 2018) because adolescent childbearing is associated with a wide range of risks for young mothers and their new-borns. Apart from health risks, adolescent pregnancy might hinder the socio-economic development of girls, because of interruptions to their education path, at least temporarily, a more difficult inclusion in the labour market, and possible social and political exclusion (Williams-Breault 2020).

Comments / Limitations

- The 2018 Eurostat City Statistics Database for this indicator does not include data points for the following countries: DK, IE, EL, HR, IT, CY, LU, MT, NL, AT and PL.
- Adolescent birth rates may decline for several reasons: a reduction in the number of sexually active adolescents, an increase in the use of contraception, or an increase in abortions (voluntary or not). This suggests that relying solely on tracking adolescent birth rates is not sufficient for a complete assessment of the issue.
- While data on adolescent live births is available across Europe, data on adolescent abortions is either incomplete or not systematically reported. Reported adolescent pregnancy rates are in general lower in countries where parental consent for abortion is not required, Sexual and Reproductive Health (SRH) services for young people are available, sex education is included in school curricula and contraception means are well known, compared to countries where these conditions are not (fully) met (Part et al. 2013).
- Adolescent pregnancy affects some population subgroups in a disproportionate manner: adolescents from linguistic, religious or ethnic minorities, adolescents from lower income groups, married adolescents, migrants and other vulnerable and marginalised groups are affected more (Nations et al. 2013).
- In Eastern Europe, adolescent birth rates are significantly higher among Roma minority groups than in the overall population. In Bulgaria for example, more than 50% of Roma adolescent girls gave birth to a child before turning 18 in 2001 (United Nations Development Programme 2011).

Metadata

Source:

Eurostat, City Statistics Database (data collected from national statistics). Table: urb_cfemor, Code: sa2010v

Hyperlink (availability of API):

https://ec.europa.eu/eurostat/databrowser/view/URB_CFEMOR__custom_1729551/default/table?lang=en (API yes)

Visualisation:

https://ec.europa.eu/eurostat/databrowser/view/URB_CFEMOR__custom_1729551/default/map?lang=en

Availability and geographical coverage:

483 cities and greater in 2018 in EU-27 plus Norway, Switzerland, United Kingdom and Turkey

Unit of measurement:

Number

Level of aggregation:

City and greater city

Time coverage and frequency:

1989-2020. Data collected every year



LINK TO OTHER SDGs

ALIGNMENT

UN list

EU list



GEOGRAPHICAL COVERAGE

PORTUGAL

SDG TARGET/S

3.c (health workforce)

AVAILABILITY

ALL

PORTUGUESE

MUNICIPALITIES

SOURCE

Statistics Portugal

MEDICAL DOCTORS

Definition of the indicator

The indicator measures the number of medical doctors per 1,000 inhabitants. Medical doctors are those persons who are qualified to diagnose and treat people who are ill, as opposed to persons who have the title 'Doctor' for other reason (scientific, education, honour).

The indicator concerns both generalist and specialist medical practitioners. The indicator does not concern other personnel in the healthcare workforce, such as nursing and midwifery, dentistry, pharmaceutical, laboratory and physiotherapy personnel.

Since no harmonised data are available across Europe at the local level, the case of Portugal is presented as an example.

Data are sourced from the National Statistical Institute of Portugal.

European context

The capacity and ability of health systems to deliver health services and meet the growing and changing demands of healthcare (e.g. ageing population, rising expectations) is influenced by the availability and size of a skilled workforce (Padaiga et al. 2006). This has been made particularly evident since the start of the COVID-19 pandemic in 2020, as healthcare workers have been under unprecedented pressure to provide care to COVID-19 patients, maintain essential health services, and roll out life-saving vaccines. Their work has always been crucial, but the pandemic has highlighted both their contributions, and the need to maintain their numbers and better equip them in order to facilitate the provision of healthcare services.

According to Eurostat, 14.7 million people were employed as healthcare workers in the EU in 2019, representing almost 4% of the total population (including medical doctors, nurses and midwives, personal care workers and other health professionals and their associates). Among the EU Member States, Sweden recorded the highest share of health workers (12% of the employed), followed by Finland and Denmark (both 10%). In contrast, the lowest shares were recorded in eight EU Member States: Cyprus, Poland, Latvia, Romania, Luxembourg, Bulgaria, Hungary and Slovenia, where health workers represented around 4% of the employed (Eurostat 2020).

To facilitate the monitoring of the overall health sector at EU level, the EC established the State of Health in the EU mechanism in 2016, through which it aims to make health system information, expertise and best practices easily accessible to stakeholders that shape health policies, and improve country-specific and EU-wide knowledge in the field of health.

Comments / Limitations

- The dataset that includes the indicator proposed here, offers other useful indicators concerning health infrastructure and services, also at different levels of aggregation: hospitals; surgery rooms in hospitals; nurses; dentist medical doctors; pharmacies and mobile medicine depots; pharmacy technicians; pharmacists; beds (practised allotment) in hospitals; internments in hospitals.
- Data about this indicator is collected on a single platform for different level of aggregation (municipality, region, country), whereas in other Member States the information, at municipal level, may be available in single municipalities' platforms.

Metadata

Source:

Instituto Nacional de Estatística
(INE) - Statistics Portugal

Hyperlink (availability of API):

https://www.ine.pt/xportal/xmain?xpid=INE&xpgid=ine_indicadores&contexto=pi&indOcorrCod=0008356&selTab=tab0
(API yes)

Visualisation: -

Availability and geographical coverage:

All Portuguese municipalities

Unit of measurement:

Rate

Level of aggregation:

Municipality

Time coverage and frequency:

2011-2019. Data collected every year



GOAL 4

**ENSURE INCLUSIVE AND
EQUITABLE QUALITY
EDUCATION AND PROMOTE
LIFELONG LEARNING
OPPORTUNITIES FOR ALL**

Description of the Goal

This goal aims to ensure that everyone has access to inclusive, equitable and quality learning at all levels and in all types of education. The Goal not only refers to school enrolment but also looks at the capacity of the education system to promote sustainable development and lifestyles, the appreciation of culture's contribution to development, the availability of trained teachers and adequate school facilities and the necessary skills for decent jobs and to favour entrepreneurship. The custodian agency of this indicator is UNESCO (UNESCO Institute of Statistics 2019).

European dimension

In the EU context, Goal 4 focuses on the progress made in promoting and improving pre-primary, primary and secondary education, but also technical, vocational and tertiary and adult education. According to Eurostat, in 2021 the EU was on track to meeting its 2030 target for participation in early childhood education. Upper secondary education is the minimum desired educational attainment level in the EU, however the share of people between 25–34 also attaining tertiary education is increasing. Similarly the share of adults with at least basic digital skills in 2019 registered an increase compared with 2015 figures (Eurostat 2021c). On the contrary, the share of adults in learning is currently lower than in 2015 as measured by pupils' performance in the PISA study for reading, maths and science.

Building on the former strategic framework for European cooperation in education and training, the Council of the European Union in 2021 adopted a new Resolution on a strategic framework towards the European Education Area and beyond (2021–2030) (Council of the European Union 2021a). This new framework addresses five strategic priorities to be reached by 2025 or 2030. Among these, the strategic framework has set a target to reduce the share of early leavers to below 9% by 2030, to raise the share of the population aged 25 to 34 that has completed tertiary or equivalent education to at least 45% by 2030 and the participation of adults in learning to 47%.

Some related European policies and legislations

Resolution on a strategic framework towards the European Education Area and beyond (2021)

European Skills Agenda (2020)

European Pillar of Social Rights (2017)

Local dimension

Early childhood education is the first step in a child's educational pathway and may have a long-lasting impact on the development of individuals. In many countries, primary and secondary education falls under the direct responsibility of local governments, in partnership with ministries of education and other local bodies. Schools encourage integration and mutual knowledge, and through education and training, individuals are able to improve their employment and economic condition. Education and life-long learning are crucial to sustainable cities, as they give people the necessary instruments to live and work in a context which is rapidly evolving and also to be engaged in shaping a more sustainable future for their city.

Three indicators address Goal 4 (all at city level):

one indicator deals with childhood education (Target 4.2)

one indicator addresses aspects of tertiary and vocational education (Target 4.3)

one indicator focuses on literacy and numeracy (Target 4.6)



LINK TO OTHER SDGs

5 GENDER EQUALITY**8 DECENT WORK AND
ECONOMIC GROWTH**

ALIGNMENT

UN list
EU list

GEOGRAPHICAL COVERAGE

EU-27 PLUS OTHERS

SDG TARGET/S

**4.2 (childhood
education)**

AVAILABILITY

426**CITIES AND GREATER
CITIES**

SOURCE

**Eurostat, City
Statistics database**

CHILDREN 0-4 IN DAY CARE OR SCHOOL

Definition of the indicator

The indicator measures the number of children between the age of 0 and 4 that are enrolled at day care institutions or schools. Day care institutions include pre-school, kindergarten, nursery school or equivalent-level institutions. Any institutions serving other than child care purposes (e.g. exclusively sports activities) are excluded.

The indicator concerns children in day care either part- or full-time, but with an average monthly attendance of 2 hours per day and an average annual attendance of 100 days.

Data harmonised by Eurostat are sourced from cities and greater cities statistics and are provided at city level.

European context

Early Childhood Education and Care (ECEC) – the phase before primary education – is becoming an essential part of the European education policy. According to the EC *'today's need for flexibility and permeability between learning experiences requires policy coherence from early childhood education and schools through to higher education, vocational education and training and adult learning'* (European Commission 2015).

Most children living in Europe start primary education at the age of six. Seven EU Member States have introduced compulsory ECEC for one year prior to starting primary education, and another three have prolonged the period of mandatory attendance to 2–3 years. Moreover, a number of countries are extending the ages of the legal right to ECEC for every child (EC/EACEA/Eurydice 2015). Attending the last year of ECEC has been made compulsory in Belgium (2020), Czech Republic (2017), Croatia (2014), Lithuania (2016), Romania (2020), Finland (2015), Sweden (2018) and Slovakia (2021).

Unfortunately, availability of publicly funded ECEC is rather low for children under the age of three. Therefore, the participation rate of children under three years old at ECEC is on average, 34% of the total child population in this age group, partially due to the associated fees.

Comments / Limitations

- The 2018 Eurostat City Statistics Database for this indicator does not include data points for the following countries: BE, CZ, DK, IE, EL, HR, IT, CY, LU, NL and AT.
- Data does not reveal if children aged 0-4 who are not enrolled in day care or school are excluded because of an insufficient provision of places or for reasons linked with the preferences (or financial possibilities) of their families.
- According to Eurostat, early childcare education can be either part- or full-time during the day but the programme must account for at minimum the equivalence of 2 hours per day and 100 days a year in order to be classified as day care (Eurostat 2017).

Metadata

Source:

Eurostat, City Statistics Database, (data collected from national statistics). Table: urb_ceduc, code te1001v

Hyperlink (availability of API):

https://ec.europa.eu/eurostat/databrowser/view/URB_CEDUC__custom_1730171/default/table?lang=en (API yes)

Visualisation:

https://ec.europa.eu/eurostat/databrowser/view/URB_CEDUC__custom_1730171/default/map?lang=en

Availability and geographical coverage:

426 cities and greater cities in 2018 in EU-27 plus Norway, Switzerland, United Kingdom and Turkey

Unit of measurement:

Number

Level of aggregation:

City and greater city

Time coverage and frequency:

1989-2020. Data collected every year



LINK TO OTHER SDGs

8 DECENT WORK AND
ECONOMIC GROWTH

9 INDUSTRY, INNOVATION
AND INFRASTRUCTURE

ALIGNMENT

UN list
EU list



GEOGRAPHICAL COVERAGE

EU-27 PLUS OTHERS

SDG TARGET/S

**4.3 (tertiary and
vocational education)**

AVAILABILITY

623

**CITIES AND GREATER
CITIES**

SOURCE

**Eurostat, City
Statistics database**

STUDENTS IN HIGHER EDUCATION

Definition of the indicator

The indicator measures the number of students that are enrolled in higher education programmes and attending levels 5 to 8 of the International Standard Classification of Education (ISCED). Such programmes include short-cycle tertiary education (level 5), Bachelor (level 6), Master (level 7) or doctoral studies (level 8).

Online students can also be considered in this indicator if they fulfil a series of requirements in terms of their participation, and the type and format of education provided (for more info see (Eurostat 2017)).

Data harmonised by Eurostat are sourced from cities and greater cities statistics and are provided at city level.

European context

A generally high level of education in the population is widely regarded as a prerequisite for a society that is modern and that fosters productivity growth, innovation and competitiveness. The fast pace of technological advances and the intensification of global competition have made labour markets increasingly demanding in terms of skills and abilities. High-level education can provide these skill and abilities, while at the same time promoting social innovation and increasing people's capacity to address economic, environmental and societal challenges (European Commission 2020e).

In 2009, the EU set a target of raising the rate of tertiary educational attainment to at least 40% of the population (Council of the European Union 2009). In 2018, this target was met, as 40.7% of the population aged 30-34 held a tertiary degree. However, expanding overall tertiary educational attainment rates does not mean that different socio-economic groups have equivalent access to higher education. In order to increase participation rates in this educational sector, around two thirds of EU countries monitor the socio-economic characteristics of students and more than half of the EU countries recognise prior informal or non-formal learning (EC/EACEA/Eurydice 2015).

Comments / Limitations

- The 2018 Eurostat City Statistics Database for this indicator does not include data points for the following countries: BE, CZ, DK, EL, CY, LU, NL and AT.
- The indicator in this dataset is further disaggregated based on sex (women, men).
- For each reference year (e.g. 2019), data refers to the school/academic year starting the year before in September (e.g. 2018/2019). As some universities have more than one campus, these might be located in two or more different cities. In this case, students should be counted in the location/premises where they study (and not at the legal address of the university). If the exact information is not available, the best choice would be to divide the total number of students in the university by the number of cities where the campuses/departments are located. Online students are included only if they fulfil certain requirements (Eurostat 2017).
- The contribution of participation in higher education as a measure for productivity and growth is challenged by some scholars who believe that jobs that once required only a high school diploma for example, now require a college degree only because more applicants have one. In their view, this might result in depressing the wages of those who lack a college degree, and in placing many college graduates in jobs that do not actually make use of the substance of their college education. This in turn leads to more and more people seeking degrees, as word spreads that a college diploma is the entry ticket to even modest jobs (Muller 2019).

Metadata

Source:

Eurostat, City Statistics Database, (data collected from national statistics). Table: urb_ceduc, code te1026v

Hyperlink (availability of API):

https://ec.europa.eu/eurostat/databrowser/view/URB_CEDUC__custom_2070605/default/table?lang=en (API yes)

Visualisation:

https://ec.europa.eu/eurostat/databrowser/view/URB_CEDUC__custom_2070605/default/map?lang=en

Availability and geographical coverage:

623 cities and greater cities in 2018 in EU-27 plus Norway, Switzerland, United Kingdom and Turkey

Unit of measurement:

Number

Level of aggregation:

City and greater city

Time coverage and frequency:

1989-2020. Data collected every year



LINK TO OTHER SDGs

1 NO POVERTY

8 DECENT WORK AND
ECONOMIC GROWTH

ALIGNMENT

UN list
EU list

GEOGRAPHICAL COVERAGE

EU-27 PLUS OTHERS

SDG TARGET/S

4.6 (literacy and
numeracy)

AVAILABILITY

155

CITIES AND GREATER
CITIES

SOURCE

Eurostat, City
Statistics database

EARLY LEAVERS FROM EDUCATION AND TRAINING

Definition of the indicator

The indicator measures the share of the population aged 18 to 24 among the total population of the same age group who fulfil the following conditions:

- Have attained an International Standard Classification of Education (ISCED) at level 0 ('Early childhood education'), 1 ('Primary education'), 2 ('Lower secondary education') or 3 ('Higher secondary education') as their highest level of education or training.
- Have not received any education and training in the four weeks preceding the EU Labour Force Survey.

Data harmonised by Eurostat are sourced from cities and greater cities statistics and are provided at city level.

European context

At EU-level, many Member States make efforts for more young people to obtain a higher secondary education qualification (ISCED 3). According to Eurostat, in 2020, 84.3% of the EU population aged 20–24 had completed at least an upper secondary level of education, a figure that reached 87.1% for women. On the other hand, 9.9% of young people aged 18–24 (11.8% of men and 8% of women) had completed at most lower secondary education (ISCED 2) but were no longer in education and training in 2020 (a drop from 10.6% in 2018) (Eurostat Statistic Explained 2021c). According to Eurostat, people with low levels of education face a higher risk of being unemployed (51.2% employment rate for those who completed ISCED 0–2 compared to 76.8% for those who completed ISCED 3–4) (Eurostat 2018a).

The EU has set a target to decrease the rate of early leavers from education and training to less than 9% by 2030 within the Council Resolution on a strategic framework for European cooperation in education and training towards the European Education Area and beyond. In 2020, 18 countries already reported shares of early leavers below the EU-level target, however, the share was still high in Spain (16%), Romania (15.6%) and Italy (13.1%) (Eurostat Statistic Explained 2021c).

Recent policy measures to decrease the rate of early leavers from education and training include improving data collection and monitoring, strengthening teachers' capacities, education and career guidance, supporting the flexibility and permeability of education pathways, supporting re-entry of early leavers and language support for students (European Commission 2020e).

Comments / Limitations

- The 2018 Eurostat City Statistics Database for this indicator only includes data points for the following countries: DE, EE, MT and FI. National or regional databases might contain data for this indicator for Member States not covered in the Eurostat database.
- Statistics on the level of the educational attainment of the population are based on the EU Labour Force Survey (EU-LFS) (Eurostat 2021a). The EU-LFS results cover the total population usually residing in Member States, except for persons living in collective or institutional households.
- The indicator in this dataset is further disaggregated based on sex (women, men).
- Eurostat, City Statistics Database (Table: urb_ceduc, Code: te2025v) collects similar information on individuals aged 25-64 with an ISCED of level 0, 1 or 2 as their highest level of education. The differentiation in the age group analysed allows for more targeted and customised activities at local level, e.g. upskilling pathways towards the creation of new opportunities.

Source:

Eurostat, City Statistics Database, (data collected from national statistics). Table: urb_ceduc, code te1039v

Hyperlink (availability of API):

https://ec.europa.eu/eurostat/databrowser/view/URB_CEDUC__custom_1982779/default/table?lang=en

Visualisation:

https://ec.europa.eu/eurostat/databrowser/view/URB_CEDUC__custom_1982779/default/map?lang=en

Availability and geographical coverage:

155 cities and greater cities in 2018 in EU-27 plus Norway, Switzerland, United Kingdom and Turkey

Unit of measurement:

Share

Level of aggregation:

City and greater city

Time coverage and frequency:

1989-2020. Data collected every year



GOAL 5

ACHIEVE GENDER EQUALITY AND EMPOWER ALL WOMEN AND GIRLS

Description of the Goal

The aim of this Goal is to achieve gender equality and eliminate all forms of violence against women in public and private spheres including trafficking and sexual and other types of exploitation. Important elements for obtaining gender equality are derived from education, non-discriminatory behaviour, recognition and valorisation of unpaid and domestic work, provision of public services and share-out of care work. Another crucial elements is women's participation in the labour market and access to decision-making positions in political, economic and public life. The longitudinal and multi-dimensional aspects of gender equality are particularly relevant for investigating persistent cultural biases in determining gender discrimination and the interaction between gender and other characteristics in determining disadvantage.

European dimension

Gender equality is a core value in Europe as stated in foundational documents of the EU such as the Treaty on the Functioning of the European Union. Progress has been made in the EU in recent years in this regard as in the past 15 years there has been a decrease in the gender gap for early leavers from education and training (from 4.5% in 2006 to 3.5% in 2021) and in the gender employment gap (from 13.4% in 2009 to 10.8% in 2021) together with an increase in the number of seats held by women in national parliament (22.2% in 2006 and 33.1% in 2021 in the EU-27) and in senior management positions (from 9.6% to 30.6% in the EU-27). On the contrary, the share of inactive women due to care responsibilities (30.2% in 2021) is still higher than the number of men (8.5%) (Eurostat 2021c) and, according to the EC, women have been disproportionately affected by the pandemic with a decline in their participation in the workforce after a decade of increase and with violence against women remaining widespread (European Commission 2022a). To achieve gender equality in the Union and tackle the gender pay gap, the EU put in place several initiatives and policies throughout the years, e.g. the Gender Equality Strategy, or the EU Gender Action Plan (GAP) III 2021–2025.

In 2020 the EC published its first ever Strategy on victims' rights (2020–2025) and put in place an EU-wide proposal for a directive to combat violence against women and domestic violence. The Directive will strengthen victims' access to support and justice, also by criminalising rape based on lack of consent, female genital mutilation and cyber violence.

Local dimension

Cities have a key role in empowering gender equality, in particular in relation to the detection of gender-based violence through specific services for victims/survivors and partnerships with health services and police, but also education and awareness campaigns (URBACT 2019). Cities can foster gender equality also increasing the availability and quality of services that might favour a reduction of the time dedicated to care work. Inclusive planning and mobility are policies that can contain preventive actions against gender-based violence in public spaces or on public transportation are also effective leverages to improve the well-being of women in cities.

Some related European policies and legislations

EU Gender Equality Strategy (2020)

EU Gender Action Plan III (2020)

EU Strategy on victims' rights (2020)

Five indicators address Goal 5 (all at city level):

one indicator refers to gender discrimination (Target 5.1)

two indicators focus on gender violence (Target 5.2)

two indicators deal with women's participation and leadership (Target 5.5)



LINK TO OTHER SDGs

8 DECENT WORK AND
ECONOMIC GROWTH

10 REDUCED INEQUALITIES

ALIGNMENT

UN list
EU list



GEOGRAPHICAL COVERAGE

EU-27 PLUS OTHERS

SDG TARGET/S

**5.1 (end gender
discrimination)**

AVAILABILITY

337

**CITIES AND GREATER
CITIES**

SOURCE

**Eurostat, City
Statistics Database**

GENDER EMPLOYMENT GAP

Definition of the indicator

The indicator measures the gender employment gap, which is defined as the difference between the employment rates of men and women.

The employment rate is calculated by dividing the number of employed people aged 20-64 by the total population of the same age group. A person can be considered to be employed if, during the reference week period of the data collection, she/he/they performed work for pay or profit for at least an hour, or was not working but has jobs from which she/he/they was/were temporarily absent (for example due to illness, holidays, industrial dispute or education and training).

Data harmonised by Eurostat are sourced from cities and greater cities statistics and are provided at city level.

European context

Employment rates since 2005 in the EU have remained systematically higher for men than women. While the gender employment gap narrowed by 2.4% in the 2009-2014 period going from 13.4% in 2009 to 11.1% in 2014, the rate of this improvement has slowed since 2014. In 2020, it was still at 11%. Italy, Romania and Greece were the EU countries with the highest gender employment gap in 2020 (Eurostat 2021c).

Women in rural areas have more difficulties accessing the labour market: the differences in the employment gap between women living in rural areas and in cities amounts to two percentage points (European Commission 2021a).

The European Pillar of Social Rights Action Plan includes a target of 78% of the EU population aged 20 to 64 being employed by 2030. In order to achieve this goal, Europe must strive to increase the employment rate of women (European Commission 2020k).

The European Gender Equality Strategy also includes a set of actions that aim to close the gender gap in the labour market and its progress is monitored through the European Semester (COM(2020) 152 final). Evidence from the literature suggests that family policies, and in particular the length and generosity of maternal leave, together with childcare support can have an impact on female employment (Profeta 2020).

Comments / Limitations

- The 2019 Eurostat City Statistics Database for this indicator only includes data points for the following countries: BE, BG, CZ, EE, ES, HR, IT, LV, LT, MT, NL and FI.
- The Eurostat database also includes data for this indicator for the 55-64 age group.
- Several local databases are available for this indicator. Therefore, local statistics should be explored for the preparation of the VLR. For example, in Valencia these data are collected monthly and also disaggregated by several age-class cohorts (Ajuntament de València - Oficina d'Estadística 2022).
- Gender intersects with other personal characteristics (e.g. country of origin, ethnic and migrant status, and disability) often adding to discrimination in terms of employment. In addition, education, marital status and parenthood strongly influence the employment rate of women relative to men (Grubanov-Boskovic, Tintori, and Biagi 2020). Therefore more disaggregated data might be useful for tailoring better intersectionality-based policies (European Commission 2020m).

Metadata

Source:

Eurostat, City Statistics Database (data collected from national statistics). Table: urb_clma, Code: ec1178v (Persons employed, 20-64, male) and Code: ec1179v (Persons employed, 20-64, female). For population data by age and sex, codes from de1050v to de1124v

Hyperlink (availability of API):

Persons employed, 20-64, male: <https://europa.eu/!yfH6fw> (API yes)

Persons employed, 20-64 female: <https://europa.eu/!N6Tvqw> (API yes)

Population, 20-64, male: <https://europa.eu/!DtdYTK> (API yes)

Population, 20-64, female: <https://europa.eu/!GHjryJ> (API yes)

Visualisation: -

Availability and geographical coverage:

337 cities and greater cities in 2019 in EU-27 plus Norway, Switzerland, United Kingdom and Turkey

Unit of measurement:

Rate

Level of aggregation:

City and Greater City

Time coverage and frequency:

1990-2020. Data collected every year



LINK TO OTHER SDGs

3 GOOD HEALTH AND
WELL-BEING

10 REDUCED INEQUALITIES

16 PEACE, JUSTICE AND
STRONG INSTITUTIONS

ALIGNMENT

UN list
EU list



GEOGRAPHICAL COVERAGE

JUDICIAL DISTRICT

SDG TARGET/S

5.2 (end gender violence)

AVAILABILITY

ALL

**SPANISH
JUDICIAL DISTRICTS**

SOURCE

**Spanish Delegation of
the Government against
Gender Violence**

FORMAL COMPLAINTS FOR EPISODES OF VIOLENCE AGAINST WOMEN

Definition of the indicator

The indicator measures the number of cases of violence against women reported to the police or to a judicial court.

Therefore it can be interpreted as a proxy of the propensity of female victims, their families and witnesses to report episodes of violence against women.

Data are harmonized by the Spanish Delegation of the Government against Gender Violence and are offered at judicial district level. The judicial district level is a territorial unit for the administration of justice, made up of one or several neighbouring municipalities and belonging to the same province.

European context

The European Institute for Gender Equality defines 'violence against women' as "*violation of human rights and a form of discrimination against women including all acts of gender-based violence that result in, or are likely to result in, physical, sexual, psychological or economic harm or suffering to women, including threats of such acts, coercion, or arbitrary deprivation of liberty, whether occurring in public or in private life*" (EIGE 2022).

Freedom from violence and stereotypes is the first pillar of the 2020–2025 EU gender equality strategy (European Commission 2020m).

The EU strategy on victims' rights (2020–2025) pays particular attention to the specific needs of victims of gender-based violence, building on the victims' rights directive (European Commission 2020d).

The 'Istanbul Convention' is the benchmark for international standards in this field. The EU signed the Convention in 2017, and concluding the ratification from remaining countries is a key priority (CETS 2011).

Comments / Limitations

- In the dataset, the origin of the complaint is presented by: the concerned women concerned, the family of the women concerned women, a police report (triggered by the complaints of the victim, their family or for direct intervention from the police), other parties witnessing the violence, third parties.
- It would also be relevant to have information on victims' characteristics e.g. in terms of age, disability or migration status.
- Existence of a higher level of critical awareness in society has led to a progressive increase in the number of complaints in recent years in Spain. This has meant that despite the strong impact of the pandemic, the response has been maintained, even if not always as high as in the 2017-2019 period (Universidad de Granada 2022).
- Improving services dedicated to women who have experienced any form of violence might encourage them to report the violence (Denti and Iammarino 2022).
- The Gender Equality index in Spain is higher (74) compared to the average in EU countries (68). Moreover, the index does not include yet the domain of violence, due to a lack of comparable EU-wide data, even at national level (EIGE 2021a). Therefore, the case of Spain is illustrated here as an example, as it offers also data with a high level of disaggregation which are collected periodically.
- Data from the latest survey on violence against women from the Delegation of the Government against Gender Violence (Género 2021) revealed that one out of every two women (57%) living in Spain aged 16 or over have suffered violence during their lives, with young women experiencing it to a greater extent. However, only 19% of the women who have suffered non-partner sexual violence have reported some of these aggressions to the Police or the Court. This implies that the number of formal complaints seriously underestimates the total number of episodes of violence against women.

Metadata

Source:

Delegación del Gobierno
contra la Violencia de Género
(Delegation of the Government
against Gender Violence,
Ministry of Equality)

Hyperlink (availability of API):

<http://estadisticasviolenciagenero.igualdad.mpr.gob.es/>

Visualisation:

<http://estadisticasviolenciagenero.igualdad.mpr.gob.es/>

Availability and geographical coverage:

All Spanish judicial districts

Unit of measurement:

Number

Level of aggregation:

Judicial district

Time coverage and frequency:

2009-2021. Data collected
every year



LINK TO OTHER SDGs

3 GOOD HEALTH AND
WELL-BEING

10 REDUCED INEQUALITIES

16 PEACE, JUSTICE AND
STRONG INSTITUTIONS

ALIGNMENT

UN list
EU list



GEOGRAPHICAL COVERAGE



SDG TARGET/S

5.2 (end gender violence)

AVAILABILITY



SOURCE

**Own elaboration
(municipality)**

FEMALE HOSPITALISATION FOR ASSAULT

Definition of the indicator

The indicator measures the number of women recorded in hospital emergency departments as victims of assaults.

Since no harmonised data are available across Europe at the local level for this indicator, no concrete database or source is recommended for use. Instead, information and data are derived upon own municipal sources.

European context

Given the low level of female victims reporting sexual offences to the police, mainly due to the fear of stigma and the fear of lacking an adequate support, this indicator allows to complement the knowledge on the extent of women victimisation. For instance, according with European Union Agency for Fundamental Rights and WHO the number of women who contact healthcare services because of violence is usually higher than those of women contacting victim support organizations or women's shelters.

Comments / Limitations

- Hospital records of hospitals within the administrative jurisdiction of a municipality, police records, records from NGOs or other municipal records are the recommended data source for this indicator.
- This indicator includes assault occurring both in public and in private life.
- This indicator allows integrating the knowledge on the extent of women victimisation in cities, if combined with the number of formal complaints, as these two indicators are able to capture respectively the severity of the victimisation and the propensity to report such an abuse.
- Female hospitalisation data is considered an improvement compared with the number of feminicides, defined as the killing of women and girls because of their gender, because it is able to capture more cases than only the extreme ones.

Metadata

Source:

Own elaboration (municipality)

Hyperlink (availability of API):

-

Visualisation:

-

Availability and geographical coverage:

-

Unit of measurement:

Number

Level of aggregation:

Municipality

Time coverage and frequency:

-



LINK TO OTHER SDGs

**16 PEACE, JUSTICE AND
STRONG INSTITUTIONS**

ALIGNMENT

UN list
EU list



GEOGRAPHICAL COVERAGE

GERMANY

SDG TARGET/S

**5.5 (women participation
and leadership)**

AVAILABILITY

ALL

**GERMAN CITIES OVER
5,000 INHABITANTS**

SOURCE

**Federal Institute for
Research on Building,
Urban affairs and Spatial
Development**

WOMEN IN CITY, MUNICIPAL OR COUNTY COUNCILS

Definition of the indicator

The indicator measures the share of women in city, municipal and county councils. It is computed as the number of women with mandates in the city, municipal or county council over the total number of mandates in the city, municipal or county council.

Since no harmonised data are available across Europe at the local level, the case of Germany is presented as an example.

Data are sourced from and harmonized by the Federal Institute for Research on Building, Urban affairs and Spatial Development and provided at city level (for cities over 5,000 inhabitants).

European context

Creating a gender balance within politics, business and administration is crucial to the viability of cities from many perspectives (employment opportunities and political representation, among others). To this end, in 2006, the EU founded the European Institute for Gender Equality (EIGE) in order to contribute to and strengthen the promotion of gender equality, including gender mainstreaming in all EU policies and the resulting national policies, and the fight against discrimination based on gender.

EIGE's Gender Statistics Database (GSD) collects and publishes data on the number of women and men in key decision-making positions across a number of different life domains at national level (EIGE 2021a). The main purpose of this database is to build a broad overview of statistics on gender, highlighting inequalities between men and women and to act as an input in policy formulation for the advancement of gender equality in the EC and the MS. The database can be consulted to compare how local indicators score against indicators at average national level.

At European level, figures related to the seats held by women in national parliaments constantly increased between 2003 (from 20.5%) and 2018 (to 29.7%), yet this is neither a lot nor enough (EIGE 2021b). Several MS impose gender quotas for both national and municipal elections that have proved to have a positive effect on the share of female candidates (and thus on the percentage of women elected officials as well) (Lassébie 2020).

Comments / Limitations

- Municipal records are the recommended data source for this indicator.
- The database includes information for all German towns and municipalities with a population of more than 5,000 and for all counties.
- Gender equality in political representation might also include issues such as women's effective decision-making power and influence; added obstacles for women relating to gender stereotypes; gender-based violence and discrimination in the workplace; the adoption of gender mainstreaming practices; intersectionality (the relative class or race privilege of women in political representation and its effects on substantive representation (e.g. for advocating for policies that would only benefit a certain group).
- The indicator does not take into account other minoritised genders.

Metadata

Source:

Federal Institute for Research on Building, Urban affairs and Spatial Development – Bundesinstitut für Bau-, Stadt- und Raumforschung
For simplicity, data are centralized and presented at the German SDG Portal.

Hyperlink (availability of API):

<https://sdg-portal.de/de/sdg-indikatoren> (API yes)

Visualisation:

-

Availability and geographical coverage:

All German cities over 5,000 inhabitants in 2018

Unit of measurement:

Share

Level of aggregation:

City

Time coverage and frequency:

2015-2018



LINK TO OTHER SDGs

**16 PEACE, JUSTICE AND
STRONG INSTITUTIONS**

ALIGNMENT

UN list
EU list



GEOGRAPHICAL COVERAGE



SDG TARGET/S

**5.5 (women participation
and leadership)**

AVAILABILITY



SOURCE

**Own elaboration
(municipality)**

POSITIONS HELD BY WOMEN IN MANAGEMENT

Definition of the indicator

The indicator measures the share of positions held by women in management.

It is computed as the number of women in management positions over the total number of positions in privately and publicly owned organisations, businesses, institutions and companies.

Managerial positions are defined according to the International Standard Classification of Occupations (ISCO-08 2008) and include persons who plan, direct, coordinate and evaluate the overall activities of businesses, governments and other organisations, or of organisational units within them, and who formulate and review their policies, laws, rules and regulations. Managerial positions also include the positions of managing directors, chief executives and board members.

Since no harmonised data are available across Europe at local level for this indicator, no specific database or source is recommended for use. Instead, information and data can be derived from local commercial chambers or other relevant municipal registries.

European context

Creating a gender balance within politics, business and administration is crucial to the viability of cities from many perspectives (employment opportunities, political representation). To this end, in 2006 the EU founded the European Institute for Gender Equality (EIGE) in order to contribute to and strengthen the promotion of gender equality, including gender mainstreaming in all EU policies and the resulting national policies, and the fight against discrimination based on gender.

At European level, in 2020, more than 9.5 million people held a managerial position, 3.3 of these were women. Although women represent almost half of all employed persons in the EU (46%), they are under-represented amongst managers (34%). This share has gradually increased from below 30% in 2002, but only by 4%.

Among EU Member States, the largest share of women in managerial positions in 2020 was recorded in Latvia (45%) and Poland (44%), followed by Bulgaria, Hungary, Slovenia and Sweden (all 42%) (Eurostat 2021d).

Comments / Limitations

- The chamber of commerce or other municipal records are the recommended data sources for this indicator.
- The indicator does not take into account other minoritised genders.
- Gender inequality as a whole is also monitored and measured in European cities by the income gap for the same position between women and men (same job-same pay).
- The indicator would benefit from being further disaggregated by aspects such as socioeconomic background, race, disability or nationality. The literature suggests that certain social groups – such as white women – benefit more from DEI policies (diversity, equity and inclusion) compared to others, such as disabled women of colour. Further disaggregating gender data might help reveal some of the intersectional exclusions that hide behind these numbers (OECD 2020b).

Metadata

Source:

Own elaboration (municipality)

Hyperlink (availability of API):

–

Visualisation:

–

Availability and geographical coverage:

–

Unit of measurement:

Share

Level of aggregation:

Municipality

Time coverage and frequency:

–



GOAL 6

ENSURE AVAILABILITY AND SUSTAINABLE MANAGEMENT OF WATER AND SANITATION FOR ALL

Description of the Goal

Goal 6 calls for ensuring availability of safe and affordable drinking water for all, guaranteeing universal access to adequate and equitable sanitation and hygiene, and ending open defecation. It also aims at reducing water pollution; increasing wastewater treatment and water use efficiency; and reducing the number of people affected by water scarcity implementing integrated water resources management at all levels. At the same time, it seeks for the protection and restoration of water-related ecosystems.

Goal 6 goes beyond drinking water, sanitation and hygiene and it also addresses the quality, protection and restoration of water resources. The 2030 Agenda recognizes the significance of water and water resources to sustainable development and the central role that improved drinking water, sanitation and hygiene play in achieving objectives related to other areas, including health, education and poverty reduction.

In recent years, the COVID-19 pandemic has recalled the critical importance of sanitation, hygiene and adequate access to clean water for preventing and containing the spread of infections and diseases in modern times.

European dimension

In the EU context, Goal 6 focuses on sanitation, water quality and water use efficiency. Most people living in the EU enjoy improved access to and quality of water and sanitation facilities and services. Water efficiency has also increased as the average daily consumption of drinking water has dropped in the last 20 years from by 28% (EEA 2018b). These results come from water management policy in many EU MS, and are also facilitated by EU environmental legislation and initiatives such as the Revised Drinking Water Directive (European Parliament 2020a). These EU policies aim to tackle emerging pollutants (e.g. micro-plastics); ensure better access for Europeans to water, and particularly for marginalised groups; promote tap water and reduce (plastic) bottle consumption; reduce water leakages and increase transparency of the sector, among others.

The most significant pressure on Europe's water resources is pollution, e.g. from agriculture, and municipal and industrial discharges and wastewater. Also, excess water extraction in particular during the summer months and in densely populated areas, can be a severe issue (Eurostat 2021n).

Other existing and emerging challenges for sustainable water management that require attention are: demographic changes – mainly because of migration and seasonal tourism – that might place additional stress on water supplies for households; and climate change-induced natural hazards and extreme weather events.

Local dimension

Water governance is a complex and diverse issue across Europe. Water services, including the supply of drinking water, collection and treatment of wastewater, and rainwater management, are regulated at EU and national level, but are organised and managed at local level by public authorities or by private companies.

Cities are directly responsible for delivering drinking water, collecting and treating urban wastewater and managing storm water. Whether they manage the water supply or not, cities are in charge of approving tariffs, determining the quality of service as well as setting and enforcing environmental and health standards, ensuring excellent wastewater collection and treatment, and protecting wetlands and river basins from urban development and sprawl.

Some related European policies and legislations

Revised Urban Waste Water Treatment Directive (2021)

Revised Drinking Water Directive (2020)

European Innovation

Partnership on Water (2019)

Directive on single-use plastics (2019)

Nitrates Directive (1991)

Four indicators address Goal 6 (all at city level):

two indicators deal with access to water (Target 6.1)

one indicator focuses on water quality (Target 6.4)

one indicator address water efficiency (Target 6.3)



LINK TO OTHER SDGs

3 GOOD HEALTH AND
WELL-BEING

ALIGNMENT

UN list
EU list



GEOGRAPHICAL COVERAGE

FRANCE

SDG TARGET/S

**6.1 (universal
access to water)**

AVAILABILITY

ALL

**FRENCH
MUNICIPALITIES**

SOURCE

**Information System
for Public Water and
Sanitation Services**

QUALITY OF WATER FOR HUMAN CONSUMPTION

Definition of the indicator

The indicator assesses the quality of water for human consumption (drinkable tap water), through its conformity to specific thresholds. It is computed by calculating the percentage of water samples analysed over one year period that respect the limits set by the regulation regarding the conformity to microbiological parameters.

Since no harmonised data are available across Europe at local level, the case of France is presented as an example.

Data are sourced from the French Information System for Public Water and Sanitation Services and are provided at municipality level.

European context

Clean and wholesome drinking water is one of the most important resources for human life. In the EU, the quality of water intended for human consumption is regulated by the *Drinking Water Directive*, and its 2021 revision, with the objective of protecting human health from the adverse effects of any contamination of water (Council of the European Union 2010).

The Directive is based on the World Health Organization's guidelines for drinking water and sets the essential quality standards at EU level (WHO 2021d). In total, 48 microbiological, chemical and physical indicator parameters must be monitored and tested regularly all over the EU. When transposing the Drinking Water Directive into their own national legislation, Member States can include additional requirements relevant within their territory, or set higher standards, but are not allowed to set lower standards as the level of protection of human health should be the same within the whole EU. The Directive also requires the provision of regular information to consumers, in addition to reports to the EC every three years.

In 2020, the EU Parliament adopted the revised Drinking Water Directive, which also tackles emerging pollutants (e.g. micro-plastics), introduces the obligation for MS to improve or maintain access to safe drinking water for all, promote tap water and reduce (plastic) bottle consumption. It also envisages better access to information for the general public regarding water suppliers, the harmonisation of quality standards for materials and products in contact with water, and measures to reduce water leakages (The European Parliament and the Council of the European Union 2020).

Comments / Limitations

- The revised *Drinking Water Directive* also requires information on leakage rates in the networks to be made available. Therefore, a complementary indicator on the amount of water lost due to network leakages could be added in the future. For France, this information is already included in the reference dataset, expressed in m³/km per day.
- The same dataset also provides information on water prices, efficiency of the distribution network, and protection of water resources, among others, as well as the evolution over time.
- Water quality in the database is covered by an additional indicator that computes the percentage of water samples analysed over a one-year period that respect the limits set by the regulation regarding the conformity to physical and chemical parameters. Both indicators are recommended for use to ensure a complete overview of water quality at local level.

Metadata

Source:

Information System for Public Water and Sanitation Services - Observatoire national des Services d'Eau et d'Assainissement (SISPEA)

Hyperlink (availability of API):

<http://sispea.brgm-rec.fr/>

Visualisation:

<http://sispea.brgm-rec.fr/donnees/dernieres-donnees-disponibles>

Availability and geographical coverage:

All French municipalities

Unit of measurement:

Share

Level of aggregation:

Municipality

Time coverage and frequency:

2009-2019. Data collected every year



LINK TO OTHER SDGs

3 GOOD HEALTH AND
WELL-BEING

ALIGNMENT

UN list
EU list



GEOGRAPHICAL COVERAGE

EU-27 PLUS OTHERS

SDG TARGET/S

**6.1 (universal access to
water)**

11.1 (access to basic services)

AVAILABILITY

288

**CITIES AND GREATER
CITIES**

SOURCE

**Eurostat, City
Statistics database**

POPULATION CONNECTED TO A DRINKING WATER SYSTEM

Definition of the indicator

The indicator measures the share of population that is connected to a drinking water system.

The indicator does not include the different qualities of the water system (from basic to improved).

It is computed as the number of people who have access to a drinking water source at urban level, expressed as a percentage of the total population.

Data harmonised by Eurostat are sourced from cities and greater cities statistics and are provided at city level.

European context

Access to drinking water and basic sanitation is a fundamental need and a human right vital for the dignity and health of all people.

According to the *WHO/UNICEF Joint Monitoring Programme for Water Supply, Sanitation and Hygiene*, 96% of Europeans (on average) had access to drinking water facilities in 2020. However, this figure varies considerably in different European cities (from 57.7% to 100%) (Our World in Data 2020).

In 2020, the European Parliament formally adopted the revised Drinking Water Directive, regulating the quality of water intended for human consumption. Its objective is to protect human health from the adverse effects of any contamination of water intended for human consumption and to ensure better and safer access to water for all Europeans, particularly for vulnerable and marginalised groups. The Directive introduces the obligation for Member States to improve or maintain access to safe drinking water for all and also envisages better access to information for the general public regarding water suppliers (The European Parliament and the Council of the European Union 2020).

Comments / Limitations

- The 2016 Eurostat City Statistics Database for this indicator only includes data points for the following countries: BE, DE, FR, HR, HU, RO and SI.
- The database does not differentiate between improved; managed; and basic water drinking system. According to WHO:
 - Improved drinking water sources include: piped water, boreholes or tube wells, protected dug wells, protected springs, rainwater, and packaged or delivered water (WHO 2021b).
 - Basic drinking water services: the population that drinks water from an improved source, provided collection time is not more than 30 minutes for a round trip (WHO 2021a).
 - Managed drinking water services: the population drinking water from an improved source that is accessible on premises, available when needed and free from faecal and priority chemical contamination (WHO 2021c).

Metadata

Source:

Eurostat, City Statistics Database, (data collected from national statistics). Table: urb_cenv, code en3012v

Hyperlink (availability of API):

https://ec.europa.eu/eurostat/databrowser/view/URB_CENV__custom_1618108/default/table?lang=en (API yes)

Visualisation:

https://ec.europa.eu/eurostat/databrowser/view/URB_CENV__custom_1618108/default/map?lang=en

Availability and geographical coverage:

288 cities and greater cities in 2016 in EU-27 plus Norway, Switzerland, United Kingdom and Turkey

Unit of measurement:

Share

Level of aggregation:

City and greater city

Time coverage and frequency:

1989-2020. Data collected every year



LINK TO OTHER SDGs

3 GOOD HEALTH AND
WELL-BEING

14 LIFE BELOW WATER

ALIGNMENT

UN list
EU list



GEOGRAPHICAL COVERAGE

EU-27 PLUS OTHERS

SDG TARGET/S

**6.3 (improve water
quality)**

AVAILABILITY

654

AGGLOMERATIONS

SOURCE

**European Environment
Agency (EEA)**

WASTEWATER SAFELY TREATED

Definition of the indicator

The indicator provides information on the shares of load generated in big cities or large discharge areas receiving particular types of wastewater treatment.

It is calculated based on measured or estimated data reported by MS under the Urban Waste Water Treatment Directive (UWWTD) (EEC 1991) reporting obligations (EEA 2019c).

The dataset is expressed in population equivalent (p.e.), and the share of safely treated water must be calculated taking into account the following categories: individual or other appropriate systems (IAS), primary treatment, secondary treatment, and more stringent treatment forms (NP-removal, N-Removal, P-Removal, Other treatment).

Data are harmonised by the EEA and provided at agglomeration level.

European context

Waste water from households and industry use is putting immense pressure on the aquatic ecosystem and environment due to the organic matter and nutrients it contains. Waste water treatment is therefore paramount for both human health and environmental quality. Recent challenges related to climate change, and the need to treat waste water in highly concentrated urban and remote rural areas against new pollutants have increased the pressure on the existing infrastructure and highlighted the need for new treatment facilities able to contribute more to the circular economy (e.g. through energy generation, water reuse and material recycling).

To this end, the EC developed the UWWTD aimed at protecting surface waters from the adverse effects of waste water discharges. Thanks to its implementation at Member State level, the EU managed to considerably reduce organic matter and other pollution in treated waste water and improve water quality all over the EU. The proportion of households connected to waste water treatment facilities varies largely across Europe (from 97% in western and central Europe to 70% in eastern and south-eastern EU countries) (The European Federation of National Associations of Water Services 2017). The EEA estimates that approximately 30 million people are not connected to waste water treatment plants in Europe (EEA 2021e).

Comments / Limitations

- Data are provided at the level of big cities/big dischargers. Big cities are defined as agglomerations of > 150,000 p.e., which is not equivalent to the administrative boundaries of cities. For this reason, municipal records are also recommended as a data source for this indicator.
- The dataset distinguishes between the following classes of treatment (pathways of waste water): not collected or addressed via Individual Appropriate Systems (IAS), collected in collecting system without treatment, addressed through individual or other appropriate systems (IAS), primary treatment, secondary treatment, and more stringent treatment forms (NP-removal, N-Removal, P-Removal, Other treatment).
- Primary (mechanical) treatment removes some of the suspended solids, while secondary (biological) treatment uses aerobic or anaerobic microorganisms to decompose most of the organic matter and retain some of the nutrients (around 20-30%). Tertiary (advanced) treatment removes organic matter even more efficiently. It generally includes phosphorus retention and, in some cases, nitrogen removal. Tertiary treatment includes the application of secondary treatment. Primary treatment alone removes no ammonium, whereas secondary (biological) treatment removes around 75% of ammonium.
- This indicator should be complemented with information concerning the agglomerations on the progress (EU funds) for implementation of the Urban Waste Water Treatment (UWWT) directive (EEA 2019b).
- Further details on the indicator and methodological insights are available at (EEA 2019).

Metadata

Source:

European Environment Agency (EEA)

Hyperlink (availability of API):

<https://europa.eu/!Gb7MW9> (API yes)

Visualisation:

<https://europa.eu/!qmBnyM>

Availability and geographical coverage:

654 agglomerations in 2018 in EU-27 plus Iceland, Norway, Switzerland and United Kingdom

Unit of measurement:

Share

Level of aggregation:

Agglomeration

Time coverage and frequency:

2013, 2014, 2016, 2018. Data collected every two years



LINK TO OTHER SDGs

3 GOOD HEALTH AND
WELL-BEING

ALIGNMENT

UN list
EU list



GEOGRAPHICAL COVERAGE

EU-27 PLUS OTHERS

SDG TARGET/S

**6.4 (increase water-
use efficiency)**

AVAILABILITY

124

**CITIES AND GREATER
CITIES**

SOURCE

**Eurostat, City
Statistics database**

TOTAL USE OF WATER

Definition of the indicator

The indicator measures water use (or consumption) in cubic meters per year in the area of interest. Water use refers to water that is used by end users for a specific purpose within a city, i.e. for domestic use, irrigation or industrial processing.

Water use covers abstracted water, which is no longer available for use because it has evaporated, transpired, been incorporated into products and crops, consumed by man or livestock, discharged directly to the sea, or otherwise removed from freshwater resources.

This indicator does not cover returned water (water abstracted from any freshwater source and discharged into freshwater without use, or before use) and water losses due to leakages during the transport of water between the point(s) of abstraction and the point(s) of use.

Data harmonised by Eurostat is sourced from cities and greater cities statistics and are provided at city level.

European context

According to the European Environment Agency (EEA), a shortage of water may be the most urgent health problem of some European countries as approximately 30% of Europe's population is affected by water stress (i.e. water scarcity and shortage) in an average year (EEA 2009).

The inefficient use of water due to, among others, network leakage and inappropriate irrigation appears to be a significant problem for Europe as a whole, while the agricultural sector in particular accounts for about 55% of consumptive water use. The situation is expected to worsen as climate change is increasing the frequency, magnitude, and impact of droughts. Overall, Europe needs to use water more efficiently to minimise the impact of water stress on people and the environment. Despite policies and regulations at European level that are in place to address water use, their implementation and effectiveness require improvement (EEA 2021g).

Comments / Limitations

- The 2018 Eurostat City Statistics Database for this indicator includes data points for the following countries: BE, EE, HR, LV, LT, HU, PL, RO, SI, SK and FI.
- The database does not differentiate between different water uses that would allow for more targeted interventions and policies at local level (e.g. household consumption, pricing, etc.).

Metadata

Source:

Eurostat, City Statistics Database, (data collected from national statistics). Table: urb_cenv, code n3003v

Hyperlink (availability of API):

https://ec.europa.eu/eurostat/databrowser/view/URB_CENV__custom_1728090/default/table?lang=en (API yes)

Visualisation:

https://ec.europa.eu/eurostat/databrowser/view/URB_CENV__custom_1728090/default/map?lang=en

Availability and geographical coverage:

124 cities and greater cities in 2018 in EU-27 plus Norway, Switzerland, United Kingdom and Turkey

Unit of measurement:

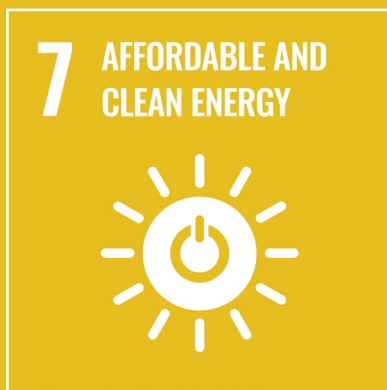
Number

Level of aggregation:

City and greater city

Time coverage and frequency:

1989-2020. Data collected every year



GOAL 7

**ENSURE ACCESS TO
AFFORDABLE, RELIABLE,
SUSTAINABLE AND MODERN
ENERGY FOR ALL**

Description of the Goal

Goal 7 calls for energy to become more sustainable and widely available, energy efficiency to be improved, and the share of renewable energy in the energy mix to be substantially increased. The Goal acknowledges that mankind's current reliance on fossil fuels is unsustainable and harmful to the planet, therefore the way in which energy is produced and consumed needs to change. The implementation of this transition to sustainable energy is paramount for addressing climate change; in doing so, it is imperative to leave no one behind and to ensure access to quality and affordable energy services for marginalised populations.

European dimension

In an EU context, Goal 7 focuses on energy consumption and supply, and access to affordable energy.

Increasing the energy efficiency of the EU economy is one of the main pillars for reaching an affordable, reliable, sustainable and modern energy system. The EU is not on track to meet its 2030 energy efficiency target as since 2014, energy consumption in Europe has been constantly growing, with the exception of 2020.

In terms of energy supply, the share of renewable energy in the gross final energy consumption has continued to rise (it doubled between 2004 and 2019 reaching 19.7%). Yet, at the current pace, the EU will not manage to meet its target of a 32% share of renewable energy by 2030. Nevertheless, the share of renewable energy has grown in all main sectors: electricity, heating and cooling, and transport (Eurostat 2021o).

The EU has made significant progress in improving access to affordable energy in recent years. In 2019, 6.9% of Europeans (compared to 10.4% in 2014) were unable to keep their houses adequately warm. As this inability mostly affected people below the poverty threshold (one out of five suffering from energy poverty), much remains to be done in this direction.

In response to these issues, in 2019 the EC launched the “European Green Deal” with the goal of reaching zero net emissions of GHG by 2050 and reducing emissions by at least 55% by 2030 (compared to 1990 levels).

Some related European policies and legislations

Regulation on the Governance of the Energy Union and Climate Action (2021)

Recommendations on Energy Poverty (2020)

A Renovation Wave for Europe—greening our buildings, creating jobs, improving lives (2020)

European Green Deal (2019)

Energy Performance of Buildings Directive (2018)

Local dimension

Although energy as a topic is subject to national strategies and regulations, meaningful measures can be undertaken at local level to achieve this Goal, such as: locally designed strategies to promote the reuse of goods; use of materials to reduce overall energy consumption; renovation of the worst energy performing buildings; provision of incentives for cleaner energy production systems and energy sharing. Also, the promotion of sustainable modes of transport is included among the practices that have proven to have a significant impact on the achievement of this Goal.

The inter-linkages between local factors, policy instruments available at urban level, and the local implementation of national legislation enhance the role of cities with respect to the overall approach to both energy consumption and production, leading to the behavioural shift, needed to achieve the ambitious goals for energy.

Three indicators address Goal 7:
two indicators deal with the ability to access energy services (Target 7.1)

one indicator focuses on the energy efficiency of dwellings (Target 7.3)



LINK TO OTHER SDGs

11 SUSTAINABLE CITIES
AND COMMUNITIES

13 CLIMATE ACTION

ALIGNMENT

UN list
EU list



GEOGRAPHICAL COVERAGE

FRANCE

SDG TARGET/S

7.1 (access to energies)

AVAILABILITY

ALL

**FRENCH
MUNICIPALITIES**

SOURCE

**Operators of Energy
Grids Agency**

ENERGY CONSUMPTION

Definition of the indicator

The indicator measures the annual consumption of electricity per municipality.

Since no harmonised data are available across Europe at local level, the case of France is presented as an example.

Data are sourced and filtered by the French operators of energy grids, disaggregated per sector of activity (agriculture, industry, third sector, residential, and unknown), and per delivery point, and provided at municipality level.

European context

The total energy consumed by end users (households, industry and agriculture) in the EU in 2020 amounted to 37,086PJ, 5.6% less than in 2019 and 10.5% less than in 2007. In 2020, oil and petroleum products accounted for the biggest share (35.0%) in the composition of final energy consumption, followed by electricity (23.2%), and natural gas (21.9%). In the same year, the share of solid fossil fuels in final energy consumption dropped to 2.1%, (down 0.7% compared to 2010), while renewable energy sources increased (reaching 11.8%, 3 points up from 2010). Sector-wise, transport was the biggest energy-consuming sector in 2020 followed by industry and households (Eurostat 2021b).

Several efforts have been made over the years by the EC to address the issues of energy consumption. Most notably, the 2015 *Energy Union Strategy* that aimed to build an energy union that provides secure, sustainable, competitive and affordable energy, while the more recent 2019 European Green Deal provided an action plan to boost the efficient use of resources by moving to a clean, circular economy, as well as to restore biodiversity and reduce pollution. The plan outlines the investments needed and financing tools available. In 2018, the EC also drew up the framework for achieving climate neutrality and proposed *the European Climate Law* to turn political commitments into legal obligations.

Comments / Limitations

- The dataset allows the analysis of energy consumption for both electricity and gas from 2011 to 2020, disaggregated per activity sector, thus informing the design of specific local policies towards the reduction of consumption, or the redistribution of the energy mix.
- For each sector, a “quality index” is presented, which measures the share of data that is derived from a survey (the complement is therefore the share of data that is the result of an estimate).
- Data on energy consumption in the professional sector differentiate between small professionals and businesses. As of 2020, in an effort to include more accurate data for residential sector consumption, data regarding energy consumption by small professional activities are excluded from the database.
- Further details on the indicator and methodological insights are available at (Ministère de la transition Écologique 2021).

Metadata

Source:

Operators of energy grids
Agency - *Agence ORE*
(Opérateurs de Réseaux
d'Énergie)

Hyperlink (availability of API):

<https://opendata.agenceore.fr/explore/dataset/conso-elec-gaz-annuelle-par-secteur-dactivite-agregee-commune/information/>

Visualisation:

<https://www.agenceore.fr/dataset/visualisation/donnees-locales-energie>

Availability and geographical coverage:

All French municipalities

Unit of measurement:

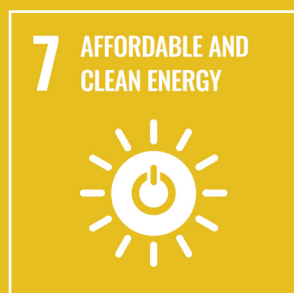
Number

Level of aggregation:

Municipality

Time coverage and frequency:

2011-2020. Data collected every year



LINK TO OTHER SDGs

1 NO POVERTY

ALIGNMENT

UN list

EU list



GEOGRAPHICAL COVERAGE

—

SDG TARGET/S

7.1 (access to energies)

AVAILABILITY

—

SOURCE

Own elaboration

(municipality)

INABILITY TO KEEP HOUSE ADEQUATELY WARM

Definition of the indicator

The indicator measures the share of households that cannot maintain their houses at an adequate temperature according to their own perception over the total number of households at local level.

Since no harmonised data are available across Europe at local level for this indicator, no database is proposed here as an example or source for use. Instead, information and data are derived from own municipal sources.

European context

Despite the absence of a common European definition of energy poverty, the extent of the problem and its severe impacts on health, living conditions and social aspects (such as social exclusion) are well recognised across EU countries.

According to the European Energy Poverty Advisory Hub (EPAH) approximately 34 million (8%) people in the EU were experiencing energy poverty to a variety of degrees (EPAH 2020).

Energy poverty can result from a combination of low income, high expenditure of the disposable household income on energy, and poor energy efficiency of buildings. It is closely linked to the housing affordability challenge and mainly strikes the most vulnerable population groups. Therefore, a just energy transition is a central issue to leave no one behind.

To this end, the EU has taken several measures to tackle energy poverty: in 2020 the European Commission adopted the Recommendations on Energy Poverty (European Commission 2020c) jointly with the Renovation wave package, to highlight the strong connection between energy poverty and the worst-performing buildings, and that a coordinated action might benefit both topics.

Acknowledging the issue at hand, in 2021 the EC launched the Energy Poverty Advisory Hub (EPAH) initiative which aims to address energy poverty and speed up the just energy transition of local governments (European Commission 2021e).

Comments / Limitations

- Data for this indicator are being collected as part of the European Union Statistics on Income and Living Conditions (EU-SILC) to monitor the development of poverty and social inclusion in the EU. The data collection is based on a survey, which means that indicator values are self-reported. A dataset at EU-27 level, with national breakdown, is available from Eurostat.
- The methodology suggested for collecting data for this indicator should be consistent with the methodology developed by Energy Poverty Observatory (EPOV) and published in the EPOV Methodology Guidebook (Thema and Vondung 2020).
- Eurostat and the EPOV have jointly developed a set of indicators for Member States to describe and monitor energy poverty. The indicator “Share of total population not able to keep their home adequately warm”, based on the question ‘Can your household afford to keep its home adequately warm?’, forms part of this set, and is monitored by Eurostat at EU level through the EU-SILC survey on income and living conditions.
- The full list of energy poverty indicators that Member States should measure and report in their energy poverty assessments is available at: (European Commission 2020c).
- This indicator has been monitored at local level by the city of Barcelona; more details on the methodology are available at: (Tirado Herrero 2018).
- The indicator would benefit from being further disaggregated by aspects such as tenure status (owner, rented at market rate, reduced, free rent), degree of urbanisation and dwelling type (detached, semi-detached, multi-family, other).

Metadata

Source:

Own elaboration (municipality)

Hyperlink (availability of API):

-

Visualisation: -

Availability and geographical coverage: -

Unit of measurement:

Share

Level of aggregation:

Municipality

Time coverage and frequency:

-



LINK TO OTHER SDGs

1 NO POVERTY

13 CLIMATE ACTION

ALIGNMENT

UN list
EU list

GEOGRAPHICAL COVERAGE

—

SDG TARGET/S

7.3 (energy efficiency)

AVAILABILITY

—

SOURCE

Own elaboration
(municipality)

DWELLINGS WITH WORST ENERGY PERFORMANCES

Definition of the indicator

The indicator measures the number of dwellings with worst energy performances, i.e. in energy classes G, and lower (H and I) if applicable.

Energy classes describe the energy performance of dwellings (all buildings and building units), and can range from class A+++ to I, depending on the energy label system defined by each Member State. Class G, and lower (H and I) if applicable, include the 15% worst performing buildings in the national building stock. Energy classes are attested by energy certificates for all dwellings constructed, sold, or rented out to a new tenant, and for public buildings above 250m².

Since no harmonised data are available across Europe at the local level for this indicator, no database is proposed here as example or source for use. Instead, information and data are derived upon own municipal sources.

European context

In Europe, buildings are responsible for about 40% of the total energy consumption, and for 36% of the energy-related greenhouse gas emissions, being the single largest energy consumer in Europe (European Commission 2020j). Since 85%-95% of the existing building stock is expected to still be standing in 2050, the renovation and improvement of the energy efficiency of existing buildings is crucial, in order to meet the 2030 and 2050 commitments on emission reductions and decarbonisation.

To this end, Member States were required by the 2010 Energy Performance of Buildings Directive (EPBD) to define a methodology for calculating energy performance and issue corresponding certificates (European Commission 2010).

In 2018, the Directive amending the EPBD added the obligation for MS to specifically target the worst performing segment of the national building stock by establishing national long-term renovation strategies supported by financial measures, monitoring indicators, as well as specific policies and measures (European Commission 2018a). This focus has been strengthened by the Renovation Wave strategy, as part of the European Green Deal, with the primary objective to at least double the annual energy renovation rate of buildings by 2030 across the EU (European Commission 2020j).

Comments / Limitations

- Data for this indicator can be retrieved from different sources, such as the local cadastre or property search websites.
- Data at national level are available in the EU Building Stock Observatory, while some MS and local authorities collect and keep specific datasets of building energy certificates (e.g. the BER dataset in Ireland, the public Energy Performance Certificate dataset in the Netherlands, or the SIAPE dataset in Italy).
- The indicator aligns with the 2022 proposal for the revision of the EPBD and assumes that 15% of the worst performing buildings of the national building stock will be included in the G class or lower.
- To ensure comparability across the EU, by 2025 all energy performance certificates must be based on a harmonised scale of energy performance classes, according to the 2021 proposal for the EPBD revision. This will simplify and consolidate the use of the proposed indicator.

Metadata

Source:

Own elaboration (municipality)

Hyperlink (availability of API):

-

Visualisation: -

Availability and geographical coverage: -

Unit of measurement:

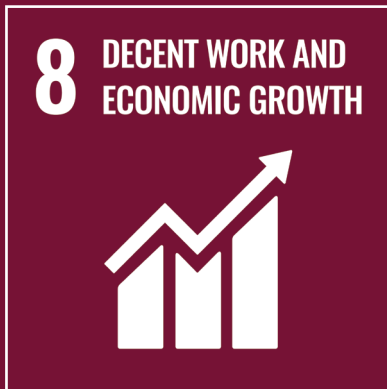
Number

Level of aggregation:

All dwellings (buildings or building units) constructed, sold, or rented out to a new tenant, and for public buildings above 250m²

Time coverage and frequency:

-



GOAL 8

**PROMOTE SUSTAINED,
INCLUSIVE AND
SUSTAINABLE ECONOMIC
GROWTH, FULL AND
PRODUCTIVE EMPLOYMENT
AND DECENT WORK FOR ALL**

Description of the Goal

The aim of this Goal is to increase employment opportunities, labour productivity, access to banking, insurance and financial services for all and foster entrepreneurship, by decoupling economic growth from environmental degradation.

In a global economy that is still recovering from past crises, this Goal aims to bridge the widening inequalities associated with imbalanced growth and address the fact that employment is not expanding sufficiently to keep up with the growing labour force. However, the Goal acknowledges the need to provide opportunities for decent work for all while eradicating forced and child labour, and promoting safe, secure and inclusive working environments.

European dimension

In the EU context, Goal 8 focuses on sustainable economic growth, employment and decent work.

According to Eurostat 2021, the indicators selected to monitor this Goal show that over the past few years European countries have been making some progress, such as in terms of increase in real GDP (from 24,900 in 2010 to 28,070 euro per capita in 2019), employment rate (from 69.1% in 2015 to 72.4% in 2020) and a reduction in the long-term unemployment rate (from 5% in 2015 to 2.5% in 2020), in the number of people killed in accidents at work (from 2.01% in 2015 to 1.74 in 2019) and of young people neither in employment nor in education and training (from 15.2% in 2015 to 13.7% in 2020) (Eurostat 2021c).

In addition, in 2020 COVID-19 caused a contraction of real GDP (from 28,070 in 2019 to 26,380 euro per capita in 2021), far higher than the previous contraction caused by the 2009 crisis. During the Coronavirus pandemic the employment rate also fell from 72.7% in 2019 to 71.7% in 2020, especially among women, the self-employed, the young and temporary workers (OECD 2020c).

Instead, unlike the 2009 crisis where a decline was observed in both labour productivity per person and per hour worked, in 2020 although labour productivity per person dropped sharply, labour productivity per hour worked continued to grow. This was the result of support schemes put in place in several European countries (Eurostat 2022).

The COVID-19 pandemic also stimulated a steep increase in teleworking (Milasi et al, 2020), and in general, more flexible working schemes (Eurostat 2021b).

Local dimension

Local authorities can play an important role in achieving Goal 8 by mobilising resources, facilitating local partnerships, building networks and a supportive environment for entrepreneurs, business start-ups and job seekers.

Other significant contributions of local authorities might relate to the implementation at local level of measures that improve education and communication activities for informing the public about the services available at local level that might support employment. Furthermore, cities can incentivise the provision of secure and inclusive working environments and equal conditions for all.

Cities have also taken the lead in the creation of networks to fight climate change. Some of the best-known examples are: the “C40 cities”, which connects 94 of the world’s megacities committed to addressing climate change; the Covenant of Mayors initiative that mobilises local governments and regions to make voluntary climate commitments that help achieve emission-reduction targets within and outside the EU and to increase the climate resilience of European economies and societies.

Some related European policies and legislations

Just Transition Mechanism (2021)

European Social Fund Plus (2021)

NextGenerationEU (2018)

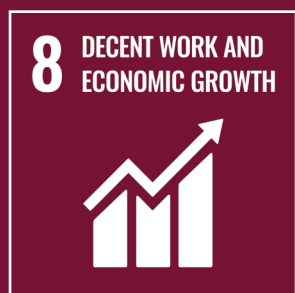
Six indicators address Goal 8 (all at city level):

one indicator addresses economic growth (Target 8.1)

one indicator touches on economic productivity (Target 8.2)

two indicators focus on aspects of productive employment (Target 8.5)

two indicators deal with safe and secure working environments and labour rights (Target 8.8)



LINK TO OTHER SDGs

1 NO POVERTY**10** REDUCED INEQUALITIES

ALIGNMENT

UN list
EU list


GEOGRAPHICAL COVERAGE

**OECD countries plus
others**

SDG TARGET/S

**8.1 (economic
growth)**

AVAILABILITY

633
FUNCTIONAL URBAN AREAS

SOURCE

**Organisation for
Economic Cooperation
and Development
(OECD),
Metropolitan database**

GROSS DOMESTIC PRODUCT (GDP) PER CAPITA

Definition of the indicator

The indicator measures the Gross Domestic Product (GDP) per capita which is measured as the ratio between the GDP and the population. It is expressed in USD, at constant purchasing power parity prices (PPP), with reference year 2015.

GDP is the “standard measure of the value added created through the production of goods and services in a country during a certain period. As such it also measures the income earned from that production, or the total amount spent on final goods and services less imports” (OECD, 2020).

Data are harmonised by the OECD and provided at functional urban area level.

European context

In the period 2015–2019 the Real GDP per capita always increased in the EU-27. While in 2020 there was a decrease, also due to the pandemic. The recovery has started but the level of GDP per capita has not yet returned to the level of the pre-crisis period.

The European countries with the highest change in Real GDP per capita in the 2015–2020 period were Ireland (did not experience any decrease in 2020), Romania, Lithuania, Poland and Estonia. While those with a decrease were Italy, Greece, France, Spain and Belgium.

Comments / Limitations

- GDP per capita at metropolitan level is estimated using the GDP per capita per NUTS3 regions and the distribution of population based on the Global Human Settlements Layer (GHSL) population grid. For some non-European countries (Australia, Canada, Colombia, Mexico and Chile), GDP per capita is derived from large regions (TL2). In the United-States, county-level data are aggregated at metropolitan area level. More details on the methodology are available in the Metropolitan database's metadata (OECD 2022).
- The 2018 database includes 259 data entries for FUAs across EU-27 countries that are also members of the OECD.
- In the 2015-2018 period, 250 FUAs in EU-27 registered an increase in their GDP per capita, while 9 FUAs experienced a decrease. The FUAs that experienced the highest increase in GDP per capita were Floresti, Schitu Duca and Simnicu De Sus, all in Romania. On the contrary, Groningen (NL) and Ingolstradt (DE) experienced the highest decreases.
- The contribution of large companies to GDP is often recorded in the region where the headquarters are located. This may artificially inflate the GDP (and therefore labour productivity) of those regions and FUAs.

Metadata

Source:

OECD, Metropolitan database, variable 'GDP per capita'

Hyperlink (availability of API):

<https://stats.oecd.org/Index.aspx?DataSetCode=CITIES#>
(API yes)

Visualisation:

https://regions-cities-atlas.oecd.org/FUA/x/x/GDP_PC_RE-AL_PPP/2018

Availability and geographical coverage:

633 FUAs in 2018 in OECD countries and other European countries (Bulgaria, Romania, Croatia and Malta)

Unit of measurement:

Number

Level of aggregation:

Functional Urban Area

Time coverage and frequency:

2000-2019. Data collected every year



LINK TO OTHER SDGs

1 NO POVERTY**10** REDUCED INEQUALITIES

ALIGNMENT

UN list
EU list


GEOGRAPHICAL COVERAGE

**OECD countries plus
others**

SDG TARGET/S

**8.1 (economic
growth)**

AVAILABILITY

613

FUNCTIONAL URBAN AREAS

SOURCE

**Organisation for
Economic Cooperation
and Development
(OECD),
Metropolitan database**

LABOUR PRODUCTIVITY

Definition of the indicator

The indicator measures labour productivity, which is defined as the 'GDP per worker' or as the value added per employed person in US Dollars purchasing power parity (PPP).

The term 'employed' does not distinguish between full-time and part-time employment. To make comparisons across countries possible, labour productivity is converted into USD at purchasing power parity (PPP), base year 2015.

Data are harmonised by the OECD and provided at functional urban area level.

European context

In the Real labour productivity per capita in the EU-27 grew in the period 2012-2019 (from 97,699 in 2012 to 103,241 in 2019), while it dropped in 2020 (98,526) due to the COVID-19 pandemic. In 2021, labour productivity almost recovered to pre-pandemic levels (102,595) and was even higher in Bulgaria, Denmark, Estonia, Ireland, Croatia, Latvia, Lithuania, Hungary, Poland, Romania, Slovenia, Slovakia, Finland and Sweden.

Comments / Limitations

- Labour productivity at metropolitan level is estimated using GDP and the number of people employed per NUTS3 regions. For some non-European countries (Australia, Canada, Colombia, Mexico and Chile), GDP is derived from large regions (TL2). Metropolitan-level employment is also estimated from large regions (TL2) for some countries (France, Greece, Chile, Netherlands, Canada, Finland, Portugal, Japan, Colombia, Poland, Turkey, Romania, Bulgaria, Croatia and Malta). In the United-States, county-level GDP and employment are aggregated at the metropolitan area level. For comparability across countries, and given the high number of part-time jobs in the US, productivity of US metropolitan areas is calculated using the employment at place of residence. More details on the methodology of calculation of this indicator are provided in the Metropolitan database's metadata (OECD 2022).
- The 2018 database includes 254 data entries for FUAs across EU-27 countries that are also members of the OECD.
- For the 2015-2018 period, data are available for 239 FUAs. 191 FUAs in EU-27 registered an increase in their labour productivity, while 48 FUAs experienced a decrease. The FUAs that experienced the highest increase in labour productivity were Floresti, Schitu Duca and Sinpetru in Romania. On the contrary, Groningen (NL) and Warsaw (PL) experienced the highest decreases.
- In cases where the contribution to GDP of forms of work other than dependent employment and self-employment are expected to be significant, such as in the case of volunteer work, the exclusion of time-spent in these productive activities may lead to the overestimation of labour productivity.

Metadata

Source:

OECD, Metropolitan database, variable 'labour productivity'

Hyperlink (availability of API):

[https://stats.oecd.org/Index.aspx?DataSetCode=CITIES#\(APIyes\)](https://stats.oecd.org/Index.aspx?DataSetCode=CITIES#(APIyes))

Visualisation:

https://regions-cities-atlas.oecd.org/FUA/x/x/GDP_PW_REAL_PPP/2018

Availability and geographical coverage:

613 FUAs in 2018 in OECD and other European countries (Bulgaria, Romania, Croatia and Malta)

Unit of measurement:

Number

Level of aggregation:

Functional Urban Area

Time coverage and frequency:

2000-2019. Data collected every year



LINK TO OTHER SDGs

1 NO POVERTY

10 REDUCED INEQUALITIES

ALIGNMENT

UN list
EU list

GEOGRAPHICAL COVERAGE

EU-27 PLUS OTHERS

SDG TARGET/S

8.5 (productive
employment)

AVAILABILITY

628

CITIES AND GREATER
CITIES

SOURCE

Eurostat, City
Statistics database

UNEMPLOYMENT RATE

Definition of the indicator

The indicator measures the rate of unemployment, which is defined as the number of people who are unemployed over the total labour force (ILO 2019).

An unemployed person is defined by Eurostat (Eurostat 2010) as someone aged 15 to 74 (in Italy, Spain, the United Kingdom, Iceland, Norway: 16 to 74 years):

- Without work during the reference week.
- Available to start work within two weeks (or who has already found a job to start within the next three months).
- Who has actively searched for employment at some time during the last four weeks.

The labour force includes both employed (employees and self-employed) and unemployed people, excluding the economically inactive, such as pre-school children, school children, students and pensioners.

Data harmonised by Eurostat are sourced from city and greater city statistics and provided at city level.

European context

According to Eurostat 2021, after a continuously decreasing trend in unemployment in the EU-27 since 2013, in 2020 the unemployment rate increased due also to the COVID-19 pandemic. The rate moderately declined again in 2021, but did not reach pre-COVID levels. The countries with the highest unemployment rate in the population group from 15-74 in 2021 were Spain (14.8), Greece (14.7) and Italy (9.5).

Youth unemployment (people aged 15-24) and the unemployment of Non-EU born workers increased the most (Eurostat 2021c).

In 2020, the EU and its Member States introduced support measures to mitigate the economic and social impact of the crisis and enhance recovery. The Temporary Support to mitigate Unemployment Risks in an Emergency (SURE) was one such measure. The SURE supported Member States protecting employees and the self-employed against the risk of unemployment and loss of income due to the pandemic.

In addition, the European Commission recommendation for Effective Active Support to Employment promotes coherent policy packages to support labour market transitions following the COVID-19 crisis. These should be composed, according to the recommendation, of three components: i) hiring and transition incentives and entrepreneurship support, ii) upskilling and reskilling opportunities and support measures, and iii) enhanced support from employment services for job transitions.

Comments / Limitations

- The 2018 Eurostat City Statistics Database for this indicator only includes data points for the following countries: BE, BG, CH, EE, FIHR, LT, LVMT, SE, SI and UK.
- There are 196 cities and greater cities for which information is available over the 2015-2019 period. Among these, the only city that experienced an increase in the unemployment rate was Klaipeda (LT). While the cities that experienced the highest decreases were all in Bulgaria: Stara Zagora, Rusem and Burgas.
- In 2018, the highest unemployment rate was observed in Charleroi (BE) and Narva (EE).
- Several local databases are available for this indicator. Two examples are Porto and Seville, whose databases also include information on the youth unemployment rate.
- Where possible, this indicator should be disaggregated by gender, education level, country of origin and disability.
- The overall unemployment rate for a country is a widely used measure of its unutilised labour supply. However, other measures also need to be considered to assess the efficiency and effectiveness of an economy:
 - Long-term unemployment: the number of people unemployed for one year or longer as a percentage of the labour force (or as a percentage of the number of unemployed people).
 - Time-related labour underutilisation: this refers to people employed for a very limited number of hours.
 - Working poverty: persons that are living in households with consumption or income per capita below the poverty line despite being employed.
 - Informal work: where labour markets are not efficient and effective and safety nets are not satisfactory, individuals may engage in informal employment.
- The legal basis for the Labour Force Survey has changed and, since the beginning of 2021, new Regulations apply, with consequences for data availability. For example, a proxy for the indicator “Unemployed jobseekers with disabilities and long-term illnesses” could be available every second year (starting from the reference year 2022) from the Labour Force Survey (LFS), using the new LFS variable on the limitations in activities (GALI).

Metadata

Source:

Eurostat, City Statistics database (data collected from national statistics). Table: urb_clma, Code: ec1020i

Hyperlink (availability of API):

https://ec.europa.eu/eurostat/databrowser/view/URB_CL-MA__custom_2533732/default/table?lang=en

Visualisation:

https://ec.europa.eu/eurostat/databrowser/view/URB_CL-MA__custom_2533732/default/map?lang=en

Availability and geographical coverage:

628 cities and greater cities in 2018 in EU-27 plus Switzerland, Norway, United Kingdom and Turkey

Unit of measurement:

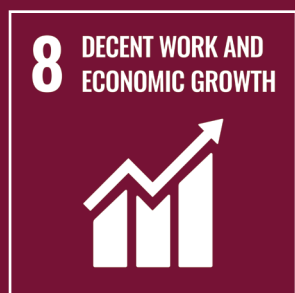
Rate

Level of aggregation:

City and Greater City

Time coverage and frequency:

1989-2020. Data collected every year



LINK TO OTHER SDGs

10 REDUCED INEQUALITIES

ALIGNMENT

UN list
EU list


GEOGRAPHICAL COVERAGE

GERMANY

SDG TARGET/S

8.8 (labour rights)

AVAILABILITY

All
**GERMAN CITIES OVER
5,000 INHABITANTS**

SOURCE

**Federal Employment
Agency, State Statistical
Offices**
FOREIGN EMPLOYMENT**Definition of the indicator**

The indicator measures the employment of foreign nationals compared to that of the total population.

Employment is considered between the ages of 15 and 64 years old for all employees subject to social insurance in the place of residence.

Since no harmonised data are available across Europe at local level, the case of Germany is presented as an example.

Data are sourced from and harmonised by the Federal Employment Agency, State Statistical Offices and provided at city level (for cities over 5,000 inhabitants).

European context

For the 18 European countries for which data was available in the last quarter of 2021 for the individuals in the 15-64 age cohorts, the rate of employment of nationals was lower than that of foreigners coming from other EU countries and higher than the employment rate of non-EU nationals. In the same period, Belgium, France and Sweden had the lowest employment rates for non-EU-27 individuals, while Italy, Spain and Belgium the lowest employment rates for EU-27 nationals, except, in both cases, those born in the reporting country. The employment rate varies considerably when looking at the intersection of countries by origin and gender (e.g. the gender employment gap is higher for non EU-27 nationals), and also by country of origin and educational attainment level.

The reasons for gaps in the integration mostly relate to lagging behind in education, language barriers, discrimination, mismatching jobs and over-qualifications in the case of highly educated migrants. While policies for migrants' integration in the labour market are usually coordinated at national level, municipalities might also favour the integration of migrants into the labour market e.g. through initiatives aimed at fighting discrimination in the local labour market, language training, skills assessments and guidance, mentoring and placement services, supporting auto- entrepreneurship and providing vocational education and training (Hooper et al, 2017).

Comments / Limitations

- Data available for the Labour Force Survey at country level are disaggregated by age cohorts, gender, country of origin citizenship and educational attainment level.

Metadata

Source:

Federal Employment Agency,
State Statistical Offices- Bundesagentur für Arbeit, Statistische Ämter der Länder

For simplicity, data are centralised and presented at the German SDG Portal.

Hyperlink (availability of API):

<https://sdg-portal.de/de/sdg-indikatoren> (API yes)

Visualisation:

-

Availability and geographical coverage:

All German cities over 5,000 inhabitants

Unit of measurement:

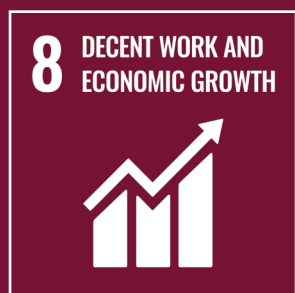
Share

Level of aggregation:

City

Time coverage and frequency:

2015-2018



LINK TO OTHER SDGs

3 GOOD HEALTH AND
WELL-BEING

ALIGNMENT

UN list
EU list



GEOGRAPHICAL COVERAGE

POLAND

SDG TARGET/S

**8.8 (safe and
secure working
environments)**

AVAILABILITY

All

POLISH DISTRICTS

SOURCE

Statistics Poland

ACCIDENTS AT WORK

Definition of the indicator

The indicator measures the number of serious (resulting in more than 4 days of absence from work) and fatal accidents that occur while an individual is engaged in an occupational activity or during the time spent at work, which leads to physical or mental harm.

Since no harmonised data are available across Europe at local level, the case of Poland is presented as an example. Poland provides the information for the European Statistics on Accidents at Work (ESAW) data collection following the ESAW methodology (European Union 2013).

Data are sourced from Polish Labour Market surveys, filtered by Statistics Poland and offered at district level.

European context

According to the definition of ESAW, accidents are divided in two categories: non-fatal, or serious accidents (implying at least 4 full calendar days of absence from work and not leading to the death of the victim) and fatal (leading to the death of a victim within one year of the accident) (European Union 2013).

In 2019, 3.1 million non-fatal accidents were registered in EU-27 (as compared to 3,408 fatal accidents), on a ratio of approximately 920 non-fatal accidents for every fatal accident. There was a 0.5% increase between 2018 and 2019 in the total number of non-fatal accidents at work. Men are in general more prone to both fatal and non-fatal accidents at work than women. In 2019, more than two out of every three (68.3 %) non-fatal accidents at work in the EU involved men.

Factors that influence these statistics are: the proportion of men and women who are in employment; the different types of work that men and women carry out; the activities in which they work; and the amount of time spent at work (Eurostat Statistics Explained, 2022).

Comments / Limitations

- The database is further disaggregated by sex (men, women), age (including those under 18 years old), severity of accident (non-fatal, fatal and by severity groups), economic sector, occupation, causes and circumstances of the accidents at work. Indicators related to accidents at work are expressed in absolute numbers, percentages, incidence rates (expressed as number of accidents per 100,000 thousands workers) or standardised incidence rates.
- The database does not disaggregate by type of accident, workplace and classification of economic activity.
- According to the Framework Directive 89/391/EEC, in Europe, each employer has the obligation to keep a list of occupational accidents resulting in a worker being unfit for work for more than three days (Council of the European Union 2018).
- Reliable statistical information on accidents at work is crucial to introduce suitable policy measures to limit accidents and promote a safe working environment.
- It is noted that a declining number of accidents at work might be a result of declining employment (particularly in hazardous occupations) and should therefore be examined in conjunction with the employment rate.

Metadata

Source:

Statistics Poland, Category K4, Group G13, Subgroup P2276, ID 74034

Hyperlink (availability of API):

<https://bdl.stat.gov.pl/bdl/dane/podgrup/wymiary> (API yes)

Visualisation:

–

Availability and geographical coverage:

All Polish districts

Unit of measurement:

Number

Level of aggregation:

District

Time coverage and frequency:

2002-2020. Data collected every year

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE



GOAL 9

BUILD RESILIENT INFRASTRUCTURE, PROMOTE INCLUSIVE AND SUSTAINABLE INDUSTRIALIZATION AND FOSTER INNOVATION

Description of the Goal

This Goal calls for the development of resilient, high-quality, reliable and sustainable infrastructure, the promotion of inclusive and sustainable industrialisation and the fostering of innovation, in order to support the universal economic prosperity, job-creation, well-being and environmental sustainability.

The goal has clear interlinkages with other SDGs: on the one hand, industrialisation and infrastructural progress are related to SDG8 (decent work and economic growth) and SDG11 (sustainable cities and communities), while innovation and technological progress can help achieve the objectives of SDG2 (zero hunger), SDG6 (clean water and sanitation) and SDG7 (affordable and clean energy).

The COVID-19 pandemic has revealed the universal need for global manufacturing and resilient infrastructure, as both are considered central to economic growth. However, the pandemic also accelerated the digitalisation of many businesses and services, and as it will continuously reshape the way people cover their basic educational, recreational and professional needs, the issue of digital divide becomes even more central. Goal 9 explicitly targets universal access to ICT and the Internet. In addition, climate change induced natural hazards and disasters will increasingly place stress on infrastructure; the need to safeguard infrastructure against such events is therefore central to uninterrupted sustainable development.

European dimension

In the EU context, Goal 9 focuses on the green and digital transformation of infrastructure, industrialisation and R&D efforts.

The EC has developed dedicated policy measures, most recently through the European Green Deal, in order to accelerate the shift to sustainable and smart mobility as well as ensure investments in digitalisation to support the ecological transition among others (European Commission 2019d).

A modern and sustainable European transport infrastructure and service system is fundamental for the future development of the EU. While European cities are connected by one of the world's best transport systems, mobility within cities can still be difficult and inefficient. For this reason, several initiatives promoted by the EC aim to enhance mobility while reducing congestion, accidents and pollution in European cities.

Industry is also at the heart of the EC political priorities supporting cities to develop and implement strategic plans to become more productive, innovative and improve urban life with several initiatives and measures. However, the increased intensity of industrialisation brings several environmental pressures that require the industry to become cleaner and more circular.

Regarding innovation, the EU is facing increasing global competition. To remain competitive with other regions, it will need to strengthen its scientific and technological capacity and resources. Nevertheless, despite the 3% of Gross Domestic Expenditure target for R&D, the EU has only shown modest growth over the past 20 years, reaching 2.2% in 2019 (Eurostat 2021p).

Local dimension

With over 70% of the European population living in cities, transportation, new industries and ICT are becoming ever more important. To this end, cities have an important role to play, among others by locally implementing new R&D strategies, providing infrastructure and services, strengthening competitiveness, channelling and sharing resources to companies and R&D organisations, and supporting the growth of new businesses.

The sustainable and inclusive industrialisation of cities provide opportunities for developing synergies, such as decoupling economic growth from environmental degradation, while at the same time creating employment and fostering clean energy innovation. For this Goal, most of the targets are usually measured at regional level and it may be hard to measure the city dimension.

Some related European policies and legislations

European Green Deal (2019)

Urban Mobility Package (2019)

EU Industrial Policy Strategy (2017)

Five indicators address Goal 9: (three at city level and two at regional level):

two indicators deal with transport and mobility (Target 9.1)

one indicator focuses on employment in specific industrial sectors (Target 9.2)

one indicator touches on issues of infrastructure (Target 9.1 and Target 9.4)

one indicators addresses the access to financial services (Target 9.3) and fostering innovation (Target 9.5)



LINK TO OTHER SDGs

11 SUSTAINABLE CITIES
AND COMMUNITIES

13 CLIMATE ACTION

ALIGNMENT

UN list
EU list



GEOGRAPHICAL COVERAGE

EU-27 PLUS OTHERS

SDG TARGET/S

**9.1 (passenger
volumes by mode)**

AVAILABILITY

220

**CITIES AND GREATER
CITIES**

SOURCE

**Eurostat, City
Statistics database**

JOURNEYS TO WORK BY PUBLIC TRANSPORT

Definition of the indicator

The indicator measures the share of journeys to work that are made using public transport (PuT), namely bus and rail (metro and tram) services that run according to a planned time schedule. The provider of the above-mentioned services may be either the municipal authority or privately-owned businesses.

A journey to work is any journey having as origin the place of residence of a commuter, and as destination, the place of work, irrespective of intermediate stops for other purposes (e.g. education, shopping or leisure).

It is computed as the number of journeys to work made using public transport over the total journeys to work.

Data harmonised by Eurostat are sourced from cities and greater cities statistics and is provided at city level.

European context

The EU has set several targets for reducing greenhouse gas (GHG) emissions from transport for many years. In its White Paper published in 2011, the European Commission set a target of a 60% reduction from 1990 levels by 2050 (European Commission 2011). In its recently published Sustainable and Smart Mobility Strategy (2020), the EC identified that the most serious challenge for the transport sector is to significantly reduce its emissions and become more sustainable moving towards zero-emission mobility. Given the high proportion of total EU GHG emissions, the EU's goal of a target of at least 55% GHG reductions by 2030 and of climate neutrality by 2050 will be reached only by introducing more ambitious policies to reduce transport's reliance on fossil fuels without delay and in synergy with zero pollution efforts (European Commission 2020j). Public transport is a determinant factor for reaching both targets.

The use of PuT is a way to reduce congestion, negative environmental impacts and health-harming emissions in urban areas, especially when run on alternative, cleaner fuels. The EU strongly encourages the use of public transport as part of the mix of modes (including walking & cycling) which persons living or working in a city can use.

Comments / Limitations

- The 2016 Eurostat City Statistics Database for this indicator only includes data points for the following countries: DE, EE, FR and FI.
- The number of missing values changes from year to year and this does not allow the analysis of time series for certain cities.
- This indicator should be used together with the indicator on access to PuT (see SDG11) to properly assess the efficiency of the PuT system.
- While this indicator focuses on the commute to and from the workplace, alternative indicators on different modes of transports for different trips might be available at local scale.
- The same dataset also provides data for the share of journeys to work by car, motorcycle, bicycle and on foot.

Metadata

Source:

Eurostat, City Statistics database (data collected from national statistics). Table: urb_ctrans, Code: tt1010v

Hyperlink (availability of API):

https://ec.europa.eu/eurostat/databrowser/view/URB_CTRAN__custom_2077173/default/table?lang=en (API yes)

Visualisation:

https://ec.europa.eu/eurostat/databrowser/view/URB_CTRAN__custom_2077173/default/map?lang=en

Availability and geographical coverage:

220 cities and greater cities in 2016 in EU-27 plus Norway, Switzerland, United Kingdom and Turkey

Unit of measurement:

Share

Level of aggregation:

City and greater city

Time coverage and frequency:

1989-2020. Data collected every year

9 INDUSTRY, INNOVATION
AND INFRASTRUCTURE

LINK TO OTHER SDGs

11 SUSTAINABLE CITIES
AND COMMUNITIES

ALIGNMENT

UN list
EU list

GEOGRAPHICAL COVERAGE

EU-27

SDG TARGET/S

9.1 (passenger
volumes by mode)

AVAILABILITY

699

CITIES

SOURCE

European Commission,
DG REGIO

TRANSPORT PERFORMANCE

Definition of the indicator

The indicator measures the transport performance (of a city) by comparing accessibility and proximity from a specific location. It is computed as the ratio between the number of people that can be reached within a 90-minute car drive (accessible population) and the number of people living within a radius of 120km (nearby population or proximity) from a specific location.

The indicator uses two input datasets, namely a 1km² population grid (by Eurostat) and the EU road network of all major and secondary roads, and most of the local roads (by TomTom).

Data are computed at grid level and provided by the European Commission, Directorate-General for Regional and Urban Policies aggregated at city level.

European context

In Europe, governments invest some EUR 100 billion in transport each year to provide people and firms with better access. Accessibility indicators can be used to capture the benefits of these investments, for example by measuring how many destinations can be reached. In that sense, they are a significant improvement over indicators such as speed, capacity or congestion. However, they are seldom used in decision-making (Dijkstra, Poelman, and Ackermans 2019).

Within the EU, Bulgaria, Croatia, Poland, Romania and Slovakia have the lowest transport performance, while Belgium and the Netherlands score highest. The transport performance of a country also depends on how urbanised it is, indeed most metropolitan regions outperform other regions. On average, cities outperform rural areas although not all cities perform that well. Cities in eastern EU Member States achieve a lower performance, especially the smaller ones (Dijkstra, Poelman, and Ackermans 2019).

Comments / Limitations

- The underlying assumption for this indicator is that, as a reference, people can reach any destination in a 120km radius within 90 minutes, so that the reference effective speed is 80km/h. Thus if a specific location has a transport performance of over one (1), this indicates that the transport network connecting that specific point allows effective travel speeds over 80km/h, while a transport performance below one (1) indicates that effective speeds on the connecting transport network are below reference value.
- The indicator is typically based on free flow, scheduled, or maximum allowed travel speeds, thus not including relevant factors such as congestion, delays and subpar road surfaces, which may influence effective speeds and travel time reliability.
- A complete and in-depth description of the methodology of the transport performance indicator can be found in (Dijkstra, Poelman, and Ackermans 2019).
- To aggregate population data of the 2 million inhabited square grid cells of 1km² in the EU, the approach for calculating this indicator uses the population weighted average of all grid cells within a city.
- This approach only accounts for results for one point in time (2015). The same method can monitor changes in accessibility and transport performance over time but requires detailed road-network data that capture changes over time, which is not currently available. Therefore, projections for years 2020 to 2050 are based on modelled population changes only.
- Transport performance is also provided by the JRC at all NUTS (1-2-3) levels. Variations of the indicator, for instance more focused on public transport networks and inner city transport performance, are feasible, but currently not available comprehensively for the entire EU territory at the JRC.

Metadata

Source:

European Commission, DG REGIO

Hyperlink (availability of API):

<https://urban.jrc.ec.europa.eu/trends/en?is=Default&ts=-DEFAULT&tl=6&dtype=udp-p&i=3&db=3&it=ranking>

Visualisation:

https://ec.europa.eu/regional_policy/mapapps/transport/rail_road_accessibility.html

Availability and geographical coverage:

699 cities in 2020 in EU-27

Unit of measurement:

Ratio

Level of aggregation:

City

Time coverage and frequency:

2015-2020 and projections available until 2050 every 10 years



LINK TO OTHER SDGs

4 SUSTAINABLE CITIES
AND COMMUNITIES

8 CLIMATE ACTION

16 CLIMATE ACTION

ALIGNMENT

UN list
EU list



GEOGRAPHICAL COVERAGE

EU-27

SDG TARGET/S

9.1 (reliable infrastructure)
9.4 (upgrade infrastructure)

AVAILABILITY

ALL

MUNICIPALITIES (LAUs)

SOURCE

**European Commission,
Joint Research Centre**

QUALITY OF BROADBAND CONNECTION

Definition of the indicator

The indicator measures the quality of broadband connection.

The broadband speed has been classified into three different categories according to the quality of connection: below 30 Mbps (minimum required), between 30 and 100 Mbps (optimal speed for average user), and higher than 100 Mbps (high-speed).

This indicator was calculated based on data provided by Ookla® (Speedtest® by Ookla®, 2020) and contains spatial information about the access to broadband network and the quality of the connection. Information used to calculate the indicator is the average download speed (represented in kilobits per second) for both the fixed and mobile networks in each municipality. The speed has been weighted according to the number of tests performed in each municipality, and calculated in Megabits per second.

For the municipalities, the LAUs boundaries are those defined in 2018. Data are harmonised and filtered by the JRC and provided at municipality level.

European context

Significant differences exist in network speed across the EU-27 countries, highlighting a well-known digital divide between urban and rural areas. Urban areas enjoy high-speed connection (> 30 Mbps) and very high-speed connection (> 100 Mbps).

With respect to fixed broadband, the highest values for average speed can be observed in cities in Denmark, Luxembourg, Sweden, Spain, and the Netherlands, with all cities showing an average speed higher than 100 Mbps. On the other hand, cities in Greece all fall in the lowest speed category (< 30 Mbps) except for the city of Athens. In other countries, such as Germany, Poland, and Italy, the situation in cities appears more heterogeneous, with cities like Hamburg and Turin belonging to the highest speed category.

Regarding mobile broadband, average speed values are generally lower than fixed broadband, with Ireland and Romania showing the poorest access to broadband connection. Cities in Bulgaria, Denmark, Finland, and Croatia show high to very high-speed connection (> 100 Mbps), whereas approximately 15% of people living in cities in Italy, Spain, Ireland, and Portugal only have access to a slow connection (< 30 Mbps).

Comments / Limitations

- High-speed broadband represents a fundamental asset for driving the economic and social development of territories. Unveiling spatial patterns of access to the broadband network is important for improving the infrastructure in areas where it is most needed (Sulis and Perpiña Castillo 2022). Furthermore, the deployment of better-quality access to broadband should go hand in hand with initiatives aimed at fostering the acquisition of digital skills, especially for some population groups.
- Due to the specific way in which the data is produced (customer's measurement through mobile application), the indicator might present some limitations regarding representativeness and location. In the case of Q4 2020, data are not available for some areas in the inner regions of Spain, France and Italy. Therefore, no indicator can be produced for those areas.
- Original data are provided at grid level, with tiles of approximately 610.8 metres by 610.8 metres at the Equator (18 arcsecond blocks). Data have been aggregated at LAU level for calculating this indicator.
- It is preferable to calculate the average speed per municipality in relation to the number of tests performed in the same area, to obtain an indicator that is more accurate than the simple average also regarding the population of the area.
- The spatial and temporal granularity of the data allow for further development of the indicator, such as the possibility to analyse access to broadband up to the local scale of cities, to understand disparities within urban areas. Furthermore, the indicator could be calculated for different time points if the data are regularly updated by the provider in the future.
- The indicator can be integrated with other metrics to explore access to broadband in specific urban areas, or by specific demographics. For example, the indicator can be included in an extended analysis looking at the availability of essential services in cities, broadband being one of these.

Metadata

Source:

European Commission, Joint Research Centre

Hyperlink (availability of API):

<https://europa.eu/!m8GHCm>

Visualisation:

<https://europa.eu/!m8GHCm>

Availability and geographical coverage:

All Municipalities (LAUs) in EU-27

Unit of measurement:

Rate

Level of aggregation:

Municipality (LAU)

Time coverage and frequency:

The indicator has been calculated for Q4 2020



LINK TO OTHER SDGs

8 DECENT WORK AND
ECONOMIC GROWTH

12 RESPONSIBLE CONSUMPTION
AND PRODUCTION

ALIGNMENT

UN list
EU list



GEOGRAPHICAL COVERAGE

EU-27 PLUS OTHERS

SDG TARGET/S

**9.2 (manufacturing
employment)**

AVAILABILITY

526

**CITIES AND GREATER
CITIES**

SOURCE

**Eurostat, City
Statistics database**

EMPLOYMENT IN MINING, MANUFACTURING, ENERGY AND WATER

Definition of the indicator

The indicator measures the number of persons employed in the economic sectors of mining, manufacturing, energy and water (categories B-E of the Statistical Classification of Economic Activities in the European Community).

Employment is defined as people working full-or part-time in the sector, either directly, as regular personnel, or indirectly but paid by the sector, e.g. sales representatives, delivery personnel or repair and maintenance teams. The indicator also accounts for cases of second, third, etc. jobs of the same person.

The indicator does not concern manpower offering any kind of services to the sector under the capacity of a business belonging to another economic sector (e.g. IT support). It does not include persons affiliated to the sector who are on lay-off, away on training, or have an assurance/ agreement to return to work at a certain date (Eurostat 2017).

Data harmonised by Eurostat are sourced from cities and greater cities statistics and is provided at city level.

European context

Manufacturing provides goods for domestic consumption and for export and has traditionally been considered a cornerstone of economic prosperity within the EU. However, in recent decades the sector has been impacted by wide-ranging transformations, such as deindustrialisation, outsourcing, globalisation, changes in business paradigms (such as just-in-time manufacturing), the growing importance of digital technologies, and concerns linked to sustainable production and the environment. Furthermore, the performance of the manufacturing industry in the EU has become increasingly linked to the competitiveness of (business) services, since many manufactured goods contain a growing share of services inputs: for example, logistical support; research and development; design; computer services; advertising and marketing (Eurostat 2019).

Comments / Limitations

- The 2018 Eurostat City Statistics Database for this indicator does not include data points for the following countries: BG, CZ, IE, EL, FR, CY, LU, HU, MT, NL, AT and RO.
- Data in this database does not differentiate among the different economic activities, i.e. employment information is collected together for all economic sectors of mining, manufacturing, energy and water.
- In 2006, the regulation establishing NACE Rev. 2 which includes the statistical classification of economic activities was adopted by the European Parliament and Council. The classification breaks down all economic activities into 10 large industries according to regional accounts statistics (Eurostat Statistic Explained 2008). Eurostat collects data on employment (number of jobs) in Europe for all 10 categories of economic activities.
- Alternatively, this indicator could be studied as a share over the rest of the employment sectors according to NACE regulation, i.e. employment in sectors B to E over employment in sectors A plus sectors F to U.

Metadata

Source:

Eurostat, City Statistics Database, (data collected from national statistics). Table: URB_CLMA, code EC2009V

Hyperlink (availability of API):

https://ec.europa.eu/eurostat/databrowser/view/URB_CLMA__custom_1737263/default/table?lang=en (API yes)

Visualisation:

https://ec.europa.eu/eurostat/databrowser/view/URB_CLMA__custom_1737263/default/map?lang=en

Availability and geographical coverage:

526 cities and greater cities in 2018 in EU-27 plus Norway, Switzerland, United Kingdom and Turkey

Unit of measurement:

Number

Level of aggregation:

City and greater city

Time coverage and frequency:

1989-2020. Data collected every year



LINK TO OTHER SDGs

8 DECENT WORK AND
ECONOMIC GROWTH

ALIGNMENT

UN list
EU list



GEOGRAPHICAL COVERAGE

GLOBAL

SDG TARGET/S

**9.3 (access to financial
services) and
9.5 (encourage innovation)**

AVAILABILITY

1,000
CITIES

SOURCE

StartupBlink

CITY STARTUP ATTRACTIVENESS

Definition of the indicator

The composite indicator measures the attractiveness of cities for startups. A startup is defined as any business that applies an innovative solution that validates a scalable economical model. The innovation can be a product or service, process, or business model (StartupBlink 2021b). The indicator does take into account entities without a unique innovation, such as non-technological service providers or digital forums built on white-labelled existing technology.

Attractiveness is computed as the sum of a score attributed to a city based on three different aspects:

1. *Quantity* that measures the number of startups, co-working spaces, accelerators, incubators, makerspaces and meetups.
2. *Quantity* that measures the presence of R&D branches and centres of International Technology Corporations and multinational companies; the total investment in startups; the number of employees per startup; the presence of unicorns, exits, and pantheon companies; the presence of global startup influencers and global startup events.
3. *Business Environment* that measures the ease of doing business and registering companies; internet speed and internet freedom; R&D investment; availability of various technological services; number of patents per capita and level of English proficiency.

Data are crowdsourced from startup related entities and databases collecting similar information, ecosystem partners at global level most of which are government agencies and white-labelled startup portals. Data are harmonised by StartupBlink and offered at city level.

European context

The EC actively supports the incubation of startups through various dedicated and horizontal policy measures (e.g. the 2020 SME Strategy for a sustainable and digital Europe).

In 2018, the EC launched the Startup Europe initiative, designed to connect startups, investors, accelerators, entrepreneurs, corporate networks, national and regional ministries, innovation agencies, universities and the media. The initiative is accompanied by a series of policy measures such as the EU Startup Nation Standard, the Innovation Radar (to identify high potential innovations and innovators in EU-funded projects), and the Digital Innovation and Scale-up Initiative (DISC) (to address the investment gap between European regions).

Comments / Limitations

- Determining a startup location in today's global economy is complex: locations can change as each startup evolves, depending on several criteria that make one location more attractive than another.
- In this indicator, bigger cities are more likely to score higher than smaller cities because of the concentration of population. Moreover, the size of the domestic market offers more potential and can scale much larger startups without international competition.
- More information on the calculation of the indicator can be found at (StartupBlink 2021a).
- The indicator does not include insights into the longevity of startups as this dimension is not considered in any of the three aspects that constitute a city's attractiveness (quantity, quality, business environment). Having a big number of startups in a city, does not necessarily indicate the success of the startup in doing business.

Metadata

Source:
StartupBlink

Hyperlink (availability of API):
www.startupblink.com (API yes)

Visualisation:
www.startupblink.com

Availability and geographical coverage:
1,000 cities globally

Unit of measurement:
Number

Level of aggregation:
City

Time coverage and frequency:
2013-2021. Data updated every year



GOAL 10

REDUCE INEQUALITY WITHIN AND AMONG COUNTRIES

Description of the Goal

The aim of this Goal is to eradicate inequalities based on income, age, disability, sexual orientation, gender, origin, race, ethnicity, religion that persist across the world by adopting relevant policies and legislation. Specific targets of Goal 10 focus on the promotion of the economic, social and political inclusion of all individuals, the facilitation of orderly, safe, regular and responsible migration and mobility of people, the elimination of discrimination and the fostering of representation. The Goal also calls for improvement of the regulation and monitoring of financial markets and institutions.

European dimension

In an EU context, Goal 10 focuses on inequalities within and between countries, and migration and social inclusion.

In recent years, some progress has been achieved across European countries in terms of increased income for those at the bottom 40% of the population, and a decrease in the relative median at-risk-of-poverty gap, urban-rural gap of poverty and social inclusion and disparities in GDP per capita. However, a worsening of the situation has been observed particularly in terms of the increased gap between non-EU citizens and citizens of reporting EU countries, and of the numbers of early leavers from education and training, young people neither in employment nor in education and training and in employment rates.

The European Pillar of Social Rights, which aims to support a fairer, and more inclusive Europe, includes various pertinent initiatives. Those most closely related to Goal 10 are the European Skills Agenda aimed at favouring access to education, training and lifelong learning for everybody, everywhere in the EU and the Strategy for the Rights of Persons with Disabilities 2021-2030 aimed at ensuring the full participation of people with disabilities in society, on an equal basis.

In addition, the European Commission's Action Plan on Integration and Inclusion (2021 to 2027) includes measures that support migrants' inclusion in education and employment and aim to achieve greater convergence between migrants and nationals both in terms of opportunities and outcomes.

Some related European policies and legislations

The European Pillar for Social Rights

European Skills Agenda

Strategy for the Rights of Persons with Disabilities 2021-2030

The European Commission's Action Plan on Integration and Inclusion

Local dimension

Cities are places where ethnic, political, economic and professional diversities become more evident than at country or regional level. In urban environments, inequalities may be due to changes in the structure and composition of population, the restructuring of economies, competition for employment, changes in the traditional household structure, differential access to quality services, .

Local governments can significantly reduce inequalities through policies targeting a wide range of local issues, including education and vocational training, housing, medical and social services, local access to services, use of public spaces and local political participation. All these measures can also foster trust in local institutions (Barone and Mocetti 2016).

Four indicators address Goal 10 (all at city level):

one indicator deals with inclusion (Target 10.2)

one indicator focuses on policies to achieve equality (Target 10.4)

two indicators cover the topic of migration and mobility (Target 10.7)



LINK TO OTHER SDGs

8 DECENT WORK AND
ECONOMIC GROWTH

ALIGNMENT

UN list
EU list



GEOGRAPHICAL COVERAGE

FINLAND

SDG TARGET/S

**10.2 (inclusion
irrespective of status)**

AVAILABILITY

ALL

FINNISH REGIONS

SOURCE

**Ministry of Economic
Affairs and Employment,
Employment Service
Statistics**

HOUSING ACCESS INDEX

Definition of the indicator

The indicator measures the number of unemployed jobseekers with disabilities and long-term illnesses on the end-of-month calculation date

The data regarding registered unemployed people with disabilities and long-term illnesses include individuals who are (according to Statistics Finland):

not employed or performing any other kind of paid work;

available for at least a part-time occupation or service.

Since no harmonised data are available across Europe at local level, the case of Finland is presented as an example.

Data are sourced from the Ministry of Economic Affairs and Employment, filtered by the Employment Service Statistics of Finland and provided at regional level.

European context

Estimates by the World Health Organization (WHO) suggest that 15% of the world's population live with some form of disability. This makes people with disabilities the world's largest minority. According to the European Parliament, in the EU alone there are approximately 80 million people with a disability, i.e. with impairments, limitations on activity and restrictions on participation (European Parliament 2020b).

The EU's disability policy strives for the full inclusion of persons with disabilities in society, by respecting the key principles of non-discrimination, self-determination and unconditional equal treatment. The EU's disability policy framework is set out in the European Disability Strategy, which serves to implement the UN Convention on the Rights of Persons with Disabilities (CRPD), to which the EU and its Member States are party. The UN convention's key measures include the 'Access City Award' which recognises the best city that works to become barrier-free (United Nations 2007).

Comments / Limitations

- This indicator should be compared with the general unemployment rate in the same area.
- National data show that the gender gap in employment is wider among persons with disabilities (United Nations Department of Economic and Social Affairs 2019).
- Similar data at municipal level are not available in this database because, according to Finnish legislation, any disability and diagnosis information are defined as sensitive and cannot be provided at local level.

Metadata

Source:

Ministry of Economic Affairs and Employment, Employment Service Statistics. Table 12r5_2021M12

Hyperlink (availability of API)

https://pxnet2.stat.fi/PXWeb/pxweb/en/StatFin/StatFin__tym__tyonv__kk/statfin_tyonv_pxt_12r5.px/table/tableViewLayout1/ (yes)

Visualisation:

-

Availability and geographical coverage:

All Finnish regions in 2021

Unit of measurement:

Number

Level of aggregation:

Region

Time coverage and frequency:

2006-2021. Data collected every month



LINK TO OTHER SDGs

1 NO POVERTY**8 DECENT WORK AND
ECONOMIC GROWTH**

ALIGNMENT

UN list
EU list

GEOGRAPHICAL COVERAGE

SPAIN

SDG TARGET/S

10.4 (greater equality)

AVAILABILITY

ALL**SPANISH
MUNICIPALITIES**

SOURCE

**Spanish National
Institute of Statistics**

GINI INDEX

Definition of the indicator

The Gini index measures the extent to which the distribution of income after taxes and transfers deviates from a perfectly equal distribution. The value of the Gini index ranges from 0 (complete equality) -100 (complete inequality).

Since no harmonised data are available across Europe at local level, the case of Spain is presented as an example.

Data are sourced from the Spanish National Institute of Statistics and are provided at municipality level.

European context

Data available from the Eurostat "Survey on Income and Living Conditions (EU-SILC) at country level [https://ec.europa.eu/eurostat/databrowser/view/ilc_di12/default/table?lang=en] reveal that in the 2015-2019 period there was a decrease of the Gini index for the EU27 countries from 30.8 to 30.2. In 2020 the Gini index returned to the 2015 level (30.8). Both in 2019 and 2020 Bulgaria, Lithuania and Latvia had the highest Gini index, while the Czech Republic, Slovenia and Slovakia had the lowest. Germany, Malta and the Netherlands experienced the highest Gini index increases in the 2019-2020 period.

Comments / Limitations

- An alternative database on the Gini Index is provided by the OECD. Data in this case are available aggregated at metropolitan level. However, the most recent year at the moment of the publication of this Handbook was 2017.
- The GINI index should be complemented with another indicator to properly address economic inequalities. This is because it is still possible to have an improvement of the Gini index, when the situation has not in fact improved. This happens for example when the second top quintile becomes poorer, other things being equal.
- A measure which is frequently used to integrate the Gini index is the S80/S20 income quintile share ratio. This is based on a comparison of the income received by the top quintile and that received by the bottom quintile of the population. The National Spanish Institute for Statistics also offers this indicator along with the Gini Index.
- Income inequality is also a dimension measured within the European pillar of social right.

Metadata

Source:

Spanish National Institute of Statistics - Instituto Nacional de Estadística

Hyperlink (availability of API)

https://www.ine.es/experimental/atlas/exp_atlas_tab.htm#

Visualisation:

-

Availability and geographical coverage:

All Spanish municipalities

Unit of measurement:

Index

Level of aggregation:

Municipality

Time coverage and frequency:

2005-2019



LINK TO OTHER SDGs

4 QUALITY EDUCATION**8** DECENT WORK AND
ECONOMIC GROWTH**16** PEACE, JUSTICE AND
STRONG INSTITUTIONS

ALIGNMENT

UN list
EU list

GEOGRAPHICAL COVERAGE

EU-27 PLUS OTHERS

SDG TARGET/S

**10.7 (migration and
mobility)**

AVAILABILITY

409**CITIES AND GREATER
CITIES**

SOURCE

**Eurostat, City
Statistics database**

POPULATION OF FOREIGN-BORN IN A NON-EU COUNTRY

Definition of the indicator

The indicator measures the number of people residing in European cities with a third country nationality, i.e. people who do not have the nationality of any of the Member States of the European Union. Stateless people or people with undetermined nationality are included in this indicator. People with dual citizenship are treated according to national legislation (and therefore may or may not be included in the indicator depending on the reporting city).

Data harmonised by Eurostat are sourced from city and greater city statistics and provided at city level.

European context

Migration is influenced by a combination of economic, environmental, political and social factors: either in a migrant's country of origin (push factors) or in the country of destination (pull factors). Historically, the relative economic prosperity and political stability of the EU are thought to have exerted a considerable pull effect on immigrants.

In 2019, there were an estimated 2.7 million migrants to the EU from non-EU countries. Germany reported the largest total number of immigrants (886.3 thousand) in 2019, followed by Spain (750.5 thousand), France (385.6 thousand) and Italy (332.8 thousand), relative to the size of the resident population.

According to Eurostat, the number of people residing in an EU Member State with citizenship of a non-member country in 2020 amounted to 23 million, representing 5.1% of the EU population. In 2019, Moroccans were the largest group among new EU-citizens (66,800 persons), ahead of Albanians (41,700), Britons (29,800), Syrians (29,100) and Turks (28,600) (Eurostat Statistic Explained 2021e).

Comments / Limitations

- The 2018 Eurostat City Statistics Database for this indicator includes data points for the following countries: BE, BG, DE, EE ES, HR, LV, HU, SI, SK, FI and SE.
- The same database offers information on the number of nationals, EU foreigners, Non-EU foreigners, native-born, foreign-born, foreign-born in an EU country and foreigners.
- Most EU Member States base their statistics on administrative data sources such as population registers, registers of foreigners, registers of residence or work permits, health insurance registers and tax registers. Some countries use mirror statistics, sample surveys or estimation methods to produce migration statistics.
- Data collected by Eurostat concern migration for a period of 12 months or longer: migrants therefore include people who have migrated for a period of one year or more as well as persons who have migrated on a permanent basis.
- The OECD provides data on non-EU migrants in Europe via two databases: (i) the first covers 36 OECD regions including data for all European countries (OECD 2021b); (ii) the second covers municipalities/local administrative areas for 22 OECD countries (Le Souder et. al 2022).

Metadata

Source:

Eurostat, City Statistics Database, (data collected from national statistics). Table: urb_cpopcb, code de2011v

Hyperlink (availability of API)

https://ec.europa.eu/eurostat/databrowser/view/URB_CPOPCB__custom_2000064/default/table?lang=en (API yes)

Visualisation:

https://ec.europa.eu/eurostat/databrowser/view/URB_CPOPCB__custom_2000064/default/map?lang=en

Availability and geographical coverage:

490 cities and greater cities in 2018 in EU-27 plus Norway, Switzerland, United Kingdom and Turkey

Unit of measurement:

Number

Level of aggregation:

City and greater city

Time coverage and frequency:

1989-2020. Data collected every year



LINK TO OTHER SDGs

11 SUSTAINABLE CITIES
AND COMMUNITIES

16 PEACE, JUSTICE AND
STRONG INSTITUTIONS

ALIGNMENT

UN list
EU list



GEOGRAPHICAL COVERAGE

SWEDEN

SDG TARGET/S

**10.7 (migration and
mobility)**

AVAILABILITY

ALL
MUNICIPALITIES

SOURCE

**Swedish Migration
Agency**

HOSTED ASYLUM SEEKERS

Definition of the indicator

The indicator measures the number of hosted asylum seekers.

In the global context, an asylum seeker is defined as a person who seeks protection from persecution or serious harm in a country other than their own and awaits a decision on the application for refugee status under relevant international and national instruments. (ref)

In the EU context, an asylum seeker is defined as a third-country national or stateless person who has made an application for protection under the *Geneva Refugee Convention and Protocol* in respect of which a final decision has not yet been taken (European Commission 2021d).

Since no harmonised data are available across Europe at local level, the case of Sweden is presented as an example.

Data are sourced from the Swedish Migration Agency's reception system and provided at municipality level.

European context

Reception is a fundamental step in the implementation of the *Common European Asylum System*. It concerns the provision of accommodation to applicants from the moment they lodge an application for asylum until they receive an answer. While temporary in nature, reception is a crucial moment between the beginning of asylum procedures and what will happen in the future: integration, relocation, or return (European Asylum Support Office 2021).

According to Eurostat, the number of asylum applications in the EU has fallen considerably since 2015 (Eurostat 2022a). The significant decrease in the number of asylum seekers, also linked with the COVID-19 pandemic, has contributed to normalising the reception and avoiding crisis management practices (Roitman 2013).

Comments / Limitations

- (Proietti and Veneri 2021) provide a comparative assessment on the location of hosted asylum seekers in 18 European countries at the level of NUTS3 regions and in six countries at municipal level until 2017.
- Several countries publish data on hosted asylum seekers periodically and more fittingly, at municipal level. Examples of these countries include Sweden, Spain, and Italy.
- Rather than observing the absolute number of hosted asylum seekers in a single municipality, looking at how asylum seekers are distributed across municipalities and how this distribution changes over time can help identify challenges in terms of accommodation and public services to be provided locally, as well as possible opportunities connected to the increase in local diversity.
- Anyone seeking asylum in Sweden has the right to receive help with temporary housing from the Swedish Migration Board. When a person applies for asylum, the Swedish Migration Agency first registers the application. The Swedish Migration Agency then offers the asylum seeker accommodation in a facility near the Swedish Migration Agency's office. Asylum seekers who have been granted a residence permit in Sweden and who live in the Swedish Migration Agency's temporary housing are invited to move from the asylum accommodation to a dwelling arranged by a municipality, in line with the Settlement Act.
- Facility housing (ABO) is housing that the Swedish Migration Agency offers, normally an apartment in an apartment building. Own accommodation (EBO) refers to accommodation where the person concerned has arranged accommodation with a relative or equivalent. The category "other housing" consists mainly of unaccompanied children in municipal housing / family homes / pre-placed children (children living with, for example, relatives).
- Unaccompanied children refers to a person under the age of 18 who has arrived in Sweden and applied for asylum without his or her parents or other legal guardian.
- The dataset provides disaggregation by gender, age, unaccompanied children and type of reception.

Metadata

Source:

Swedish Migration Agency

Hyperlink (availability of API)

<https://www.migrationsverket.se/Om-Migrationsverket/Statistik/Asyl.html>

Visualisation:

-

Availability and geographical coverage:

All municipalities in 2021 in Sweden

Unit of measurement:

Number

Level of aggregation:

Municipality

Time coverage and frequency:

2010-2021. Data collected every year



GOAL 11

**MAKE CITIES INCLUSIVE,
SAFE, RESILIENT AND
SUSTAINABLE**

Description of the Goal

Goal 11, also known as the “Urban Goal”, calls for cities and human settlements to be made inclusive, safe, resilient and sustainable. As urbanisation is recognised as a factor for economic and social development, this goal tackles elements that can greatly affect the quality of life in cities. It includes, among others, aspects related to housing (Balestra and Sultan 2013), public transport, urban waste, land consumption, participation in planning, public space, and exposure to air pollution by particulate matter. The implementation of Goal 11 can benefit from the principles and actions identified in the New Urban Agenda (United Nations 2016a), adopted by the United Nations in Quito, Ecuador in October 2016. It delivers a vision for sustainable urban development, specifically highlighting the potential of cities in tackling global challenges. Cities are therefore considered a key driver for achieving a sustainable future (Eurostat 2019).

European dimension

Over the last few decades, MS have spent at least 50% of the European Regional Development Fund (ERDF) as part of the Cohesion policy in cities to improve the urban environment, promote urban regeneration and innovative measures, as well as reduce inequalities.

The amount of ERDF directly allocated to integrated strategies for sustainable urban development amounted to EUR 15 billion in the 2014-2020 programming cycle, allowing urban authorities to be directly involved in the selection of projects (European Commission, Directorate-General for Employment 2019).

An extensive data collection about these strategies is available on the STRAT-Board, the Territorial and Urban Strategies Dashboard (Joint Research Centre 2019). The STRAT-Board offers a unique knowledge base on the integrated approach to urban and territorial development as supported by EU provisions and tools in 2014-2020.

In 2016, the EU and its Member States adopted the Urban Agenda for the EU (European Commission 2016) that tackles issues and challenges that are particularly impactful in cities, notably the sustainable use of land and nature-based solutions, urban poverty or air quality. The Cohesion Report provides a coherent periodic assessment of the EU's economic, social and territorial cohesion in European Cities and Regions¹.

Some related European policies and legislations

New European Bauhaus (2021)
The new Leipzig Charter (2020)
Cohesion Policy (2021-2017)
Urban Agenda for the EU (2016)

¹ https://ec.europa.eu/commission/presscorner/detail/en/IP_22_762

Local dimension

All SDGs have a local dimension in which cities are called to take action, and improve and coordinate their efforts with other cities and different levels of government. However, this Goal is urban and local per se: for this reason, in the UN global framework, the SDG 11 targets are designed specifically for cities and communities and related indicators have to be measured in cities.

As per the rationale of this *Handbook*, many of the indicators normally used to measure the SDG 11 are listed in other goals and they are not duplicated in this Goal, even if pertinent. A proper assessment of the differences by degree of urbanisation (cities, towns and suburbs, rural areas) can be made for a number of indicators collected by DG REGIO and Eurostat and excluded in this *Handbook*. However they can potentially be used to assess the differences in the performance of European cities versus other types of settlements.

Nine indicators address Goal 11 (Eight at city and one at regional level):

one indicator focuses on access to housing services (Target 11.1)
three indicators address aspects of mobility and access to transport systems (Target 11.2)
one indicator focuses on consumption of land (Target 11.3)
three indicators deal with air quality and the impact of environmental pollution (Target 11.6)
one indicator touches on issues of public space (Target 11.7)



LINK TO OTHER SDGs

1 NO POVERTY

ALIGNMENT

UN list ☐

EU list ☐

GEOGRAPHICAL COVERAGE

SPAIN

SDG TARGET/S

11.1 (access to
housing)

AVAILABILITY

306

SPANISH
MUNICIPALITIES

SOURCE

Ministry of Transport,
Mobility and Urban
Agenda (MITMA) and
National Institute of
Statistics (INE)

HOUSING ACCESS INDEX

Definition of the indicator

This composite indicator estimates the capacity of the population to access the housing market.

It is computed by calculating the ratio between two individual core indicators: the taxed housing value per square metre and the average gross annual income per household for the same year.

Since no harmonised data are available across Europe at local level, the case of Spain is presented as an example. The Ministry of Transport, Mobility and Urban Agenda (MITMA) source data on the medium taxed value of houses. The Spanish National Institute of Statistics sources data on the average gross annual income per household.

European context

Housing affordability can be broadly described as “the ability of households to buy or rent adequate housing, without impairing their ability to meet basic living costs” (OECD 2021a).

In Europe, there is no official definition of the term ‘affordable housing’ or ‘housing affordability’. Therefore, various criteria are applied to measure housing affordability. Of those, the “housing price-to-income ratio” criterion is the most commonly used (Caturianas et al. 2020), since it provides an indication of the financial pressure that households face due to housing costs. It also offers an overview of how the association between prices and income varies over time, as well as across cities or countries. On average in the EU in 2020, 20.1% of disposable income was allocated to housing costs (Eurostat 2021c).

Key factors behind the rising housing costs and decreasing affordability of housing in Europe include: the financialisation of housing (the transformation of housing into a financial asset or a commodity) (Sjoerdje Van Heerden, Barranco, and Lavallo 2020); secondary property ownership, widely used in many EU Member States as an investment to supplement absent or low second-tier pension arrangements; foreign investment that causes a decrease in the rate of home ownership in an area and an increase in local house prices; finally, the recent rise of collaborative economy platforms for short-term accommodation negatively impacts access to affordable housing because it reduces the supply of housing available to local residents and pushes up prices (Caturianas et al. 2020).

Comments / Limitations

- Data for this indicator are being collected as part of the European Union Statistics on Income and Living Conditions (EU-SILC).
- The Housing Access Index has the advantage of simplicity of interpretation, as well as a wide variety of possible disaggregations and/or variants (using income by gender, nationality, prices, etc.). Likewise, it is a composite indicator open to analysis and modifications such as the use of net disposable income, per person or per household.
- For the medium taxed housing value, disaggregated data are available concerning the age of the building.
- Data on the average gross annual income per household are indexed between 0 and 100; the higher the index (closer to 100), the harder it is to buy or rent a home. In practice though, any values ranging from 10 to 100 are considered values that indicate difficulty. For example, in 2019, among the 3,061 available cities in the database, the worst value reported in Spain is 21.47, the best is 4.4 (while in 2017 it was 2.21) and the average is 9.56.

Metadata

Source:

Ministry of Transports, Mobility and Urban Agenda (MITMA)
"Valor tasado de la vivienda"
National Institute of Statistics (INE), Experimental Statistics
"Atlas de distribución de renta de los hogares - indicadores renta media y mediana - Renta bruta media por hogar"

Hyperlink (availability of API)

<https://www.mitma.gob.es/el-ministerio/informacion-estadistica/vivienda-y-actuaciones-urbanas/estadisticas/valor-tasado-de-la-vivienda>
https://www.ine.es/experimental/atlas/experimental_atlas.htm

Visualisation:-

Availability and geographical coverage:

306 Spanish Municipalities with more than 25,000 inhabitants in 2019

Unit of measurement:

Ratio

Level of aggregation:

Municipality

Time coverage and frequency:

2005-2019



LINK TO OTHER SDGs

3 GOOD HEALTH AND
WELL-BEING

ALIGNMENT

UN list
EU list



GEOGRAPHICAL COVERAGE

GLOBAL

SDG TARGET/S

**11.2 (access to
transport systems)**

AVAILABILITY

555
CITIES

SOURCE

**Open Orienteering Map
(OOM)**

SHARED BICYCLES

Definition of the indicator

The indicator measures the total number of bicycles in docking stations available for short-term lease. Docking stations at designated city locations are comprised of docking positions (docks), which are in turn used for holding bicycles available for lease.

The indicator does not include data on shared bicycles from all possible providers within a city.

Data are sourced from public bicycle rental service providers operating in European cities, harmonised by Open Orienteering Map and provided at city level.

European context

In its 2020 Sustainable and Smart Mobility Strategy, the EU stressed its vision to support the development of additional cycling infrastructure in cities over the next 10 years and to reallocate public space to walking, cycling and greenery as a means of taking people from vehicle transport to active alternatives (European Commission 2020j). The Strategy also highlighted the shift towards shared and collaborative mobility services in many European cities (shared cars, bikes, ride-hailing, and other forms of micromobility). These have been facilitated by the emergence of intermediary platforms, thereby enabling the reduction of the number of vehicles in daily traffic.

This European vision of future sustainable mobility is materialised in 82 concrete initiatives which form the overall European strategy to reach a 90% reduction in emissions by 2050, delivered by a smart, competitive, safe, accessible and affordable European transport system; bike sharing is acknowledged as a concrete way to achieve this.

Comments / Limitations

- The Bike Share Map produced by Open Orienteering Map collects and maps data from docking stations around the world in real time. Data and information for 374 cities of the EU-27 can be found on the map.
- The map offers a function to replay the last 48 hours of data and explore the bike-share flow in a given city.
- Additional functions include real-time analysis of the availability of shared bicycles in real time, the load factor of docking stations with shared bicycles, the city's spatial coverage by docking stations.

Metadata

Source:

Open Orienteering Map

Hyperlink (availability of API):

<https://bikesharemap.com> (API yes)

Visualisation:

<https://bikesharemap.com>

Availability and geographical coverage:

555 cities globally in 2022

Unit of measurement:

Number

Level of aggregation:

City

Time coverage and frequency:

Real time



LINK TO OTHER SDGs

3 GOOD HEALTH AND
WELL-BEING

13 CLIMATE ACTION

ALIGNMENT

UN list
EU list



GEOGRAPHICAL COVERAGE

EU-27 PLUS OTHERS

SDG TARGET/S

**11.2 (access to transport
systems) and 11.6 (air
quality)**

AVAILABILITY

517

**CITIES AND GREATER
CITIES**

SOURCE

**Eurostat, City
Statistics database**

REGISTERED PRIVATE VEHICLES

Definition of the indicator

The indicator measures the number of private registered vehicles per 1,000 population of natural persons. The indicator describes the total stock of cars, including new registrations.

It does not include registered cars by small or big business (e.g. taxis or hire cars) and does not provide information on the type of cars (fuel, size, emissions, etc.).

Data harmonised by Eurostat are sourced from cities and greater cities statistics and provided at city level.

European context

International experience in Europe and beyond suggests that the less cars registered per capita in a city, the more alternatives for travellers to use other means of transport (be it from a services or an infrastructure perspective) (Silva et al. 2021; Tao, He, and Thøgersen 2019). A declining number of registered private cars per capita can also be an indication of urban policies in place that make private transport less attractive (e.g. policies ranging from ownership costs to parking restrictions and access regulations). In turn, the more limited the use of private cars in a city, the lower the concerns related to environmental and noise pollution, and congestion impacts (Pettigrew, Nelson, and Norman 2020).

European cities have a big role to play in delivering the European Green Deal and its ambitious targets of a 90% cut in emissions in the EU transport sector by 2050 and 100 EU cities becoming climate neutral by 2030. The transformation of the transport sector itself to emit less is necessary but not sufficient on its own. Among others, cities will need to implement measures and policies towards regulated access and circulation of cars (e.g. through low and zero emission zones), invest in and promote public and shared transport, and decrease the overall number of cars in cities (European Commission 2020l).

Comments / Limitations

- The 2018 Eurostat City Statistics Database for this indicator does not include data points for the following countries: BG, CZ, DK, EL, ES, FR, CY, LU, NL, AT, PT, RO and SK.
- National or municipal car registries are recommended as a data sources for this indicator.
- The link between the number of registered cars per capita and the existence/offer of other transport alternatives is not always direct for all European cities, i.e. a smaller (compared to other years) number of registered cars does not necessarily mean a better public transport system or cycling alternatives for a city.
- With respect to positive impacts related to the declining number of registered cars in a city, this indicator should be studied in combination with other urban mobility indicators (e.g. modal share, non-motorised transport infrastructure, traffic-induced environmental pollutants).
- In some cases, a declining number of registered cars per capita may be an indication of the limited ownership capacity of the population due to costs (from purchase to use and maintenance).
- Owning a private vehicle was viewed as a reflection of societal and economical status. However, emerging technological advances and concepts such as the sharing economy have shifted this point of view largely. Nonetheless, this change has come at different speeds in different geographical areas in Europe.

Metadata

Source:

Eurostat, City Statistics Database, (data collected from national statistics). Table: urb_ctrans, Code: tt1057i

Hyperlink (availability of API)

https://ec.europa.eu/eurostat/databrowser/view/URB_CTRAN__custom_1619270/default/table?lang=en (API yes)

Visualisation:

https://ec.europa.eu/eurostat/databrowser/view/URB_CTRAN__custom_1619270/default/map?lang=en

Availability and geographical coverage:

517 cities and greater cities in 2018 in EU-27 plus Norway, Switzerland, United Kingdom and Turkey

Unit of measurement:

Number

Level of aggregation:

City and greater city

Time coverage and frequency:

1989-2020. Data collected every year



LINK TO OTHER SDGs

3 GOOD HEALTH AND WELL-BEING

8 DECENT WORK AND ECONOMIC GROWTH

10 REDUCED INEQUALITIES

ALIGNMENT

UN list
EU list



GEOGRAPHICAL COVERAGE

EU-27 PLUS OTHERS

SDG TARGET/S

11.2 (access to transport systems)

AVAILABILITY

464

URBAN CENTRES

SOURCE

**European Commission,
DG REGIO**

ACCESS TO PUBLIC TRANSPORT

Definition of the indicator

The indicator measures a city population's access to public transport services (bus, tram, metro and train). The indicator allocates the share of population into five different groups, according to the level of public transport services (from no services to services with a very high frequency) available at public transport stops located within walking distance of the people's places of residence.

Data on public transport (location of stops and frequency of departure at stops) are sourced from open data initiatives, public transport operators and regional or national organisations integrating operator information.

Data on population are sourced from the JRC-GEOSTAT 2018 grid (at a 100 m resolution) (Eurostat 2018b) and the related population estimates by the Urban Atlas polygon (Copernicus 2018).

Data on street networks are sourced from TomTom.

All data are harmonised by the European Commission, Directorate-General for Regional and Urban Policies (DG REGIO) and provided at the level of urban centres (high-density clusters of 1 km² grid cells).

European context

Easy access to public transport is a prerequisite to encourage a modal shift towards collective transport modes. Data collected in 2012 show that one in five people in Europe reported 'high' or 'very high' levels of difficulty in accessing public transport (20.4%), indicating that many people in the EU still do not consider public transport sufficiently convenient. Disadvantaged groups such as the elderly, those at risk of poverty, and those with disabilities are likely to be most affected by barriers to accessing public transport. Access is also particularly important for people with low incomes because they are less likely to be able to afford a car (Eurostat 2019).

The Urban Agenda for the EU has setup a dedicated Partnership for Urban Mobility (PUM) that explicitly investigates ways for a more accessible, safe, efficient, affordable and sustainable infrastructure for walking and public transport. It particularly works on delivering public transport systems and walking infrastructures that offer genuine door-to-door accessibility in European cities and regions (The International Association of Public Transport 2021).

Comments / Limitations

- The proposed indicator is calculated with the method developed by (Dijkstra, Poelman, and Ackermans 2019) and is aligned with UN-Habitat metadata for indicator 11.2.1 as regards the maximum walking distance to bus and tram stops (500 m) and metro and train stops (1 km) used in determining the typology of service frequencies (United Nations 2021a).
- Walking distance is calculated for metro and train stops and for bus or tram stops according to estimated willingness to walk. Residential population distribution is provided as input data at the highest resolution available.
- The combination of data about access to public transport with share of trips to work by different means other than public transport would provide relevant information on additional parameters that may influence the mode of transport.
- The indicator can be complemented by the calculation of performance of urban public transport (computing the relationship between accessibility to residential population and proximity of population (Dijkstra, Poelman, and Ackermans 2019).
- Among others, the following complexities might arise when calculating this indicator for entries (urban centres) not included in the database: availability of open data on public transport timetables (and respective data licensing policy) and spatial resolution of population data.
- Findings based on the monitoring of this indicator can be used to benchmark cities and to simulate the effect of planned investments or network performance enhancements.

Metadata

Source:

European Commission, DG REGIO

Hyperlink (availability of API)

https://ec.europa.eu/regional_policy/en/information/publications/working-papers/2020/low-carbon-urban-accessibility (API yes)

Visualisation:

https://ec.europa.eu/regional_policy/en/information/maps/low-carbon-urban-accessibility

Availability and geographical coverage:

464 urban centres in 2018 in EU-27 plus Norway, Switzerland, Iceland, Western Balkans and United Kingdom

Unit of measurement:

Share

Level of aggregation:

Urban centre

Time coverage and frequency:

2018



LINK TO OTHER SDGs

15 LIFE ON LAND

ALIGNMENT

UN list
EU list

GEOGRAPHICAL COVERAGE

EU-27 PLUS OTHERS

SDG TARGET/S

11.3 (land consumption)

AVAILABILITY

98,613
MUNICIPALITIES

SOURCE

European Commission,
Joint Research Centre

BUILT-UP SURFACE

Definition of the indicator

The indicator estimates the amount of built-up surface expressed in km² assessed from Earth observation records. A “built-up” surface is the gross surface bounded by the building wall perimeter with a spatial generalisation compliant with 1:10,000 topographic map specifications.

Buildings are defined as constructions above and/or underground which are intended or used for the shelter of humans, animals, things, the production of economic goods or the delivery of services and that refer to any structure constructed or erected on its site, built-up surfaces can be non-permanent buildings.

Data are extracted from Landsat and Sentinel satellites with the Global Human Settlement Layer (GHSL) framework, sourced from modelled built-up surface maps of the JRC and provided at municipality level.

European context

While densely populated areas can provide a resource-efficient way for people to live and reduce land take, recent trends have shown that the land in urban areas is not always used efficiently. Since the mid-1950s, settlement areas have been expanding more quickly than the growth of urban population. Over this period, the total area of cities in the EU has increased by 78% compared to a population growth of 33%. As a result, the loss of land and ecosystem services remains one of the major environmental challenges Europe is facing. Despite EU efforts to increase land use efficiency, settlement area per capita — comprising both sealed and non-sealed surfaces — has increased by 9.2% since 2009: this does not put the EU on track to achieve its goal of halting land degradation (Eurostat 2019).

In 2015, each EU inhabitant occupied an average of 263m², almost the double in comparison to 40 years ago (Pesaresi et al. 2016). Between 1990–2015, urban centres in Europe accommodated 12 million new people and expanded over 7,000km² (Schiavina et al. 2022).

Comments / Limitations

- This indicator differs from the official UN indicator 11.3.1, which is the Land Use Efficiency (LUE). This indicator can be used to compute the Land Consumption Rate over Population Growth Rate of the SDG indicator, and other related indicators such as built-up surface per capita, delta built-up surface, and delta built-up surface per capita or other indicators requiring an estimation of built-up surfaces over time.
- For an estimation of the indicator fully aligned with SDG 11.3.1 users are invited to retrieve population data of the LAU2 for the desired year and apply a simple ratio between this indicator and the population value according to SDG metadata.
- For a detailed discussion of the advantages and limitations of SDG 11.3.1 mathematical formulation see (UN-Habitat 2018; Schiavina et al. 2019).
- In this Handbook, the built-up surface has been preferred to the LUE because it expresses a concept (area occupied) that is easier to communicate and for people to understand.
- If readers wish to assess the built-up surface change over time it is sufficient to subtract the built-up surface value of the following year from the previous year. It is also possible to calculate the built-up area per capita based on the population data of the area of interest.
- Further details on the indicator and methodological insights are available at (Schiavina and Melchiorri 2022).

Metadata

Source:

European Commission, Joint Research Centre

Hyperlink (availability of API)

<https://data.jrc.ec.europa.eu/dataset/94d62a61-25d0-42fd-9e1e-a41f877cf788>

Visualisation:

–

Availability and geographical coverage:

98,613 municipalities in 2015 in EU-27 plus Albania, Switzerland, United Kingdom, Norway, Liechtenstein, Macedonia, San Marino and Iceland

Unit of measurement:

Number

Level of aggregation:

Municipality

Time coverage and frequency:

2000, 2010 and 2015. Data updated periodically.



LINK TO OTHER SDGs

3 GOOD HEALTH AND
WELL-BEING

13 CLIMATE ACTION

ALIGNMENT

UN list
EU list



GEOGRAPHICAL COVERAGE

EU-27 PLUS OTHERS

SDG TARGET/S

**11.6 (reduce
environmental impact)**

AVAILABILITY

1,338
NUTS3

SOURCE

**European Environment
Agency (EEA)**

PREMATURE DEATHS ATTRIBUTED TO PM_{2.5}

Definition of the indicator

The indicator measures the number of premature deaths attributed to PM_{2.5}.

It is computed by considering all-cause (natural) mortality in people aged over 30 years for all concentrations (i.e., concentrations above 0µg/m³), assuming a linear increase in the risk of mortality of 6.2% for a 10µg/m³ increase in PM_{2.5}.

Data are harmonised and filtered by the EEA and provided at NUTS3 level.

European context

Air pollution is a major cause of premature death and disease and is the single largest environmental health risk in Europe. Heart disease and stroke are the most common reasons for premature deaths attributable to air pollution, followed by lung diseases and lung cancer (WHO 2018). A recent global review found that chronic exposure to air pollution can affect every organ in the body, complicating and exacerbating existing health conditions (Schraufnagel et al. 2019).

At EU-level, besides particulate matter (PM), nitrogen dioxide (NO₂) and ground-level ozone (O₃) are the pollutants that cause the greatest harm to human health and the environment in Europe. In 2019, air pollution continued to drive a significant burden of premature death and disease in the 41 countries reporting to EEA as 373,000 premature deaths were attributed to chronic exposure to PM_{2.5} (González Ortiz et al. 2021). The EU's progress to reach the 2030 target of 55% fewer premature deaths caused by PM_{2.5} (compared to 2005) reflects a steady decrease in the number of premature deaths over the years and if it continues to fall at a comparable rate the target will be achieved by 2032 (European Commission 2021f).

Comments / Limitations

- Further details on the indicator and methodological insights are available at: (González Ortiz et al. 2021).
- The premature deaths are calculated at NUTS3 level, and are in absolute terms higher for those regions with the highest populations. They have been thus normalised by 100,000 inhabitants in the database in order to make the numbers comparable among regions.

Metadata

Source:

European Environment Agency (EEA)

Hyperlink (availability of API)

<https://discomap.eea.europa.eu/App/AirQualityHealthRisk-sNUTS3/index.html> (API yes)

Visualisation:

<https://eea.maps.arcgis.com/apps/InteractiveLegend/index.html?appid=f008e0dc0ce24e-dfae5463748de10f27>

Availability and geographical coverage:

1,338 NUTS3 in 2019 in EU-27 plus 14 countries

Unit of measurement:

Number

Level of aggregation:

NUTS3

Time coverage and frequency:

2005, 2009, 2014-2019



LINK TO OTHER SDGs

3 GOOD HEALTH AND
WELL-BEING

13 CLIMATE ACTION

ALIGNMENT

UN list
EU list



GEOGRAPHICAL COVERAGE

EU-27 PLUS OTHERS

SDG TARGET/S

**11.6 (reduce
environmental impact)**

AVAILABILITY

323

EUROPEAN CITIES

SOURCE

**European Environment
Agency (EEA)**

PM_{2.5} CONCENTRATION

Definition of the indicator

The indicator measures the average concentration of PM_{2.5} in the past two years in European cities with over 25,000 inhabitants.

It is computed based on data derived from on the ground measurements of fine particulate matter, taken by over 400 monitoring stations, and reported to the European Environment Agency (EEA) by EU member countries under the EU Ambient Air Quality Directives (European Commission 2008).

Data are harmonised and filtered by the EEA and provided at city level.

European context

Air pollution is the single largest environmental health risk in Europe, with impacts in terms of premature death and cardiovascular and respiratory diseases, among others.

As a component of air pollution, fine particulate matter (PM_{2.5}) is largely recognized as the individual air pollutant driving the most significant health problems and premature mortality; this is a major concern, given that in 2019 in the European Union, 97% of the urban population was exposed to levels of fine particulate matter above the levels set by the World Health Organization (World Health Organization 2021).

The standards set by the European Union for air pollutants were generally less demanding than those set by the WHO; however, as part of the European Green Deal, the EU has initiated a revision of the Ambient Air Quality Directives, to align them more closely with the 2021 WHO recommendations. In particular, under the European Green Deal's Zero Pollution Action Plan, the European Commission set the 2030 goal of reducing the number of premature deaths caused by PM_{2.5} by at least 55% compared with 2005 levels (European Commission 2021f).

The indicator on PM_{2.5} concentration provides essential information to tackle this topic at local level through specific policies. To this end, useful information could be provided by the PM2.5 Atlas 2021, published by the Joint Research Centre (Thunis et al. 2021).

Comments / Limitations

- The dataset also provides a ranking of European cities according to their average levels of fine particulate matter over the past two full calendar years. Air quality is classed as: “Good” for levels of fine particulate matter that are under the annual guideline value of the World Health Organization of $10\mu\text{g}/\text{m}^3$; “Moderate” for levels from 10 to below $15\mu\text{g}/\text{m}^3$; “Poor” for levels from 15 to below $25\mu\text{g}/\text{m}^3$; and “Very poor” for levels at and above the European Union limit value of $25\mu\text{g}/\text{m}^3$.
- The dataset includes cities with a population over 25,000 inhabitants. Cities are not included in the database if: (i) the city does not have urban or suburban air quality monitoring stations; (ii) the urban and/or suburban air quality monitoring stations in the city have not reported data covering 75% of the days in the year; (iii) the city is not included in the database of cities established under the European Commission’s Urban Audit (Eurostat 2021q).
- For cities for which either data for the last calendar year or for the one before is not available, the annual mean of the available year is used.
- For the last full calendar year, the annual mean concentration of fine PM for a city is calculated by averaging the daily means for all urban background stations and suburban background stations in the city, based on “up-to-date” air quality data (EEA 2021d). For the year before last, the same procedure is used based on the validated air quality data (EEA 2021). Finally, the two resulting values are used to calculate the mean concentration across those two calendar years.

Metadata

Source:

European Environment Agency (EEA)

Hyperlink (availability of API)

<https://www.eea.europa.eu/themes/air/urban-air-quality/european-city-air-quality-viewer>

Visualisation:

–

Availability and geographical coverage:

323 cities over 25,000 inhabitants in EU-27 plus Iceland, Liechtenstein, Norway, Sweden and Switzerland

Unit of measurement:

Rate

Level of aggregation:

City

Time coverage and frequency:

2019–2020



LINK TO OTHER SDGs

3 GOOD HEALTH AND
WELL-BEING

13 CLIMATE ACTION

ALIGNMENT

UN list
EU list



GEOGRAPHICAL COVERAGE

EU-27

SDG TARGET/S

**11.6 (reduce
environmental impact)**

AVAILABILITY

800
CITIES

SOURCE

**European Commission,
Joint Research Centre**

POPULATION EXPOSED TO NO₂ CONCENTRATION

Definition of the indicator

The indicator measures the total number of people exposed to atmospheric annual mean concentrations of NO₂ exceeding 40 µg /m³.

It is computed using the Land Use Regression (LUR) model developed by the European Commission, Joint Research Centre (JRC). The model combines the NO₂ concentrations extrapolated from the AirBase database, published and updated annually by the European Environment Agency (EEA), with land use and population data parameters taken from the LUISA platform, to derive the total population exposed (Vizcaino and Lavallo 2018).

Data are filtered and harmonized by the JRC and provided at city level.

European context

Air pollution is a major environmental risk for humans and ecosystems in Europe and is the main cause of premature deaths (IHME 2013). During the last decades, the EU has developed measures to regulate anthropogenic emissions pollutants. In 2013, the EC published the Clean Air Package that set out concrete objectives for reducing the health and environmental impacts of air pollution by 2030, and contained legislative proposals to implement stricter standards for emissions and air pollution. In line with these, several measurements and strategies have been implemented at city, regional and national level. Specifically, these measures focus primarily on reductions of net emissions of NO₂ by improving automobile technologies (EC 2007), promoting alternatives to road transport or imposing traffic regulation measures.

Despite the improvements, a large proportion of urban population in Europe is still exposed to concentrations of NO₂ over the imposed legislation levels. Geographically detailed information on air pollutant concentration distribution is thus key, to understanding the impacts of air pollution on people and to designing policies that aim to mitigate these impacts.

The EU Air Quality Directive (2008/50/EC) has set forth legally binding limit values for annual and hourly ground-level concentrations of NO₂, the annual value being the more restrictive).

Comments / Limitations

- NO₂ concentrations are especially high in cities, as this is one of the main pollutants emitted by road vehicles, shipping, power generation industry and households. Besides the risk NO₂ poses for humans, nitrogen oxide emissions and the subsequent deposition of nitrogen contribute to both eutrophication and acidification of ecosystems. Therefore the Air Quality Directive has also established concentration limits (annual mean concentration limit of 30 µg/m³) to ensure the protection of vegetation and ecosystems.
- The JRC calculated the annual mean concentrations of NO₂ using LUR models in which independent variables are related to human activities such as traffic or industrial activities allocated with high resolution maps (resolution at 100m). This allows the production of highly detailed maps of concentrations. The population exposed is calculated based on these maps, whereas EEA assumes the same levels of concentration within certain areas of interest defined by proximity criteria.
- More details on the indicator and methodological insights are available at: (Vizcaino and Lavalley 2015).

Metadata

Source:

Joint Research Centre

Hyperlink (availability of API)

<http://data.europa.eu/89h/jrc-luisa-udp-no2popexposed-reference-2016>

Visualisation:

-

Availability and geographical coverage:

800 cities in 2020 in EU-27

Unit of measurement:

Number

Level of aggregation:

City

Time coverage and frequency:

2010 – 2020 – 2030 (modelled)



LINK TO OTHER SDGs

3 GOOD HEALTH AND
WELL-BEING

15 CLIMATE ACTION

ALIGNMENT

UN list
EU list



GEOGRAPHICAL COVERAGE

EU-27 PLUS OTHERS

SDG TARGET/S

11.7 (public space)

AVAILABILITY

764

URBAN CENTRES

SOURCE

**European Commission,
DG REGIO**

POPULATION WITHOUT GREEN URBAN AREAS IN THEIR NEIGHBOURHOOD

Definition of the indicator

The indicator measures the share of the urban centre population without access to green urban areas within a 400 metre walk.

It is computed by analysing the presence and the area of green urban areas that are within walking distance from the population served.

The methodology takes into account the spatial distribution of both population and green areas throughout the cities' territory and a maximum walking distance of 400 metres between the population served and the accessible green areas (Poelman 2021).

To obtain comparable results for all cities, harmonised EU-wide data sources were used, such as the complete set of Copernicus Urban Atlas 2018 land use/land cover data, population figures (JRC 2018) at the highest spatial resolution available, and TomTom street network 2018 (Poelman 2018).

The indicator does not include very small public green areas that are not captured by Urban Atlas, or information on typology, effective access and functions of green urban areas.

Data are harmonised by the European Commission, Directorate-General for Regional and Urban Policies and are provided at the level of urban centres (high-density clusters of 1km² grid cells).

European context

Green areas in cities (parks, gardens and forests) are functional under several perspectives from ecological to recreational. They also play a role in promoting public health and providing cooling through shading and enhanced evapotranspiration. As has been made explicit by the context of the pandemic, these areas contribute to a better quality of life.

This fact is acknowledged among others by the European Climate Pact, part of the *European Green Deal*, which aims to support the development of green areas to build resilience against climate threats, as well as threats to human health, with a particular focus on European cities.

Comments / Limitations

- Additional information on typology, effective access and functions of green urban areas could help refine the analysis further, provided that such information is comparable and consistent.
- The high-resolution results of the green urban areas proximity indicator can also open up opportunities for analysis combined with the distribution of demographic, socio-economic or environmental variables in urban areas, in order to address social inequalities and to prioritise areas of intervention (for example, on the basis of the availability of private gardens or the building density).
- Data by urban centre cover all urban centres that are sufficiently covered by Urban Atlas 2018 areas (coverage representing at least 85% of the urban centre population).
- The indicator is complementary to more traditional indicators, and provides a harmonised view enabling easy comparisons amongst cities, based on comparable concepts, datasets and methodologies.
- The dataset also provides information on the share of the urban centre population with access to less than 1 hectare of green urban areas within a 400 metres walk.
- Further details on the indicator and methodological insights are available at (Poelman 2018) and (Poelman 2021).

Metadata

Source:

European Commission, DG REGIO

Hyperlink (availability of API)

https://ec.europa.eu/regional_policy/en/information/publications/working-papers/2018/a-walk-to-the-park-assessing-access-to-green-areas-in-europe-s-cities

Visualisation:

-

Availability and geographical coverage:

764 urban centres in EU-27 plus Iceland, Norway, Switzerland, Western Balkans and United Kingdom

Unit of measurement:

Share

Level of aggregation:

Urban centre

Time coverage and frequency:
2018



GOAL 12

ENSURE SUSTAINABLE CONSUMPTION AND PRODUCTION PATTERNS

Description of the Goal

This Goal calls for sustainable consumption and production patterns to be ensured by including policies and procurement procedures that improve resource efficiency, reduce waste and mainstream sustainability practices across all sectors of the economy. Therefore, this Goal focuses on urgent measures required to ensure that current material needs do not lead to resource over-extraction or to degradation of environmental resources. As such, it includes efforts to reduce the material footprint, food waste and waste; increase recycling rates; and promote sustainable tourism. In addition, Goal 12 aims to promote sustainability over the long term by increasing people's awareness of the importance of choosing lifestyles in harmony with nature.

European dimension

In the EU context, Goal 12 focuses on decoupling environmental impacts from economic growth, the green economy, and waste generation and management. This focus is in line with the EU's growth strategy that aims to transform the EU into a fair and prosperous climate-neutral society, with a modern, resource-efficient and competitive economy where economic growth is decoupled from resources.

To this end, the EU has made some progress in decoupling resource and energy consumption from economic output. On the one hand, economic growth in the EU together with reductions in domestic material consumption led to an increase in the EU's resource productivity of 36.4% (between 2004 and 2019) while, on the other end, energy productivity for the same period increased by 34.1% (Eurostat 2021f).

On a similar note, the value added of the environmental goods and services sector has grown by 66.3% over the past 15 years.

This Goal is addressed by several EU policies and in particular by the new Circular Economy Action Plan for a cleaner and more competitive Europe (European Commission 2020a).

Some related European policies and legislations

Revised Urban Waste Water Treatment Directive (2021)

A new Circular Economy Action Plan For a cleaner and more competitive Europe (2020)

European Green Deal (2019)

European Pollutant Release and Transfer Register Regulation (2017)

Waste Framework Directive (2008)

Local dimension

Urban circular economy applies to all those (combined) economic activities that are implemented by public and private stakeholders in an urban context with the aim of increasing resource efficiency and reducing waste generation.

With increasing urbanisation, cities are the ideal level at which to implement circular changes and originate the circular city concept. However, assessment at urban scale is still a challenge and methods are not harmonised.

Among the several aspects of circular economy that local governments can influence, urban waste, pollutants, consumer behaviour in the transition from a linear economy to a circular economy, and sustainable tourism are all considered in this Handbook.

The EU has set a target of 60% of municipal waste to be recycled and prepared for reuse in EU Member States by 2030. Cities can also monitor and reach agreements with industrial facilities that emit pollutants in their territories.

Four indicators address Goal 12 (all at city level):

one indicator focuses on the release of chemicals to the environment (Target 12.4)

two indicators deal with the reduction of waste (Target 12.5)

one indicator addresses aspects of sustainable tourism (Target 12.b)



LINK TO OTHER SDGs

9 INDUSTRY, INNOVATION AND
INFRASTRUCTURE

13 CLIMATE ACTION

ALIGNMENT

UN list
EU list



GEOGRAPHICAL COVERAGE

EU-27 PLUS OTHERS

SDG TARGET/S

**12.4 (chemical
management)**

AVAILABILITY

60,000
INDUSTRIAL FACILITIES

SOURCE

**European Environment
Agency (EEA)**

POLLUTANTS RELEASED FROM INDUSTRIAL FACILITIES

Definition of the indicator

The indicator measures the annual variation of the total amount of the pollutants released by industrial facilities to air, water, and land, by pollutant; as well as off-site transfers of waste, and off-site transfers in waste-water.

It is computed by comparing the values of different years in the Industrial Emissions Portal database.

The indicator does not include information for facilities that do not need to report under the European Pollutant Release and Transfer Register (E-PRTR) (European Parliament and Council 2006).

Data are harmonized and filtered by the EEA and provided at industrial facility level.

European context

The information concerning the amount of pollutants released by industrial activities is useful for monitoring the effects of industrial production at local scale and designing specific policies to reduce the impact of industrial activities on the environment and health.

The Industrial Emissions Portal brings together thematic data reported annually and requested under the Industrial Emissions Directive (IED), via the EU Registry on Industrial Sites (EU Registry), and the European Pollutant Release and Transfer Register (E-PRTR). The E-PRTR is the Europe-wide register that provides easy access to key environmental data from industrial facilities in EU Member States and in Iceland, Liechtenstein, Norway, Serbia, Switzerland and United Kingdom.

Comments / Limitations

- The Industrial Emissions Portal covers over 60,000 industrial sites from 65 economic activities across Europe. These activities are within the following nine sectors: energy; production and processing of metals; mineral industry; chemical industry; Waste and waste water management; Paper and wood production and processing; intensive livestock production and aquaculture; animal and vegetable products from the food and beverage sector; and other activities
- For each facility, information is provided concerning the sites' location and administrative data; as well as the annual releases of regulated substances to air, water, and land; off-site transfers of waste; and off-site transfers in wastewater. For Large Combustion Plants (LCPs), more detailed data on energy input and emissions are provided.
- The database is limited to the facilities that are required to report under E-PRTR because they meet the following criteria: (i) the facility falls under at least one of the 65 economic activities in Annex I of the Regulation and exceeds at least one of the E-PRTR capacity thresholds; (ii) the facility releases pollutants which exceed specific thresholds specified for air, water and land in Annex II of the Regulation; (iii) the facility transfers waste off-site which exceeds specific thresholds set out in Article 5 of the Regulation.
- 91 pollutants are included in E-PRTR. They fall under the following seven groups: greenhouse gases; other gases; heavy metals; pesticides; chlorinated organic substances; other organic substances; and inorganic substances.
- The release and emissions data covers the period 2007-2020 for facilities and 2016-2020 for large combustion plants (LCPs), reported under the new E-PRTR/LCP integrated reporting.
- Emissions to land have generally not been reported much and the data are incomplete. As a result these have not been included in the current version (December 2021) of the portal.

Metadata

Source:

European Environment Agency (EEA)

Hyperlink (availability of API)

https://www.eea.europa.eu/ds_resolveuid/DAT-238-en

Visualisation:

<https://industry.eea.europa.eu/explore/explore-data-map/map>

Availability and geographical coverage:

60,000+ industrial facilities in EU-27 plus Iceland, Liechtenstein, Norway, Serbia, Switzerland and United Kingdom

Unit of measurement:

Number

Level of aggregation:

Industrial facility

Time coverage and frequency:

2007- 2020. Data collected every year



LINK TO OTHER SDGs

7 INDUSTRY, INNOVATION AND
INFRASTRUCTURE

11 CLIMATE ACTION

ALIGNMENT

UN list
EU list



GEOGRAPHICAL COVERAGE

EU-27 PLUS OTHERS

SDG TARGET/S

**12.5 (reduce waste
generation)**

AVAILABILITY

121

**CITIES AND GREATER
CITIES**

SOURCE

**Eurostat, City
Statistics database**

RECYCLED WASTE

Definition of the indicator

The composite indicator measures the total amount of municipal waste (domestic and commercial) collected per capita in one year (in kg per capita).

Municipal waste consists of waste collected by or on behalf of municipal authorities and disposed of through waste management systems.

Municipal waste includes waste generated by commerce and trade, small businesses, office buildings and institutions: schools, hospitals, government buildings; it also includes waste from selected municipal services (i.e. waste from park and garden maintenance, waste from street cleaning services, if managed as waste).

It is computed by dividing the total amount of waste generated in the municipality per year by the total number of inhabitants living in the municipality on 1 January.

The indicator does not include waste from municipal sewage networks and treatment, municipal construction and demolition waste.

Data harmonised by Eurostat are sourced from city and greater city statistics and provided at city level.

Data harmonised by Eurostat are sourced from cities and greater cities statistics and provided at city level.

European context

EU waste management policies aim to reduce the environmental and health impacts of waste and improve Europe's resource efficiency by extracting high-quality resources from waste as much as possible. The European Green Deal aims to promote growth by transitioning to a modern, resource-efficient and competitive economy.

Therefore, information about the total amount of waste per capita produced in one year can inspire more sustainable choices by customers regarding individual and collective behaviour and choices (food waste, packaging, use of plastic bottles, etc.). Municipal waste accounts for only about 10% of total waste generated, as reported according to the Waste Statistics Regulation (European Commission 2010).

In 2020, each EU inhabitant generated 505 kg of municipal waste per year on average. Although the EU has not substantially reduced its municipal waste generation in the past 15 years (in 2005 the average was 506 kg/capita/year), it has clearly shifted to more sustainable modes of managing a large quantity (Eurostat 2019), whereas more efforts are required regarding the reduction of the waste produced.

Comments / Limitations

- The concept of municipal waste includes different waste streams in different municipalities. Especially, the extent to which waste generated by offices and small businesses is included differs from municipality to municipality. Thus, different levels of municipal waste generation may reflect different coverage of the generation of waste, but also differences in the organisation of municipal waste management.
- This indicator can inform municipal strategies and be easily presented and disseminated to the public, because it is directly linked to individual consumption habits.

Metadata

Source:

Eurostat, City statistic Database (data collected from national statistics). Municipal waste generated Table: urb_cenv, Code: en4008v. Population data: Table: urb_cpop1, Code: de1001v

Hyperlink (availability of API)

Municipal waste generated: <https://europa.eu/!vvKjd4> (API yes)
Population: <https://europa.eu/!TmqQqx> (API yes)

Visualisation:

–

Availability and geographical coverage:

121 cities and greater cities in 2020 in EU-27 plus Norway, Switzerland, United Kingdom and Turkey

Unit of measurement:

Ratio

Level of aggregation:

Cities

Time coverage and frequency:

1989–2020. Data collected every year



LINK TO OTHER SDGs

7 INDUSTRY, INNOVATION AND
INFRASTRUCTURE

11 CLIMATE ACTION

ALIGNMENT

UN list
EU list



GEOGRAPHICAL COVERAGE

PORTUGAL

SDG TARGET/S

**12.5 (reduce waste
generation)**

AVAILABILITY

ALL

**PORTUGUESE
MUNICIPALITIES**

SOURCE

Statistics Portugal

MUNICIPAL WASTE

Definition of the indicator

The indicator measures the share of recycled waste over the total waste collected.

Recycling regards any recovery operation through which the materials constituting waste are transformed back into products, materials or substances for their original purpose or for other purposes. It does not regard the organic recovery of biodegradable municipal waste.

Waste regards any waste generated in private households as well as other waste, which, by its nature or composition, is similar to waste from households.

Since no harmonised data are available across Europe at local level, the case of Portugal is presented as an example.

Data are sourced from the National Statistical Institute of Portugal and provided at municipality level.

European context

According to the European Environment Agency (EEA), the waste recycling rate is increasing in the EU-27, however, with marginal improvement over the past 5 years (EEA 2021f). Specific waste streams show varying recycling rates, ranging from 66% for packaging waste to 39% for electrical and electronic waste. In 2019, almost half of the municipal waste generated in the EU was recycled (48%). EU and national strategies prioritising efficient waste management have largely contributed to these results (EEA 2021f). In 2019, the EU country with the highest recycling rate was Germany (67%) followed by Slovenia (59%) and Austria (58%) (Eurostat 2021d).

At EU level, the 2008 Waste Framework Directive (European Parliament and Council 2008) and the Packaging Waste Directive (European Parliament and Council 1994) targets were adapted in 2018, as follows:

By 2030, at least 70% of all packaging waste in each EU country should be recycled.

By 2035, all EU countries should recycle at least 65% and landfill should be less than 10% of municipal waste.

Comments / Limitations

- In the same dataset, other useful information is available, also at different levels of aggregation: total waste, landfill, energy and organic valorisation.
- The recycling rate depends both on the waste collection (people's behaviour) and on the capacity of the waste management system (managing authorities). Depending on the country, the waste management authorities can be at city, sub-regional or regional level.
- Data for this indicator are collected on a single platform for different levels of aggregation (municipality, region, country), whereas in other Member States the information, at municipal level, is usually available in single municipality platforms.

Metadata

Source:

Statistics Portugal – *Instituto Nacional de Estatística (INE)*

Hyperlink (availability of API)

https://www.ine.pt/xportal/xmain?xpid=INE&xpgid=i-ne_indicadores&indOcorrCo-d=0008658&contexto=bd&sel-Tab=tab2&xlang=en

Visualisation:

–

Availability and geographical coverage:

All Portuguese municipalities

Unit of measurement:

Share

Level of aggregation:

Municipality

Time coverage and frequency:

2002-2020. Data collected every year after 2009



LINK TO OTHER SDGs

8 DECENT WORK AND
ECONOMIC GROWTH

9 INDUSTRY, INNOVATION
AND INFRASTRUCTURE

ALIGNMENT

UN list
EU list



GEOGRAPHICAL COVERAGE

EU-27

SDG TARGET/S

**12.b (sustainable
tourism)**

AVAILABILITY

ALL

MUNICIPALITIES (LAUs)

SOURCE

**European Commission,
Joint Research Centre**

LOCAL TOURISM INTENSITY

Definition of the indicator

The indicator measures the intensity of local tourism.

Tourism intensity is defined as the ratio of the number of nights spent at tourist accommodation establishments and the number of residents in a municipality.

Data on tourism nights spent are obtained from official statistics (Eurostat) at NUTS2 level. These data are then disaggregated to the municipal level proportionally to the tourism accommodation capacity (derived from the location of tourist accommodation establishments present in online booking platforms). The population figures per LAU level are sourced from Eurostat.

Data are harmonized and filtered by the JRC and provided at municipality level.

European context

The EU is one of the most prominent tourism destinations worldwide. Predictably, tourism was one of the most negatively affected sectors during the COVID pandemic (Batista e Silva et al. 2021) (Barranco et al, 2021).

In general, the higher the tourism intensity level, the higher the risk of overtourism pre-COVID (Pasquinelli and Trunfio 2021) and of under-tourism during COVID (Curtale et al. 2022).

According to the analysis by (Batista e Silva et al. 2018), tourism intensity is generally high in coastal areas and the Mediterranean islands. Some areas in the Alpine range are also characterised by very high tourism intensity due to high tourism demand and relatively low resident populations. Large EU cities, although major attractors of tourism demand, have low to moderate tourism intensity due to the high resident population density.

Comments / Limitations

- The nights spent considered in the ‘Local tourism intensity’ indicator are solely based on official data from Eurostat based on data reporting by tourist accommodation establishments. However, nights spent in home stays (e.g., brokered by online collaborative economy platforms) are underrepresented in official statistics and in the indicator. Further methodological research and data integration is necessary to address this issue in the future. Hence, actual number of nights spent and, consequently, tourism intensity may be underestimated.
- The higher the value, the higher the potential pressure of tourism on local resources, but also the higher the dependence of the local economy on tourism. Conversely, a very low tourism intensity value implies a low relative importance of tourism for the local economy.

Metadata

Source:

European Commission, Joint Research Centre)

Hyperlink (availability of API):

<https://europa.eu/!7kkfxm>

Visualisation:

-

Availability and geographical coverage:

All Municipalities (LAUs) in 2019 in EU-27

Unit of measurement:

Ratio

Level of aggregation:

Municipality

Time coverage and frequency:

2019; 2021 (forthcoming). Data collected periodically



GOAL 13

TAKE URGENT ACTION TO COMBAT CLIMATE CHANGE AND ITS IMPACTS

Description of the Goal

Goal 13 calls for the strengthening of resilience and adaptive capacity against climate change-induced natural hazards and extreme weather events. Climate change does not only disrupt economies, but also affects lives and livelihoods, especially those in poor and vulnerable conditions.

Therefore, the goal includes efforts to integrate climate change mitigation and adaptation measures into strategies, policies and planning at various levels. In addition, the goal calls for the improvement of education, awareness and institutional capacity on climate change.

Goal 13 is highly interlinked with Goal 7 (sustainable energy) as the two are to an extent complementary given that the reduction of energy related pollutant emissions by switching to renewable energy and enhanced end-use energy efficiency will help achieve climate related targets. Objectives of Goal 13 are also strongly correlated with Goal 6 (clean water and sanitation) and Goal 14 (ocean conservation).

Although the COVID-19 pandemic travel restrictions and economic slowdowns helped reduce the amount of pollutants emitted temporarily, climate change cannot be paused. The return to normality and the world's recovery from the pandemic are expected to bring pollutant emissions back up to high levels once again, therefore the targets of Goal 13 on combating climate change are more pertinent than ever.

European dimension

In the EU context, Goal 13 focuses on climate mitigation efforts, the reduction of climate impacts and support for climate measures.

Addressing climate change is one of the priorities of the EU that has set ambitious short- and long-term emission reduction targets. However, the EU is not yet on track to meeting the increased 2030 GHG emissions reduction target of 55% (between 1990 and 2030), in spite of total emission reductions. This is mostly due to the fact that emissions from transport and energy consumption increased by about 7%. (Eurostat 2021g). Nevertheless, the European Union managed to decouple GHG emissions from economic growth, as between 2004 and 2019 GDP increased by 22.2% while GHG emissions fell by 19.7% (Eurostat 2021g). In addition, the EU continues to face unfavourable trends in climate impacts, with continuous increases in near-surface temperatures ocean acidity. Similarly, weather- and climate-related extreme events have resulted in increased economic losses in recent years (19.3% more between 2009 and 2019).

To address the adverse effects of climate change, the EU continuously mobilised an increased number of funds directed at climate measures within the European Union and also in developing countries.

Local dimension

As climate change knows no borders, climate targets are usually set at international level. However, the local level is most actively involved in the accomplishment of Goal 13 targets and must adapt to the implied changes: the world's urban areas accounted for about 66% of global primary energy use and produced 70% of the planet's carbon dioxide emissions in 2021 (IEA 2021). Local authorities can implement mitigation and adaptation measures based on urban planning, mobility, public transport and infrastructure development, energy efficiency of buildings and local subsidies or taxes.

Cities have also taken the lead in the creation of networks to fight climate change. Some of the best-known examples are: the "C40 cities", which connects 94 of the world's megacities committed to addressing climate change; the Covenant of Mayors initiative that mobilises local governments and regions to make voluntary climate commitments that help achieve emission-reduction targets within and outside the EU and to increase the climate resilience of European economies and societies.

Some related European policies and legislations

European Climate Law (2021)
EU strategy on adaptation to climate change (2021)
European Green Deal (2020)
EC 2030 climate and energy framework (2014)
Water scarcity and drought policy (2012)
Directive on assessment and management of floods (2006)

Five indicators address Goal 13 (three at city level and two at regional level):

three indicators deal with exposure to disasters (Target 13.1)
one indicator deals with the integration of climate change mitigation practices into policy (Target 13.2)
one indicator deals with GHG emissions (Target 13.10)



LINK TO OTHER SDGs

1 NO POVERTY**10** REDUCED INEQUALITIES

ALIGNMENT

UN list
EU list


GEOGRAPHICAL COVERAGE

GLOBAL

SDG TARGET/S

**13.1 (exposure to
disasters)**

AVAILABILITY

MUNICIPALITIES

SOURCE

**Emergency Events
Database (EM-DAT)**

PEOPLE AFFECTED BY DISASTERS

Definition of the indicator

This indicator measures the number of deaths, missing and directly affected persons attributed to disasters per 100,000 people. People affected includes people experiencing health problems, being displaced, or who have suffered direct damage to their livelihoods, economic, physical, social, cultural and environmental assets.

The dataset is comprised of various sources including UN, governmental and non-governmental agencies, insurance companies, research institutes and press agencies.

Data are filtered and harmonised by the Centre for Research on the Epidemiology of Disasters (CRED), gathered at the Emergency Events Database (EM-DAT) and provided at municipality level.

European context

Disaster risk management (DRM) needs a comprehensive approach that goes beyond the first response. Development and relief agencies have long recognized the crucial role played by data and information in mitigating the impacts of disasters on vulnerable populations. Systematic collection and analysis of these data provides invaluable information to governments and agencies in charge of relief and recovery activities. They are also crucial in the integration of health components into development and poverty alleviation programmes.

There is still no international consensus regarding best practices for collecting these data. Together with the complexity of collecting reliable information, huge variability in definitions, methodologies, tools and sourcing remain.

The “Disaster Risk Management Knowledge Centre” (DRMKC) provides a networked approach to the science-policy interface in DRM, across the Commission, EU Member States and the DRM community within and beyond the EU (see European Commission 2019b).

The 2020 report “Science for Disaster Risk Management 2020: acting today, protecting tomorrow” (Casajus Valles, A., Marin Ferrer, M., Poljanšek, K. 2021) provides an example of support from science to strategies for disaster risk reduction.

Comments / Limitations

- The Emergency Events Database (EM-DAT) was created by the Centre for Research on the Epidemiology of Disasters (CRED) with the initial support of the World Health Organisation (WHO) and the Belgian Government. The main objective of the database is to support humanitarian action at national and international levels. In particular, the initiative aims to rationalise decision-making for disaster preparedness, as well as provide a reliable base for vulnerability assessment and priority setting.
- The CRED, within the University of Louvain provides free access to the full Emergency Events Database (EM-DAT) for non-commercial purposes.
- In addition to providing information on the human impact of disasters – such as the number of people killed, injured or affected – EM-DAT provides disaster-related economic damage estimates and disaster-specific international aid contributions.
- To avoid conflicting information and figures due to the various sources of the database, CRED has established a method of ranking these sources according to their ability to provide trustworthy and complete data. In the majority of cases, a disaster is entered into the EM-DAT if at least two sources report its occurrence in terms of death and/or affected persons. The final figures in EM-DAT usually originate from the priority source, but they can also be completed by a secondary source. In certain cases, a secondary source can become a primary one. Also, some sources are used for specific disasters.
- Further details on the indicator and methodological insights are available at (UNISDR 2017).

Metadata

Source:

Emergency Events Database (EM-DAT)

Hyperlink:

<https://public.emdat.be/>

Visualisation:

<https://public.emdat.be/mapping/subcountry>

Availability and geographical coverage:

Global

Unit of measurement:

Number

Level of aggregation:

Municipality

Time coverage and frequency:

1990-2020. Data collected every year



LINK TO OTHER SDGs

**11 SUSTAINABLE CITIES
AND COMMUNITIES**

ALIGNMENT

UN list
EU list



GEOGRAPHICAL COVERAGE

EU-27 PLUS OTHERS

SDG TARGET/S

**13.1 (exposure to
disasters)**

AVAILABILITY

121,848

LAUs

SOURCE

**European Commission,
Joint Research Centre**

POPULATION EXPOSED TO RIVER FLOOD

Definition of the indicator

This composite indicator provides an estimation of the population exposed to river flooding assessed at LAU level for a return period of 100 years (as proposed in the EU Floods Directive (European Parliament and Council 2007)).

It is computed by intersecting the population gridded data from the Global Human Settlement Layer (GHSL POP - 100m resolution), with the European flood inundation maps (derived from LISFLOOD -FP flood plain model) for the entire Europe domain at 100m resolution and for return period of 100 years.

Data are available through the Disaster Risk Management Knowledge Centre (DRMKC) Risk Data Hub, a Geo portal developed by the JRC and provided at LAU level.

European context

River flooding remains one of the most significant natural hazards occurring in Europe in terms of economic damage (EEA 2021c).

The impacts of flooding on human activity are especially high in urban areas, due to the density of the population and the presence of physical assets/infrastructure. Even though European cities are taking action to mitigate flooding through various technologies and physical barriers both in urban areas and upstream, many improvements can still be made.

According to the European Environment Agency, annual river floods increased in north-western parts of central Europe but decreased in southern and north-eastern Europe over the period 1960-2010 because of climate change. In fact the change of climate is projected to increase the intensity and occurrence of once-in-a-century river floods in most regions of Europe, with the exception of parts of northern Europe and southern Spain (EEA 2021c).

The management of floods is based on prior assessments of flood events and their impact (as a function of hazard, exposure and vulnerability,) and has become the dominant approach to flood control policies throughout Europe. An approximation of the exposure can give insights into what can be expected and supports decision-making on possible measures that can be taken, prioritising areas where action is required.

Comments / Limitations

- The population totals in the database were disaggregated in scenarios according to the “degree of urbanisation”, classifying the LAUs into: cities, towns and suburbs, rural areas.
- The dataset also includes data for the return periods $T = \{10, 50, 200, 500\}$ years.
- The disaster loss and damage data module containing the flood records from various open sources covers a period from 1870 to 2018.
- The dataset is composed of three hazard subtypes with varying amounts of input: river floods: 818 events; flash floods: 879 events; storm surge (coastal floods): 56 events.
- Disaggregation by different aspects is also possible by using the proportions (%) within a region and applying these to the exposed population can provide information on exposed men and women, people over 65 or the exposure of various income classes, etc.
- Data and methodologies behind this indicator also support the National Risk Assessment in the context of the Union Civil Protection Mechanism (UCPM), and support the EU Climate Adaptation Strategy through a harmonised approach to climate risk data.
- Further details on the indicator and methodological insights are available in (Antofie et al. 2019).

Metadata

Source:

European Commission, Joint Research Centre, DRMKC Risk Data Hub

Hyperlink:

<https://drmkc.jrc.ec.europa.eu/risk-data-hub#/risk>

Visualisation:

<https://drmkc.jrc.ec.europa.eu/risk-data-hub#/risk>

Availability and geographical coverage:

121,848 LAUs in 2018 in EU-27 plus Iceland, Liechtenstein, Norway, Switzerland and United Kingdom

Unit of measurement:

Number

Level of aggregation:

LAU

Time coverage and frequency:

1870–2018. Data updated periodically



LINK TO OTHER SDGs

**11 SUSTAINABLE CITIES
AND COMMUNITIES**

ALIGNMENT

UN list
EU list



GEOGRAPHICAL COVERAGE

EU-27 PLUS OTHERS

SDG TARGET/S

**13.1 (exposure to
disasters)**

AVAILABILITY

121,848

LAUs

SOURCE

**European Commission,
Joint Research Centre**

POPULATION EXPOSED TO FOREST FIRES

Definition of the indicator

This composite indicator measures population exposure to forest fires, considering the Wildland–Urban Interface area (WUI).

It is computed by identifying the Wildland–Urban Interface areas (Modugno et al. 2016) at European level, then delimiting the WUI area with potential fire activity and lastly quantifying the residential built-up area and population exposed to fire within the identified WUI area.

WUI areas are considered those where forest fires are most likely to threaten assets and population and present conditions of fire hazard. They are mapped as the spaces where artificial surface (urban area) and forest fuel mass come into contact.

Data are available from the Disaster Risk Management Knowledge Centre (DRMKC) Risk Data Hub, a Geo portal developed by the JRC and provided at LAU level.

European context

Although forest fires play a functional role for forest renewal or control disease damage in an ecosystem, their increased frequency and extent in recent years, partly due to climate change, has severely impacted air and water quality, biodiversity, soil and landscape aesthetics, among others. Forest fires also release large amounts of greenhouse gases, and can cause economic damage and loss of human lives in populated areas. *The European Climate and Health Observatory* specifically studies health issues caused by forest fires.

As acknowledged in the 2021 *EU strategy on adaptation to climate change*, the latter is expected to increase the risk of forest fires in Europe. To better understand past impacts, and plan accordingly for the future, the EC developed the *European Forest Fire Information System* (EFFIS), managed by the Joint Research Centre (JRC), which monitors and reports the number of fires and the burnt area (EEA 2021b). In 2018, more countries suffered large-scale forest fires than ever before, most notably in southern Europe, but also in countries and regions that are not typically affected by forest fires (central and northern Europe). The increasing number and intensity of forest fires has meant that several European countries were in need of firefighting assistance in recent years (e.g. Italy, Greece, Sweden) (EEA 2021b).

Comments / Limitations

- The population totals in the database were disaggregated in scenarios according to the “degree of urbanisation”, classifying the LAUs into: Cities, towns and suburbs, and rural areas
- The Wildfire records cover the period 2000-2018; the catalogue includes 16,407 burned areas across European countries.
- Matching records on various impacts with the burned areas were prepared considering aggregation by season or time periods of climatological events such as drought or heatwaves. In this way, records on fatalities and injured people per fire-season and total area burned were retrieved.
- Information on economic losses are also provided in the same database.
- More updated or disaggregated data may be available in official risk assessments by national authorities.
- Disaggregation by different aspects is also possible. Using the proportions within a region and applying them to the exposed population can provide information on exposed men and women, people over 65 or exposure of various income classes, etc.
- Identification of WUI areas that are more likely to be affected by fires is essential for fire management. Researchers and policymakers have requested better accountability of impact potential from fire hazard, especially within WUI communities (Paveglio et al. 2017). Accordingly, population or artificial areas have been largely used for characterising potential exposure or sensitivity to forest fire within the WUI community (Price and Bradstock 2014). Conducted at relevant spatial scales, fire hazard potential in the WUI area can provide important information about the magnitude and extent of impact.
- Further details on this indicator and methodological insights are available at (Antofie et al. 2019).

Metadata

Source:

European Commission, Joint Research Centre. Disaster Risk Management Knowledge Centre (DRMKC) Risk Data Hub

Hyperlink:

<https://drmkc.jrc.ec.europa.eu/risk-data-hub#/risk>

Visualisation:

<https://drmkc.jrc.ec.europa.eu/risk-data-hub#/risk>

Availability and geographical coverage:

121,848 LAUs in 2018 in EU-27 plus Iceland, Liechtenstein, Norway, Switzerland and United Kingdom

Unit of measurement:

Share

Level of aggregation:

LAUs

Time coverage and frequency:

2000-2018. Data updated periodically



LINK TO OTHER SDGs

**11 SUSTAINABLE CITIES
AND COMMUNITIES**

ALIGNMENT

UN list
EU list



GEOGRAPHICAL COVERAGE

—

SDG TARGET/S

**13.2 (climate change
measures into policy)**

AVAILABILITY

—

SOURCE

**Own elaboration
(municipality)**

ECO-FRIENDLY MUNICIPAL VEHICLES

Definition of the indicator

The indicator measures the share of the vehicles that are environmental (or eco-) friendly in the municipal fleet of vehicles.

Environmental friendly vehicles are considered those vehicles that run on alternative fuels, such as electricity, hydrogen, gas or biofuel, or a hybrid version of those, and emit fewer emissions than conventional vehicles running on petrol. The indicator includes both low- and zero-emission vehicles.

A municipal fleet of vehicles may include vehicles for school transport, waste collection and bus services for local traffic among others. It is however evident that the latter category (bus vehicles) forms the majority of a municipal vehicle fleet.

It is computed as the number of environmentally friendly vehicles in the municipal fleet over the total number of vehicles in the municipal fleet.

Since no harmonised data are available across Europe at local level for this indicator, no concrete database or source is recommended for use. Instead, information and data are derived from own municipal sources.

European context

In 2019, the European Parliament and Council adopted the revised Clean Vehicles Directive (CVD) that promotes clean mobility solutions in public procurement tenders, providing a solid boost to the demand and further deployment of low- and zero-emission vehicles (European Commission 2019a).

The new Directive, which has not yet been transposed into national law by all MS, defines “clean vehicles” and sets national targets for their public procurement. It applies to different means of public procurement, including purchase, lease, rent and relevant service contracts. A MS has to meet at least half of the procurement target for clean buses through the procurement of zero-emission buses. Targets for MS vary between 27% (until 2025) and 65% (until 2030). However, bus registration figures in 2020 show that while sales of electric buses are progressing, most countries have not yet achieved the CVD targets (ACEA 2020).

National governments should make the best use of available funds, including national and European recovery plans, to achieve the targets of the directive. In fact, the EC has recently explored various ways of supporting local and urban mobility authorities in greening their bus fleets – in particular through electric buses – by offering innovative financing solution (Clean Bus Europe Platform 2022; Deal and Gentiloni 2021).

Comments / Limitations

- Own municipal records are recommended as a data source for this indicator.

Metadata

Source:

Own elaboration (municipality)

Hyperlink (availability of API): -

Visualisation: -

Availability and Geographical coverage: -

Unit of measurement:

Share

Level of aggregation:

Municipality

Time coverage and frequency:

-

Possible/suggested/useful disaggregation: -



LINK TO OTHER SDGs

7 AFFORDABLE AND
CLEAN ENERGY

9 INDUSTRY, INNOVATION
AND INFRASTRUCTURE

11 SUSTAINABLE CITIES
AND COMMUNITIES

ALIGNMENT

UN list
EU list



GEOGRAPHICAL COVERAGE

EU-27 PLUS OTHERS

SDG TARGET/S

**13.2 (climate change
measures into policy)**

AVAILABILITY

116,572
MUNICIPALITIES

SOURCE

OpenGHGMap

CO₂ EMISSIONS

Definition of the indicator

The indicator provides an estimate of CO₂ emissions.

It is computed by spatially disaggregating each country's official CO₂ emissions inventory to places, using activity data from Open Street Map. Emissions are localised at the place of emission: vehicle emissions are attributed across fuel stations, train emissions at stations, aviation bunker fuel emissions at airports, and so on. Industrial source emissions are located at the registered address, which is either where these emissions physically occur or where they are legally controlled.

The indicator does not include an emissions inventory related to the consumption footprint that would attribute all emissions associated with imported goods and services produced domestically or abroad, to consumers.

Data are provided at municipality level.

European context

While climate goals are set at national and international level, local governments and the general public are often largely involved in the accomplishment of these goals and must adapt to the implied changes.

City-level CO₂ emission inventories are therefore fundamental for supporting the EU's decarbonisation goals: inventories are essential for priority setting and for estimating impacts from the decarbonisation transition.

The inventory can help to make local and regional sources of emissions more tangible for policy makers and local communities, and it provides a good starting point, especially for municipalities that lack a detailed GHG emissions inventory. Making an abstract concept such as GHG emissions more visible will enable discussions regarding localisation and the upgrading of facilities and infrastructures, and will provide a basis for designing focussed policies and fostering behavioural changes, with a high potential impact for the region (Moran et al. 2021).

Comments / Limitations

- The database provides an essential starting point for cities to act on climate change and start preparing a local climate action plan (CAP).
- The dataset is disaggregated by nine emission sources: airports, buildings, industrial facilities, farms, vehicles, harbours, refineries, TiOx (Titanium dioxide) production, and train stations. It is provided in both absolute and per capita values.
- The current model focuses only on CO₂ emissions, other GHG gasses are not included.
- The model is broadly consistent with the Open-source Data Inventory for Anthropogenic CO₂ (ODIAC 2019) and EDGAR - Emissions Database for Global Atmospheric Research (European Commission 2020f) results but distinguishes higher cell-level variability and provides results per jurisdiction rather than in a gridded form. The model does not include emissions from land-use, land-use change, and forestry.
- Emissions from cargo flights, long-haul flights and military aviation could be inaccurately allocated to airports.

Metadata

Source:

OpenGHGMap R2021A, calculated by (Moran et al. 2021)

Hyperlink:

<http://dx.doi.org/10.5194/essd-14-845-2022>

Visualisation:

<https://openghghmap.net/>

Availability and geographical coverage:

116,572 Municipalities in 2018 in EU-27 plus Iceland, Liechtenstein, Norway, Switzerland, Turkey, Ukraine and United Kingdom

Unit of measurement:

Number

Level of aggregation:

Municipality

Time coverage and frequency:

2018. Data updated periodically



GOAL 14

**CONSERVE AND SUSTAINABLY USE
THE OCEANS, SEAS AND MARINE
RESOURCES FOR SUSTAINABLE
DEVELOPMENT**

Description of the Goal

This goal calls for the prevention and reduction of marine pollution, and the sustainable use of marine and coastal ecosystems. The goal includes efforts to reverse the impacts of ocean acidification and eutrophication; regulate harvesting; end overfishing and destructive fishing practices; protect marine life and biodiversity; and strengthen the transfer of marine technology and the implementation of international law.

Goal 14 acknowledges that healthy oceans and seas are essential to the existence of humankind as they are a primary source of food, energy and water, while also acting as a global climate system regulator. As such, Goal 14 is highly interlinked with the objectives and targets of Goal 3 (Good Health and Well-being), Goal 13 (Climate Change) and Goal 6 (clean water and sanitation).

European dimension

In the EU context, Goal 14 focuses on ocean health, marine conservation and sustainable fisheries.

Overall, coastal bathing water quality is continuously improving (since 2013) thanks to European-wide efforts to reduce microbiological contamination and marine litter in these waters. However, despite improvements in bathing water quality, pollution continues to threaten the marine environment by causing eutrophication: in 2019, marine waters were classified as eutrophic three times (in terms of area) as compared to 2014 (Eurostat 2021h). To the contrary, ocean acidification levels in the EU have been declining at a steady rate since 1985.

The spatial extent of marine protected areas has been increasing in the EU and is expected to be significantly extended due to the new Biodiversity Strategy for 2030 (European Commission 2020g). However, growth in the extent of protected areas alone does not necessarily reflect the protection of species and habitats, as a high proportion of marine species and habitats across Europe's seas are still in 'unfavourable conservation status' (EEA 2019a).

In the EU, improved sustainability of fisheries in the North-East Atlantic and adjacent seas has been observed in recent years. Nevertheless, the picture is quite different in the Mediterranean and Black Sea, where overexploitation and overfishing remained high until 2017; for these areas though, extended data limitation do not permit thorough assessments.

Local dimension

Cities can substantially contribute to the reduction of ocean pollution that originates from the urban environment. This kind of pollution includes a wide variety of hydrocarbons, hazardous household waste, and other toxic agents. Thanks to an appropriate design and maintenance of catchment basins and urban drainage systems, cities can significantly contribute to achieving the targets of Goal 14, while also implementing local measures to improve wastewater treatment, and effectively reduce and recycle waste, in particular plastics.

As cities greatly contribute to GHG emissions and climate change, with a direct impact on oceans and seas, they also have a central role to play in controlling emissions.

Local governments cooperate with the private sector and civil society organisations on the sustainable development of fisheries and coastal areas through the Fisheries Local Action Groups, funded by the European Maritime and Fisheries Fund.

Some related European policies and legislations

Bathing Water Directive (2021)

EU biodiversity strategy for 2030 (2020)

Directive on the reduction of the impact of certain plastic products on the environment (2019)

Regional Sea Conventions (2016)

Marine Strategy Framework Directive (2008)

European Common Fisheries Policy (2004)

Two indicators address Goal 14 (one at single bathing site level and one at provincial level):

both deal with the reduction of marine pollution (Target 14.1)



LINK TO OTHER SDGs

6 CLEAN WATER AND SANITATION

ALIGNMENT

UN list
EU list



GEOGRAPHICAL COVERAGE

EU-27 PLUS OTHERS

SDG TARGET/S

14.1 (reduce marine pollution)

AVAILABILITY

22,276

BATHING SITES

SOURCE

European Environment
Agency (EEA)

BATHING SITES WITH EXCELLENT WATER QUALITY

Definition of the indicator

The indicator gives the total number of bathing sites classified as having 'excellent' water quality.

It is computed by counting the number of bathing sites in the area of interest with the best classification in the database collected by the European Environment Agency (EEA).

The classification is assigned according to the data resulting from the collection of water samples by local authorities at officially identified bathing sites (e.g. coastal, transitional, river and lake water bodies) throughout the bathing season (e.g. May - September). The samples are then analysed for two types of bacteria that indicate contamination from sewage or livestock according with EEA Methodological prescriptions. Depending on the levels of bacteria detected, the bathing water quality is classified as 'excellent', 'good', 'sufficient' or 'poor'.

Data are sourced and harmonised by the EEA and provided at single bathing site level.

European context

The EU *Bathing Waters Directive* (European Commission 2006) requires Member States to identify popular bathing places in fresh and coastal waters and monitor them for microbiological contamination (amongst other substances) throughout the bathing season.

The quality of bathing water in Europe has been consistently satisfactory in previous years, and of a much higher quality than a few decades ago. This is due to the systematic care of the good environmental status of water, especially thanks to major investment in wastewater treatment plants, the regulation of urban drainage and to sustainable solutions in the farming sector. Systematic monitoring and management introduced under the *Bathing Water Directive* is important for managing risks to bathers' health, encouraging targeted investments in water protection and strengthening people's confidence in European water policy.

For 2020, the *European Bathing Water Quality interactive assessment* tracks the water quality of 22,276 bathing sites across the EU, Albania, Switzerland and the United Kingdom. The share of excellent sites represented 83% of bathing sites in the EU, while the minimum water quality standards were met at 93% of sites. The quality of coastal sites is generally better than that of inland sites. In 2020, 85.4% of the EU coastal bathing sites were classified as being of excellent quality compared to 77.5% of inland sites.

Comments / Limitations

- The share of bathing sites classified with “excellent” water quality (instead of the total number of bathing sites) should also be considered as the total number of sites included and measured may vary year to year.
- For this indicator, ‘excellent’ water quality should be measured as the objective would be to have all bathing sites in this status. However, the number and share of bathing sites classified with ‘good’, ‘sufficient’ or ‘poor’ quality, and their trend over time are also an area of interest.
- Every year, the European Commission and the EEA publish a European Bathing Water Quality report, based on the information provided by the Member States. The public have access to high-quality information regarding bathing water quality through the EEA website, with information regarding bathing water quality for coastal beaches and inland sites across Europe, and can check bathing water quality on an interactive map, download data and individual country reports, and compare the water quality of previous years (EEA 2015).
- Countries run national or local websites with detailed information on each bathing water site. These websites usually include a map search function and allow the public to monitor the water status, both in real time and for previous seasons.
- The quality of a number of bathing waters could not be classified due to an inadequate number of samples in relation to the restrictions caused by the epidemic. For the 2020 season, 1,309 (6.0%) EU bathing waters were not classified, compared to 806 (3.7%) in 2019.

Metadata

Source:

European Environment Agency (EEA)

Hyperlink (availability of API):

<https://www.eea.europa.eu/themes/water/europes-seas-and-coasts/assessments/state-of-bathing-water/state-of-bathing-water-4>

Visualisation:

<https://www.eea.europa.eu/themes/water/interactive/bathing/state-of-bathing-waters>

Availability and geographical coverage:

22,276 bathing sites in 2020 in EU-27 plus Albania, Switzerland and United Kingdom

Unit of measurement:

Number

Level of aggregation:

Bathing site

Time coverage and frequency:

1990-2020. Data collected every year



LINK TO OTHER SDGs

9 INDUSTRY, INNOVATION
AND INFRASTRUCTURE

11 SUSTAINABLE CITIES
AND COMMUNITIES

13 CLIMATE ACTION

ALIGNMENT

UN list
EU list



GEOGRAPHICAL COVERAGE

EU-27 PLUS OTHERS

SDG TARGET/S

**14.1 (reduce marine
pollution)**

AVAILABILITY

SIX

ANDALUSIAN PROVINCES

SOURCE

**Autonomous Community
Of Andalusia**

POLLUTION LOAD OF URBAN EFFLUENTS DISCHARGED TO THE COASTLINE

Definition of the indicator

The indicator measures the pollution load present in urban effluents, to verify the volume and characteristics of pollution discharged into the sea.

It is computed based on the Pollution Unit (PU), calculated for suspended solids, organic material such as chemical oxygen demand and nutrients (total nitrogen and total phosphorus).

The pollution unit synthesises for each parameter the information on the volume of discharges, considering its distribution and the specific contaminants identified.

The calculation includes all urban discharges, with and without treatment, both to coastal and transitional waters, these representing 93% and 7%, respectively, of the Pollution Units emitted.

Since no harmonised data are available across Europe at local level, the case of Andalusia is presented as an example.

Data are harmonised by the Autonomous Community of Andalusia and provided at province level.

European context

Coastlines are rich and dynamic natural spaces, affected by multiple pressures and socio-economic processes. Public administrations must engage in managing this complex balance, in order to preserve their natural systems as well as the activities (from fishing to tourism) that are carried out on the coastline based on them. Over the last decades in Europe, agricultural runoff, changes in river inputs and, in particular, the dumping of waste water have led to an increase of nutrient inputs in coastal waters.

Under the Convention for the Protection of the Marine Environment of the Northeast Atlantic (OSPAR) Agreement, the RID (Riverine Inputs and Direct Discharges) programme requires MS to provide information on direct and indirect emissions to the sea. In the frame of the Programme for the Assessment and Control of Marine Pollution in the Mediterranean (MED POL) program, the parties concerned must carry out a monitoring programme for water quality and emissions. Derived from all these obligations, local and regional governments inform the Ministry responsible for coasts and marine environment about emissions on the coasts (Atlantic and Mediterranean), providing the annual calculation of polluting load of urban and industrial discharges.

Comments / Limitations

- The dataset includes the following sub-indicators:
 - Evolution of urban effluents discharged to the coast, 2001-2018.
 - Evolution of urban effluents discharged to the coast according to the parameters analysed: Chemical Oxygen Demand (COD), nitrogen, phosphorus and suspended solids, 2008-2018.
 - Evolution of the flow of urban effluents discharged to the coast by province, 2008-2018.
 - Pollution load of urban effluents according to discharge authorisation.
- Further details on the indicator and methodological insights are available at (Junta de Andalusia 2019).
- Other coastal regions from countries engaged in the OSPAR Agreement and Barcelona convention might produce similar indicators.
- This indicator refers to discharges at coastal points/sites leaving river-specific indicators aside.

Metadata

Source:

Junta de Andalusia, Indicator
*Carga contaminante de efluentes
urbanos vertidos al litoral*

Hyperlink (availability of API): https://descargasrediam.cica.es/repo/s/RUR?path=%2F16_INDICADORES_ESTADISTICAS%2F01_IMA%2FIMA_2020%2FEstadisticas_indicadores%2F05_Litoral_estado_y_ordenacion

Visualisation: -

Availability and geographical coverage:

Six Andalusian provinces
(NUTS3) in 2018

Unit of measurement:

Number

Level of aggregation:

Province (NUTS3)

Time coverage and frequency:

2001–2018. Data collected
every year



GOAL 15

PROTECT, RESTORE AND PROMOTE SUSTAINABLE USE OF TERRESTRIAL ECOSYSTEMS, SUSTAINABLY MANAGE FORESTS, DESERTIFICATION, AND HALT AND REVERSE LAND DEGRADATION AND HALT BIODIVERSITY LOSS

Description of the Goal

This goal calls for the protection, restoration, conservation and sustainable use of terrestrial, inland-water and mountain ecosystems. It includes efforts to sustainably manage forests; combat deforestation, desertification and droughts; halt and restore degraded land and soil, and preserve biodiversity by also protecting threatened species. The goal calls for urgent action to reduce the loss of natural habitats and biodiversity not only as aspects of the human heritage and but as direct sources of food and water security, climate change mitigation and adaptation, and peace and security.

Nature and land-based ecosystems are critical to human survival, as they provide goods, raw materials and ecosystem services (e.g. capture of carbon, maintenance of water and soil quality, provision of habitat for biodiversity). They also contribute to the reduction of the risks posed by climate change-induced natural disasters and extreme weather events. Reducing the increasing stress on nature and promoting the sustainable use of ecosystems is therefore key for the generations to come.

European dimension

In the EU context, Goal 15 focuses on the health and well-functioning of ecosystems, on halting land degradation and preserving biodiversity, especially in light of global trends such as population growth, accelerating urbanisation and the increasing need for natural resources.

To this end, the EU has significantly progressed in making European rivers cleaner, as organic and phosphate pollution levels have been constantly decreasing since 2000 (by 37.7% and 28.9% respectively between 2000 and 2018). In addition, the EU's share of forest and wooded land area is marginally but steadily growing, covering 43.5% of the total area in 2018 (up by 1% since 2015). Nevertheless, at the same time, the 'land take' (the process of transforming agricultural, forest and other semi-natural and natural areas into artificial areas) in the EU grew between 2006 and 2018 by 8.3% (Eurostat 2021i).

Efforts to address and mitigate soil erosion have helped the EU to reduce the extent of land area at risk of severe soil erosion by 0.6% (between 2010 and 2016), while many terrestrial habitats and species in the EU have not reached favourable conservation status (as set out by the Habitats Directive) (EEA 2020).

Local dimension

With an increasing urban population in Europe and the associated induced demand on natural resources, urbanisation is a major threat to natural ecosystems.

Local governments can play a significant role in achieving the targets of Goal 15 by protecting natural areas surrounding cities, reversing land degradation (also limiting land abandonment), and preserving existing biodiversity also in urban areas, for example by promoting green infrastructures. Green urban spaces improve air quality and climate-change mitigation and are a fundamental component of well-being, having positive effects on both mental and physical well-being and social cohesion.

Few SDG indicators related to Goal 15 are suitable for cities, as the achievement of many of its targets go beyond the powers of local governments. What is more, Goal 15 is not only tackled within strict administrative boundaries (be they urban or regional) but often expands into other spatial or conceptual divisions.

Some related European policies and legislations

EU Biodiversity Strategy for 2030 (2020)

Water scarcity and drought policy (2012)

Common Agricultural Policy (2006)

Birds and Habitats Directives (1992)

Three indicators address Goal 15 (one at city level, one at regional level and one at water body level):

two indicators deal with the restoration of terrestrial and freshwater ecosystems (Target 15.1)

one indicator addresses land degradation (Target 15.3)



LINK TO OTHER SDGs

6 NO POVERTY**13** CLIMATE ACTION**14** LIFE BELOW WATER

ALIGNMENT

UN list
EU list


GEOGRAPHICAL COVERAGE

EU-27 PLUS OTHERS

SDG TARGET/S

**15.1(restoration
of terrestrial and
freshwater ecosystems)**

AVAILABILITY

1,827
WATER BODIES

SOURCE

**European Environment
Agency (EEA)**

SURFACE WATERS WITH HIGH ECOLOGICAL STATUS

Definition of the indicator

The indicator measures the share of surface waters with high ecological status. Ecological status is determined (and classified into bad, poor, moderate, good and high) for each of the surface water bodies of rivers, lakes, transitional waters and coastal waters, based on biological quality elements and supported by physico-chemical and hydromorphological quality elements. The overall ecological status classification for a water body is determined, according to the 'one out, all out' principle, by the element with the worst status out of all the biological and supporting quality elements. (EEA 2018).

Data are harmonised and sourced by the European Environment Agency (EEA) and provided at water body level.

European context

The ecological status of surface waters is determined by water quality (e.g. pollution) and habitat degradation. According to the EEA, the issue of most concern for surface water bodies is pollution stemming from wastewater and agricultural sources, while other hydromorphological aspects (e.g. barriers, low-flow or channelised rivers) also put pressure on their ecological status, with the main impacts being nutrient enrichment, chemical pollution and habitat alterations (EEA 2021a). To this end, the main objective of the overall EU water policy is to ensure that a sufficient quantity of good-quality water is available for the needs of both people and the environment. This is above all reflected in the 2001 Water Framework Directive (WFD), which requires Member States to achieve good status for all surface water and groundwater bodies.

In 2015, approximately 40% of surface waters (rivers, lakes and transitional and coastal waters) were characterised with good ecological status (EEA 2018). However, this figure has only marginally improved since 2009, with ecological status remaining similar for most water bodies; hence, more measures are needed for further improvement. According to EEA, in order to address the remaining 60% of surface waters that have less than good ecological status, the following measures will be necessary: full implementation of management and mitigation measures under the WFD, in combination with full implementation of measures under other relevant directives (EEA 2021a).

Comments / Limitations

- The Water Information System for Europe (WISE) Freshwater visualisation tool presents more and more detailed results.
- Specific results on the ecological potential of heavily modified and artificial water bodies (HMWBs and AWBs) can be obtained from the WISE Freshwater visualisation tool. Good ecological potential is the environmental objective for HMWBs and AWBs. Its achievement requires improvements to be made to the physico-chemical, hydromorphological and biological conditions as far as possible without impairing the non-substitutable water uses that were the reason for the designation of HMWB or AWB.
- Countries report data on the ecological status of their water bodies to the EEA and these data are stored in the WFD database.
- The ecological status is comparable between countries and river basin districts to a certain extent; however, the interpretation of differences in status should take into account differences in the use of quality elements in determining overall status.
- Further details on this indicator and methodological insights are available at (EEA 2018) and (European Commission 2019e).

Metadata

Source:

European Environment Agency (EEA)

Hyperlink:

https://www.eea.europa.eu/ds_resolveuid/3b5857899c0f-4d27b0b92030ccb7f668

Visualisation:

<https://europa.eu/!DTPwRH>

Availability and geographical coverage:

1,827 Water bodies in 2015 in EU-27 plus Norway and the United Kingdom

Unit of measurement:

Share

Level of aggregation:

Water body

Time coverage and frequency:

2010–2015. Data updated every six years



LINK TO OTHER SDGs

-

ALIGNMENT

UN list

EU list



GEOGRAPHICAL COVERAGE

GLOBAL

SDG TARGET/S

**15.1(restoration
of terrestrial and
freshwater ecosystems)**

AVAILABILITY

119

CITIES GLOBALLY

SOURCE

**Food and Agriculture
Organization (FAO)**

NEWLY PLANTED TREES

Definition of the indicator

The indicator measures the number of newly trees planted in the city. It is computed as the aggregated number of newly planted street trees (growing along pavement, roadsides, driveways, highways and parking lots) and park trees (trees, shrubs, bushes, hedges and other woody vegetation on land in public parks, public cemeteries, and all areas owned by the city, or areas to which the public has free access to). The indicator does not include information on the tree type and diversity.

Data harmonised by the Tree Cities of the World, a programme promoted by the Food and Agriculture Organization (FAO), are sourced from cities recognised by the programme through a dedicated certification process and provided at city level.

European context

Under the EU Green Deal, the EU biodiversity strategy for 2030 commits to planting at least three billion additional trees in the EU by 2030 in full respect of ecological principles (European Commission 2020). To monitor the progress of this number, the EC launched the MapMyTree counter that counts new trees that comply with the criteria of the 3 Billion Trees Pledge, since the adoption of the EU biodiversity strategy (European Commission 2021b). The accompanying map provides different options to view where trees have been planted across the EU from NUTS1 to NUTS3 level.

Moreover, the EC has dedicated a section of its New EU Forest Strategy for 2030 on cities as an ideal location to plant trees, and in detail, trees in urban and peri-urban areas: street trees, trees in parks and open spaces, trees on private property and in green buildings. In addition to trees, green roofs and urban gardens together with initiatives to replace tiles with plants, bushes and trees also play a growing and important role in greening the cities. Although the pledge is about trees, it could also be a stimulus to create other types of green areas, such as with the smaller plant/grass species typically used in green roofs (European Commission 2021b).

Comments / Limitations

- The 2021 database concerns 24 cities across seven EU-27 MS.
- Own municipal records are recommended as a data source for this indicator.
- The responsibility for city trees (planting, care, maintenance, removal) usually lies within either a designated city tree manager, a municipal department or office, or a city tree board.
- Methodologies for counting trees at city-level include complete census or sample inventories.
- The Tree cities of the World platform keeps a repository of different entries per year for a recognised city.
- A city's recognition and visualisation on the platform is annual and is not on a rolling basis. Therefore, the cities on the map are a snapshot of those that were recognised in the last calendar year.
- A similar indicator for target 15.1 is the share of tree canopy coverage computed as the extent of canopy (in e.g. square metres) over the extent of the city. This indicator is also called 'Tree cover density' (Siragusa et al. 2020). Besides the restoration of terrestrial ecosystems addressed with the proposed indicator, the conservation and preservation of existing vegetation is also key to meeting target 15.1. Keeping track of such activities (e.g. through number of trees pruned) is also recommended.

Metadata

Source:

Own city statistics reported at the Tree Cities of the World - Programme of the Food and Agriculture Organization

Hyperlink:

<https://treecitiesoftheworld.org/directory.cfm>

Visualisation:

-

Availability and geographical coverage:

119 cities globally in 2021

Unit of measurement:

Number

Level of aggregation:

City

Time coverage and frequency:

2021. Data updated every year



LINK TO OTHER SDGs

3 GOOD HEALTH AND
WELL-BEING

11 SUSTAINABLE CITIES AND
COMMUNITIES

ALIGNMENT

UN list
EU list



GEOGRAPHICAL COVERAGE

EU-27

SDG TARGET/S

15.3 (land degradation)

AVAILABILITY

1,163
NUTS3

SOURCE

**European Commission,
Joint Research Centre**

AGRICULTURAL LAND ABANDONMENT

Definition of the indicator

The indicator measures the share of the abandoned agricultural land with regard to the total Utilised Agricultural Area (UAA).

Abandoned agricultural land can be defined as “land that was previously used for crop or pasture/livestock grazing production, but does not have farming functions anymore (i.e. a total cessation of agricultural activities) and has not been converted into forest or artificial areas either” (Perpiña Castillo et al. 2018).

It is computed by analysing the likely territorial patterns of land abandonment within the period 2018-2050 within the EC-JRC LUISA Territorial Modelling Platform (JRC 2022), using both market-related (agricultural land demands projected up to 2050 from the 2016 CAPRI baseline projections) and non-market related elements (biophysical, agro-economic, demographic and geographic factors by regions). The indicator presents data concerning the current status of land abandonment and future projections (2018-2050) at national, regional (NUT2/NUTS3) and grid level for EU27 Member States.

Data are harmonised by the Joint Research Centre and provided at NUTS3 level.

European context

In most Member States, Utilised Agricultural Area (UAA) has been considerably reduced due to several reasons (urban sprawl, deforestation and farmland abandonment). According to (Carolina Perpiña Castillo et al. 2021b), approximately 11% (more than 20 million ha) of agricultural land in the EU is under high risk of abandonment due to biophysical land suitability, farm structure and agricultural viability, population and regional specifics, among others; future projections for 2030 expect around 3% of the total agricultural land to be abandoned.

The environmental impacts of farmland abandonment may either present an opportunity to ecologically restore an area, or a threat to biodiversity, food security and human health and well-being. Targeted policy interventions, among others in the form of the EU Common Agricultural Policy can negate such potential risks.

Comments / Limitations

- This indicator is calculated at grid level and aggregated at NUTS3 level for visualisation and statistical purposes. Despite this, in some specific contexts, it can support the assessment of a city within its region.
- The risk map of agricultural land abandonment is built by aggregating a set of factors and adapting several methods into three groups: 1) biophysical land suitability for general agricultural activities; 2) farm structure and agricultural viability, and 3) population and regional context. Each criterion corresponds to a spatial thematic layer or statistical information from different European data sources.
- The biophysical factors have been assigned the highest weights following the assumption that abandonment could be initially triggered by primary drivers related to remote and mountain regions, as well as unfavourable soil and climate conditions for agriculture.
- More details on the indicator and methodological insights are available at (Perpiña Castillo et al. 2018 and Perpiña et al. 2020 and 2021).

Metadata

Source:

European Commission, Joint Research Centre, Urban Data Platform Plus

Hyperlink:

<https://urban.jrc.ec.europa.eu/trends/en?is=Default&ts=EU&tl=3&dtype=udpp&i=4&db=5&it=download>

Visualisation:

<https://urban.jrc.ec.europa.eu/trends/en?is=Default&ts=EU&tl=3&dtype=udpp&i=4&db=5&it=outline>

Availability and geographical coverage:

1,163 NUTS3 regions in 2018 in EU-27

Unit of measurement:

Share

Level of aggregation:

NUTS3

Time coverage and frequency:

2018 and projections for 2020, 2030, 2040, 2050. Data updated periodically

16 PEACE, JUSTICE AND STRONG INSTITUTIONS



GOAL 16

PROMOTE PEACEFUL AND INCLUSIVE SOCIETIES FOR SUSTAINABLE DEVELOPMENT, PROVIDE ACCESS TO JUSTICE FOR ALL AND BUILD EFFECTIVE, ACCOUNTABLE AND INCLUSIVE INSTITUTIONS AT ALL LEVELS

Description of the Goal

The Goal calls for peaceful and inclusive societies based on respect for human rights, protection of the most vulnerable, the rule of law and effective governance at all levels. It also envisages transparent and accountable institutions, which promote non-discriminatory laws and policies, combat crime and prevent violence and terrorism. The Goal covers measures on illicit flows, corruption and bribery reduction.

The Goal also calls for a better understanding of the links between the environment and human security to prevent conflict, allow post-conflict reconstruction and promote peace and stability for societies, as fundamental conduits for sustainable development.

European dimension

In the EU context, Goal 16 focuses on the progress made in ensuring peace and personal security, in promoting access to justice and in increasing trust in EU institutions.

Undisputedly, the EU has become a safer place to live, with the number of homicides (54% less than in 2002) and number of people affected by crime, violence or vandalism (2% less than in 2019) significantly reduced. More than half of the European population enjoys access to an independent justice system (4% more than in 2016) (Eurostat 2021j). Because of effective European justice systems and their fight against corruption, EU Member States are among the least corrupt countries in the world (Transparency International 2020). Nevertheless, corruption is a persistent challenge for European societies, compromising trust in democratic institutions and weakening the accountability of political leadership, and the European Commission is taking specific measures to fight it (European Commission 2015).

Confidence in the political institutions as a prerequisite for effective democracies has been also increasing in Europe. Nevertheless, the increase in employment precariousness (Eurostat 2019g) and the shrinkage of the welfare system have made the public less content with politics in recent years. In order to address this, there have been dedicated efforts at European level to increase democratic participation through participatory budgeting, deliberative pools, public assemblies and transparency (open government initiatives) (PBWA 2021); (European Parliament 2021).

Local dimension

Insecurity reduces the level of life satisfaction and trust towards others and institutions. Cities can contribute to lowering crime rates through a variety of initiatives, including: engaging youth in social activities (especially in the most deprived neighbourhoods); providing basic support to individuals struggling financially, and ensuring an efficient local police system (Becker 2004).

The local level is also the primary gateway to restoring trust in institutions through democratic participation and innovation. Engaging the public in what matters most in their everyday life can also foster their participation in national and European elections (Bank 2016; Giuliano and Nunn 2013). Furthermore, the local level is where it is easiest for the public to access information and contribute to society.

Some related European policies and legislations

Citizens' dialogues and Citizens' participation in the EU decision-making resolution (2021)

Four indicators address Goal 16 (all at city level):

one indicator deals with security in cities and the reduction of death rates (Target 16.1)

two indicators deal with efficient and transparent institutions (Target 16.6)

two indicators deal with participatory decision-making (Target 16.7)


[LINK TO OTHER SDGs](#)

ALIGNMENT

UN list
EU list


GEOGRAPHICAL COVERAGE

EU-27 PLUS OTHERS

SDG TARGET/S

16.1 (reduce death rates)

AVAILABILITY

486
CITIES AND GREATER CITIES

SOURCE

Eurostat, City Statistics database

INTENTIONAL HOMICIDES

Definition of the indicator

The indicator measures the number of intentional homicides committed in one calendar year. Homicide is defined as the intentional killing of a person, including murder, manslaughter, euthanasia and infanticide. It excludes death by dangerous driving, abortion and help with suicide. Attempted (uncompleted) homicide is also excluded.

Data harmonised by Eurostat are sourced from city and greater city statistics and provided at city level.

European context

Crime statistics are used by EU institutions, national authorities, media, politicians, organisations, and the general public. Each Member State establishes its own criminal laws and defines crimes, legal proceedings and justice reactions, as well as specifications for official crime statistics in their own way (except for crimes that are covered by international or EU law).

According to Eurostat, the police recorded 3,875 cases of intentional homicides in 2019 (which is the lowest observed number since 2008 with a reduction of 32%). In relation to the population size (police-recorded offences per 100,000 inhabitants), the highest figures were observed in Latvia (4.7) and Lithuania (3.0), followed by nine countries with between one and two intentional homicides per 100,000 inhabitants (Estonia, Finland, Cyprus, Slovakia, Romania, France, Belgium, Bulgaria and Sweden). In the same year, 36% of intentional homicide victims in the EU were females, while this percentage decreased as compared to 2018 for 12 Member States in total (Eurostat Statistic Explained 2021b).

Comments / Limitations

- The 2018 Eurostat City Statistics Database for this indicator does not include data points for the following countries: BG, CZ, DK, EL, ES, FR, CY, LU, NL, AT, PT, RO and SK.
- Data and crime statistics are registered and handled by different national authorities within a country. Data sources can include police and other law enforcement agencies, public prosecutors, law courts, prison institutions, relevant ministries or statistical offices. Of those authorities, data stemming from police records appear to be more complete as they include all registered offences regardless of whether they led to prosecution.

Metadata

Source:

Eurostat, City Statistics Database, (data collected from national statistics). Table: urb_clivcon, Code: sa3005v

Hyperlink (availability of API)

https://ec.europa.eu/eurostat/databrowser/view/URB_CLIVCON__custom_2089750/default/table?lang=en (API yes)

Visualisation:

https://ec.europa.eu/eurostat/databrowser/view/URB_CLIVCON__custom_2089750/default/map?lang=en

Availability and geographical coverage:

486 cities and greater cities in 2018 in EU-27 plus Norway, Switzerland, United Kingdom and Turkey

Unit of measurement:

Number

Level of aggregation:

City and greater city

Time coverage and frequency:

1989-2020. Data collected every year



LINK TO OTHER SDGs

11 SUSTAINABLE CITIES
AND COMMUNITIES

17 PARTNERSHIPS FOR THE
GOALS

ALIGNMENT

UN list
EU list


GEOGRAPHICAL COVERAGE

PORTUGAL

SDG TARGET/S

**16.6 (efficient
and transparent
institutions)**

AVAILABILITY

ALL
**PORTUGUESE
MUNICIPALITIES**

SOURCE

**Transparency
International Portugal**

TRANSPARENCY OF THE PUBLIC ADMINISTRATION

Definition of the indicator

The Municipal Transparency Index (ITM), allows the public and decision-makers to assess the degree of transparency of their municipality through an analysis of the information made available to the public on the websites of the Municipal Councils.

The ITM is composed of 76 indicators grouped into seven areas:

- Information on the Organisation, Social Composition and Functioning of the Municipality
- Plans and Reports
- Taxes, Fees, Prices and Regulations
- Relationship with Society
- Public Contracting
- Economic and Financial Transparency
- Transparency in the area of Urbanism

The Transparency Index visits the websites of each of the 308 Portuguese municipalities, seeking to find each of the 76 indicators included in the index. For each indicator, a binary result is indicated: the information is included (score 1) or not (score 0). The index is then calculated. It assumes value 0 if no information is available and 100 if all the information is easy accessible on the municipalities' websites, all the other values are given based on the percentage of information available.[https://transparencia.pt/wp-content/uploads/2017/11/ITM_Apresentacao_e_Indicadores_2017.pdf]

Since no harmonised data are available across Europe at local level, the case of Portugal is presented as an example.

Data are sourced from Transparency International Portugal and are provided at municipal level.

European context

Transparency of public management is universally considered an element of good governance (Ribeiro et al, 2017).

The publication of information by municipalities on their website, does not in itself improve the quality of democracy, but it is a small contribution to greater public empowerment for monitoring and participating in municipal management.

Key measures for the European Social Fund include, among others, investments to favour more transparency, integrity and accountability in public administration and spending of public funds.[https://ec.europa.eu/regional_policy/en/policy/themes/better-public-administration]

Comments / Limitations

- The Municipal Transparency Index serves to create universal criteria for gauging the levels of transparency in municipalities, through the analysis of information on local governance made available on their websites.
- The data collection is carried out from the perspective of the common user, who is assumed to be a member of the public with access to the Internet and information technologies, but without specialised knowledge in the use of computer tools. As such, the information provided must be locatable by browsing the municipal website, without any additional contact with other services or communication channels of the municipality and without the assistance of municipal services or officials.
- Although several of the index indicators correspond to information that, by law, municipalities are obliged to publish on their websites, a legality criterion was not followed in the definition of the ITM indicators. In other words, the fact that an indicator is legally required to be published does not mean that it has been selected to appear in the index. Conversely, there are indicators whose publication is not legally required but which were understood to be in the public interest and, as such, are included in the index.

Metadata

Source:

Transparency International
Portugal

Hyperlink (availability of API)

<https://transparencia.pt/en/itm/>

Visualisation:

<https://transparencia.pt/en/itm/>

Availability and geographical coverage:

All Portuguese Municipalities

Unit of measurement:

Index

Level of aggregation:

Municipality

Time coverage and frequency:

2013-2017



LINK TO OTHER SDGs

11 SUSTAINABLE CITIES
AND COMMUNITIES

ALIGNMENT

UN list
EU list



GEOGRAPHICAL COVERAGE

ITALY

SDG TARGET/S

**16.7 (participatory
and representative
decision-making)**

AVAILABILITY

ALL
MUNICIPALITIES

SOURCE

**Italian Interior Affairs
Ministry**

VOTER TURNOUT IN MUNICIPAL ELECTIONS

Definition of the indicator

This indicator measures the share of people who vote in a municipal election over the total eligible population.

Since no harmonised data are available across Europe at local level, the case of Italy is presented as an example.

Data are sourced from the Interior Affairs Ministry of Italy and provided at municipality level.

European context

Although data on local elections are available from official sources, the understanding of their patterns and dynamics in a comparative perspective across Europe is still very limited with no available database including data with European coverage. This fact does not permit the disentanglement of historical trends in voter turnout in local elections or the assessment of the difference in voter turnout for local, national and European Parliament elections in a comparative perspective and over time. (Gendźwił and Steyvers 2021).

Comments / Limitations

- This indicator should be compared with the general unemployment rate in the same area.
- The total eligible population in the case of Italy is composed of individuals over 18 years of age who either have Italian citizenship or the citizenship of another EU country but are resident in Italy (Tintori 2018).
- While some literature argues that relatively low turnout rates can be considered as 'natural' for established democracies (Parvin 2018) most of the scholars interpret low turnout as a consequence of democratic dis(engagement) and dissatisfaction with democracy (Scipioni, Tintori, and Bosco 2022).
- This is especially true when referring to municipal elections given that these offer a possibility for people to contribute towards the day-to-day functioning of their community through the election of their local representatives.
- Besides this, there are several factors potentially influencing voter turnout such as size of municipalities, local authority power, directly elected mayors, weekend voting, concurrence with other elections (Kouba, Novák, and Strnad 2021).
- In the previous edition of the European Handbook, the case of Greece was mentioned. Several EU countries also publish data on voter turnout at neighbourhood scale.

Metadata

Source:

Italian Interior Affairs Ministry
(Eligendo platform, *Ministero dell'Interno*)

Hyperlink (availability of API)

<https://elezioni.interno.gov.it/opendata>

Visualisation:

-

Availability and geographical coverage:

All Italian Municipalities

Unit of measurement:

Rate

Level of aggregation:

Municipality

Time coverage and frequency:

1989-2021. Data updated periodically



LINK TO OTHER SDGs

5 GENDER EQUALITY**10** REDUCED INEQUALITIES**11** SUSTAINABLE CITIES
AND COMMUNITIES

ALIGNMENT

UN list
EU list

GEOGRAPHICAL COVERAGE

LISBON

SDG TARGET/S

**16.7 (participatory
and representative
decision-making)**

AVAILABILITY

ONE**PORTUGUESE
MUNICIPALITY**

SOURCE

Lisbon Municipal Council

MUNICIPAL PARTICIPATORY BUDGETING

Definition of the indicator

This indicator measures the amount of resources allocated through participatory budgeting (PB) at municipal level for funding projects initiated by inhabitants. PB is a structured and cyclical process of engagement where inhabitants and local authorities share decisions on spending a part of the municipal budget.

Since no harmonised data are available across Europe at the local level, the case of Lisbon is presented as an example

Data are sourced from the Lisbon Municipal Council.

European context

Participatory budgeting was originally developed in Latin America and has been diffused there since the 1980s. In Europe it was limited to a small number of cities until the 2008 financial crisis when the reduced participation of the public in politics motivated a number of local governments to test new means of democratic engagement. To date, according to the Participatory Budgeting World Atlas that maps over 11,700 PB initiatives at global level, Europe is the region hosting the majority of these initiatives at approximately 40% (PBWA 2021).

Despite some regional differences, the PB process adopted in most European cities follows a similar pattern, where inhabitants develop project proposals and then vote on the ones they consider most fit for their own neighbourhood, district or city. Subsequently, and given certain conditions set by the local authorities, the projects with the greater resonance among the public are funded through the municipal budget and implemented by the city council.

In 2021 the European Parliament approved the 'Citizens' dialogues and Citizens' participation in the EU decision-making Resolution' that, among others proposes, the introduction of public participation mechanisms for pilot projects, including PB to allow the shaping of the expenditure side of the Union's budget and crowdsourcing to enable the public to be involved in the co-creation of policies with EU decision-makers (European Parliament 2021)

Comments / Limitations

- The analysis of the types of projects proposed and accepted for the implementation of the PB can also provide additional insight on the use of this tool.
- It is crucial for municipalities that are currently engaged with PB to include information on both the budget initially allocated and the amount spent, by initiative.
- Municipalities could also introduce additional information, for example the participation rate in PB by groups (e.g. gender, couples with young children, people with low incomes). This information would help in understanding if PB enables local authorities to engage with people who are not already active in traditional political activities.
- Involvement in PB increases trust in the public administration, when it effectively manages the expectations of participants.

Metadata

Source:

Lisbon Municipal Council -
Camara municipal de Lisboa,
Tab Projectos Vencedores

Hyperlink (availability of API)

<https://op.lisboaparticipa.pt/projetos-vencedores>

Visualisation:

-

Availability and geographical coverage:

1 Portuguese municipality
(Lisbon)

Unit of measurement:

1 Portuguese municipality
(Lisbon)

Level of aggregation:

Municipality

Time coverage and frequency:

2008-2021. Data collected
every year

17 PARTNERSHIPS
FOR THE GOALS



GOAL 17

**STRENGTHEN THE MEANS OF
IMPLEMENTATION
AND REVITALIZE THE GLOBAL
PARTNERSHIP
FOR SUSTAINABLE DEVELOPMENT**

Description of the Goal

This Goal calls for the enhancement of global partnerships and the strengthening of means – including financing development, connecting people through ICT networks, international trade flows, and strengthening data collection and analysis – for monitoring and achieving all SDGs. The goal acknowledges that sustainable development requires partnerships between governments at all levels, the private sector and the civil society, as do complex challenges of today that know no borders (i.e. climate change, pandemics).

Exchange of knowledge between stakeholders will be necessary to unlock innovation. Inclusive partnerships, built upon a shared vision and shared goals that place people and the planet at the centre, will be required in different constituencies (local, regional, national and global). As such, Goal 17 refers to the need for cross-sector and cross-government collaboration and streamlining in pursuit of all the Goals.

European dimension

In the EU context, Goal 17 focuses on global partnerships as well as on financial governance and access to technology within the EU.

The EU supports country-led development through a range of financial support mechanisms such as the Official Development Assistance (ODA), Other Official Flows (OOF), private resources such as Foreign Direct Investments (FDI). However, Member States will need to ensure their own financial stability for their own sustainable development to continue this cooperation. To this end, the steady progress in reducing government debt as a share of GDP was halted by the COVID-19 pandemic, reaching 90.6% in 2020 (13.3% more compared to 2019) (Eurostat 2021k).

To enhance policy coherence for sustainable development, the overall statistical capacity to monitor progresses towards the SDGs should be improved. Internet has become an important instrument for accessing information and fostering cooperation. Across the EU, considerable progress has been made in the rollout of fixed and very high capacity network connections (i.e. fibre connections or similar bandwidth networks). In 2020, 59.6% of European households had access to such networks (up from 15.6% in 2013) (Eurostat 2021k).

Local dimension

After the 2008 financial crisis, government debt had to be limited according to the Treaty on the functioning of the European Union (European Union 2012) in order to pursue MS sustainable development. In this context, local authorities also had to limit their debt, while at the same time continuing to deliver local services, especially those targeting the most vulnerable groups.

The crisis also induced a widespread degradation of the average economic conditions of migrants, which impacted on emittance flows (Bartolini and Castagnone 2015). Cities are where most foreigners live and where the outflow of remittances is usually the highest. Therefore, cities are also the most suitable players for implementing initiatives to reduce inefficiencies linked to remittances (e.g. promoting financial inclusion and education, and transparent transaction costs).

Some related European policies and legislations

EU Trade Policy Review (2021)

The European Green Deal (2019)

European consensus on Development 'Our World, Our Dignity, Our Future' (2017)

Two indicators address Goal 17 (all at city level):

one indicator deals with debt sustainability (Target 17.4)

one concerns the availability of data (Target 17.18)



LINK TO OTHER SDGs

16 PEACE, JUSTICE AND
STRONG INSTITUTIONS

ALIGNMENT

UN list
EU list



GEOGRAPHICAL COVERAGE

PORTUGAL

SDG TARGET/S

17.4 (debt sustainability)

AVAILABILITY

ALL

**PORTUGUESE
MUNICIPALITIES**

SOURCE

Statistics Portugal

MUNICIPAL COUNCIL DEBT

Definition of the indicator

The indicator measures the municipal council debt per inhabitant. It is measured in euros per inhabitant and reflects the amount of money owed by a city per capita. Debt includes loans, leasing contracts and any other form of indebtedness to financial institutions, as well as other debts to third parties arising from budgetary operations. Debt by a city is issued to finance a variety of purposes and projects, and is repaid over a number of years by sources that include, but are not limited to, property taxes, utilities revenues or tax increment financing (future projected taxes).

Since no harmonised data are available across Europe at local level, the case of Portugal is presented as an example.

Data are sourced from the National Statistical Institute of Portugal.

European context

According to the OECD, in 2017, the total debt of the sub-national governments in EU on average was EUR 847.4 billion, which represents 6.7% of the MS general government gross debt (EUR 12,504 billion) (OECD 2018). In the EU, a significant proportion of local government debt is denominated in loans (an average of 64.8%), while another significant rate belongs to the accounts payable (29.5%) and bonds (11.8%). The debtors, i.e. the owners of debts, are local governments or municipalities with fiscal autonomy (in the EU classification this considers the lower levels of Local Administrative Units (LAU level 2).

Debt management can be categorised in four categories, i.e. different ways for managing the debt itself: a) changing the conditions (lower interest cost – debt conversion, advance refunding debt consolidation, compromise); b) repayment strategies (terminal annuity, snowball or stacking method, debt management agency); c) additional resources (surplus, sinking fund, specialised financial institutions); and d) state intervention (bailout – consolidation, limitations, financial guardian – insolvency administrator) (Vértesy 2019).

Comments / Limitations

- The database does not contain information on the type of debt per municipality (credit and loan, bonds, accounts payable) which in turn calls for different interventions to repay it.
- A declining debt rate (debt per capita) in a city does not necessarily mean a decrease in the total amount of debt owed (particularly with influxes of population in certain cities).
- According to the structure of the LAU 2 level, in countries with larger and more populous local governments (e.g. Sweden, the Netherlands), the sum of the local government debt might not be considered high, but when this is allocated per inhabitant, it might entail a higher burden (Vértesy 2019).
- In a country with low per capita income there will automatically be less debt in euros per capita, as the public sector in total is smaller in euros and hence also the debts of municipalities. In countries with very high per capita income, there will also be a high per capita debt of municipalities in euros, yet what nominally would appear as a big number, is not necessarily worrisome in economic realities, as these municipalities will have a quite large budget turnover.
- Debts are not necessarily a problematic issue for municipalities; if well invested, a loan can enable a municipality to increase future tax revenues (for instance, investments into a local vocational training centre or a local sport facility could substantially increase the attractiveness of the municipality for employees of local business, and in results for business itself). In contrast, for a municipality that cannot transform a local public investment of today into an increase of future tax revenues tomorrow, the issue of debt is becoming more pertinent.

Metadata

Source:

Statistics Portugal – *Instituto Nacional de Estatística* (INE)

Hyperlink (availability of API)

https://www.ine.pt/xportal/xmain?xpid=INE&xpgid=i-ne_indicadores&indOcorrCo-d=0009156&contexto=bd&sel-Tab=tab2&xlang=en

Visualisation:

–

Availability and geographical coverage:

All Portuguese municipalities

Unit of measurement:

Rate

Level of aggregation:

Municipality

Time coverage and frequency:

2011-2019. Data collected every year



LINK TO OTHER SDGs

16 PEACE, JUSTICE AND
STRONG INSTITUTIONS

ALIGNMENT

UN list
EU list



GEOGRAPHICAL COVERAGE

—

SDG TARGET/S

**17.18 (increase data
capacity)**

AVAILABILITY

—

SOURCE

**Own elaboration
(municipality)**

VLR DISAGGREGATED INDICATORS

Definition of the indicator

The indicator measures the share between the number of indicators in a published VLR that can be disaggregated where relevant by other dimensions, for instance age, income class, sex, ethnicity, disability status or migration status over the total number of indicators included.

Since no harmonised data are available across Europe at local level for this indicator, no concrete database or source is recommended for use. Instead, information and data are derived upon completion of the VLR.

European context

More and more cities are becoming involved in the production of VLRS. However, official data at municipal level and in a comparative perspective are usually more limited than data at lower levels of disaggregation. Hence, cities tend to use, consistent with that recommended by this *Handbook*, both official and experimental data. Target 17.18 also requires the availability of high-quality and reliable data, at the finest granularity available, in order to provide information based on, gender, income, age, race, ethnicity, migratory status and disability. Therefore, it is useful for cities to monitor, in addition to their progress towards single targets, their progress in improving disaggregated statistics as an instrument for achieving sustainable development.

Comments / Limitations

- In the first edition of the *European Handbook*, the indicator, 'VLR indicators from official statistics', was proposed for measuring the number of indicators included in the VLR which are collected, processed and disseminated according to the Fundamental Principles for Official Statistics (Siragusa et al. 2020). The present indicator can complement and provide additional information on the statistical capacity of the city to disaggregate further data on information by other relevant dimensions that can better reveal areas of targeted interventions.
- However, disaggregation of the SDG indicators imposes significant data requirements and operational challenges for statistical systems but also for stakeholders responsible for developing a VLR.
- Increased data capacity in SDG monitoring is also a way to achieve better representation, inclusion, and accountability in the way data are collected and managed.
- Disaggregated local data in VLRs is expected to outlive a VLR itself, as the mechanisms used to collect them will remain available to the local level to improve information and knowledge of the local reality.
- Among VLRs published at global level, indicators are most often disaggregated by gender, as this is the most fundamental distinction in most of the data collection frameworks, especially at national level. Only some VLRs include indicators that are disaggregated by dimensions other than gender, and this is mostly found in relation to health and education indicators where ethnicity and religion are also considered.

Metadata

Source:

Own elaboration (municipality)

Hyperlink (availability of API)

–

Visualisation:

–

Availability and geographical coverage:

–

Unit of measurement:

Share

Level of aggregation:

Municipality

Time coverage and frequency:

–

03

The VLR as a document

When looking at the VLR as a document we can identify four main phases that characterise its preparation and follow-up, on which some specific reflections are needed.

- 1 The first one is on the **data selection and publication**.
- 2 The second is on the **data analysis and interpretation**.
- 3 The third is on the **transformative measures for the implementation of the SDGs** included in the VLRs and their relation to existing strategies.
- 4 The fourth concerns the next steps – **how to take decisions to achieve the SDGs**.

This part of the *European Handbook* provides some reflections and insights on each of those phases.

3.1

Data selection and publication

3.1.1 Reflections on the evolution of the indicators over time

As discussed in Part 1, the first-generation VLRs replicated the structure of the VNRs and were based on indicators from the UN global set available at subnational or local scale. Over time, local, regional and national authorities realised that those indicators were not suitable for reflecting the local level. At the moment of writing, three main types of approach can be observed in regard to the selection of the indicators for LRGs, in order of complexity:

- Approach 1: only indicators from the UN global set and available at subnational scale;
- Approach 2: any indicator available at local scale – no matter whether aligned or referring to a specific target or policy;
- Approach 3: a specific framework adopted by the municipality taking into consideration for example, guidelines from a specific international institution, the national level, a specific network adapted to the local context.

Ciambra reported this shift in the use of indicators from the first-generation VLRs compared to a second generation of increasingly locally-relevant and locally-produced indicators (Ciambra 2021a). This, of course, implies a lower potential for comparability between VLRs of different cities, which in turn means **a gap in the potential of benchmarking and of the development of a collective knowledge on the achievement of the SDGs in cities**. If all cities were to define their own SDG indicators, the process of providing input to the national level (and the VNRs) might also become more difficult, while the monitoring of the robustness of the SDG monitoring system by policy makers could also prove to be a daunting activity. Moreover, own indicator selection allows cities to self-define how to monitor their progress towards the achievement of the SDGs (versus the policies they implement locally), customise their own indicator set and create ownership of the SDG monitoring process from start to finish. Although complete benchmarking is not possible, synergies between cities are also cultivated as one draws inspiration from the experience of others, particularly in the cases of clusters of cities (see for example the Finnish and German cluster). For example, some cities which are late adopters, might first adopt and then adapt another city's approach to their own reality.

Overall, a VLR can be considered as an exercise in accountability and transparency only when:

- a clear definition of the indicators used therein is provided;

- the underlying methodology for computing an indicator is either reported or described in the VLR, or adequate references are provided;
- the computation process of the indicator is replicable (given the availability of necessary technical means);
- the source of data for the indicator is traceable;
- minimum statistical principles are observed.

In other cases, the SDG monitoring procedure, as well as the political commitment and backing of the LRGs involved in the whole process, might be jeopardised.

3.1.2 Data challenges for local governments

When engaging in the VLR process, governments are often faced with challenges regarding all facets of data management: from collection and storage, to processing and publication. Both the literature and the experience of applying the first edition of the *European Handbook* in six European pilot cities suggest that these challenges are inherent when dealing with data (Siragusa et al. 2021). However, these issues can be overcome, at least to a certain degree, depending on the resources and time available. Data challenges can be grouped in categories that follow a linear logic when it comes to using data for monitoring a specific indicator that is related to an SDG target. A summary of all data challenges is presented in Table 6.

Table 6 Data challenges for local governments

Challenge	Topics	Cross-cutting
Collection	<ul style="list-style-type: none"> • Availability • Disaggregation • Different sources • Resources • Transformation 	<ul style="list-style-type: none"> • Quality • Accuracy • Complexity • Mobility • Scaling • Post-management
Storage	<ul style="list-style-type: none"> • Volume • Accessibility • Access rights • Maintenance • Security • Protection 	
Processing	<ul style="list-style-type: none"> • Verification • Validation • Filtering • Consolidation • Classification • Calculation • Analytics 	
Dissemination	<ul style="list-style-type: none"> • Mapping • Visualisation • Understanding 	

Data collection

Regarding *data collection*, many local governments have issues related to data **visibility**, i.e. they are not aware of what sort of data is or could be available at local scale; data **availability** for a specific indicator over time might be low; data **disaggregation** by different parameters (gender, age, ethnicity, etc.) might not be possible, i.e. data **granularity** might be scarce, not allowing for a neighbourhood level analysis; data might come from **different sources with different formats and accuracy** (administrative data, mobile data, survey data or data collected by different municipal departments); there might also be challenges related to **resources** (in personnel and budget), for example in terms of personnel capacity to find data or data sources that might be proprietary; also **transforming** data into units and formats that can be understood by a processing system (e.g. a computer) can be a daunting task.

Data storage

Regarding *data storage*, once collected, data need to be saved in some sort of repository that will be used as a basis for future data processing. The storing activity entails challenges related to the **protection** of the personal aspects of collected data in accordance with the GDPR and the **anonymisation** processes involved, if necessary. Challenges also concern the **volume** of data collected, the **accessibility** and respective **access rights** for different stakeholders, and the **maintenance** of the storing infrastructure and processes. Above all, this category includes challenges related to the **security and protection** of the collected data from external providers. Be it internally (at local government level) or externally (collaboration with other stakeholders responsible for these aspects), local governments are required to carefully plan the resource-intensive process of data storage that will further define the data processing and cannot be easily altered once designed and developed.

Data processing

Regarding *data storage*, once collected, data need to be saved in some sort of repository that will be used as a basis for future data processing. The storing activity entails challenges related to the **protection** of the personal aspects of collected data in accordance with the GDPR and the **anonymisation** processes involved, if necessary. Challenges also concern the **volume** of data collected, the **accessibility** and respective **access rights** for different stakeholders, and the **maintenance** of the storing infrastructure and processes. Above all, this category includes challenges related to the **security and protection** of the collected data from external providers. Be it internally (at local government level) or externally (collaboration with other stakeholders responsible for these aspects), local governments are required to carefully plan the resource-intensive process of data storage that will further define the data processing and cannot be easily altered once designed and developed.

Data publication

Regarding *data publication*, i.e. how the data previously collected, stored and processed can now be shared with a greater audience and disseminated to the general public, challenges related to data posting usually include difficulties in **mapping** and **visualising** data in a meaningful way and format. This category however goes one step further and includes reported challenges on **data understanding**, i.e. how data that have been analysed can be interpreted to provide information that can in turn be easily consumed by non-experts (within and out of the local government itself).

Data cross-cutting challenges

In addition to the broad data challenges faced by local governments, certain cross-cutting horizontal issues affect more than one category at a time. Most notably, such challenges concern **quality and accuracy** (of data related to specific SDGs and of processes), **complexity** (of data structures, of handling data from different sources but also from imposed external conditions, e.g. the COVID-19 pandemic), **mobility** (changes of cloud networks where data are stored), **scaling** (of data sources, of data processing) and **post-management** (curation of old databases, sharing).

How to overcome data challenges

Solutions to these pertinent data challenges are not one-dimensional and require detailed planning before the initiation of the VLR process.

In short, some of the solutions proposed by the six European pilot cities that have implemented the method as described in the first edition of the *European Handbook* concern:

- The efforts to improve the **data literacy** of professionals involved in the VLR process (through investment in educational initiatives, trainings and workshops).
- The full – to the extent possible – **automation of the collection process** (to avoid human-related errors, ensure the objectivity of the process, and allow its future replication).
- The increase of the **data culture** of all people and parties involved in the process (from the design of the VLR process to its final utilisation as a tool for targeted policy development).
- The development of **one-stop-shop data portals or observatory** (at city level, or at cluster-of-cities level).
- The design of a **standardised SDG indicator set** between cities in the same country and beyond (to allow a common data management process and eventually feed the VNR); composed

of a skeleton of comparable indicators and a set of indicators which might be helpful for targeting specific local challenges.

- The **investment in living labs and projects** that will themselves develop experimental indicators and collect data on topics with intense data scarcity (e.g. culture and creativity).

3.1.3 Data platforms

As data and all related facets of its management – from collection and storage, to processing and publication – are a decisive parameter behind an accurate and reality-reflecting VLR, several LRGs have decided to either use existing data platforms, or develop their very own.

Data platforms are not databases. A database is a collection of usually organised information in a rather regular structure, in most cases (but not always) accessible in a machine-readable format. A data platform is a suite of tools that cover the whole spectrum of data management, i.e. they are able to ingest, process, analyse and present data, in a centralised, one-stop-shop approach. Data platforms can be used across an entire LRG administrative structure, preventing departmental silos and providing actionable insights based on a holistic view of an LRG's data (both the data generated by the municipality itself and the data collected). The advantages of implementing and/or using a data platform at LRG level include:

- An increased number of users, internal and external to the LRG, can discover and analyse data within the platform as well as understand the context associated with data. They can also derive insights from data with minimal dependencies on technical or other experts.
- The platform offers scalability – should the needs and/or objectives change and grow (from a VLR with a few indicators to future ones with more).
- The platform offers flexibility as it can serve multiple groups and uses, and potentially different projects and activities. The VLR could be a culmination of different use-cases, i.e. the place (document) where different experiences from different departments are gathered, and as such, a data platform can be used to add new functionalities depending on the needs of the LRG.
- Possibility of analysing vast quantities of data (volume), from different sources and sectors (variety), in a fraction of the time needed otherwise (velocity)– therefore big data – by applying the latest advances and innovations in technology, particularly around machine learning (ML) and artificial intelligence (AI) that can be integrated as functionalities in the platforms.

Several cities have turned to the option of data platforms (in different forms and formats) in recent years. For example, Munich¹, Vienna² and Lyon³, among others, use an open, city-wide data platform for collecting, processing, analysing, interpreting, storing and distributing city data in the domains of mobility, energy and urban living. The platform acts as a complete solution for transforming “big data” into “smart data”, i.e. data that entail information and knowledge, and through this, improve urban planning and quality of life (Morishita-Steffen et al. 2021).

Similarly, three Portuguese cities (Porto⁴, Aveiro and Lisbon⁵) use a data platform that makes data from different domains accessible, rather than stored in compartmentalised silos according to specific topics. It therefore allows these Portuguese cities to use data from a wider range of sources, measuring the mobility of people and goods, environmental aspects, and public safety in real-time.

Other examples include the city of Rotterdam⁶ (uses a data platform for visualising and publishing real-time energy-use of buildings), the city of Umeå⁷ (uses an open-data platform on the city’s energy consumption and production) or Glasgow⁸ (develops an open-data platform to support decision-making across different domains). Although the scope of having and using a data platform might differ from city to city, the number of cities opting for data platforms is continuously increasing, testimony to the usefulness of the overall approach that can be decisively useful when conducting VLRs.

1 <https://opendata.muenchen.de/>

2 <https://digitales.wien.gv.at/open-data/>

3 <https://data.grandlyon.com/>

4 <https://opendata.porto.digital/>

5 <https://lisboaaberta.cm-lisboa.pt/index.php/pt/>

6 <https://rotterdamopendata.nl/#/home>

7 <https://opendata.umea.se/pages/startsidea/>

8 <https://data.glasgow.gov.uk/>

9 <https://urban.jrc.ec.europa.eu>

10 https://knowledge4policy.ec.europa.eu/territorial/tools-regional-focus_en

3.1.4 The Urban Data Platform Plus

The Urban Data Platform Plus⁹ (UDP+) is a joint initiative of the Joint Research Centre and the Directorate General for Regional and Urban Policy (DG REGIO). As a key component of the Knowledge Centre for Territorial Policies¹⁰, it provides access to information on the status and trends of cities and regions, on EU supported urban and territorial development strategies and on the local dimension of Sustainable Development Goals. The UDP+ offers in detail:

- A comprehensive overview of the performance of cities, provinces, districts, regions and countries in societal, economic and environmental domains based on the collection of official and experimental indicators. This overview also covers the SDGs and associates the availability of indicators to places with specific SDGs, i.e. users are able to check specific SDG indicators for their place of interest.
- Trends in cities, regions and local areas in Europe and beyond, including overtime evolution as well as future projections (based on modelling techniques).
- Policy-learning tools for the design, implementation and

monitoring of strategies for urban and territorial development and in particular of of Sustainable Urban Development (SUD), Integrated Territorial Investment (ITI) and Community-led Local Development (CLLD) strategies implemented across Europe within Cohesion Policy 2014-2020.

- A dedicated knowledge repository for the localisation of SDGs.
- Thematic analyses making sense of data based on the best available quantitative information and mathematical models.
- Specific tools for analysing data sets based on different formats.

The 72 indicators that are included in Part 2 of this edition of the *European Handbook*, along with all accompanying information and metadata, as well as those covered in the first edition, are included in the UDP+, both as indicators associated with specific domains (e.g. *labour market, security and safety, or population dynamics*) and with the SDGs. Figure 8 illustrates a snapshot of the Brussels city overview with the SDG functionality of the UDP+ (left), the indicator on the number of people at risk of poverty associated with Goal 1, and the Domain functionality (right) with indicators on *population dynamics*.

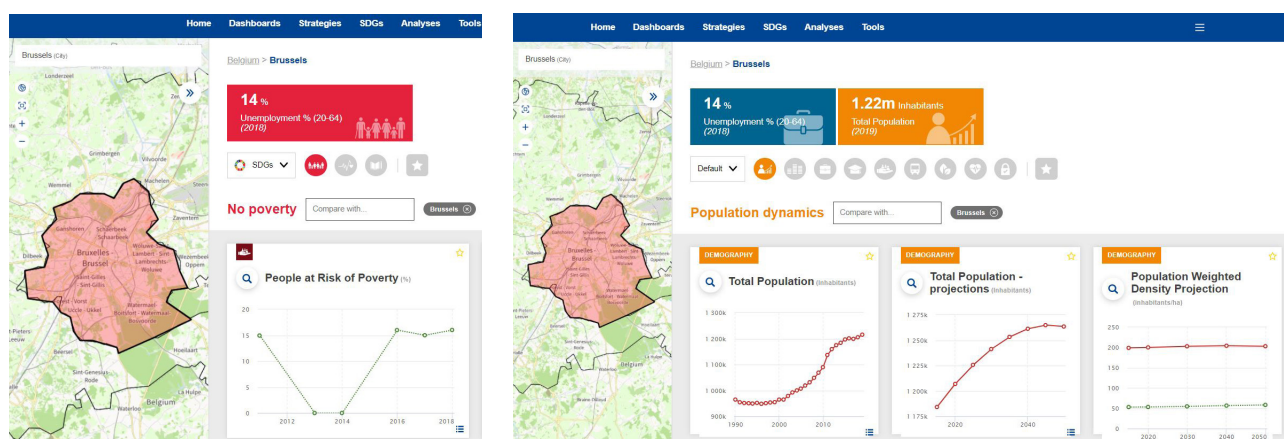


Figure 8 Snapshot of the UDP+ overview on Brussels city performance. Left: the SDG functionality, Right: the Domain functionality

The UDP+ will host a plethora of indicators under each SDG that are not in their entirety included either in the first or in the second edition of the *European Handbook*. The enrichment of UDP+ with additional indicators will allow it to be up-to-date with the latest advances in the sector, covering the period after the release of the current edition. It will also allow practitioners and other users of the UDP+ to have the latest

information on the availability of indicators for specific places in Europe or to analyse trends at different territorial scales.

The list of indicators provided in Part 2 of this *European Handbook* should not be considered exhaustive in terms of how to monitor the SDGs or which indicators to include in a VLR. This is also evidenced by the implementation of the indicator framework provided in the first edition of the *European Handbook* by six European pilot cities, where it was found that each city had an individual approach on how to choose indicators to optimally measure its performance against the SDGs (Siragusa et al. 2021). Indeed, few cities considered it sufficient to only include those proposed, many others added additional ones available from different national, regional or local sources. Additionally, a comparative analysis on the use of indicator frameworks in VLRs in Europe found that on average, the indicators described in the first edition of the *European Handbook* were adopted at a rate of 28.7% (i.e. one out of three indicators chosen were derived from the *European Handbook* framework) (Ciambra 2021b).

3.2

Data analysis and interpretation

3.2.1 A taxonomy for indicators related to the Sustainable Development Goals*

Taxonomy?

There are many available indicators that seek to measure progress towards the UN Sustainable Development Goals (SDGs), but how to know which ones to choose? What can the indicators be used for, besides just “reporting”? What do they actually measure? What insights can be gained from them? These were some of the questions that triggered KS, the Norwegian Association of Local and Regional Authorities, to investigate possible answers. The result presented itself in something called a taxonomy.

A taxonomy is a system for classification, a set of rules for arranging and creating order, but not just for the sake of sorting. A taxonomy should also provide a *context* and a *purpose* for arranging something. As such, the primary purpose of this taxonomy is to sort, evaluate and compare different SDG indicators and indicator sets, but more importantly to identify the central properties and characteristics necessary for a user to assess whether the indicators are useful in the user’s context. In the taxonomy these central characteristics are organised under three *dimensions*:

Goal, which tells us *what an indicator is about*, i.e., which SDG goals and targets, and which TBL (Triple Bottom Line¹¹) it may be related to.

Perspective, which clarifies *why or in which context* the indicator is used (the user’s perspective).

* This paragraph has been authored by Geir Graff, Innovation strategist, Portfolio Manager for strategic projects, P30 at Asker Kommune

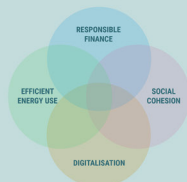
11 Triple bottom line (TBL) accounting expands the traditional reporting framework to take into account social and environmental performance in addition to financial performance. https://en.wikipedia.org/wiki/Triple_bottom_line

A TAXONOMY FOR INDICATORS RELATED TO THE SUSTAINABLE DEVELOPMENT GOALS

The taxonomy was developed with the purpose of sorting, evaluating and comparing different indicators and indicator sets related to the Sustainable Development Goals (SDGs).

Strategic priority

Can be formulated dynamically according to the user needs, e.g.:



PERSPECTIVE

Development sector

A 14-category structure (Digitaliseringsdirektoratet, Norway) which is a common glossary for categorising and describing public services and resources.



Evaluation

The 5-category typology originates from the well-known input-output model in econometrics.



Distribution

Relevant when the same indicator is needed more than once, either over time, across geographical areas or subpopulations.



INDICATOR

QUALITY

Based on version 2.0 of "Quality Assurance Framework of the European Statistical System (ESS)".

Class 1

Standard quality framework of ESS.



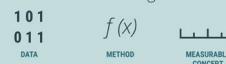
Class 2

If the indicator neither belongs to class 1 nor class 3.



Class 3

If the indicator is unavailable, because one or several of the following features are missing.



GOAL

The Sustainable Development Goals (SDGs)

consists of 17 goals and 169 targets



Triple bottom line (TBL)

Triple bottom line accounting expands the traditional reporting framework to take into account social and environmental performance in addition to financial performance.



Figure 9 A Taxonomy for the indicators related to the Sustainable Development Goals (source: KS and Statistics Norway)

Quality, which measures *how useful* the indicator is, i.e., if it is fit-for-purpose.

These overarching dimensions provide the taxonomy with a logical structure and cover the relevant elements from similar classification systems that KS and Statistics Norway have come across in the available literature on this subject, such as: The UN “Global indicator framework”¹², and The Global Taskforce of LRG (UCLG and Global Taskforce of Local and Regional Governments 2020), to name a few. Even though we consider the taxonomy to have a robust frame, putting the taxonomy to practical use is likely to reveal other user needs.

The taxonomy project has established the need for a common taxonomy to be able to compare uses and usability across a variety of indicator sets. This will help users from all the different sectors in a society to find fit-for-purpose indicators from their own standpoint, be it an organisation in central government, a region, a municipality or a private sector organisation or NGO. They all have a common need for functioning ways of measuring their work to achieve the SDGs. They also have a need to compare this with other organisations or sectors within a country or across countries. Using the taxonomy to classify international, national, or local indicators and indicator sets will in time provide a vast knowledge base of classified indicators. It will also make it easier to reuse these indicators and help each other with classification work, given the global basic structure of the classes and dimensions in the taxonomy.

The main purpose of the taxonomy is all about helping users such as policymakers, local and national administrations, businesses, and NGOs to find the indicators that would best support them in measuring progress towards the SDGs depending on their own context and strategic priorities.

What are the next steps?

The taxonomy was developed by Statistics Norway (Zhang et al. 2021), in an R&D project funded by KS, and has triggered considerable activity in two main directions, that will continue to provide results in the years to come:

- 1 Classifying indicator sets. The first classification exercise, performed with resources from the Geneva UN Charter Centre of Excellence in Trondheim and The Norwegian University of Science and Technology (NTNU) focuses on six sources for indicator sets related to the 2030 Agenda and the SDGs:
 - The UN Global SDG indicator framework
 - The OECD indicators for a territorial approach to the SDGs
 - The U4SSC KPI-set
 - The UNSDSN/Bertelsmann Stiftung SDG Index- set
 - The EU-JRC-VLR-handbook indicators
 - The Norwegian Measurement Points from the Norwegian Government’s white paper on SDGs

The classification made so far has already provided interesting findings

12 <https://unstats.un.org/sdgs/indicators/indicators-list/>

13 Class 1 is used if the (statistical) indicator can be assessed with respect to the standard quality assurance framework of the European Statistical System (ESS), after the principles of “Relevance”, “Accuracy”, “Timeliness”, “Coherence and comparability”, and lastly “Availability and clarity”.

across indicator sets, and more findings will emerge as more and more indicator sets are classified. Here are some early examples:

- Many indicators measure output, but very few measure impact. SDG work is all about creating impact, so this particular finding will potentially trigger research to find other or better indicators that can help in measuring more of the impact from all the output indicators.
- The indicators measuring development areas are unevenly distributed across development areas. This might reveal a lack of data in certain areas, or that the current choice of indicators stems from a skewed pool of indicators and data in the first place – in other words that we have not looked broadly enough to find them.

Most classified indicators are of Class 1¹³ when it comes to quality. That is of course a good thing, but in accordance with the other findings, it also shows the potential to find alternative sources of knowledge other than indicators.

- 2 Working to publish the taxonomy as a vocabulary and data schema that makes it easier to integrate the taxonomy as a metadata model in various IT-systems that are used to measure sustainability efforts in different ways.

These combined efforts will provide both valuable knowledge about the supply of available sustainability indicators, as well as make it easier to connect data sources used to measure the efforts made to create a more sustainable society, locally, nationally, and globally.

3.2.2 Use of the Proximity Index

The *Proximity Index* is an instrument that might help in capturing the issue of comparability between indicators used in different VLRs and highlight the areas (in terms of SDGs and targets) for which similar, comparable or non-comparable indicators have been chosen.

This *Index* can be used to describe how close the metrics used in a published VLR are to the indicators selected in another VLR, i.e. on a 1-to-1 comparison between VLRs of different cities, or between VLRs of the same city in different years. It can also be implemented to describe the ‘distance’ between the indicator set that has been chosen in a specific city compared to a certain indicator framework, for example the ones described in both editions of the *European Handbook*. An exercise of this sort was conducted by (Ciambra 2021a), studying how 16 VLRs published by European LRGs between 2018 and 2020 compare with the indicator set described in the first edition of the *European Handbook*. Ciambra found that on average 28.7% of the indicators used in cities’ VLRs bore resemblance to those of the *Handbook*. At SDG-level, the analysis

revealed that indicators chosen for Goals 8, 11 and 12 elicited the highest proximity, while Goals 10, 14, and 17 elicited the lowest.

However, it should be noted that as VLRs rarely use homogeneous vocabulary in the formulation of an indicator, assessing proximity may be highly subjective based on the party who is implementing it. Ciambra used three classes to describe proximity (*meaningful coincidence or overlap, comparable indicators that share context, objectives or methodology of calculation, non-comparable indicators*), each one assigned to a different score for calculating the index (Ciambra 2021a). Nevertheless, this classification is not binding as a different number (and content) of classes can be used to qualitatively describe proximity (in turn altering the quantitative aspect and score of the index).

In addition, the use of a *Proximity Index* does not aim to rank cities or assess the quality of their VLR because of a greater or lesser index, nor does it intend to suggest that a city should change its chosen set with a goal of bringing it closer to the set it compares with. On the contrary, the Proximity Index can be used as a tool to map the diversity of data management and measurement approaches adopted by different VLRs and potentially to increase coherence, comparability and replicability across the indicators and data used by European LRGs.

Similarly, it is not the aim of the *European Handbook* itself to provide a prescriptive and standardised indicator set to be strictly followed by LRGs when conducting VLRs, but merely to provide examples of how, and with the use of which tools, an SDG and its targets can be approximated and tackled.

3.2.3 Interlinkages of SDGs and targets

As presented in the Introduction, the SDGs and their targets are interlinked – to a greater or lesser extent. Interventions designed and made to address a specific challenge may potentially create positive or negative effects for other dimensions. The synergies, complementarities, potential parallel achievability but also trade-offs of the SDGs and their targets have been the topic of an extensive number of references in the literature in recent years (see for example Griggs, D.J., Nilsson, M., Stevance, A. and McCollum 2017; Singh et al. 2018; Karnib 2017).

As reported in the literature, interlinkages can be studied using different approaches, which can be synthesised in five distinct categories (Miola, A., Borchardt, S., Neher, F. and Buscaglia 2019):

- The *linguistic* approach (where the assessment is based on the wording used in publications dealing with SDGs) (Le Blanc 2015).
- The *literature* approach (where the assessment is based on content analysis of publications, which do not necessarily directly refer to SDGs but on their content) (Vandyck et al. 2018).

14 Available at: <https://knowsdgs.jrc.ec.europa.eu/interlinkages-visualization>

15 KnowSDGs (Knowledge base for the Sustainable Development Goals) is a web platform that provides tools and organises knowledge on policies, indicators, methods and data to support the evidence-based implementation of the SDGs. <https://knowsdgs.jrc.ec.europa.eu>

- The *expert* approach (where the assessment is argumentative and based on the opinion, experience and expertise of dedicated experts or working groups) (Fuso Nerini et al. 2018).
- The *quantitative* approach (where the inference is made through statistical analysis) (Mainali et al. 2018).
- The *modelling* approach (where models are developed or adapted so as to identify interlinkages in specific sectors) (Scherer et al. 2018).

In addition, interlinkages have been found to be both context-dependent and also general, while they differ based on the geographical-level at which they are being studied (from local, to national and global). Among the different levels, interlinkages at local level have been studied and explored the least, forming a future area of research and interest for the scientific community.

To this end, the UN established a dedicated Working Group to identify possible interlinkages in the statistics underlying the global SDG indicators and to research and identify ways in which these interlinkages can be harnessed to facilitate global, regional and national SDG monitoring and analysis.

The JRC has also extensively worked on the topic, recently developing an online tool to visualise the interlinkages among the SDGs and respective targets¹⁴ based on the work of (Miola, A., Borchardt, S., Neher, F. and Buscaglia 2019). This tool is part of a set developed by the JRC and available on a dedicated platform¹⁵.

Mapping the SDG11 – also referred to as the “urban goal” – using this tool (Figure 10), reveals the synergies and trade-offs of the Goal itself and its targets with all other SDGs. This finding is not necessarily applicable or representative of the interlinked nature of Goal 11 with other SDGs and targets for all cities; to the contrary, it is a snapshot of how Goal 11 is on average interlinked based on SDG related reports conducted at national level (and reporting on SDG 11 and its targets).

SDG interlinkages should be taken into consideration when monitoring indicator trends and progress towards the achievement of the targets and also in relation to policy measures.

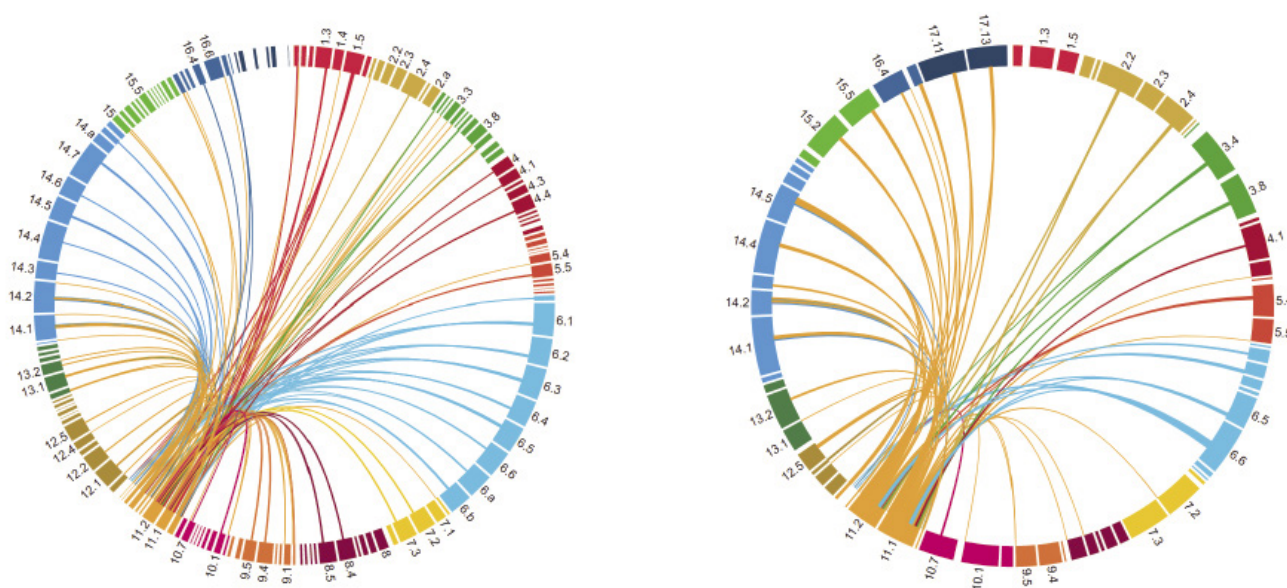


Figure 10 Synergies (left) and Trade-offs (right) of Goal 11 targets with other SDG targets (Source: <https://knowsdgs.jrc.ec.europa.eu/interlinkages-visualization>)

3.3

Transformative measures for the SDGs

3.3.1 What transformative measures should be included in the VLRs?

When LRGs report on the progress towards Goals and targets, apart from the statistical portraying of progress illustrated via indicators, they include qualitative examples of projects and initiatives.

In the first generation of VLRs, most of the LRGs reported the implementation of specific ongoing or future activities and partnerships which, to some extent, contribute to different SDGs developed via government programmes/projects. The description of these measures often includes the **outputs** and specifies the **number of people** served or targeted. This description enables the construction of a specific **narrative** on the governmental measure and also aims to ensure **accountability**.

However, we know that if we want to achieve the SDGs and leave no one and no place behind, we need to take transformative measures at all levels. As a consequence, the VLRs should also focus on them.

When we talk about transformative measures at local level, these should:

- be designed after the gap assessment;

- not be ordinary management;
- address the SDGs in an integrated way, taking into consideration potential interlinkages and trade-offs;
- address a specific target;
- benefit and foster partnerships;
- implement innovative solutions, techniques, tools, processes and data;
- have a significant impact that substantially improves the current trend.

Looking at the VLRs already published three main approaches can be identified as used by European LRGs to select the qualitative examples of projects and initiatives for SDGs.

1. The measures are **selected by the administration**: this is the case, among others, of Besançon (Ville de Besançon 2018; 2019; 2020), Bonn (City of Bonn 2020), Liverpool (2030hub 2020), NR-Westfalen, Gothenburg (Sandra C. Valencia 2019), Stuttgart (State Capital Stuttgart, German Institute for Urban Studies, and Bertelsmann Foundation 2019).
2. The measures are **linked to the local existing strategy**: this is the case, among others, of Barcelona (Barcelona City Hall 2019), Espoo (City of Espoo 2020b), Euskadi (Euskadi Basque Country 2021), Helsinki (Helsinki and City of Helsinki 2019), Jaén (Herrador Lindes, Mesa, and Fernández Moreno 2019), Malaga (Fundación CIEDES, n.d.), Mannheim (City of Mannheim 2019), Niort and Turku (City of Turku and Turku City Hall 2020).
3. The measures are selected via a **consultation with local stakeholders**: this is the case, among others, of Bristol (Fox and Macleod 2019a), Canterbury (Canterbury SDG Forum 2019), Wallonia (Wallonie Service Public 2020), Ghent (City of Ghent 2020).

One example of the first approach when the measures are **selected by the administration is the case of Besançon** (Ville de Besançon 2018; 2019; 2020). The Bisontine objectives and the measures described in the reports respond to some specific targets directly or indirectly. For each objective, the report provides specific perspectives and interpretations. The results of the measures are organised according to five themes of sustainable development (climate change, biodiversity, natural environments and resources, social cohesion and solidarity, development of human beings, responsible consumption and production). While on the one hand, this approach comes with the risk of cherry-picking successful measures, on the other hand it enables a consistent approach over time. In this case, information about the cost of the implementation was also provided for each action consistently.

Espoo is an example of the second approach where measures are **linked to the local existing strategy** (City of Espoo 2020). As explained in the methodology of the VLR, each unit in the City of Espoo was asked to select one to three projects, phenomena or activities that implement the Espoo Story, the city narrative towards a more sustainable city. The units wrote articles about these and indicated which SDGs the project, phenomenon or activity was implementing. Espoo working groups, key partners from industry and other sectors of society also took part in the review. While on the one hand, this approach comes with the risk of being exclusively linked to institutional approach, on the other hand all presented measures are part of the 2030 strategy and the process includes consultation with stakeholders. Moreover, this approach tackles the issue of silo, since the articles describing the measures are written by different city departments.

16 <https://globalgoalscentre.org/project/sdg-alliance/>

Bristol is an example of the approach where measures are selected via **consultation with local stakeholders** (Fox and Macleod 2019a). For every goal, some flagship measures are illustrated with the identification of the specific target. As illustrated in the methodology, the measures were collected via a survey disseminated through key networks of city stakeholders – NGOs, organisations, private sector. The city received 88 responses. It is interesting to note that 42% of the respondents declared that they were not using the SDG framework, but were able to highlight specific measures that contribute to the different Goals. This approach does not ensure a comprehensive or representative sample of local measures because it relies on voluntary survey and in some cases, might lack specific references, however, it definitely increases the engagement of local stakeholders and led to the creation of the Bristol SDG Alliance¹⁶. As described above, each method has advantages and limitations. Every LRG should consider the time, resources and capacities available when deciding which approach best fits the local context and aspirations. In VLRs there is still a narrow perspective regarding the depth of effectiveness or breadth of reach of policies and programmes that LRGs and local stakeholders can act upon. In some cases, connections or causal effects between measures and impacts are unclear, and this is why relying on robust and sound data and indicators is key when monitoring the SDGs.

3.3.1 Link of the VLR with strategies, policies and actions

As discussed in Part 1, localisation is a process to translate the 2030 Agenda for Sustainable Development into local measures and impacts that contribute to the global achievement of the SDGs. The VLR is both a process and a tool for localising the SDGs. However, the VLR is not the only tool that enables the localisation of the SDGs, and the process of localisation can be made in several steps and may assume different forms.

As recalled before, the SDGs can only be achieved if all levels of government cooperate. (Hidalgo Simón 2021b) defined the **SDG ecosystem** as ‘the co-ordinated design, implementation and monitoring of multilevel, multi-stakeholder strategies, initiatives and measures for the achievement of the Sustainable Development Goals on the ground. An SDG ecosystem contributes to better policymaking by establishing a coherent, consistent, and mutually reinforcing collaborative framework with a strong territorial approach’.

But when we talk specifically about the local level, how is this translated into practice? How are the VLRs leading to specific strategies, policies and measures?

As illustrated in Figure 11, LRGs can engage in different types and levels of activities related to the SDGs and therefore to their localisation. The first and most simple is awareness raising, the second is the mapping exercise (mapping existing activities vs the Goals); the third is the VLRs. The fourth and more complete type that also encompasses the previous ones, is the full alignment of the SDGs into the strategic plan of the government and possibly budget, designed using the SDG framework as reference.

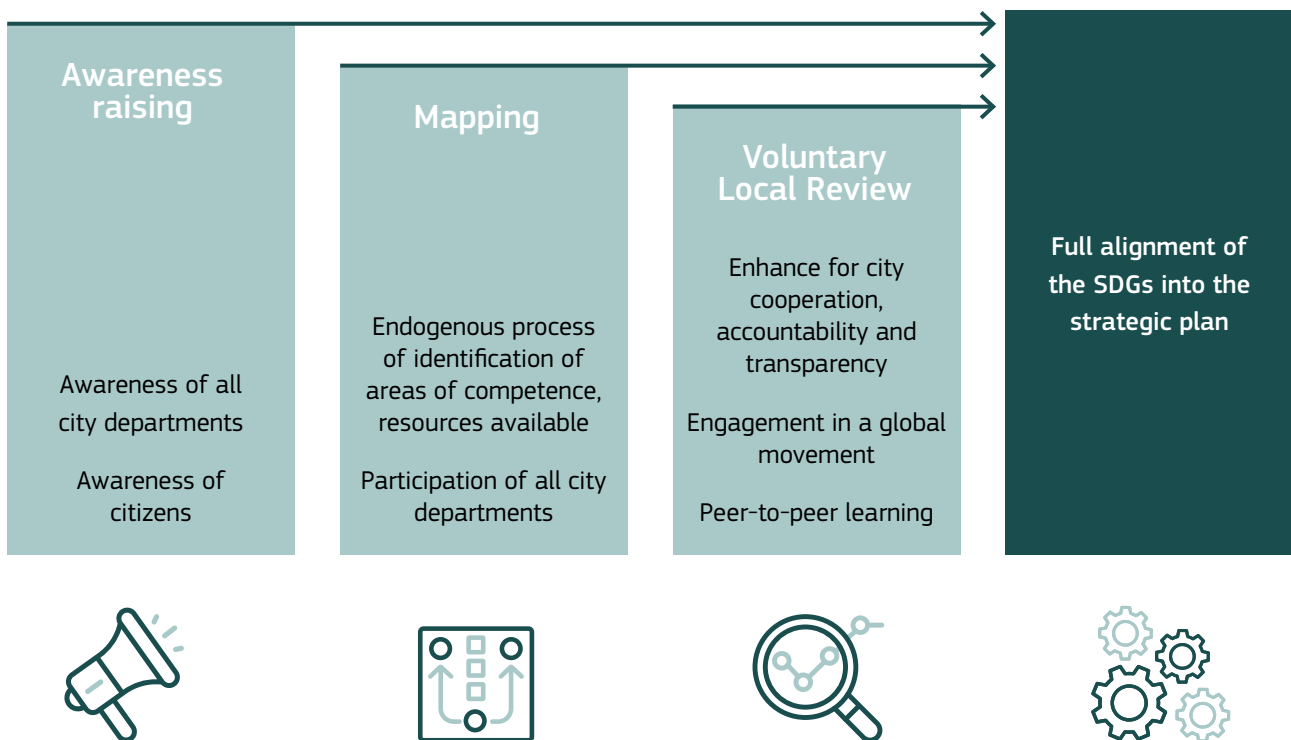


Figure 11 Local activities related to the SDGs

Each group of activities summarised here come with related measures, stakeholders, resources needed and an indicative timeframe to be completed. Some examples for each of these elements are illustrated in Table 7.

The **SDG awareness raising** activities can be developed through measures such as communication campaigns within the administration or directed at the public. Depending on the types of measures, the stakeholders involved may be restricted to the local administration or to the general public. Dedicated activities to engage the general public in educational or training activities, might also target specific groups, such as students. Resources are usually limited and the timeframe depends on how wide the target audience is and on the depth of its background knowledge.

In the second group of activities, LRGs **map** already established city priorities vs the SDGs, align them to the SDG framework and highlight the measures and programmes that contribute to one or more SDGs. The local administration is usually the main stakeholder involved in this procedure, performed with very limited resources (performed as a task of officers) and in a limited time.

The third type of activities is related to the **VLR** itself. As discussed extensively in Part 1, the LRG can monitor the achievement of the SDGs for all SDGs, for the SDGs under-review at the HLPF, or only for Goals considered a priority. In all these cases, the stakeholders involved in the process include the local administration which is usually solely responsible for setting up high-level priorities and short- and medium-term strategies, the statistical offices (providing access to data for monitoring the SDGs), consultants and analysts (for the development or collection of indicators that match the LRG's priorities) and others. Resources depend on the model used to perform the VLR. This process usually takes about one year.

The fourth type of activity is the **alignment of the strategic plan to the SDG**. This is the case when the 2030 Agenda and the SDGs are fully integrated into the definition of the strategic plan and it is used as a framework for the identification of priorities, measures and monitoring strategies. All stakeholders usually involved in the planning process plus those linked to the specific SDGs should be involved. Adequate resources should of course be allocated to the strategy preparation that usually takes between 18 months and 2 years.

Table 7 Type of activities for localising the SDGs

Type of activities for localising the SDGs	SDG awareness raising	SDG mapping	SDG Voluntary Local Review	Alignment of the strategic plan to the SDGs
Measures (examples)	<ul style="list-style-type: none"> • Communication campaigns • Public engagement • Education and training 	<ul style="list-style-type: none"> • Mapping of the LRG plan priorities vs the SDGs OR <ul style="list-style-type: none"> • The city highlights the measures/ programmes that contribute to one or more SDGs 	The LRG monitors the achievement of the SDGs <ul style="list-style-type: none"> • All SDGs • Under-review at the HLPF • Priority SDGs 	The 2030 Agenda is fully integrated into the definition of the strategic plan and it is used as a framework for the identification of priorities, measures and monitoring strategies
Stakeholders	Local administration + Target groups	Local administration	Local administration + Statistical office + Consultants + others	All stakeholders usually involved in the planning process + additional linked to the SDGs
Resources	Limited	Limited – internal at the administration	Limited - Depending on VLR management method	Extensive
Timeframe (Indicative)	----	6 months - 1 year	± 1 years	18 months - 2 years

3.4

Next steps – how to take action

3.4.1 Tools to support decision making and strategy development

¹⁷ <https://knowsdgs.jrc.ec.europa.eu/enablingsdgs#learn>

Since their adoption, the SDGs have and continue to draw increasing interest from the scientific, academic, policy, and practitioner communities, working towards a more sustainable future. To this end, several institutions and organisations, including the European Commission - Joint Research Centre, have created a suite of tools that can be used to answer different questions and serve a variety of objectives with the same target: to serve the community, obtain a clearer understanding of sustainable urban development, and where relevant, the SDGs themselves.

A representative example of such a tool is the *EnablingSDGs*¹⁷ that was

developed with the intention of supporting decision makers. The tool helps to better understand the complex interconnectedness of the SDGs and their targets and tries to highlight how they can influence the policy-landscape and governance processes. The tool allows its users to map, visualise and analyse how the SDG targets of most relevance in a specific context influence each other. It also provides evidence-based knowledge that draws upon a semi-qualitative analysis based on empirical observation and scientific expertise – and all customised interactions of users form the creation of a cross-impact matrix – which is the final outcome of the tool itself.

Similarly, the *SDG Mapper*¹⁸ allows users to identify how documents relate to the 2030 Agenda and the SDGs. The Mapper provides users with a contextualisation of their work within the SDG framework with the ultimate objective of mainstreaming the SDGs into policy and other decision-making processes. Following a simple process of document upload and running the Mapper, the tool finally provides several visualisations showing how the SDGs are addressed in text documents. Bar charts, bubble charts, and tables are used to provide a comprehensive overview of the SDGs identified and their relative importance in the text.

In addition to these, and within an even broader context, the *Self-Assessment Tool for Sustainable Urban Development strategies*¹⁹ (SAT4SUD) is designed for LRGs developing sustainable urban development strategies supported by Cohesion Policy. The tool aims to assess to what extent the strategy builds on an integrated and participatory approach and provides guidance when evaluating the strategy's completeness and quality, from its design and implementation, to its monitoring and evaluation. The SAT4SUD helps to address all the main elements of the EU integrated approach to territorial development in urban areas described in another JRC tool, the Handbook of Sustainable Urban Development Strategies²⁰.

Combining the SDGs with the Smart Specialisation Strategies, the JRC's *Smart Specialisation Platform*²¹ provides insights towards the development of a global Guidebook on Science, Technology and Innovation (STI) Roadmaps for SDGs and the Global Pilot Programme on STI for SDGs. The platform also develops and tests new methodological approaches for Sustainable Smart Specialisation Strategies (S3) in neighbourhood regions to the EU, yet targeted at EU Member States. The platform explicitly presents the urban experience of S3 for SDGs in Bulgaria²² and Finland²³.

Taking a similarly sectoral approach, the *Consumer Footprint Calculator*²⁴, takes a closer look at SDGs that deal with sustainable consumption and production (Goal 12), climate change (Goal 13) and energy efficiency (Goal 7), but also other targets related to air quality (e.g. Targets 11.6), pollution (e.g. Targets 14.1 and 15.1) or sustainable transportation (e.g. Targets 9.1 and 11.2). The tool allows users to calculate the environmental impact of their consumption pattern, as well as evaluate

¹⁸ <https://knowsdgs.jrc.ec.europa.eu/sdgmapper>

¹⁹ <https://urban.jrc.ec.europa.eu/sat4sud/en>

²⁰ <https://urban.jrc.ec.europa.eu/urbanstrategies/>

²¹ <https://s3platform.jrc.ec.europa.eu/sustainable-development-goals>

²² <https://s3platform.jrc.ec.europa.eu/s3-for-sdgs-in-sofia>

²³ <https://s3platform.jrc.ec.europa.eu/s3-for-sdgs-in-the-six-cities-strategy-projects>

²⁴ <https://knowsdgs.jrc.ec.europa.eu/cfc>

²⁵ <https://unhabitat.org/sdg-project-assessment-tool-volume-1-general-framework> and <https://unhabitat.org/sdg-project-assessment-tool-volume-2-user-guide>

²⁶ <http://rfsc.eu/>

how lifestyle choices influence environmental footprint. The Consumer Footprint calculator covers 16 environmental impact indicators related to emissions generated in soil, water, and air as well as resource use.

However, not only the EC and the JRC are working with the SDGs in mind and towards sustainable urban development. Several other organisations are also leading this work, most notably the UNHABITAT with its *SDG project assessment tool*²⁵. The tool is a digital instrument to support cities in developing sustainable, and at the same time inclusive and effective urban projects, in several domains, including urban planning, mobility, resilience and data systems. The tool is based on a framework of existing publications, policy papers and normative principles in the respective fields (UN Habitat 2020). Among other things, the tool aims to enhance urban projects from the planning to the design phase and improve their sustainability and inclusiveness, and to steer a participatory process between city authorities and delivery partners to develop strategies that optimise a project's alignment to the SDGs (UN Habitat 2019).

Finally, the CEMR's *Reference Framework for Sustainable Cities*²⁶ (RFSC) is a toolkit for LRGs working in the areas of integrated and sustainable urban development. The toolkit aims to bring together peer cities that suffer from similar issues and which are developing solutions to address them, via different forms of exchange and support (for instance training sessions, peer learning or showcase catalogues). The toolkit also supports authorities in developing urban sustainable strategies, identifying the interlinkages (positive or negative) of these strategies with different policy sectors and monitoring their progress over a certain period of time.

3.4.2 Leave no one behind principle

According to UN, the Leave no one behind (LNOB) principle is the *central, transformative promise of the 2030 Agenda for Sustainable Development and its SDGs* (United Nations 2020b). It reflects the commitment of Member States to ensure that inequalities and vulnerabilities faced by people are eradicated, with a particular focus on those parts of the society that are *worst-off* (García-Pardo, Bárcena-Martín, and Pérez-Moreno 2021). In practice, the commitment to Leave no one behind is converted into tangible development measures that reach those most in need of support. This may include the homeless, asylum seekers, women, youth, people with disabilities, and minorities.

This principle, a conceptual and inherent attribute of the SDGs as a whole, was also taken into account in the design and development of the *European Handbook*. As presented in Part 2, when developing the indicator framework of this second edition, a dedicated selection criterion was inserted in order to reflect the LNOB principle. According to this, indicators that explicitly study marginalised groups and minorities are favoured compared to those which do not. Similarly, databases that are disaggregated by different dimensions: age, income class, gender, sex,

ethnicity, disability status, migration status are preferred to databases with no disaggregation. In fact, the *European Handbook* suggests a designated indicator (see Part 2, Goal 17) that assesses the disaggregation approach taken within each conducted and published VLR in an effort to encourage urban practitioners to include the LNOB principle in the VLR itself.

In total, the *European Handbook* presents 24 indicators (out of 72 in total, i.e. 33%) that touch on the LNOB approach. These are presented in Table 8.

Table 8 The LNOB indicators in the second edition of the European Handbook

SDG	Indicator
1	Homeless people
1	People at risk of income poverty after social transfers
1	Households in social housing
1	People living in households with very low work intensity
1	Lone parent private households
2	Overweight rate
3	Adolescent births
4	Early leavers from education and training
5	Gender employment gap
5	Formal complaints for episodes of violence against women
5	Female hospitalisation for assault
5	Women in city, municipal, or county councils
5	Positions held by women in management
8	Employment among different migrant/ethnicity background
10	Unemployed jobseekers with disabilities and long-term illnesses
10	Population foreign-born in a non-EU country
10	Hosted asylum seekers
11	Housing access Index
11	Access to public transport
11	Population without green urban areas in their neighbourhood
13	People affected by disasters
13	Population exposed to river flood
13	Population exposed to wild fires
17	VLR disaggregated indicators

In addition, a series of additional indicators that touch on issues of LNOB were also considered but not included in the final indicator list for the reasons mentioned in Part 2 (see Section 2.2.1). These deal with data availability and timeliness, solid methodological fundamentals or frequency of data publication. To name a few, indicators dealing with the impact of COVID on lower income households (Goal 1), the digital literacy and education of older people (Goal 4), the access of women to health and the number of feminicides (Goal 5), inadequate housing and waiting time to access public/social housing (Goal 11) or violence against children as part of domestic violence (Goal 16) were excluded from the final list.

3.4.3 Decarbonisation approach

It is now widely regarded that the term decarbonisation encompasses all those measures that an entity – be it a government, a sector or a business – can take in order to manage and eventually reduce the carbon footprint of its activities. The definition goes beyond the reduction of CO₂ emissions alone and widely regards the reduction of other GHG emissions that affect the climate. By default, this touches upon different sectors of the society (from energy to mobility, and production to consumption), and the latter is also reflected in the SDGs and their targets.

To this end, and in view of the need to reach the EU Green Deal objective of reaching climate neutrality in Europe by 2050, the *European Handbook* has deliberately discussed and inserted decarbonisation elements in the majority of the description of the SDGs (see Part 2). Even where the official definition of the Goal did not include it directly, efforts have been made to go beyond the straightforward objectives of each Goal, in order to address the need to decarbonise. As such, descriptions of Goals 1, 3, 6, 7, 9, 11, 13, 14 and 15 or their transposition in the EU context now bring to the forefront the need to decarbonise to some degree, in the broader sense (including aspects of e.g. air quality, pollution, etc.).

The *European Handbook* also suggests indicators that directly deal with the need to decarbonise, as is the case for example in Goal 7, *Dwellings with worst energy performances* or Goal 13, *CO₂ emissions*. In addition, a series of indicators that infer the need to decarbonise in an indirect way are presented: for example in Goal 11, *Registered private vehicles*, in Goal 14, *Pollution load of urban effluents discharged to the coastline* or in Goal 15, *Surface water with high ecological status*.

In total, the *European Handbook* presents 19 indicators (out of 72 in total, i.e. 26%) that directly or indirectly deal with the need to decarbonise. These are presented in Table 9.

Table 9 Indicators including decarbonisation elements in the second edition of the European Handbook

SDG	Indicator
7	Inability to keep house adequately warm
7	Dwellings with low worst energy performances
9	Journeys to work by public transport
11	Shared bicycles
11	Registered private vehicles
11	Access to public transport
11	Premature deaths attributed to PM2.5
11	PM2.5 concentration
11	Population exposed to NO2 concentration
11	Population without green urban areas in their neighbourhood
12	Pollutants released from industrial facilities
12	Municipal waste
12	Recycled waste
13	Eco-friendly municipal vehicles
13	CO2 emissions
14	Bathing sites with excellent water quality
14	Pollution load of urban effluents discharged to the coastline
15	Surface waters with high ecological status
15	Newly planted trees

Similarly, as with the LNOB principle, a series of additional indicators that touch on issues of decarbonisation were also considered but not included in the final indicator list for the reasons mentioned in Part 1 (see Section 2.2.1). These deal with data availability and timeliness, solid methodological fundamentals or the frequency of data publication. To name but a few, indicators addressing Goal 7, for example *municipal procurements with green energy clauses*, *technical photovoltaic potential* or *energy consumption education* and Goal 12, for example *food waste* or *sustainability education* were not considered in the end. Similarly, indicators that dealt with mobility measures to mitigate climate change, e.g. UVAR (Urban Vehicle Access Restriction), and LEZ (Low Emission Zones) or congestion charging (Goal 13), or urban greenness and biodiversity coefficient (in Goal 15) were not included in the list.

CONCLUSIONS

¹ https://www.eeas.europa.eu/delegations/un-new-york/eu-statement-%E2%80%93-un-general-assembly-high-level-meeting-new-urban-agenda_en?s=63 and https://ec.europa.eu/regional_policy/sources/newsroom/pdf/new-urban-agenda-statement-2022.pdf

As stated at the 76th Session of the United Nations General Assembly High-Level Meeting on the New Urban Agenda by H.E. Ambassador Olof Skoog¹, the support to SDG Voluntary Local Reviews (VLRs) together with the use and promotion of the definition of Degree of Urbanisation, demonstrates the ambition of the EU and its Member States to provide high quality, comparable data and frameworks for better monitoring and reporting at global level.

This second edition of the *European Handbook for SDG Voluntary Local Reviews* is a key step forward in providing knowledge for policies when it comes to the localisation of the SDGs in Europe and in particular in the support to European cities and regions for conducting VLRs. While the first edition was exploratory in terms of methods and example indicators, this second edition has expanded the conceptualisation of the VLRs and consolidated the methodology, with the inclusion of the Leave no one behind principle and the decarbonisation approach.

The objectives of this edition of the *European Handbook* were to review the method and definition of VLRs from output-oriented to process-oriented (Part 1), update the example indicators (Part 2), and provide new insights into local SDG monitoring (Part 3).

More specifically, **Part 1** of the *European Handbook* expands the definition of the VLR starting from an **output** (a written document on the localisation of SDGs) to a **process** (incremental, reiterative, retrofitting, and interactive), which is expected to produce **outcomes**.

Part 2 offers a consolidated set of 72 example indicators that European Local and Regional Governments (LRGs) can use to monitor the SDGs, along with their definition and methodology of calculation, relevance and trends in Europe, comments and limitations, and metadata.

Part 3 of the Handbook follows the structure of the VLR as a document, and includes reflections and recommendations on the selection and use of local indicators and the framework of the SDGs for achieving sustainable development.

We are confident that with a more consolidated support and accurate knowledge, more European cities may decide to prepare a VLR to localise the SDGs basing their work on a sound method and a list of robust indicators.

This work, that to date has more specifically addressed the city level, will be expanded and adapted by the JRC to also address the regional level in the EU in 2022-2023.

REFERENCES

#

2030hub. 2020. "Sustainable Development Goals Report for Liverpool City Council." Liverpool.

A

ACEA. 2020. "Medium and Heavy Buses (over 3.5 t) New Registrations by Fuel Type in the European Union," no. April: 3–6.

https://www.acea.be/uploads/press_releases_files/ACEA_buses_by_fuel_type_full-year_2019.pdf.

Ajuntament de València - Oficina d'Estadística. 2022. "Paro y Contratos Registrados . 2 / 2022 Desocupació i Contractes Registrats . 2 / 2022." 2022.

https://www.valencia.es/estadistica/UltDatos/SERVEF_cast.pdf.

Alemán-Díaz, Aixa Y, Sophia Backhaus, Lisa L Siebers, Obiora Chukwujama, Friederike Fenski, Christoph N Henking, Karolina Kaminska, Aigul Kuttumuratova, and Martin W Weber. 2018. "Child and Adolescent Health in Europe: Monitoring Implementation of Policies and Provision of Services." *The Lancet Child & Adolescent Health* 2 (12): 891–904.

[https://doi.org/https://doi.org/10.1016/S2352-4642\(18\)30286-4](https://doi.org/https://doi.org/10.1016/S2352-4642(18)30286-4).

Antofie, T, S Luoni, A Faiella, and M Marin Ferrer. 2019. *Risk Data Hub - Web Platform to Facilitate Management of Disaster Risks*. Luxembourg: Publications Office of the European Union. Doi. Vol. 10. Luxembourg: Publications Office of the European Union.

<https://doi.org/10.2760/68372>.

Aranha, Diego F, Helder Ribeiro, and André Luis Ogando Paraense. 2016. "Crowdsourced Integrity Verification of Election Results." *Annals of Telecommunications* 71 (7): 287–97.

<https://doi.org/10.1007/s12243-016-0511-1>.

Ascheri, Andrea, AM Kiss Nagu, G Marconi, M Meszaros, R Paulino, and F Reis. 2021. "Competition in Urban Hiring Markets: Evidence from Online Job Advertisements." Luxembourg.

Asicioglu, F, M Kuloglu Genc, T Tekin Bulbul, M Yayla, S Z Simsek, C Adioren, and S Mercan. 2021. "Investigation of Temporal Illicit Drugs, Alcohol and Tobacco Trends in Istanbul City: Wastewater Analysis of 14 Treatment Plants." *Water Research* 190: 116729.

<https://doi.org/https://doi.org/10.1016/j.watres.2020.116729>.

Assmann, Dirk, Jasmin Honold, Busso Grabow, and Jochen Roose. 2018. "SDG-Indikatoren Für Kommunen. Indikatoren Zur Abbildung Der Sustainable Development Goals Der Vereinten Nationen in Deutschen Kommunen." Gütersloh: Bertelsmann Stiftung, Bundesinstitut für Bau-, Stadt- und Raumforschung Deutscher Landkreistag, Deutscher Städtetag, Deutscher Städte- und Gemeindebund, Deutsches Institut für Urbanistik, and Engagement Global.

Association of Flemish Cities and Municipalities. 2020. "Vvsg Sdg Pilot Project With Local Governments 2017-2019 : Approach and Lessons." Belgium.

B

Baarck, Julia, Alexandra Balahur-Dobrescu, Laura Giulia Cassio, Beatrice D'hombres, Pasztor Zsuzsanna, and Guido Tintori. 2021. "Loneliness in the EU. Insights from Surveys and Online Media Data." Luxembourg (Luxembourg): Publications Office of the European Union.
<https://doi.org/10.2760/28343> (online), [10.2760/46553](https://doi.org/10.2760/46553) (print).

Balestra, Carlotta, and Joyce Sultan. 2013. "Home Sweet Home: The Determinants of Residential Satisfaction and Its Relation with Well-Being. Working Paper." OECD Statistics Working Paper Series, no. STD/DOC(2013)5: 42.
<https://doi.org/10.1787/5jzbcx0czc0x-en>.

Barcelona City Hall. 2019. "Informe Sobre Localització Dels ODS 2030 a Barcelona." Barcelona.

Barcena-Martin, E., F. García-Pardo, and S Pérez-Moreno. 2021. "How Much Are People Left behind in Multidimensional Poverty?" In *Improving the Understanding of Poverty and Social Exclusion in Europe*, edited by Anne-Catherine Guio, Eric Marlier, and Brian Nolan. Publications Office of the European Union.

Barone, Guglielmo, and Sauro Mocetti. 2016. "Inequality and Trust: New Evidence from Panel Data." *Economic Inquiry*.
<https://doi.org/10.1111/ecin.12309>.

Bartolini, Laura, and Eleonora Castagnone. 2015. "Remittances and the Economic Crisis: Evidence from the Greenback 2.0 Survey in Italy," 27.

Batista e Silva, Filipe, Ricardo Barranco, Paola Proietti, Cristian Pigaiani, and Carlo Lavallo. 2021. "A New European Regional Tourism Typology Based on Hotel Location Patterns and Geographical Criteria." *Annals of Tourism Research*.
<https://doi.org/10.1016/j.annals.2020.103077>.

Batista e Silva, Filipe, Mario Alberto Marín Herrera, Konstantín Rosina, Ricardo Ribeiro Barranco, Sérgio Freire, and Marcello Schiavina. 2018. "Analysing Spatiotemporal Patterns of Tourism in Europe at High-Resolution with Conventional and Big Data Sources." *Tourism Management* 68.
<https://doi.org/10.1016/j.tourman.2018.02.020>.

Becker, Gary S. 2004. "Crime and Punishment: An Economic Approach." In *Economic Analysis of the Law*, 255–65. John Wiley & Sons, Ltd.
<https://doi.org/https://doi.org/10.1002/9780470752135.ch25>.

Ben, Welle, Qingnan Liu, Wei Li, Claudia Steil, Robin King, Claudio Sarmiento, and Marta Obelheiro. 2015. "Cities Safer by Design." Report.

Bilsky, Edgardo, Anna Calvete Moreno, Ainara Fernández Tortosa, Edgardo Bilsky, Anna Calvete Moreno, and Ainara Fernández Tortosa. 2021. "Local Governments and SDG Localisation : Reshaping Multilevel Governance from the Bottom up Local Governments and SDG Localisation : Reshaping Multilevel Governance from the Bottom Up." *Journal of Human Development and Capabilities* 0 (0): 1–12.
<https://doi.org/10.1080/19452829.2021.1986690>.

Blanc, David Le. 2015. "The Sustainable Development Goals as a Network of Targets. Monitoring and Evaluation NEWS." *Department of Economic and Social Affairs* 1 (141): 1–17.
http://www.un.org/esa/desa/papers/2015/wp141_2015.pdf.

Boto, Isolina, and Isaura Lopes. 2011. "Food Price Volatility Implications for ACP Countries," 46.

Brandeburová, Paula, Igor Bodík, Ivana Horáková, Dušan Žabka, Sara Castiglioni, Noelia Salgueiro-González, Ettore Zuccato, Viera Špalková, and Tomáš Mackuľak. 2020. "Wastewater-Based Epidemiology to Assess the Occurrence of New Psychoactive Substances and Alcohol Consumption in Slovakia." *Ecotoxicology and Environmental Safety* 200: 110762.
<https://doi.org/https://doi.org/10.1016/j.ecoenv.2020.110762>.

Brundtland, Gro Harlem. 1987. *Our Common Future, From One Earth to One World*. Report of the World Commission on Environment and Development. Our Common Future. UN.

C

Canterbury SDG Forum. 2019. "Canterbury Sustainable Development Goals Forum Reports on Local Implementation of the Goals," no. January.
https://www.kent.ac.uk/estates/files/sustainability/SDG_Forum_Report.pdf.

Cardoso, Ana Rute, Loviglio Annalisa, and Piemontese Lavinia. 2016. "Misperceptions of Unemployment and Individual Labor Market Outcomes." *IZA Journal of Labor Policy*, 1–22.

Casajus Valles, A., Marin Ferrer, M., Poljanšek, K., Clark. 2021. "Science for Disaster Risk Management 2020: Acting Today, Protecting Tomorrow." Luxembourg: Publications Office of the European Union.
<https://doi.org/10.2760/438998>.

Caturianas, Dovydas, Piotr LEWANDOWSKI, Jakub SOKOŁOWSKI, Zuzanna KOWALIK, and Egidijus BARCEVIČIUS. 2020. "Policies to Ensure Access to Affordable Housing."
<https://doi.org/10.2861/064360>.

Cavalli, Laura, Luca Farnia, Sergio Vergalli, Giulia Lizzi, Ilenia Romani, and Mia Alibegovic. 2020. "Conoscere Il Presente per Un Futuro Sostenibile: L'SDGs Index per Le Province e Le Città Metropolitane d'Italia." Milan.
https://www.feem.it/m/publications_pages/rpt-province.pdf.

CEMR-CCRE, and Platforma. 2020. "The 2030 Agenda through the Eyes of the Local and Regional Government Associations."

CETS. 2011. "Convention on Preventing and Combating Violence against Women and Domestic Violence." Council of Europe Treaty Series., no. 210: 25.
<https://rm.coe.int/168008482e>.

Ciambra, Andrea. 2021a. European SDG Voluntary Local Reviews. A Comparative Analysis of Local Indicators and Data. Edited by Alice Siragusa and Paola Proietti. Publications Office of the European Union.
<https://doi.org/10.2760/9692>.

———. 2021b. "Guidelines for Voluntary Local Reviews Volume 2: Towards a New Generation of VLRs: Exploring the Local-National Link." Vol. 2. Guidelines for VLRs. Nairobi: UN-Habitat and UCLG.
<https://unhabitat.org/guidelines-for-voluntary-local-reviews-volume-2-towards-a-new-generation-of-vlrs-exploring-the>.

Cieśla, Maria. 2021. "Modern Urban Transport Infrastructure Solutions to Improve the Safety of Children as Pedestrians and Cyclists." Infrastructures .
<https://doi.org/10.3390/infrastructures6070102>.

Città Metropolitana di Firenze. 2022. "La Città Metropolitana Di Firenze Verso Lo Sviluppo Sostenibile. 10 Obiettivi Metropolitan per Il 2030."
<https://www.cittametropolitana.fi.it/wp-content/uploads/AgendaAdottata.pdf>.

City of Bonn. 2020. "Voluntary Local Review - Agenda 2030 on the Local Level. Implementation of the UN Sustainable Development Goals in Bonn." Mayor of the City of Bonn/Department of International Affairs and Global Sustainability/.
<https://www.bonn.de/microsite/en/international-profile/sustainability-cluster/voluntary-local-review.php>.

City of Espoo. 2020. "VOLUNTARY LOCAL REVIEW IMPLEMENTATION OF THE UNITED NATIONS'SUSTAINABLE DEVELOPMENT GOALS 2030 IN THE CITY OF ESPOO." Espoo.

City of Ghent. 2020. "Ghent Sustainability Report 2020. Voluntary Local Review."

City of Helsinki. 2021. "From Agenda to Action. The Implementation of the UN Sustainable Development Goals in Helsinki 2021."

City of Mannheim. 2019. "The Implementation of the United Nations' Sustainable Development Goals in Mannheim 2030 - Voluntary Local Review." Mannheim.
https://www.mannheim.de/sites/default/files/2019-10/MAOB_1847_001_Report_englisch_04_WEB_A.pdf.

City of Turku, and Turku City Hall. 2020. A Voluntary Local Review 2020. The Implementation of the 2030 Agenda for Sustainable Development in the City of Turku. Turku: City of Turku.
https://www.turku.fi/sites/default/files/atoms/files/turku_voluntary_local_review_2020_0.pdf.

Clean Bus Europe Platform. 2022. "Cleanbusplatform.Eu." 2022.

<https://cleanbusplatform.eu/>.

Commission of The European Communities. 2007. "White Paper on a Strategy for Europe on Nutrition, Overweight and Obesity Related Health Issues."

Com 3.5.2007 (December 2005): 1–12.

http://europa.eu/legislation_summaries/public_health/%5Cnhealth_determinants_lifestyle/c11542c_en.htm.

———. 2008. "Food Prices in Europe."

<https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52008DC0821&from=EN>.

Copernicus. 2018. "Urban Atlas." 2018.

<https://land.copernicus.eu/local/urban-atlas/urban-atlas-2018>.

Council of the European Union. 2009 "Council Conclusions of 12 May 2009 on a Strategic Framework for European Cooperation in Education and Training."

Accessed February 17, 2022.

[https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52009XG0528\(01\)&from=EN](https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52009XG0528(01)&from=EN).

———. 2010. "Council Directive 98/83/EC of 3 November 1998 on the Quality of Water Intended for Human Consumption (OJ L 330 05.12.1998 p. 32)." Documents in European Community Environmental Law, 865–78.

<https://doi.org/10.1017/cbo9780511610851.055>.

———. 2018. "Directive 89/391 on the Introduction of Measures to Encourage Improvements in the Safety and Health of Workers at Work." EU Treaties and Legislation, no. L: 612–21.

<https://doi.org/10.1017/9781108624374.022>.

———. 2021a. "Council Resolution on a Strategic Framework for European Cooperation in Education and Training towards the European Education Area and beyond (2021-2030) 2021/C 66/01." 2021.

———. 2021b. "EU Drugs Strategy 2021-2025" 2020 (December): 1–35.

Curtale, Riccardo, Filipe Batista e Silva, Paola Proietti, and Ricardo Barranco. 2022. "Determinants of Tourism Destination Vulnerability in Europe during the COVID-19 Pandemic ." Forthcoming.

D

Deal, Green, and Paolo Gentiloni. 2021. "Banque Des Territoires and EIB Launch the Clean Buses Platform, an Innovative Investment Programme Dedicated to Greening Bus Fleets across France," no. January.

<https://www.eib.org/en/press/all/2021-009-banque-des-territoires-and-eib-launch-the-clean-buses-platform-an-innovative-investment-programme-dedicated-to-greening-bus-fleets-across-france>.

Deininger, Niki, Yasu Lu, Jason Griess, and Robert Santamaria. 2019. "Cities Taking the Lead on the Sustainable Development Goals A Voluntary Local Review Handbook for Cities."

Denti, Daria, and Simona Iammarino. 2022. "Coming out of the Woods. Do Local Support Services Influence the Propensity to Report Sexual Violence?" *Journal of Economic Behavior & Organization* 193: 334–52

Denti, D., & Faggian, A (2021), Where do angry birds tweet? Income inequality and online hate in Italy, *Cambridge Journal of Regions, Economy and Society*, Volume 14, Issue 3, November 2021, Pages 483–506, <https://doi.org/10.1093/cjres/rsab016>

Denti, D. (2022). Looking ahead in anger: The effects of foreign migration on youth resentment in England. *Journal of Regional Science*, 62(2), 578–603.

Denti, D., & Faggian, A. (2022). The Councilwoman's Tale. Countering Intimate Partner Homicides by electing women in local councils. *LSE Papers in Economic Geography and Spatial Economics*

Denti, D (forthcoming) How European cities make operational the principle of leaving no one behind in mission statements, policies and budgets.

Dijkstra, Lewis, Hugo Poelman, and Linde Ackermans. 2019. "Road Transport Performance in Europe. Introducing a New Accessibility Framework."

Doling, John. 2006. "A European Housing Policy?" *European Journal of Housing Policy* 6 (3): 335–49.

E

EC/EACEA/Eurydice. 2015. "Structural Indicators for Monitoring Education and Training Systems in Europe." Eurydice Report.

https://webgate.ec.europa.eu/fpfis/mwikis/eurydice/index.php/Publications:Structural_Indicators_for_Monitoring_Education_and_Training_Systems_in_Europe_-_2015.

EC. 2007. "Regulation No 715/2007 of the European Parliament and of the Council of 20 June 2007 on Type Approval of Motor Vehicles with Respect to Emissions from Light Passenger and Commercial Vehicles (Euro 5 and Euro 6) and on Access to Vehicle Repair and Maintenance."

Economic Commission for Europe Committee on Urban Development Housing and Land Management. 2021. "Draft Guidelines for the Development of Voluntary Local Reviews in the ECE Region (ECE/HBP/2021/4)."

EEA. 2009. Water Resources across Europe – Confronting Water Scarcity and Drought. EEA Report 2/2009.

———. 2018. "European Waters Assessment of Status and Pressures 2018." <https://doi.org/10.2800/303664>.

———. 2019a. “Marine Messages II Navigating the Course towards Clean, Healthy and Productive Seas through Implementation of an Ecosystem-based Approach.” 2019.

<https://www.eea.europa.eu/publications/marine-messages-2/file>.

———. 2019b. “Waterbase - UWWTD: Urban Waste Water Treatment Directive – Reported Data — European Environment Agency.” 2019.

<https://www.eea.europa.eu/data-and-maps/data/waterbase-uwtd-urban-waste-water-treatment-directive-7>.

———. 2019c. “Workbook: Agglomerations.” 2019.

———. 2021a. “Ecological Status of Surface Waters.” 2021.

———. 2021b. “Forest Fires in Europe.” 2021.

———. 2021c. “Indicator Assessment River Floods.” 2021.

———. 2021d. “Up to Date Air Quality Data.” 2021.

<https://www.eea.europa.eu/data-and-maps/explore-interactive-maps/up-to-date-air-quality-data>.

———. 2021e. “Urban Waste Water Treatment for 21st Century Challenges.” 2021.

———. 2021f. “Waste Recycling in Europe.” 2021.

<https://www.eea.europa.eu/ims/waste-recycling-in-europe>.

———. 2021g. “Water Resources across Europe — Confronting Water Stress: An Updated Assessment.”

<https://www.eea.europa.eu/publications/water-resources-across-europe-confronting>.

———. 2021h. “Air Quality E-Reporting.” 2021.

<https://www.eea.europa.eu/data-and-maps/data/aqereporting-9>.

EEC. 1991. “Council Directive 91/271/EEC of 21 May 1991 Concerning Urban Waste-Water Treatment.” 1991.

EIGE. 2021a. “Gender Equality Index.” 2021.

<https://eige.europa.eu/gender-equality-index/2021>.

———. 2021b. “Women and Men in Decision-Making.” 2021.

https://eige.europa.eu/gender-statistics/dgs/indicator/wmidm_pol_parl__wmid_locpol.

———. 2022. “Violence against Women.” 2022.

<https://eige.europa.eu/thesaurus/terms/1426>.

Eisenman, Theodore S, Alicia F Coleman, and Gregory LaBombard. 2021. “Street Trees for Bicyclists, Pedestrians, and Vehicle Drivers: A Systematic Multimodal Review.” Urban Science .

<https://doi.org/10.3390/urbansci5030056>.

EPAH. 2020. "EU - Energy Poverty Advisory Hub."

https://energy-poverty.ec.europa.eu/index_en.

ESCAP. 2020. Asia-Pacific Regional Guidelines on Voluntary Local Reviews. United Nations.

[https://www.unescap.org/sites/default/d8files/knowledge-products/Asia-Pacific Regional Guidelines on VLRs_0.pdf](https://www.unescap.org/sites/default/d8files/knowledge-products/Asia-Pacific%20Regional%20Guidelines%20on%20VLRs_0.pdf).

Euro-Peristat Project. 2018. "Core Indicators of the Health and Care of Pregnant Women and Babies in Europe in 2015,," no. European Perinatal Health Report: 180. www.europeristat.com.

European Asylum Support Office. 2021. Strategy on Reception.

<https://doi.org/10.2847/18429>.

European Commission. 2010. "Directive on the Energy Performance of Buildings." Official Journal of the European Union, no. 31.

———. 2011. "WHITE PAPER Roadmap to a Single European Transport Area – Towards a Competitive and Resource Efficient Transport System."

<https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52011DC0144&from=EN>.

———. 2015. "New Priorities for European Cooperation in Education and Training."

<https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52015DC0408&from=EN>.

———. 2020. "Our Life Insurance, Our Natural Capital: An EU Biodiversity Strategy to 2020." 2020.

<https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52011DC0244&from=EN>.

———. 2021. "The European Pillar of Social Rights."

<https://doi.org/10.1007/s12027-017-0473-4>.

European Commission, Directorate-General for Employment, Social Affairs and Inclusion. 2019. Employment and Social Developments in Europe 2019 : Sustainable Growth for All: Choices for the Future of Social Europe. Publications Office of the European Union.

<https://doi.org/doi/10.2767/79057>.

European Commission. 2006. "Directive 2006/7/EC of the European Parliament and of the Council of 15 February 2006 Concerning the Management of Bathing Water Quality and Repealing Directive 76/160/EEC." Official Journal of the European Union L 064 (1882): 37–51.

https://doi.org/L_102/15.

———. 2008. "Directive 2008/50/EC on Ambient Air Quality and Cleaner Air for Europe."

———. 2010. "Waste Statistics," no. 849: 2–41.

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2010:253:0002:0041:EN:PDF>.

- . 2015. "Public Integrity and Trust in Europe."
- . 2016. "Pact of Amsterdam - Urban Agenda for the EU."
- . 2018a. "Dire on the Energy Performance of Buildings and on Energy Efficiency." Official Journal of the European Union.
- . 2018b. European Health Interview Survey (EHIS Wave 3) Methodological Manual 2018 Edition.
- . 2019a. "Directive (EU) 2019/1161 of the European Council and of the European Parliament of 20 June 2019, Amending Directive 2009/33/EC on the Promotion of Clean and Energy-Efficient Road Transport Vehicles." Official Journal of the European Union. 2019.
<https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019L1161&from=EN>.
- . 2019b. "Disaster Risk Management Knowledge Centre (DRMKC) Overview." 2019.
- . 2019c. "Integrated Assessment of the 2nd River Basin Management Plans: EU-Wide Storyline Report." Edited by Directorate-General for Environment European Commission. Publications Office of the European Union.
<https://doi.org/10.2779/640259>.
- . 2019d. "The European Green Deal."
<https://op.europa.eu/en/publication-detail/-/publication/b828d165-1c22-11ea-8c1f-01aa75ed71a1>.
- . 2020a. "A New Circular Economy Action Plan For a Cleaner and More Competitive Europe."
<https://doi.org/10.7312/columbia/9780231167352.003.0015>.
- . 2020b. "Commission Recommendations (EU) 2020/1563 of 14 October 2020 on Energy Poverty." Official Journal of the European Union L357 (35): 35–41.
<https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32020H1563&from=EN>.
- . 2020c. "COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS EU Strategy on Victims' Rights (2020-2025) COM/2020/258 Final.Eu." 2020.
<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52020DC0258>.
- . 2020d. Education and Training Monitor. Publications Office of the European Union.
<https://doi.org/10.2766/69134>.
- . 2020e. "Emissions Database for Global Atmospheric Research (EDGAR)." 2020.
<https://edgar.jrc.ec.europa.eu/>.
- . 2020f. "EU Biodiversity Strategy for 2030."

- . 2020g. “Renovation Wave for Europe - Greening Our Buildings, Creating Jobs, Improving Lives.” Official Journal of the European Union Official Journal of the European Union.
- . 2020h. “Sustainable and Smart Mobility Strategy – Putting European Transport on Track for the Future.”
- . 2020i. “The European Pillar Of Social Rights Action Plan (Swd(2021) 46 Final).”
- . 2020j. “Transport and the Green-Deal.” 2020.
https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal/transport-and-green-deal_en.
- . 2020k. “Union Of Equality: Gender Equality Strategy. Communication From The Commission To The European Parliament The Council The European Economic And Social Committee And The Committee Of The Regions.”
- . 2021a. “2021 Report on Gender Equality in the EU.” Luxembourg.
- . 2021b. “3 Billion Trees Pledge.” 2021.
https://ec.europa.eu/environment/3-billion-trees_en.
- . 2021c. “Ageing Report. Economic & Budgetary Projections for the EU Member States (2019-2070). INSTITUTIONAL PAPER 148.”
<https://doi.org/10.2765/84455>.
- . 2021d. “Asylum Seeker.” 2021.
https://ec.europa.eu/home-affairs/pages/glossary/asylum-seeker_en.
- . 2021e. “Energy Poverty Advisory Hub.” 2021.
https://energy-poverty.ec.europa.eu/index_en.
- . 2021f. “Pathway to a Healthy Planet for All. EU Action Plan: ‘Towards Zero Pollution for Air, Water and Soil,’” 22.
https://eur-lex.europa.eu/resource.html?uri=cellar:a1c34a56-b314-11eb-8aca-01aa75ed71a1.0001.02/DOC_1&format=PDF.
- . 2021g. “PROPOSAL FOR A JOINT EMPLOYMENT REPORT FROM THE COMMISSION AND THE COUNCIL, COM(2021) 743 Final.”
- . 2022a. “2022 Report on Gender Equality in the EU.” Luxembourg.
- . 2022b. “The EU Strategy on the Rights of the Child and the European Child Guarantee.” 2022.
- European Environment Agency. 2018. “Water Use in Europe 2014.” 2018.
- . 2019. Urban Waste Water Treatment for 21st Century Challenges - Briefing No. 5/2019.
<https://doi.org/10.2800/362039>.
- . 2020. State of Nature in the EU. Igarss 2014.
<http://bookshop.europa.eu/ro/state-of-nature-in-the-eu-pbTHAK15002/?CatalogCategoryID=iEKep2lx3hEAAAEud3kBgSLq>.

European Monitoring Centre for Drugs and Drug Addiction. 2021a. European Drug Report 2021: Trends and Developments.

<https://www.rte.ie/documents/news/2021/06/european-drug-report-2021.pdf> (18 June 2021).

———. 2021b. “Wastewater Analysis and Drugs — a European Multi-City Study (Perspectives on Drugs).” Publications Office of the European Union.

European Parliament. 2020a. “DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on the Quality of Water Intended for Human Consumption.”

https://eur-lex.europa.eu/resource.html?uri=cellar:8c5065b2-074f-11e8-b8f5-01aa75ed71a1.0018.02/DOC_1&format=PDF.

———. 2020b. “EU Policy for Persons with Disabilities.”

———. 2021. “Citizens’ Dialogues and Citizens’ Participation in the EU Decision-Making,” 107–19.

<https://doi.org/10.4324/9781351049955-11>.

European Parliament and Council. 1994. “Directive on Packaging and Packaging Waste.” Official Journal of the European Communities 1993 (L): 10–23.

———. 2006. “European Pollutant Release and Transfer Register.” Official Journal of the European Union L33 (4.2.2006): 1–17.

<https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2006:033:0001:0017:EN:PDF#page=8>.

———. 2007. “Directive on the Assessment and Management of Flood Risks.”

Official Journal of the European Union, no. 2455: 27–34. <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32007L0060&from=EN>.

———. 2008. “Directive 2008/122/EC on Waste.”

<https://doi.org/10.5040/9781782258674.0028>.

European Union. 2012. Treaty on European Union and the Treaty on the Functioning of the European Union (Official Journal C 326 , 26/10/2012 P. 0001 - 0390).” Official Journal C 326 , 26/10/2012 P. 0001 - 0390.

<https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2012:326:FULL:EN:PDF>.

———. 2013. European Statistics on Accidents at Work (ESAW).

<https://doi.org/10.2785/40882>.

Eurostat. 2010. “Glossary: Unemployment.” 2010.

———. 2018a. “Employment Rates of Young People Not in Education and Training by Sex, Educational Attainment Level and Years since Completion of Highest Level of Education.” 2018.

http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=demo_gind&lang=fr.

———. 2018b. “Geostat Grid.” 2018.

<https://ec.europa.eu/eurostat/web/gisco/geodata/reference-data/population-distribution-demography/geostat>.

- . 2020. "Health Workers in the EU." 2020.
<https://ec.europa.eu/eurostat/web/products-eurostat-news/-/DDN-20200409-2>.
- . 2021a. "Early Estimates of Income Inequalities during the 2020 Pandemic." Online. 2021.
https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Early_estimates_of_income_inequalities_during_the_2020_pandemic.
- . 2021b. "Energy Statistics - an Overview." Online. 2021.
- . 2021c. "EU SILC Database." 2021.
- . 2021d. "Municipal Waste by Waste Management Operations." 2021.
http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=demo_gind&lang=fr.
- . 2021e. "Road Accidents: Number of Fatalities Continues Falling." 2021.
<https://ec.europa.eu/eurostat/web/products-eurostat-news/-/ddn-20210624-1>.
- . 2021f. "SDG 12 - Responsible Consumption and Production." Online. 2021.
<https://ec.europa.eu/research/foresight/index.cfm>.
- . 2021g. "SDG 13 - Climate Action." Online. 2021.
<https://ec.europa.eu/research/foresight/index.cfm>.
- . 2021h. "SDG 14 - Life below Water." Online. 2021.
- . 2021i. "SDG 15 - Life on Land." Online.
- . 2021j. "SDG 16 - Peace, Justice and Strong Institutions." Online. 2021.
- . 2021k. "SDG 17 - Partnerships for the Goals." Online. 2021.
- . 2021l. "SDG 2 - Zero Hunger." 2021.
- . 2021m. "SDG 3 - Good Health and Well-Being." Online. 2021.
- . 2021n. "SDG 6 - Clean Water and Sanitation." Online. 2021.
- . 2021o. "SDG 7 - Affordable and Clean Energy." 2021.
- . 2021p. "SDG 9 - Industry, Innovation and Infrastructure." Online. 2021.
- . 2021q. "Spatial Units." 2021.
- . 2022a. "Annual Asylum Statistics." Online. 2022.
- . 2022b. "People Living in Households with Very Low Work Intensity [SDG_01_40]." 2022.
<http://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&language=en&pcode=teina225&plugin=1>.
- EUROSTAT. 2017. Methodological Manual on City Statistics, 2017 Edition.
<https://doi.org/10.2785/765198>.

———. 2019. "Assessing Sustainable Development in the European Union. Monitoring Report on Progress towards the SDGs in an EU Context. 2019 Edition." Edited by Simon Johannes Bley. Luxembourg: Publications Office of the European Union.

<https://doi.org/10.9774/gleaf.3062.2001.wi.00007>.

———. 2021a. "EU Labour Force Survey." 2021.

<https://ec.europa.eu/eurostat/web/lfs>.

———. 2021b. "Labour Market Statistics at Regional Level." 2021.

https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Labour_market_statistics_at_regional_level&oldid=541660.

———. 2021c. Sustainable Development in the European Union. Monitoring Report on Progress towards the SDGs in an EU Context (2021 Edition). Edited by Simon Johannes Bley. Sustainable Development in the European Union. Luxembourg: Publications Office of the European Union.

<https://doi.org/10.9774/gleaf.9781315611471>.

———. 2021d. "Women Remain Outnumbered in Management." 2021.

<https://ec.europa.eu/eurostat/web/products-eurostat-news/-/edn-20210305-2>.

———. 2022. "Key Indicators of Labour Productivity Show Recovery." 2022.

<https://ec.europa.eu/eurostat/web/products-eurostat-news/-/ddn-20220314-1>.

Eurostat Statistic Explained. 2008. "Statistical Classification of Economic Activities in the European Community, Rev. 2." Online. 2008.

———. 2021a. "Accidents at Work Statistics." Online. 2021.

———. 2021b. "Crime Statistics." Online. 2021.

———. 2021c. "Educational Attainment Statistics." Online. 2021.

———. 2021d. "Index @ Ec.Europa.Eu." Online. 2021.

———. 2021e. "Migration and Migrant Population Statistics." Online. 2021.

———. 2021f. "Mortality and Life Expectancy Statistics." Online. 2021.

———. 2021g. "Road Accident Fatalities - Statistics by Type of Vehicle." Online. 2021.

Euskadi Basque Country. 2017. I Agenda Euskadi Basque Country 2030 Monitoring Report 2017.

———. 2018. 2nd Monitoring Report. Agenda Euskadi Basque Country 2030.

———. 2019. "3rd Monitoring Report I Agenda Euskadi Basque Country 2030 Monitoring Report I Agenda Euskadi Basque Country 2030."

<https://www.euskadi.eus/2030-agenda/monitoring-2019/>.

———. 2021. "4o Informe de Seguimiento. Agenda Euskadi Basque Country 2030. Año 2020."

Famsi. 2020. "GUÍA PARA LA IMPLEMENTACIÓN DE LOS ODS EN EL ÁMBITO LOCAL DE ANDALUCÍA."

FEANTSA. 2007. "European Typology of Homelessness," 12.
<https://www.feantsa.org/download/fea-002-18-update-ethos-light-0032417441788687419154.pdf>.

Fioretti, Carlotta, Martina Pertoldi, Martina Busti, and Sjoerdje Van Heerden, eds. 2020. Handbook of Sustainable Urban Development Strategies. Publications Office of the European Union.
<https://doi.org/10.2760/32842>.

Fondation Abbé Pierre, and FEANTSA. 2021. "6th Overview of Housing Exclusion in Europe 2021."
https://www.fondation-abbe-pierre.fr/documents/pdf/rapport_europe_2021_gb.pdf.

Food and Agriculture Organization of the United Nations. 2011. The State of Food Insecurity in the World: How Does International Price Volatility Affect Domestic Economies and Food Security? Organization.
<http://www.fao.org/docrep/014/i2330e/i2330e00.htm>.

Food and Agriculture Organization of the United Nations, IFAD, IMF, OECD, UNCTAD, WFP, the World Bank, The WTO, IFPRI, and UN HLTF. 2011. "World Trade Organization: Price Volatility in Food and Agricultural Markets : Policy Responses," no. June.

Fox, Sean, and Allan Macleod. 2019a. "Bristol and the SDGs a Voluntary Local Review of Progress 2019." Bristol.
https://research-information.bris.ac.uk/ws/portalfiles/portal/207892282/BRISTOL_AND_THE_SDGs_A4_report_July_2019_FINAL.pdf.

———. 2019b. "Voluntary Local Reviews: A Handbook for UK Cities," 24.

Fundación CIEDES. 2020 "La Estrategia Europa 2020 y El Desarrollo Sostenible 2030: Una Adaptación Para La Ciudad de Málaga. CUADERNO 18." Edited by Rafael López del Paso, Esperanza Nieto Lobo, Fernando Morilla García, Cristina Delgado Reina, J. Antonio Muñoz López, Felisa Becerra Benítez, Felipe Cebrino Casquero, et al. Málaga: Fundación CIEDES.
www.ciedes.es.

Fuso Nerini, Francesco, Julia Tomei, Long Seng To, Iwona Bisaga, Priti Parikh, Mairi Black, Aiduan Borrion, et al. 2018. "Mapping Synergies and Trade-Offs between Energy and the Sustainable Development Goals." Nature Energy 3 (1): 10–15.
<https://doi.org/10.1038/s41560-017-0036-5>.

Futurium - European Commission. 2017. "Urban Poverty Part of Urban Agenda for the EU." 2017.
<https://futurium.ec.europa.eu/en/urban-agenda/urban-poverty/pages/about>.

Gabinet Tècnic de Programació, and Oficina Municipal de Dades. 2019. "Informe Sobre Localització Dels Objectius de Desenvolupament Sostenible (ODS) 2030 a Barcelona." Barcelona.

https://www.diba.cat/documents/167993676/190765953/AJTBCN_InformeLocalitzacióAgenda2030aBarcelona_20190329.pdf/6689959b-881d-43e8-ae1e-8c64fb9920d5.

García-Pardo, F., E. Bárcena-Martín, and S. Pérez-Moreno. 2021. "Measuring the 'Leaving No One behind' Principle in the European Countries: An AROPE-Based Fuzzy Logic Approach." *Fuzzy Sets and Systems*.

<https://doi.org/10.1016/j.fss.2020.07.017>.

Gea Aranoa, Ainhoa. 2021. *Analysis of Regional Indicators for the Sustainable Development Goals*. Edited by Alice Siragusa and Paola Proietti. Luxembourg (Luxembourg): Publications Office of the European Union.

<https://doi.org/10.2760/623814>.

Gendźwiłł, Adam, and Kristof Steyvers. 2021. "Guest Editors' Introduction: Comparing Local Elections and Voting in Europe: Lower Rank, Different Kind... or Missing Link?" *Local Government Studies*.

<https://doi.org/10.1080/03003930.2020.1825387>.

General Secretariat of the Council. 2017. "Proposal for an Interinstitutional Proclamation on the European Pillar of Social Rights (12860/17 SOC 619 EMPL 475 EDUC 356 SAN 337 ECOFIN 779)."

https://ec.europa.eu/info/sites/default/files/proclamation-pillar_en.pdf.

Género, Delegación del Gobierno contra la Violencia de. 2021. "EXECUTIVE SUMMARY OF THE 2019 MACRO-SURVEY ON VIOLENCE AGAINST WOMEN."

Giles-Corti, Billie, Anne Vernez-Moudon, Rodrigo Reis, Gavin Turrell, Andrew L Dannenberg, Hannah Badland, Sarah Foster, et al. 2016. "City Planning and Population Health: A Global Challenge." *The Lancet* 388 (10062): 2912–24.

[https://doi.org/10.1016/S0140-6736\(16\)30066-6](https://doi.org/10.1016/S0140-6736(16)30066-6).

Giuliano, Paola, and Nathan Nunn. 2013. "The Transmission of Democracy: From the Village to the Nation-State." In *American Economic Review*.

<https://doi.org/10.1257/aer.103.3.86>.

Global Task Force of Local and Regional Governments. 2020. "TOWARDS THE LOCALIZATION OF THE SDGs LOCAL AND REGIONAL GOVERNMENTS' REPORT TO THE 2020 HLPF 4th REPORT." Barcelona.

www.uclg.org.

Gobierno de Navarra. 2019. "Agenda 2030 de Desarrollo Sostenible. Alineación de Las Políticas Públicas Con Los ODS y Sus Metas. Resumen Ejecutivo y Plan de Acción."

http://www.cooperacionespanola.es/sites/default/files/agenda_2030_desarrollo_sostenible_cooperacion_espanola_12_ago_2015_es.pdf.

González Ortiz, Alberto, Artur Gsella, Cristina Guerreiro, Joana Soares, and Jan Horálek. 2021. "Health Risk Assessment of Air Pollution." Eionet Report – ETC/ATNI 2021/10.

<https://www.eionet.europa.eu/etcs/etc-atni/products/etc-atni-reports/etc-atni-report-10-2021-health-risk-assessments-of-air-pollution-estimations-of-the-2019-hra-benefit-analysis-of-reaching-specific-air-quality-standards-and-more/@@download/file/2021-10>.

Griggs, D.J., Nilsson, M., Stevance, A. and McCollum, D. 2017. "A Guide To SDG Interactions : From Science to Implementation." International Council for Science 33 (7): 1–239.

<https://www.modares.ac.ir/uploads/Agr.Oth.Lib.17.pdf>.

Grubanov-Boskovic, S., G. Tintori, and F. Biagi. 2020. "Gaps in the EU Labour Market Participation Rates: An Intersectional Assessment of the Role of Gender and Migrant Status." Luxemburg.

H

Harel, Daphna, Elaine Russo Hitchcock, Daniel Szeredi, José Ortiz, and Tara McAllister Byun. 2017. "Finding the Experts in the Crowd: Validity and Reliability of Crowdsourced Measures of Children's Gradient Speech Contrasts." Clinical Linguistics & Phonetics 31 (1): 104–17.

<https://doi.org/10.3109/02699206.2016.1174306>.

Heerden, S Van, P Proietti, and S Iodice. 2022. "Homelessness in EU Urban Areas before and during the COVID- 19 Pandemic. Main Challenges and Ways Forward." Luxemburg.

Heerden, Sjoerdje Van, R. Barranco, and C. Lavalle. 2020. "Who Owns the City? Exploratory Research Citivity on the Financialisation of Housing in EU Cities." The Sovereign Street.

Helsinki, and City of Helsinki. 2019. From Agenda to Action. The Implementation of the UN Sustainable Development Goals in Helsinki 2019. City of Helsinki, City Executive Office.

<https://www.hel.fi/static/helsinki/julkaisut/SDG-VLR-Helsinki-2019-en.pdf>.

Herrador Lindes, Inmaculada, Antonio Martín Mesa, and Juana Pilar Fernández Moreno. 2019. "Indicadores Para Medir La Consecución de Los Objetivos de Desarrollo Sostenible (ODS) de La Provincia de Jaén." Jaén: Fundación ESTRATEGIAS PARA EL DESARROLLO ECONÓMICO Y SOCIAL DE LA PROVINCIA DE JAÉN.

https://www.planestrajaen.org/centro-documental/otros-documentos/indicadores_ods_provincia_jaen.html.

Hidalgo Simón, Andoni. 2021a. "SDG Localisation and Multi-Level Governance: Lessons from the Basque Country." Edited by Alice Siragusa and Paola Proietti. Luxembourg (Luxembourg): Publications Office of the European Union.

<https://doi.org/10.2760/20519>.

———. 2021b. “SDG Localisation and Multi-Level Governance: Lessons from the Basque Country.” Edited by Alice Siragusa and Paola Proietti. Luxembourg (Luxembourg): Publications Office of the European Union.
<https://doi.org/10.2760/20519>.

Hoekstra, J. 2009. “Two Types of Rental System? An Exploratory Empirical Test of Kemeny’s Rental System Typology.” *Urban Studies* 46 (1): 45–62.

Housing Europe. 2021a. “Impact of the Recovery Plans on the Social & Affordable Housing Sector.”

———. 2021b. “Social, Cooperative and Public Housing in the EU Cohesion Policy after 2020.”

———. 2021c. “The State of Housing in Europe 2021.”

Huovila, Aapo, Peter Bosch, and Miimu Airaksinen. 2019. “Comparative Analysis of Standardized Indicators for Smart Sustainable Cities: What Indicators and Standards to Use and When?” *Cities*.
<https://doi.org/10.1016/j.cities.2019.01.029>.

I

IEA. 2021. “Empowering Cities for a Net Zero Future.”
<https://doi.org/10.1787/7a222c8b-en>.

IHME. 2013. *The Global Burden of Disease: Generating Evidence, Guiding Policy – European Union and European Free Trade Association Regional Edition*.

ILO. 2019. *Time to Act for SDG 8: Integrating Decent Work, Sustained Growth and Environmental Integrity*. Geneva: International Labour Office.

ISCO-08. 2008. “International Standard Classification of Occupations.” Department of Statistics International Labour Office I.
<http://www.ilo.org/public/english/bureau/stat/isco/index.htm>.

J

Joint Research Centre. 2019. “STRAT-Board: Territorial and Urban Strategies Dashboard.” 2019.
<https://urban.jrc.ec.europa.eu/strat-board/#/where>.

JRC. 2018. “Geostat.” 2018.
<https://ec.europa.eu/eurostat/web/gisco/geodata/reference-data/population-distribution-demography/geostat>.

———. 2022. “LUISA Territorial Modelling Platform.” 2022.
https://joint-research-centre.ec.europa.eu/luisa_en.

Junta de Andalusia. 2019. “Carga Contaminante de Efluentes Urbanos Vertidos Al Litoral.”

Karnib, Ali. 2017. "Mapping the Direct and Indirect Interlinkages across the Sustainable Development Goals: A Qualitative Nexus Approach." *International Journal of Development and Sustainability* 6 (9): 1150–58.

www.isdsnet.com/ijds.

Kermeny, J. 1995. *From Public Housing to the Social Market: Rental Policy Strategies in Comparative Perspective*.

Klasen, Stephan, and Marc Fleurbaey. 2019. "Leaving No One Behind: Some Conceptual and Empirical Issues." *Journal of Globalization and Development* 9 (2).

<https://doi.org/10.1515/jgd-2018-0045>.

Koike, Hirotaka, Fernando Ortiz-Moya, Yatsuka Kataoka, and Junichi Fujino. 2020. *The Shimokawa Method For Voluntary Local Review (VLR)*. Institute for Global Environmental Strategies (IGES).

https://www.iges.or.jp/en/publication_documents/pub/training/en/10779/Shimokawa+Method+Final.pdf.

Kouba, K., J., Novák, and M. Strnad. 2021. "Explaining Voter Turnout in Local Elections: A Global Comparative Perspective." *Contemporary Politics* 27 (1): 58–78.

Krzysztozek, Jana, Ida Laudańska-Krzemińska, and Michał Bronikowski. 2019. "Assessment of Epidemiological Obesity among Adults in EU Countries." *Annals of Agricultural and Environmental Medicine* 26 (2): 341–49.

<https://doi.org/10.26444/aaem/97226>.

Kumar, Pradeep, Dipendra Kumar Mahato, Madhu Kamle, Rituraj Borah, Bharti Sharma, Shikha Pandhi, Vijay Tripathi, et al. 2021. "Pharmacological Properties, Therapeutic Potential, and Legal Status of Cannabis Sativa L.: An Overview." *Phytotherapy Research* 35 (11): 6010–29.

<https://doi.org/https://doi.org/10.1002/ptr.7213>.

Landers, Richard, Robert Brusso, and Elena Auer. 2019. "Crowdsourcing Job Satisfaction Data: Examining the Construct Validity of Glassdoor.Com Ratings." *Personnel Assessment and Decisions* 5 (3).

<https://doi.org/10.25035/pad.2019.03.006>.

Lassébie, Julie. 2020. "Gender Quotas and the Selection of Local Politicians: Evidence from French Municipal Elections." *European Journal of Political Economy* 62: 101842.

<https://doi.org/https://doi.org/10.1016/j.ejpoleco.2019.101842>.

Lieske, Scott N, Simone Z Leao, Lindsey Conrow, and Chris Pettit. 2019. "Assessing Geographical Representativeness of Crowdsourced Urban Mobility Data: An Empirical Investigation of Australian Bicycling." *Environment and Planning B: Urban Analytics and City Science* 48 (4): 775–92.

<https://doi.org/10.1177/2399808319894334>.

Lozzi, G, M Rodrigues, E Marcucci, T Teoh, V Gatta, and V Pacelli. 2020. "Research for TRAN Committee – COVID-19 and Urban Mobility: Impacts and Perspectives," no. September: 24.

[https://www.europarl.europa.eu/RegData/etudes/IDAN/2020/652213/IPOL_IDA\(2020\)652213_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/IDAN/2020/652213/IPOL_IDA(2020)652213_EN.pdf).

Lutz, Johannes. 2015. "The Validity of Crowdsourcing Data in Studying Anger and Aggressive Behavior." *Social Psychology* 47 (1): 38–51.

<https://doi.org/10.1027/1864-9335/a000256>.

M

Madrid. 2021. "Estrategia de Localización de Los Objetivos de Desarrollo Sostenible de La Agenda 2030 En La Ciudad de Madrid." Madrid.Es.

https://www.madrid.es/UnidadesDescentralizadas/FondosEuropeos/madrid_es/AGENDA2030/Especial Informativo/Capitulos/Estrategia de localización/ESTRATEGIA 2030 JUNTA DE GOBIERNO MARZO 2021.pdf.

Mainali, Brijesh, Jyrki Luukkanen, Semida Silveira, and Jari Kaivo-Oja. 2018. "Evaluating Synergies and Trade-Offs among Sustainable Development Goals (SDGs): Explorative Analyses of Development Paths in South Asia and Sub-Saharan Africa." *Sustainability (Switzerland)* 10 (3).

<https://doi.org/10.3390/su10030815>.

Mannheim. 2019. "Mission Statement Mannheim 2030."

<https://doi.org/10.1159/000322062>.

Marques, Adilson, Miguel Peralta, Ana Naia, Nuno Loureiro, and Margarida Gaspar de Matos. 2018. "Prevalence of Adult Overweight and Obesity in 20 European Countries, 2014." *European Journal of Public Health* 28 (2): 295–300.

<https://doi.org/10.1093/eurpub/ckx143>.

Ministère de la transition Écologique. 2021. "Données Locales d'énergie Méthodologie."

Miola, A., Borchardt, S., Neher, F. and Buscaglia, D. 2019. *Interlinkages and Policy Coherence for the Sustainable Development Goals Implementation*. Luxembourg: Publication Office of the European Union.

<https://doi.org/10.2760/472928>.

Modugno, Sirio, Heiko Balzter, Beth Cole, and Pasquale Borrelli. 2016. "Mapping Regional Patterns of Large Forest Fires in Wildland-Urban Interface Areas in Europe." *Journal of Environmental Management* 172: 112–26.

<https://doi.org/10.1016/j.jenvman.2016.02.013>.

Moran, Daniel, Peter-Paul Pichler, Heran Zheng, Helene Muri, Jan Klenner, Diogo Kramel, Johannes Többen, et al. 2021. "Estimating CO2 Emissions for 108,000 European Cities," no. September: 1–23.

<https://doi.org/10.5194>.

Morishita-Steffen, Naomi, Rémi Alberola, Baptiste Mougeot, Étienne Vignali, Camilla Wikström, Uwe Montag, Emmanuel Gastaud, et al. 2021. "Smarter Together: Progressing Smart Data Platforms in Lyon, Munich, and Vienna." *Energies* 14 (4): 1–25.

<https://doi.org/10.3390/en14041075>.

Muller, Jerry Z. 2019. *The Tyranny of Metrics*. Princeton University Press.

N

Nations, United, Population Fund, World Population Report, and Eastern Europe. 2013. "Adolescent Pregnancy in Eastern Europe and Central Asia The Scope of Adolescent Pregnancy in the Region," 2009–11.

New York City, and United Nations Human Settlements Programme (UN-HABITAT). 2022. "Leading Locally: The Origins and Impact of the Voluntary Local Review." 2022.

O

ODIAC. 2019. "Fossil Fuel CO2 Emission Data Product." 2019.

<https://odiac.org/index.html>.

OECD. 2018. "Key Data on Local and Regional Governments in the European Union."

———. 2020a. "A Territorial Approach to the Sustainable Development Goals."

<https://doi.org/10.1787/ba1e177d-en>.

———. 2020b. All Hands In? Making Diversity Work for All.

<https://doi.org/https://doi.org/https://doi.org/10.1787/efb14583-en>.

———. 2020c. *OECD Employment Outlook 2020: Worker Security and The Covid-19 Crisis*. OECD.

———. 2020d. "A Territorial Approach to the Sustainable Development Goals." *OECD Urban Policy Reviews*. OECD.

<https://doi.org/10.1787/ba1e177d-en>.

———. 2021a. "Building for a Better Tomorrow: Policies to Make Housing More Affordable." *Employment, Labour and Social Affairs Policy Briefs*. Paris.

<http://oe.cd/affordable-housing-2021>.

———. 2021b. "Migrants in OECD Regions."

<https://doi.org/https://doi.org/https://doi.org/10.1787/6ef7b296-en>.

———. 2021c. "The Sustainable Development Goals as a Framework for COVID-19 Recovery in Cities and Regions. Findings from the OECD-Committee of the Regions Survey."

———. 2022. "The OECD Metropolitan Database. Database Metadata and Release Notes (Version February 2022)."

<https://stats.oecd.org/wbos/fileview2.aspx?IDFile=a13526ef-7b32-49bc-9a64-45e4fb258747>.

Open Working Group of the General Assembly on Sustainable Goals. 2014. "Open Working Group Proposal for Sustainable Development Goals (A/68/970)." https://sustainabledevelopment.un.org/content/documents/1579SDGs_Proposal.pdf.

Ortiz-Moya, Fernando, Hirotaka Koike, Junko Ota, Yatsuka Kataoka, and Junichi Fujino. 2020. "STATE OF THE VOLUNTARY LOCAL REVIEWS 2020 - Local Action for Global Impact in Achieving the SDGs." Institute for Global Environmental Strategies (IGES).

Our World in Data. 2020. "Share of the Population with Access to Drinking Water Facilities." 2020. https://ourworldindata.org/grapher/access-drinking-water-stacked?country=OWID_WRL~Low+income~Upper-middle+income~High+income~Lower-middle+income~Sub-Saharan+Africa~Central+and+Southern+Asia~North+America+and+Europe~Latin+America+and+the+Caribbean~Western+.

P

Padaiga, Zilvinas, Liudvika Starkiene, Zeneta Logminiene, and Jack Reamy. 2006. The Health Care Workforce in Europe. The Health Care Workforce in Europe Learning from Experience. http://www.euro.who.int/__data/assets/pdf_file/0008/91475/E89156.pdf.

Part, Kai, Caroline Moreau, Serena Donati, Mika Gissler, Inês Fronteira, Helle Karro, and the REPROSTAT group. 2013. "Teenage Pregnancies in the European Union in the Context of Legislation and Youth Sexual and Reproductive Health Services." *Acta Obstetricia et Gynecologica Scandinavica* 92 (12): 1395–1406. <https://doi.org/https://doi.org/10.1111/aogs.12253>.

Parvin, P. 2018. "Democracy without Participation: A New Politics for a Disengaged Era." *Res Publica* 24 (1): 31–52.

Pasquinelli, Cecilia, and Mariapina Trunfio. 2021. "The Missing Link between Overtourism and Post-Pandemic Tourism. Framing Twitter Debate on the Italian Tourism Crisis." *Journal of Place Management and Development*. <https://doi.org/10.1108/JPMD-07-2020-0073>.

Paveglio, Travis B., Max Nielsen-Pincus, Jesse Abrams, and Cassandra Moseley. 2017. "Advancing Characterization of Social Diversity in the Wildland-Urban Interface: An Indicator Approach for Wildfire Management." *Landscape and Urban Planning* 160: 115–26. <https://doi.org/10.1016/j.landurbplan.2016.12.013>.

PBWA. 2021. "Participatory Budget World Atlas." 2021. <https://www.pbatlas.net/world.html>.

Peltonen, E, E Lagerspetz, P Nurmi, and S Tarkoma. 2015. "Energy Modeling of System Settings: A Crowdsourced Approach." In 2015 IEEE International Conference on Pervasive Computing and Communications (PerCom), 37–45. <https://doi.org/10.1109/PERCOM.2015.7146507>.

Peralta, Miguel, Madalena Ramos, Anna Lipert, João Martins, and Adilson Marques. 2018. "Prevalence and Trends of Overweight and Obesity in Older Adults from 10 European Countries from 2005 to 2013." *Scandinavian Journal of Public Health* 46 (5): 522–29.

<https://doi.org/10.1177/1403494818764810>.

Perpiña Castillo, C., B. Kavalov, V. Diogo, C. Jacobs-Crisioni, F. Batista e Silva, and C. Lavalle. 2018. "Agricultural Land Abandonment in the EU within 2015–2030. JRC113718." European Commission.

Perpiña Castillo, C, B Kavalov, C Jacobs-Crisioni, C Baranzelli, F Batista e Silva, and Carlo Lavalle. 2019. "Main Land-Use Patterns in the EU within 2015–2030." JRC Policy Insights, no. February.

<https://doi.org/JRC115895>.

Perpiña Castillo, Carolina, Chris Jacobs-Crisioni, Vasco Diogo, and Carlo Lavalle. 2021. "Modelling Agricultural Land Abandonment in a Fine Spatial Resolution Multi-Level Land-Use Model: An Application for the EU." *Environmental Modelling & Software* 136: 104946.

<https://doi.org/https://doi.org/10.1016/j.envsoft.2020.104946>.

Perpiña Castillo, Carolina, Boyan Kavalov, Ricardo Ribeiro Barranco, Vasco Diogo, Chris Jacobs-Crisioni, Filipe Batista e Silva, Claudia Baranzelli, and Carlo Lavalle. 2018. "Territorial Fact and Trends in the EU Rural Areas within 2015–2030." Publications Office of the European Union.

<https://doi.org/10.2760/525571>.

Pettigrew, Simone, John D Nelson, and Richard Norman. 2020. "Autonomous Vehicles and Cycling: Policy Implications and Management Issues." *Transportation Research Interdisciplinary Perspectives* 7: 100188.

<https://doi.org/https://doi.org/10.1016/j.trip.2020.100188>.

Pigeyre, M., J. Rousseaux, P. Trouiller, J. Dumont, L. Goumidi, D. Bonte, M. P. Dumont, et al. 2016. "How Obesity Relates to Socio-Economic Status: Identification of Eating Behavior Mediators." *International Journal of Obesity* 40 (11): 1794–1801.

<https://doi.org/10.1038/ijo.2016.109>.

Pipa, Tony, and Max Bouchet. 2020. "Next Generation Urban Planning Level through Voluntary Local Reviews (VLRs)," no. February.

Poelman, Hugo. 2018. "A Walk to the Park? Assessing Access to Green Areas in Europe's Cities. Update Using Completed Copernicus Urban Atlas Data." European Commission Regional and Urban Policy.

http://ec.europa.eu/regional_policy/sources/docgener/work/2018_01_green_urban_area.pdf.

———. 2021. "A Short Walk to the Park ? Describing the Updated Methodology," 1–10.

Price, Owen, and Ross Bradstock. 2014. "Countervailing Effects of Urbanization and Vegetation Extent on Fire Frequency on the Wildland Urban Interface: Disentangling Fuel and Ignition Effects." *Landscape and Urban Planning* 130 (1): 81–88.

<https://doi.org/10.1016/j.landurbplan.2014.06.013>.

Prime Minister's Office. 2020. Voluntary National Review 2020 FINLAND Report on the Implementation of the 2030 Agenda for Sustainable Development. Helsinki.

https://sustainabledevelopment.un.org/content/documents/26261VNR_Report_Finland_2020.pdf.

Profeta, P. 2020. *Gender Equality and Public Policy*. Cambridge University Press.

Proietti, Paola, and Paolo Veneri. 2021. "The Location of Hosted Asylum Seekers in OECD Regions and Cities." *Journal of Refugee Studies* 34 (1): 1243–68.

R

Randazzo, Walter, Enric Cuevas-Ferrando, Rafael Sanjuán, Pilar Domingo-Calap, and Gloria Sánchez. 2020. "Metropolitan Wastewater Analysis for COVID-19 Epidemiological Surveillance." *International Journal of Hygiene and Environmental Health* 230: 113621.

<https://doi.org/https://doi.org/10.1016/j.ijheh.2020.113621>.

REDS - Red Española para el Desarrollo Sostenible. 2018. "Mirando Hacia El Futuro: Ciudades Sostenibles. Los Objetivos de Desarrollo Sostenible En 100 Ciudades Españolas." Edited by Inés Sánchez de Madariaga, Javier García López, and Raffaele Sisto. Madrid: REDS and UNSDSN.

———. 2020. "Los Objetivos de Desarrollo Sostenible En 100 Ciudades Españolas." Edited by Inés Sánchez de Madariaga, Javier Benayas del Álamo, Javier García López, Raffaele Sisto, Julia Urquijo Reguera, and Marta García Haro. REDS and UNSDSN.

Rodrigues, João Aleixo, Sofia Silva, Vítor Vale Cardoso, Maria João Benoliel, Eugénia Cardoso, Maria Rosário Coelho, António Martins, and Cristina Maria Martins Almeida. 2021. "Screening and Seasonal Behavior of Analgesics, Non-Steroidal Anti-Inflammatory Drugs, and Antibiotics in Two Urban Wastewater Treatment Plants." *Environmental Management* 68 (3): 411–25.

<https://doi.org/10.1007/s00267-021-01496-5>.

Roitman, J. 2013. *Anti-Crisis*. Edited by Duke University Press.

S

Samouda, Hanen, Maria Ruiz-Castell, Valery Bocquet, Andrea Kuemmerle, Anna Chioti, Frédéric Dadoun, Ngianga-Bakwin Kandala, and Saverio Stranges. 2018. "Geographical Variation of Overweight, Obesity and Related Risk Factors: Findings from the European Health Examination Survey in Luxembourg, 2013–2015." *PLOS ONE* 13 (6): e0197021.

<https://doi.org/10.1371/journal.pone.0197021>.

- Sánchez-Mira, Núria, Laura Bernardi, Benjamin Moles-Kalt, and Cléolia Sabot. 2021. "The Reshaping of Daily Time during the COVID-19 Pandemic: Lone Parent's Work-Family Articulation in a Low-Intensity Lockdown." *Social Sciences*.
<https://doi.org/10.3390/socsci10070239>.
- Sandra C. Valencia. 2019. "Localisation of the 2030 Agenda and Its Sustainable Development Goals in Gothenburg, Sweden."
https://www.kolada.se/index.php?_p=jamforelse&unit_id=16699.
- Scherer, Laura, Paul Behrens, Arjan de Koning, Reinout Heijungs, Benjamin Sprecher, and Arnold Tukker. 2018. "Trade-Offs between Social and Environmental Sustainable Development Goals." *Environmental Science and Policy* 90 (September): 65–72.
<https://doi.org/10.1016/j.envsci.2018.10.002>.
- Schiavina, Marcello, M Melchiorri, C Corbane, S Freire, and F Batista e Silva. 2022. "Built-up Areas Are Expanding Faster than Population Growth: Regional Patterns and Trajectories in Europe." *Journal of Land Use Science*, April, 1–18.
<https://doi.org/10.1080/1747423X.2022.2055184>.
- Schiavina, Marcello, and Michele Melchiorri. 2022. "GHS-BUILT-LAU2STAT R2022A - GHS Built-up Surface Statistics in European LAU2, Multitemporal (1975-2020)." European Commission, Joint Research Centre (JRC) [Dataset]. 2022.
<https://data.jrc.ec.europa.eu/dataset/94d62a61-25d0-42fd-9e1e-a41f877cf788>.
- Schiavina, Marcello, Michele Melchiorri, Christina Corbane, Aneta J Florczyk, Sergio Freire, Martino Pesaresi, and Thomas Kemper. 2019. "Multi-Scale Estimation of Land Use Efficiency (SDG 11.3.1) across 25 Years Using Global Open and Free Data." *Sustainability* 11 (5674): 1–25.
<https://doi.org/10.3390/su11205674>.
- Schraufnagel, Dean E, John R Balmes, Clayton T Cowl, Sara De Matteis, Soon-Hee Jung, Kevin Mortimer, Rogelio Perez-Padilla, et al. 2019. "Air Pollution and Noncommunicable Diseases: A Review by the Forum of International Respiratory Societies' Environmental Committee, Part 2: Air Pollution and Organ Systems." *Chest* 155 (2): 417–26.
<https://doi.org/https://doi.org/10.1016/j.chest.2018.10.041>.
- Scipioni, M, G. Tintori, and C. Bosco. 2022. "The European Parliament Elections of 2019. Which Places Show Withdrawal from Electoral Participation?" In *New Perspectives on Territorial Disparities. From Lonely Places to Places of Opportunities*, edited by P. Proietti, P. Sulis, C. Perpiña Castillo, and C. Lavalle. Luxembourg: Publication Office of the European Union.
- Seufert, A, F Wamser, S Wunderer, A Hall, and T Hoßfeld. 2021. "Trust but Verify: Crowdsourced Mobile Network Measurements and Statistical Validity Measures." In *2021 Joint European Conference on Networks and Communications & 6G Summit (EuCNC/6G Summit)*, 443–48.
<https://doi.org/10.1109/EuCNC/6GSummit51104.2021.9482428>.

Silva, Cecília, Nayanne Castro, Catarina Cadima, and Aud Tennøy. 2021. "Public Transport Strategy." *Journal of Transport and Land Use* 14 (1): 1275–94.

<https://www.jstor.org/stable/48646232>.

Singh, Gerald G., Andrés M. Cisneros-Montemayor, Wilf Swartz, William Cheung, J. Adam Guy, Tiff Annie Kenny, Chris J. McOwen, et al. 2018. "A Rapid Assessment of Co-Benefits and Trade-Offs among Sustainable Development Goals." *Marine Policy* 93 (March 2017): 223–31.

<https://doi.org/10.1016/j.marpol.2017.05.030>.

Siragusa, A., P. Proietti, C. Bertozzi, E. Coll Aliaga, S. Foracchia, A. Irving, S. Monni, M. Pacheco Oliveira, and R. Sisto. 2021. Building Urban Datasets for the SDGs. Six European Cities Monitoring the 2030 Agenda. Edited by Alice Siragusa, Paola Proietti, and Cecilia Bertozzi. Luxembourg: Publications Office of the European Union.

<https://doi.org/10.2760/0720>.

Siragusa, Alice, Pilar Vizcaino, Paola Proietti, and Carlo Lavallo. 2020. European Handbook for SDG Voluntary Local Reviews. Luxembourg: Publications Office of the European Union.

<https://doi.org/10.2760/670387>.

Skiathos Municipality. 2020. "Voluntary Local Review 2020."

Spinelli, A, M Buoncristiano, V A Kovacs, A Yngve, I Spiroski, G Obreja, G Starc, et al. 2019. "Prevalence of Severe Obesity among Primary School Children in 21 European Countries." *Obesity Facts* 12 (2): 244–58.

<https://doi.org/10.1159/000500436>.

StartupBlink. 2021a. "Global Startup Ecosystem Index," 10–50.

———. 2021b. "What Is a Startup?" 2021.

<https://www.startupblink.com/blog/what-is-a-startup-the-definition/>.

State Capital Stuttgart, German Institute for Urban Studies, and Bertelsmann Foundation. 2019. "Stuttgart – a Livable City The Global Agenda 2030 at a Local Level. Baseline Study Depicting the Sustainable Development Goals (SDGs) - Executive Summary -." Stuttgart.

https://www.stuttgart.de/medien/ibs/20191212_SDG-Local-Review_Stuttgart_Executive-Summary.pdf.

Strickland, Justin C, and William W Stoops. 2018. "Feasibility, Acceptability, and Validity of Crowdsourcing for Collecting Longitudinal Alcohol Use Data." *Journal of the Experimental Analysis of Behavior* 110 (1): 136–53.

<https://doi.org/https://doi.org/10.1002/jeab.445>.

Sulis, Patrizia, and Carolina Perpiña Castillo. 2022. "Digital Connectivity and the Urban-Rural Divide. Exploring the Spatial Access to High-Speed Broadband across Europe." In *New Perspectives on Territorial Disparities. From Lonely Places to Places of Opportunities*, edited by P. Proietti, P. Sulis, C. Perpiña Castillo, and C. Lavallo. Luxembourg: Publication Office of the European Union.

Tao, Sui, Sylvia Y He, and John Thøgersen. 2019. "The Role of Car Ownership in Attitudes towards Public Transport: A Comparative Study of Guangzhou and Brisbane." *Transportation Research Part F: Traffic Psychology and Behaviour* 60: 685–99.

<https://doi.org/https://doi.org/10.1016/j.trf.2018.12.005>.

The City of New York. 2018a. "Voluntary Local Review: New York City's Implementation of the 2030 Agenda for Sustainable Development." Voluntary Local Review: New York City's Implementation of the 2030 Agenda for Sustainable Development. New York.

https://www1.nyc.gov/assets/international/downloads/pdf/NYC_VLR_2018_FINAL.pdf.

———. 2018b. "Voluntary Local Review: New York City's Implementation of the 2030 Agenda for Sustainable Development." New York.

The European Federation of National Associations of Water Services. 2017. "Europe's Water in Figures – An Overview of the European Drinking Water and Waste Water Sectors." *Europe's Water in Figures: An Overview of the European Drinking Water and Waste Water Sectors*, 22.

The European Parliament and the Council of the European Union. 2020a. "Directive (EU) 2020/2184, EU (Revised) Drinking Water Directive. Annex 1. Part B." *Official Journal of the European Communities* 2019 (December): 35.

<https://eur-lex.europa.eu/eli/dir/2020/2184/oj>.

———. 2020b. "Directive (EU) 2020/2184, EU (Revised) Drinking Water Directive. Annex 1. Part B." *Official Journal of the European Communities* 2019 (December): 35.

The Housing Finance and Development Centre of Finland (ARA). 2021. "Homelessness in Finland 2020," 25.

[https://www.ara.fi/en-US/Materials/Homelessness_reports/Report_2021_Homelessness_in_Finland_2020\(60242\)](https://www.ara.fi/en-US/Materials/Homelessness_reports/Report_2021_Homelessness_in_Finland_2020(60242)).

The International Association of Public Transport. 2021. "Urban Mobility Indicators." *Urban Mobility Indicators for Walking and Public Transport*.

Thema, Johannes, and Florin Vondung. 2020. *EPOV Indicator Dashboard: Methodology Guidebook*. Edited by Energie gGmbH Wuppertal Institut für Klima, Umwelt. European Union Energy Poverty Observatory.

https://energy-poverty.ec.europa.eu/system/files/2021-09/epov_methodology_guidebook_1.pdf.

Thunis, P., Enrico Pisoni, B. Bessagnet, J. Wilson, Elisabetta Vignati, A. De Meij, and A Mascherpa. 2021. "Urban PM2.5 Atlas." Luxembourg (Luxembourg): Publications Office of the European Union.

<https://doi.org/10.2760/356670> (online), 10.2760/07645 (print).

Tintori, Guido. 2018. "Report on Political Participation of Mobile EU Citizens : Italy."

Tirado Herrero, Sergio. 2018. "Indicadores Municipales de Pobreza Energética En La Ciudad de Barcelona." RMIT Europe, RMIT University, Barcelona. Barcelona.
https://www.researchgate.net/profile/Sergio-Tirado-Herrero/publication/336103090_Indicadores_municipales_de_pobreza_energetica_en_la_ciudad_de_Barcelona/links/5d8e0db9a6fdcc25549f9285/Indicadores-municipales-de-pobreza-energetica-en-la-ciudad-de-Barcelona.

Tokyo. 2021. "Tokyo Sustainability Action." Tokyo.

Transparency International. 2020. "Corruption Perceptions Index." 2020.
<https://www.transparency.org/en/cpi/2020/>.

U

UCLG. 2019. "Towards the Localization of the SDGs. Local and Regional Governments' Report to the 2019 HLPF: 3rd Report," 1–108.
https://www.uclg.org/sites/default/files/towards_the_localization_of_the_sdgs_0.pdf.

UCLG, and Global Taskforce of Local and Regional Governments. 2020. "Towards the Localization of the SDGs. How to Accelerate Transformative Actions in the Aftermath of the COVID-19 Outbreak." LRGs' Report to the HLPF. Barcelona: UCLG and GTF.

UCLG, and UN-Habitat. 2020. "Guidelines for Voluntary Local Reviews. Vol. 1: A Comparative Analysis of Existing VLRs." Volume 1. VLR Series. Barcelona: United Cities and Local Governments.

UN-Habitat. 2018. SDG Indicator 11.3.1 Training Module: Land Use Efficiency. Nairobi: United Nations Human Settlement Programme (UN-Habitat).

———. 2020. "The Tenth Session of the World Urban Forum - Cities of Opportunities: Connecting Culture and Innovation. Report," no. September.
<https://unhabitat.org/report-of-the-tenth-session-of-the-world-urban-forum>.

UN-Habitat, and UCLG. 2021. "Guidelines for Voluntary Local Reviews. Vol. 2: Exploring the Local-National Link." Vol. 2. Guidelines for VLRs. Nairobi: UN-Habitat and UCLG (forthcoming).

UN Habitat. 2019. "SDG Project Assessment Tool. Vol 2: User Guide." SDG Project Assessment Tool User Guide 2 (November): 32.
www.impact-test.co.uk.

———. 2020. "Sdg Project Assessment Tool General Framework" 1 (September).

UNDESA. 2020. "Global Guiding Elements for Voluntary Local Reviews (VLRs) of SDG Implementation."

UNECA, UN-Habitat, and UCLG Africa. 2022. "Africa Voluntary Local Review Guidelines."
<https://www.uneca.org/voluntary-local-reviews-africa>.

UNECE. 2006. "Guidelines on Social Housing. Principles and Examples." Update. Geneva.

———. 2021. Measuring the Progress Towards the Sustainable Development Goals. UNECE.

<https://doi.org/978-92-1-117250-8>.

UNESCO Institute of Statistics. 2019. SDG 4 Data Book. Montreal: UNESCO Institute for Statistics.

<http://uis.unesco.org/sites/default/files/documents/sdg4-data-book-2018-en.pdf>.

UNISDR. 2017. "Technical Guidance for Monitoring and Reporting on Progress in Achieving the Global Targets of the Sendai Framework for Disaster Risk Reduction Collection of Technical Notes on Data and Methodology," no. December: 1–180.

<http://www.preventionweb.net/drr-framework/open-ended-working-group>.

United Nations. 2000. "United Nation Millennium Declaration." 55/2. United Nations Millennium Declaration.

<https://doi.org/0055951>.

———. 2014. "Fundamental Principles of Official Statistics (A/RES/68/261)."

———. 2015a. "Social Housing in the UNECE Region," 168.

———. 2015b. Transforming Our World: The 2030 Agenda for Sustainable Development. A/RES/70/1.

———. 2016a. "New Urban Agenda. Resolution Adopted by the General Assembly on 23 December 2016 A/RES/71/256."

<http://habitat3.org/wp-content/uploads/New-Urban-Agenda-GA-Adopted-68th-Plenary-N1646655-E.pdf>.

———. 2016b. "The Sustainable Development Goals Report 2016." New York.

<https://doi.org/10.1177/000331979004100307>.

———. 2017. "The Sustainable Development Goals Report 2017." New York.

———. 2019. "The Sustainable Development Goals Report 2019." United Nations Publication Issued by the Department of Economic and Social Affairs. New York.

<https://undocs.org/E/2019/68>.

———. 2020a. "The Sustainable Development Goals Report 2020."

<https://unstats.un.org/sdgs/report/2020/The-Sustainable-Development-Goals-Report-2020.pdf>.

———. 2020b. "United Nations Sustainable Development Cooperation."

———. 2021a. "SDG Indicator Metadata," no. July: 1–28.

<https://unstats.un.org/sdgs/metadata/files/Metadata-11-03-01.pdf>.

———. 2021b. "The Sustainable Development Goals Report 2021."

<https://unstats.un.org/sdgs/report/2021/The-Sustainable-Development-Goals-Report-2021.pdf>.

United Nations, Department of Economic and Social Affairs. 2007. "Convention on the Rights of Persons with Disabilities [A/RES/61/106]." 2007.

<https://www.un.org/development/desa/disabilities/resources/general-assembly/convention-on-the-rights-of-persons-with-disabilities-ares61106.html>.

United Nations Department of Economic and Social Affairs. 2019. Disability and Development Report 2018. UN.

<https://doi.org/10.18356/a0b1b1d1-en>.

———. 2020. “Handbook for the Preparation of Voluntary National Reviews. The 2020 Edition.”

https://sustainabledevelopment.un.org/content/documents/25245Handbook_2020_EN.pdf.

United Nations Development Programme. 2011. “The Roma Pilot Project: Tools and Methods for Evaluation and Data Collection.”

United Nations Statistical Division. 2021. “Standard Country or Area Codes for Statistical Use.” 2021. 2021.

<https://unstats.un.org/unsd/methodology/m49/>.

Universidad de Granada. 2022. “IMPACTO DE LA PANDEMIA POR COVID-19 EN LA VIOLENCIA DE GÉNERO EN ESPAÑA.”

URBACT. 2019. “Gender Equal Cities.” Paris.

Urban Agenda for the EU. 2018. “Urban Poverty Partnership – Final Action Plan,” 69.

https://ec.europa.eu/futurium/en/system/files/ged/action_plan_urban_poverty.pdf.

V

Vandyck, Toon, Kimon Keramidas, Alban Kitous, Joseph V. Spadaro, Rita Van Dingenen, Mike Holland, and Bert Saveyn. 2018. “Air Quality Co-Benefits for Human Health and Agriculture Counterbalance Costs to Meet Paris Agreement Pledges.” *Nature Communications* 9 (1): 1–11.

<https://doi.org/10.1038/s41467-018-06885-9>.

Vértesy, László. 2019. “Local Government Debts in the EU Countries Purpose of the Paper,” no. 2016: 1–13.

Ville de Besançon. 2018. “RAPPORT ANNUEL DÉVELOPPEMENT DURABLE 2018.”

<https://www.besancon.fr/actualite/rapport-annuel-developpement-durable/>.

———. 2019. “RAPPORT ANNUEL DÉVELOPPEMENT DURABLE 2019.”

<https://www.besancon.fr/wp-content/uploads/2019/09/Rapport-DD-2019.pdf>.

———. 2020. “RAPPORT ANNUEL DÉVELOPPEMENT DURABLE 2020.”

Vizcaino, Pilar, and Carlo Lavalle. 2015. “UDP – Population Exposed to NO₂, 2010 – 2050 (JRC LUISA Reference Scenario 2016).”

<https://data.jrc.ec.europa.eu/dataset/jrc-luisa-udp-no2popexposed-reference-2016>.

———. 2018. “Development of European NO₂ Land Use Regression Model for Present and Future Exposure Assessment: Implications for Policy Analysis.” *Environmental Pollution* 240: 140–54.

<https://doi.org/https://doi.org/10.1016/j.envpol.2018.03.075>.

- Wallonie Service Public. 2020. "Où En Est La Wallonie PAR RAPPORT AUX OBJECTIFS DE DÉVELOPPEMENT DURABLE?" http://developpementdurable.wallonie.be/sites/default/files/2019-12/SPW - Rapport indicateurs ODD-def_0.pdf.
- World Bank. 2016. "Making Politics Work for Development: Harnessing Transparency and Citizen Engagement." The World Bank.
- WHO. 2018. "Burden of Disease from the Joint Effects of Household and Ambient Air Pollution for 2016." World Health Organization, no. 2. <http://apps.who.int/gho/data/node.sdg>.
- . 2021a. "Population Using at Least Basic Drinking-Water Services (%)." 2021. <https://www.who.int/data/gho/indicator-metadata-registry/imr-details/4818>.
- . 2021b. "Population Using Improved Drinking-Water Sources (%)." 2021. <https://www.who.int/data/gho/indicator-metadata-registry/imr-details/8>.
- . 2021c. "Population Using Safely Managed Drinking-Water Services (%)." 2021. <https://www.who.int/data/gho/indicator-metadata-registry/imr-details/4819>.
- . 2021d. "Water Sanitation and Hygiene Wash." 2021. <https://www.who.int/health-topics/water-sanitation-and-hygiene-wash>.
- Williams-Breault, Beth D. 2020. "Teen Pregnancy: United States vs. Europe" 5 (6): 46–54. www.ijahss.com.
- World Health Organisation. 2018. "Obesity-and-Overweight @ Www.Who.Int." Organización Mundial de La Salud. <http://www.who.int/es/news-room/fact-sheets/detail/obesity-and-overweight>.
- World Health Organization. Regional Office for Europe. 2018. Situation of Child and Adolescent Health in Europe. Copenhagen PP - Copenhagen: World Health Organization. Regional Office for Europe. <https://apps.who.int/iris/handle/10665/342237>.
- World Health Organization. 1941a. "Constitution of the World Health Organization." https://doi.org/10.11137/2014_2_75_88.
- . 1941b. "Mapping Sustainability." <https://doi.org/10.3390/SU12083359>.
- . 2021. WHO Global Air Quality Guidelines: Particulate Matter (PM2.5 and PM10), Ozone, Nitrogen Dioxide, Sulfur Dioxide and Carbon Monoxide. World Health Organization.
- Zhang, Li-chun, Johan Fosen, Bjørn Are Holth, and Tatsiana Pekarskaya. 2021. "A Taxonomy for Indicators Related to the Sustainable Development Goals." 11. Statistics Norway.

LIST OF ABBREVIATIONS

A	AACID	Andalusian Agency for International Development Cooperation
	AI	Artificial Intelligence
	ANC	Area facing natural or other specific constraints
B	AROPE	At Risk of Poverty or social Exclusion
	BCR	Benefit-to-Cost Ratio
	BMI	Body Mass Index
C	CAP	Common Agricultural Policy
	CEAP	Circular Economy Action Plan
	CEDEFOP	European Centre for the Development of Vocational Training
	CEF	Connecting Europe Facility
	CF	Cohesion Fund
	CLC CORINE	Land Cover
	CLLD	Community-Led Local Development
	COD	Chemical Oxygen Demand
	COFOG	Classification of Functions of Government
	CRII	Coronavirus Response Investment Initiative
D	CRiT	Coal Regions in Transition
	CV	Coefficient of Variation
	DG ECFIN	Directorate-General for Economic and Financial Affairs, European Commission
	DG REGIO	Directorate-General for Regional and Urban Policy, European Commission
E	EAFRD	European Agricultural Fund for Rural Development
	EAGF	European Agricultural Guarantee Fund
	ECEC	Early Childhood Education and Care
	EEN	Enterprise Europe Network
	EIBIS	European Investment Bank investment survey
	EIGE	European Institute for Gender Equality
	EIS	European Innovation Scoreboard
	EQI	European Quality of Government Index
	EPAH	European Energy Poverty Advisory Hub
	EPBD	Energy Performance of Buildings Directive
	ERDF	European Regional Development Fund
	ERP	Enterprise Resource Planning

	ESD	Effort Sharing Decision
	ESF+	European Social Fund (the former abbreviation was ESF)
	ESIF	European Structural and Investment Funds
	ETS	Emissions Trading Scheme EU European Union
	EUIPO	European Union Intellectual Property Office
	EU-SILC	EU statistics on income and living conditions
	EU-SPI	EU Regional Social Progress Index
	EUSSM	EU Strategy on Sustainable and Smart Mobility
F	FDI	Foreign Direct Investment
	FemAI	Female Achievement Index
	FemDI	Female Disadvantage Index
	FUA	Functional Urban Area
G	GBER	General Block Exemption Regulation
	GDP	Gross Domestic Product
	GHG	Greenhouse Gas
	GIS	Geographic Information System
	GNI	Gross National Income
	GSD	Gender Statistics Database
	GVA	Gross Value Added
	GVC	Global Value Chain
H	HDEP	High Decarbonising Employment Potential
I	IPCC	Intergovernmental Panel on Climate Change
	ISCED	International Standard Classification of Education
	ISCO	International Standard Classification of Occupations
	ITI	Integrated Territorial Investment
	JRC	Joint Research Centre, European Commission
J	JTF	Just Transition Fund
	JTM	Just Transition Mechanism
L	LAI	Local Autonomy Index
	LAU	Local Administrative Unit
	LBM	LUISA base map
	LFS	(EU) Labour Force Survey
	LG	Local Government
	LIFE	L'Instrument Financier pour L'Environnement
	LNOB	Leave No One Behind
	LRGs	Local and Regional Governments
M	MAD	Mean Absolute Deviation
	MED POL	Programme for the Assessment and Control of Marine Pollution in the Mediterranean
	MFF	Multi-Annual Financial Framework
	MNE	Multinational Enterprises

N	NECP	National Energy and Climate Plan
	NEETS	Not in Employment, Education or Training
	NMVOC	Non-Methane Volatile Organic Compound
O	NSI	National Statistical Institute
	NUTS	Nomenclature of Territorial Units for Statistics
	OECD	Organisation for Economic Co-operation and Development
P	OP	Operational Programme
	OSPAR	Convention for the Protection of the Marine Environment of the Northeast Atlantic Agreement
	PISA (OECD)	Programme for International Student Assessment
R	PO	Policy Objective
	PP	Percentage point
	PPS	Purchasing Power Standards
S	PSE	Poverty and Social Exclusion
	RAI	Regional Authority Index
	RCI	Regional Competitiveness Index
T	RDEP	Restricted Decarbonising Employment Potential
	REACT	Recovery Assistance for Cohesion and the Territories of Europe
	RID	Riverine Inputs and Direct Discharges
U	RIS	Regional Innovation Scoreboard
	RTDI	Research, Technological Development and Innovation
	SDEP	Slow Decarbonising Employment Potential
V	SDG	Sustainable Development Goals
	STEM	Science, Technology, Engineering and Mathematics
	TED	Tenders Electronic Daily
W	TEN-T	Trans-European Transport Network
	TFP	Total Factor Productivity
	TJTP	Territorial Just Transition Plan
Y	UNDP	United Nations Development Program
	VEG-GAP	Vegetation for Urban Green Air Quality Plans
	VET	Vocational Education and Training
W	WFP	World Food Programme
	WGI	Worldwide Governance Indicator
	WJP	World Justice Project
Y	YEI	Youth Employment Initiative

LIST OF FIGURES

FIGURE 1	Organisation and stakeholders involved in the SDG measurement and monitoring
FIGURE 2	Potential entry points, elements of the process, output and outcomes of VLRs
FIGURE 3	Number of VLRs published for the first time in each year
FIGURE 4	VLRs published per year
FIGURE 5	Map of the VLRs published
FIGURE 6	Map of the VLRs published in Europe
FIGURE 7	Rationale for the selection of the indicators
FIGURE 8	Snapshot of the UDP+ overview on Brussels city performance.
FIGURE 9	A Taxonomy for the indicators related to the Sustainable Development Goals
FIGURE 10	Synergies (left) and Trade-offs (right) of Goal 11 targets with other SDG targets
FIGURE 11	Local activities related to the SDGs

LIST OF TABLES

TABLE 1	VLRs published by type of local government
TABLE 2	Number of LRGs that published VLRs in 2016-2022 by country, grouped by world region and subregion
TABLE 3	European LRGs that have published VLRs
TABLE 4	SDG targets addressed in the European Handbook
TABLE 5	Indicators included in the European Handbook by SDG
TABLE 6	Data challenges for local governments
TABLE 7	Type of activities for localising the SDGs
TABLE 8	The LNOB indicators in the second edition of the European Handbook
TABLE 9	Indicators including decarbonisation elements in the second edition of the European Handbook

ANNEX 1

LIST OF PROPOSED INDICATORS

SDG	INDICATOR	TYPE	LINKS	COVERAGE	AVAILABILITY	SOURCE	TIME COVERAGE	SDG TARGET(S)
1	Homeless people	Official	2, 3, 10, 11	Finland	223 Finnish municipalities	Housing Finance and Development Centre of Finland	2012-2020	1.1 & 1.4
	People at risk of income poverty after social transfers	Official	2, 3, 4, 10	EU-27 plus others	145 cities and greater cities	Eurostat, City Statistics Database	1989-2020	1.2 & 1.3
	Households in social housing	Official	3, 11	EU-27 plus others	117 cities and greater cities	Eurostat, City Statistics Database	1989-2020	1.2 & 1.3
	People living in households with very low work intensity	Official	5, 8, 10	EU-27 plus others	145 cities and greater cities	Eurostat, City Statistics Database	1989-2020	1.2 & 1.4
	Lone parent private households	Experimental	5, 8, 10	EU-27 plus others	266 cities and greater cities	Eurostat, City Statistics Database	1989-2020	1.2 & 1.4
2	Overweight rate	Official	1, 3	Sweden	All Swedish municipalities	Public Health Agency of Sweden	2004-2021	2.2
	Land used for agriculture	Experimental	1, 15	EU-27	1,155 NUTS3	European Commission, Joint Research Centre	2018 (2020-2030 2040-2050 modelled)	2.4
	Food commodity prices	Experimental	1	EU-27 plus others	139 cities	Numbeo crowdsourced platform	2021	2.c & 1.2
3	Infant mortality	Official	1, 10	EU-27 plus others	714 cities and greater cities	Eurostat, City Statistics Database	1989-2020	3.2
	Illicit drug consumption	Official		EU-27 plus others	91 cities	European Monitoring Centre for Drugs and Drug Addiction (EMCDDA)	2011-2020	3.5
	Deaths in road accidents	Official	9, 11	EU-27 plus others	670 cities and greater cities	Eurostat, City Statistics Database	1989-2020	3.6
	Adolescent births	Official	1, 4, 5, 10	EU-27 plus others	483 cities and greater cities	Eurostat, City Statistics Database	1989-2020	3.7
	Medical doctors	Official		Portugal	All Portuguese municipalities	Statistics Portugal	2011-2020	3.c
4	Children 0-4 in day care or school	Official	5, 8	EU-27 plus others	426 cities and greater cities	Eurostat, City Statistics Database	1989-2020	4.2
	Students in higher education	Official	8, 9	EU-27 plus others	623 cities and greater cities	Eurostat, City Statistics Database	1989-2020	4.3
	Early leavers from education and training	Official	1, 8	EU-27 plus others	155 cities and greater cities	Eurostat, City Statistics Database	1989-2020	4.6

5	Gender employment gap	Official	8, 10	EU-27 plus others	337 cities and greater cities	Eurostat, City Statistics Database	1989-2020	5.1
	Formal complaints for episodes of violence against women	Official	3, 10, 16	Spain	All Spanish judicial districts	Spanish Delegation of the government against Gender Violence	2009-2021	5.2
	Female hospitalisation for assault	Official	3, 10, 16			Own elaboration (municipality)		5.2
	Women in city, municipal, or county councils	Official	16	Germany	All German cities over 5.000 inhabitants	Federal Institute for Research on Building, Urban affairs and Spatial Development	2015-2018	5.5
	Positions held by women in management	Official	16			Own elaboration (municipality)		5.5
6	Quality of water for human consumption	Official	3	France	All French municipalities	Information System for Public Water and Sanitation Services (SISPEA)	2009-2019	6.1
	Population connected to a drinking water system	Official	11	EU-27 plus others	288 cities and greater cities	Eurostat, City Statistics Database	1989-2020	6.1 & 11.1
	Wastewater safely treated	Official	3, 14	EU-27 plus others	654 agglomerations	European Environment Agency (EEA)	2013,2014, 2016, 2018	6.3
	Total use of water	Official	3	EU-27 plus others	124 cities and greater cities	Eurostat, City Statistics Database	1989-2020	6.4
7	Energy consumption	Official	11, 13	France	All French municipalities	Operators of Energy Grids Agency	2011-2020	7.1
	Inability to keep house adequately warm	Official	1			Own elaboration (municipality)		7.1
	Dwellings with low worst energy performances	Official	1, 13			Own elaboration (municipality)		7.3
8	Gross domestic product (GDP) per capita	Experimental	1, 10	OECD countries and other European countries	633 Functional Urban Areas	Organisation for Economic Cooperation and Development (OECD)	2000-2019	8.1
	Labour productivity	Experimental	1, 10	OECD countries and other European countries	613 Functional Urban Areas	Organisation for Economic Cooperation and Development (OECD)	2000-2019	8.2
	Unemployment rate	Official	1, 10	EU-27 plus others	628 cities and greater cities	Eurostat, City Statistics Database	1989-2020	8.5
	Perception about the local labour market	Official	11	EU-27 plus others	105 cities and greater cities	Eurostat, City Statistics Database	2004, 2009, 2012, 2015, 2019	8.5
	Foreign employment	Official	10	Germany	All German cities over 5,000 inhabitants	Federal Employment Agency, State Statistical Offices	2015-2018	8.8
	Accidents at work	Official	3	Poland	All Polish districts	Statistics Poland	2002-2020	8.8

9	Journeys to work by public transport	Official	11, 13	EU-27 plus others	220 cities and greater cities	Eurostat, City Statistics Database	1989-2020	9.1
	Transport performance	Experimental	11	EU-27	699 cities	European Commission, DG REGIO	2015-2020 and projections available until 2050 every 10 years	9.1
	Quality of broadband connection	Experimental	4, 8, 16	EU-27	All Municipalities (LAUs)	European Commission, Joint Research Centre	Q4 in 2020	9.1 & 9.4
	Employment in mining, manufacturing, energy and water	Official	8, 12	EU-27 plus others	526 cities and greater cities	Eurostat, City Statistics Database	1989-2020	9.2
	City startup attractiveness	Experimental	8	Global	1000 cities	Startupblink	2013-2021	9.3 & 9.5
10	Unemployed jobseekers with disabilities and long-term illnesses	Official	8	Finland	All Finnish regions	Ministry of Economic Affairs and Employment, Employment Service Statistics	2006-2021	10.2
	Gini index	Experimental	1, 8	Spain	All Spanish municipalities	Spanish National Institute of Statistics	2015-2019	10.4
	Population foreign-born in a non-EU country	Official	4, 8, 16	EU-27 plus others	490 cities and greater cities	Eurostat, City Statistics Database	1989-2020	10.7
	Hosted asylum seekers	Official	11, 16	Sweden	All Swedish municipalities	Swedish Migration Agency	2010-2021	10.7
11	Housing access Index	Official	1	Spain	306 Spanish municipalities with more than 25,000 inhabitants	Ministry of Transport, Mobility and Urban Agenda (MITMA), National Institute of Statistics (INE)	2005-2019	11.1
	Shared bicycles	Experimental	3	Global	555 cities	Open Orienteering Map (OMM)	Real time	11.2
	Registered private vehicles	Official	3, 13	EU-27 plus others	517 cities and greater cities	Eurostat, City Statistics Database	1989-2020	11.2 & 11.6
	Access to public transport	Experimental	3, 8, 10	EU-27 plus others	464 urban centres	European Commission, DG REGIO	2018	11.2
	Built-up surface	Experimental	15	EU-27 plus others	98,613 municipalities	European Commission, Joint Research Centre	2000, 2010, 2015	11.3
	Premature deaths attributed to PM2.5	Official	3, 13	EU-27 plus others	1,338 NUTS3	European Environment Agency (EEA)	2005, 2009, 2014-2019	11.6
	PM2.5 concentration	Official	3, 13	EU-27 plus others	323 cities over 25,000 inhabitants	European Environment Agency (EEA)	2019-2020	11.6
	Population exposed to NO2 concentration	Experimental	3, 13	EU-27	800 cities	European Commission, Joint Research Centre	2010 - 2020 - 2030 (modelled)	11.6
	Population without green urban areas in their neighbourhood	Experimental	3, 15	EU-27 plus others	764 urban centres	European Commission, DG REGIO	2018	11.7

12	Pollutants released from industrial facilities	Official	9, 13	EU-27 plus others	60,000 industrial facilities	European Environment Agency (EEA)	2007-2020	12.4
	Municipal waste	Official	7, 11	EU-27 plus others	121 cities	Eurostat, City Statistics Database	1989-2020	12.5
	Recycled waste	Official	7, 11	Portugal	All Portuguese municipalities	Statistics Portugal	2002-2020	12.5
	Local tourism intensity	Experimental	8, 9	EU-27	All Municipalities (LAUs)	European Commission, Joint Research Centre	2019, 2021	12.b
13	People affected by disasters	Official	1, 10	Global	All municipalities	Emergency Events Database (EM-DAT)	1990-2020	13.1
	Population exposed to river flooding	Experimental	11	EU-27 plus others	121,848 LAUs	European Commission, Joint Research Centre	1870-2018	13.1
	Population exposed to wild fires	Experimental	11	EU-27 plus others	121,848 LAUs	European Commission, Joint Research Centre	2000-2018	13.1
	Eco-friendly municipal vehicles	Official	11			Own elaboration (municipality)		13.2
	CO2 emissions	Experimental	7, 9, 11	EU-27 plus others	116,572 municipalities	OpenGHGMap	2018	13.1
14	Bathing sites with excellent water quality	official	6	EU-27 plus others	22,276 bathing sites	European Environment Agency (EEA)	1990-2020	14.1
	Pollution load of urban effluents discharged to the coastline	Official	9, 11, 13	Andalusia	6 Andalusian provinces	Autonomous Community of Andalusia	2001 - 2018	14.1
15	Surface waters with high ecological status	Official	6, 13, 14	EU-27 plus others	1,827 Water bodies	European Environment Agency (EEA)	2010-2015	15.1
	Newly planted trees	Official	15	Global	119 cities	Food and Agriculture Organization (FAO)	2021	15.1
	Agricultural land abandonment	Experimental	3, 11	EU-27	1,163 NUTS3	European Commission, Joint Research Centre	2018 and projections for 2020, 2030, 2040, 2050	15.3
16	Intentional homicides	Official		EU-27 plus others	486 cities and greater cities	Eurostat, City Statistics Database	1989-2020	16.1
	Transparency of the public administration	Official	11, 17	Portugal	All Portuguese municipalities	Transparency International Portugal	2013-2017	16.6
	Voter turnout in municipal elections	Official	11	Italy	All Italian municipalities	Italian Interior Affairs Ministry	1989-2021	16.7
	Municipal Participatory Budgeting	official	5, 10, 11	Lisbon	1 Portuguese municipality	Lisbon Municipal Council	2008-2021	16.7
17	Municipal council debt	Official		Portugal	All Portuguese municipalities	Statistics Portugal	2011-2019	17.4
	VLR disaggregated indicators	Experimental	16			Own elaboration (municipality)		17.18

ANNEX 2

GOALS AND TARGETS

(from the 2030 Agenda for Sustainable Development)¹

¹ As contained in the Annex of the resolution adopted by the General Assembly on 6 July 2017, Work of the Statistical Commission pertaining to the 2030 Agenda for Sustainable Development (A/RES/71/313), annual refinements contained in E/CN.3/2018/2 (Annex II), E/CN.3/2019/2 (Annex II), 2020 Comprehensive Review changes (Annex II) and annual refinements (Annex III) contained in E/CN.3/2020/2, and annual refinements contained in E/CN.3/2021/2 (Annex).

GOAL 1. | END POVERTY IN ALL ITS FORMS EVERYWHERE

- 1.1 By 2030, eradicate extreme poverty for all people everywhere, currently measured as people living on less than \$1.25 a day
- 1.2 By 2030, reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions
- 1.3 Implement nationally appropriate social protection systems and measures for all, including floors, and by 2030 achieve substantial coverage of the poor and the vulnerable
- 1.4 By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance
- 1.5 By 2030, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters
- 1.a Ensure significant mobilization of resources from a variety of sources, including through enhanced development cooperation, in order to provide adequate and predictable means for developing countries, in particular least developed countries, to implement programmes and policies to end poverty in all its dimensions
- 1.b Create sound policy frameworks at the national, regional and international levels, based on pro-poor and gender-sensitive development strategies, to support accelerated investment in poverty eradication actions

GOAL 2. | END HUNGER, ACHIEVE FOOD SECURITY AND IMPROVED NUTRITION AND PROMOTE SUSTAINABLE AGRICULTURE

- 2.1 By 2030, end hunger and ensure access by all people, in particular the poor and people in vulnerable situations, including infants, to safe, nutritious and sufficient food all year round
- 2.2 By 2030, end all forms of malnutrition, including achieving, by 2025, the internationally agreed targets on stunting and wasting in children under 5 years of age, and address the nutritional needs of adolescent girls, pregnant and lactating women and older persons
- 2.3 By 2030, double the agricultural productivity and incomes of small-scale food producers, in particular women, indigenous peoples, family farmers, pastoralists and fishers, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets and opportunities for value addition and non-farm employment

2.4 By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality

2.5 By 2020, maintain the genetic diversity of seeds, cultivated plants and farmed and domesticated animals and their related wild species, including through soundly managed and diversified seed and plant banks at the national, regional and international levels, and promote access to and fair and equitable sharing of benefits arising from the utilization of genetic resources and associated traditional knowledge, as internationally agreed

2.a Increase investment, including through enhanced international cooperation, in rural infrastructure, agricultural research and extension services, technology development and plant and livestock gene banks in order to enhance agricultural productive capacity in developing countries, in particular least developed countries

2.b Correct and prevent trade restrictions and distortions in world agricultural markets, including through the parallel elimination of all forms of agricultural export subsidies and all export measures with equivalent effect, in accordance with the mandate of the Doha Development Round

2.c Adopt measures to ensure the proper functioning of food commodity markets and their derivatives and facilitate timely access to market information, including on food reserves, in order to help limit extreme food price volatility

GOAL 3. | ENSURE HEALTHY LIVES AND PROMOTE WELL-BEING FOR ALL AT ALL AGES

3.1 By 2030, reduce the global maternal mortality ratio to less than 70 per 100,000 live births

3.2 By 2030, end preventable deaths of newborns and children under 5 years of age, with all countries aiming to reduce neonatal mortality to at least as low as 12 per 1,000 live births and under-5 mortality to at least as low as 25 per 1,000 live births

3.3 By 2030, end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases

3.4 By 2030, reduce by one third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being

3.5 Strengthen the prevention and treatment of substance abuse, including narcotic drug abuse and harmful use of alcohol

3.6 By 2020, halve the number of global deaths and injuries from road traffic accidents

3.7 By 2030, ensure universal access to sexual and reproductive health-care services, including for family planning, information and education, and the integration of reproductive health into national strategies and programmes

3.8 Achieve universal health coverage, including financial risk protection, access to quality essential health-care services and access to safe, effective, quality and affordable essential medicines and vaccines for all

3.9 By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination

3.a Strengthen the implementation of the World Health Organization Framework Convention on Tobacco Control in all countries, as appropriate

3.b Support the research and development of vaccines and medicines for the communicable and non-communicable diseases that primarily affect developing countries, provide access to affordable essential medicines and vaccines, in accordance with the Doha Declaration on the TRIPS Agreement and Public Health, which affirms the right of developing countries to use to the full the provisions in the Agreement on Trade-Related Aspects of Intellectual Property Rights regarding flexibilities to protect public health, and, in particular, provide access to medicines for all

3.c Substantially increase health financing and the recruitment, development, training and retention of the health workforce in developing countries, especially in least developed countries and small island developing States

3.d Strengthen the capacity of all countries, in particular developing countries, for early warning, risk reduction and management of national and global health risks

GOAL 4. | ENSURE INCLUSIVE AND EQUITABLE QUALITY EDUCATION AND PROMOTE LIFELONG LEARNING OPPORTUNITIES FOR ALL

4.1 By 2030, ensure that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes

4.2 By 2030, ensure that all girls and boys have access to quality early childhood development, care and pre-primary education so that they are ready for primary education

4.3 By 2030, ensure equal access for all women and men to affordable and quality technical, vocational and tertiary education, including university

4.4 By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship

4.5 By 2030, eliminate gender disparities in education and ensure equal access to all levels of education and vocational training for the vulnerable, including persons with disabilities, indigenous peoples and children in vulnerable situations

4.6 By 2030, ensure that all youth and a substantial proportion of adults, both

men and women, achieve literacy and numeracy

4.7 By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development

4.a Build and upgrade education facilities that are child, disability and gender sensitive and provide safe, non-violent, inclusive and effective learning environments for all

4.b By 2020, substantially expand globally the number of scholarships available to developing countries, in particular least developed countries, small island developing States and African countries, for enrolment in higher education, including vocational training and information and communications technology, technical, engineering and scientific programmes, in developed countries and other developing countries

4.c By 2030, substantially increase the supply of qualified teachers, including through international cooperation for teacher training in developing countries, especially least developed countries and small island developing States

GOAL 5. | ACHIEVE GENDER EQUALITY AND EMPOWER ALL WOMEN AND GIRLS

5.1 End all forms of discrimination against all women and girls everywhere

5.2 Eliminate all forms of violence against all women and girls in the public and private spheres, including trafficking and sexual and other types of exploitation

5.3 Eliminate all harmful practices, such as child, early and forced marriage and female genital mutilation

5.4 Recognize and value unpaid care and domestic work through the provision of public services, infrastructure and social protection policies and the promotion of shared responsibility within the household and the family as nationally appropriate

5.5 Ensure women's full and effective participation and equal opportunities for leadership at all levels of decision-making in political, economic and public life

5.6 Ensure universal access to sexual and reproductive health and reproductive rights as agreed in accordance with the Programme of Action of the International Conference on Population and Development and the Beijing Platform for Action and the outcome documents of their review conferences

5.a Undertake reforms to give women equal rights to economic resources, as well as access to ownership and control over land and other forms of property, financial services, inheritance and natural resources, in accordance with national laws

5.b Enhance the use of enabling technology, in particular information and communications technology, to promote the empowerment of women

5.c Adopt and strengthen sound policies and enforceable legislation for the promotion of gender equality and the empowerment of all women and girls at all levels

GOAL 6. | ENSURE AVAILABILITY AND SUSTAINABLE MANAGEMENT OF WATER AND SANITATION FOR ALL

6.1 By 2030, achieve universal and equitable access to safe and affordable drinking water for all

6.2 By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations

6.3 By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally

6.4 By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity

6.5 By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate

6.6 By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes

6.a By 2030, expand international cooperation and capacity-building support to developing countries in water- and sanitation-related activities and programmes, including water harvesting, desalination, water efficiency, wastewater treatment, recycling and reuse technologies

6.b Support and strengthen the participation of local communities in improving water and sanitation management

GOAL 7. | ENSURE ACCESS TO AFFORDABLE, RELIABLE, SUSTAINABLE AND MODERN ENERGY FOR ALL

7.1 By 2030, ensure universal access to affordable, reliable and modern energy services

7.2 By 2030, increase substantially the share of renewable energy in the global energy mix

7.3 By 2030, double the global rate of improvement in energy efficiency

7.a By 2030, enhance international cooperation to facilitate access to clean

energy research and technology, including renewable energy, energy efficiency and advanced and cleaner fossil-fuel technology, and promote investment in energy infrastructure and clean energy technology

7.b By 2030, expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries, in particular least developed countries, small island developing States and landlocked developing countries, in accordance with their respective programmes of support

GOAL 8. | PROMOTE SUSTAINED, INCLUSIVE AND SUSTAINABLE ECONOMIC GROWTH, FULL AND PRODUCTIVE EMPLOYMENT AND DECENT WORK FOR ALL

8.1 Sustain per capita economic growth in accordance with national circumstances and, in particular, at least 7 per cent gross domestic product growth per annum in the least developed countries

8.2 Achieve higher levels of economic productivity through diversification, technological upgrading and innovation, including through a focus on high-value added and labour-intensive sectors

8.3 Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalization and growth of micro-, small- and medium-sized enterprises, including through access to financial services

8.4 Improve progressively, through 2030, global resource efficiency in consumption and production and endeavour to decouple economic growth from environmental degradation, in accordance with the 10-Year Framework of Programmes on Sustainable Consumption and Production, with developed countries taking the lead

8.5 By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value

8.6 By 2020, substantially reduce the proportion of youth not in employment, education or training

8.7 Take immediate and effective measures to eradicate forced labour, end modern slavery and human trafficking and secure the prohibition and elimination of the worst forms of child labour, including recruitment and use of child soldiers, and by 2025 end child labour in all its forms

8.8 Protect labour rights and promote safe and secure working environments for all workers, including migrant workers, in particular women migrants, and those in precarious employment

8.9 By 2030, devise and implement policies to promote sustainable tourism that creates jobs and promotes local culture and products

8.10 Strengthen the capacity of domestic financial institutions to encourage and expand access to banking, insurance and financial services for all

8.a Increase Aid for Trade support for developing countries, in particular least

developed countries, including through the Enhanced Integrated Framework for Trade-related Technical Assistance to Least Developed Countries

8.b By 2020, develop and operationalize a global strategy for youth employment and implement the Global Jobs Pact of the International Labour Organization

GOAL 9.

BUILD RESILIENT INFRASTRUCTURE, PROMOTE INCLUSIVE AND SUSTAINABLE INDUSTRIALIZATION AND FOSTER INNOVATION

9.1 Develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all

9.2 Promote inclusive and sustainable industrialization and, by 2030, significantly raise industry's share of employment and gross domestic product, in line with national circumstances, and double its share in least developed countries

9.3 Increase the access of small-scale industrial and other enterprises, in particular in developing countries, to financial services, including affordable credit, and their integration into value chains and markets

9.4 By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities

9.5 Enhance scientific research, upgrade the technological capabilities of industrial sectors in all countries, in particular developing countries, including, by 2030, encouraging innovation and substantially increasing the number of research and development workers per 1 million people and public and private research and development spending

9.a Facilitate sustainable and resilient infrastructure development in developing countries through enhanced financial, technological and technical support to African countries, least developed countries, landlocked developing countries and small island developing States

9.b Support domestic technology development, research and innovation in developing countries, including by ensuring a conducive policy environment for, inter alia, industrial diversification and value addition to commodities

9.c Significantly increase access to information and communications technology and strive to provide universal and affordable access to the Internet in least developed countries by 2020

GOAL 10.

REDUCE INEQUALITY WITHIN AND AMONG COUNTRIES

10.1 By 2030, progressively achieve and sustain income growth of the bottom 40 per cent of the population at a rate higher than the national average

10.2 By 2030, empower and promote the social, economic and political inclusion of all, irrespective of age, sex, disability, race, ethnicity, origin, religion or economic or other status

10.3 Ensure equal opportunity and reduce inequalities of outcome, including by eliminating discriminatory laws, policies and practices and promoting appropriate legislation, policies and action in this regard

10.4 Adopt policies, especially fiscal, wage and social protection policies, and progressively achieve greater equality

10.5 Improve the regulation and monitoring of global financial markets and institutions and strengthen the implementation of such regulations

10.6 Ensure enhanced representation and voice for developing countries in decision-making in global international economic and financial institutions in order to deliver more effective, credible, accountable and legitimate institutions

10.7 Facilitate orderly, safe, regular and responsible migration and mobility of people, including through the implementation of planned and well-managed migration policies

10.a Implement the principle of special and differential treatment for developing countries, in particular least developed countries, in accordance with World Trade Organization agreements

10.b Encourage official development assistance and financial flows, including foreign direct investment, to States where the need is greatest, in particular least developed countries, African countries, small island developing States and landlocked developing countries, in accordance with their national plans and programmes

10.c By 2030, reduce to less than 3 per cent the transaction costs of migrant remittances and eliminate remittance corridors with costs higher than 5 per cent

GOAL 11. | MAKE CITIES AND HUMAN SETTLEMENTS INCLUSIVE, SAFE, RESILIENT AND SUSTAINABLE

11.1 By 2030, ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums

11.2 By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons

11.3 By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries

11.4 Strengthen efforts to protect and safeguard the world's cultural and natural heritage

11.5 By 2030, significantly reduce the number of deaths and the number of people affected and substantially decrease the direct economic losses relative to global gross domestic product caused by disasters, including water-related disasters, with a focus on protecting the poor and people in vulnerable situations

11.6 By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management

11.7 By 2030, provide universal access to safe, inclusive and accessible, green and public spaces, in particular for women and children, older persons and persons with disabilities

11.a Support positive economic, social and environmental links between urban, peri-urban and rural areas by strengthening national and regional development planning

11.b By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and develop and implement, in line with the Sendai Framework for Disaster Risk Reduction 2015–2030, holistic disaster risk management at all levels

11.c Support least developed countries, including through financial and technical assistance, in building sustainable and resilient buildings utilizing local materials

GOAL 12. | ENSURE SUSTAINABLE CONSUMPTION AND PRODUCTION PATTERNS

12.1 Implement the 10-Year Framework of Programmes on Sustainable Consumption and Production Patterns, all countries taking action, with developed countries taking the lead, taking into account the development and capabilities of developing countries

12.2 By 2030, achieve the sustainable management and efficient use of natural resources

12.3 By 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses

12.4 By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment

12.5 By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse

12.6 Encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle

12.7 Promote public procurement practices that are sustainable, in accordance

with national policies and priorities

12.8 By 2030, ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature

12.a Support developing countries to strengthen their scientific and technological capacity to move towards more sustainable patterns of consumption and production

12.b Develop and implement tools to monitor sustainable development impacts for sustainable tourism that creates jobs and promotes local culture and products

12.c Rationalize inefficient fossil-fuel subsidies that encourage wasteful consumption by removing market distortions, in accordance with national circumstances, including by restructuring taxation and phasing out those harmful subsidies, where they exist, to reflect their environmental impacts, taking fully into account the specific needs and conditions of developing countries and minimizing the possible adverse impacts on their development in a manner that protects the poor and the affected communities

GOAL 13. | TAKE URGENT ACTION TO COMBAT CLIMATE CHANGE AND ITS IMPACTS²

13.1 Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries

13.2 Integrate climate change measures into national policies, strategies and planning

13.3 Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning

13.a Implement the commitment undertaken by developed-country parties to the United Nations Framework Convention on Climate Change to a goal of mobilizing jointly \$100 billion annually by 2020 from all sources to address the needs of developing countries in the context of meaningful mitigation actions and transparency on implementation and fully operationalize the Green Climate Fund through its capitalization as soon as possible

13.b Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities

GOAL 14. | CONSERVE AND SUSTAINABLY USE THE OCEANS, SEAS AND MARINE RESOURCES FOR SUSTAINABLE DEVELOPMENT

14.1 By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution

² Acknowledging that the United Nations Framework Convention on Climate Change is the primary international, intergovernmental forum for negotiating the global response to climate change.

14.2 By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans

14.3 Minimize and address the impacts of ocean acidification, including through enhanced scientific cooperation at all levels

14.4 By 2020, effectively regulate harvesting and end overfishing, illegal, unreported and unregulated fishing and destructive fishing practices and implement science-based management plans, in order to restore fish stocks in the shortest time feasible, at least to levels that can produce maximum sustainable yield as determined by their biological characteristics

14.5 By 2020, conserve at least 10 per cent of coastal and marine areas, consistent with national and international law and based on the best available scientific information

14.6 By 2020, prohibit certain forms of fisheries subsidies which contribute to overcapacity and overfishing, eliminate subsidies that contribute to illegal, unreported and unregulated fishing and refrain from introducing new such subsidies, recognizing that appropriate and effective special and differential treatment for developing and least developed countries should be an integral part of the World Trade Organization fisheries subsidies negotiation

14.7 By 2030, increase the economic benefits to small island developing States and least developed countries from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture and tourism

14.a Increase scientific knowledge, develop research capacity and transfer marine technology, taking into account the Intergovernmental Oceanographic Commission Criteria and Guidelines on the Transfer of Marine Technology, in order to improve ocean health and to enhance the contribution of marine biodiversity to the development of developing countries, in particular small island developing States and least developed countries

14.b Provide access for small-scale artisanal fishers to marine resources and markets

14.c Enhance the conservation and sustainable use of oceans and their resources by implementing international law as reflected in the United Nations Convention on the Law of the Sea, which provides the legal framework for the conservation and sustainable use of oceans and their resources, as recalled in paragraph 158 of “The future we want”

GOAL 15.

PROTECT, RESTORE AND PROMOTE SUSTAINABLE USE OF
TERRESTRIAL ECOSYSTEMS, SUSTAINABLY MANAGE FORESTS,
COMBAT DESERTIFICATION, AND HALT AND REVERSE LAND
DEGRADATION AND HALT BIODIVERSITY LOSS

15.1 By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under

international agreements

15.2 By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally

15.3 By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world

15.4 By 2030, ensure the conservation of mountain ecosystems, including their biodiversity, in order to enhance their capacity to provide benefits that are essential for sustainable development

15.5 Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species

15.6 Promote fair and equitable sharing of the benefits arising from the utilization of genetic resources and promote appropriate access to such resources, as internationally agreed

15.7 Take urgent action to end poaching and trafficking of protected species of flora and fauna and address both demand and supply of illegal wildlife products

15.8 By 2020, introduce measures to prevent the introduction and significantly reduce the impact of invasive alien species on land and water ecosystems and control or eradicate the priority species

15.9 By 2020, integrate ecosystem and biodiversity values into national and local planning, development processes, poverty reduction strategies and accounts

15.a Mobilize and significantly increase financial resources from all sources to conserve and sustainably use biodiversity and ecosystems

15.b Mobilize significant resources from all sources and at all levels to finance sustainable forest management and provide adequate incentives to developing countries to advance such management, including for conservation and reforestation

15.c Enhance global support for efforts to combat poaching and trafficking of protected species, including by increasing the capacity of local communities to pursue sustainable livelihood opportunities

GOAL 16.

PROMOTE PEACEFUL AND INCLUSIVE SOCIETIES FOR SUSTAINABLE DEVELOPMENT, PROVIDE ACCESS TO JUSTICE FOR ALL AND BUILD EFFECTIVE, ACCOUNTABLE AND INCLUSIVE INSTITUTIONS AT ALL LEVELS

16.1 Significantly reduce all forms of violence and related death rates everywhere

16.2 End abuse, exploitation, trafficking and all forms of violence against and torture of children

- 16.3 Promote the rule of law at the national and international levels and ensure equal access to justice for all
- 16.4 By 2030, significantly reduce illicit financial and arms flows, strengthen the recovery and return of stolen assets and combat all forms of organized crime
- 16.5 Substantially reduce corruption and bribery in all their forms
- 16.6 Develop effective, accountable and transparent institutions at all levels
- 16.7 Ensure responsive, inclusive, participatory and representative decision-making at all levels
- 16.8 Broaden and strengthen the participation of developing countries in the institutions of global governance
- 16.9 By 2030, provide legal identity for all, including birth registration
- 16.10 Ensure public access to information and protect fundamental freedoms, in accordance with national legislation and international agreements
- 16.a Strengthen relevant national institutions, including through international cooperation, for building capacity at all levels, in particular in developing countries, to prevent violence and combat terrorism and crime
- 16.b Promote and enforce non-discriminatory laws and policies for sustainable development

GOAL 17. | STRENGTHEN THE MEANS OF IMPLEMENTATION AND REVITALIZE THE GLOBAL PARTNERSHIP FOR SUSTAINABLE DEVELOPMENT

Finance

- 17.1 Strengthen domestic resource mobilization, including through international support to developing countries, to improve domestic capacity for tax and other revenue collection
- 17.2 Developed countries to implement fully their official development assistance commitments, including the commitment by many developed countries to achieve the target of 0.7 per cent of gross national income for official development assistance (ODA/GNI) to developing countries and 0.15 to 0.20 per cent of ODA/GNI to least developed countries; ODA providers are encouraged to consider setting a target to provide at least 0.20 per cent of ODA/GNI to least developed countries
- 17.3 Mobilize additional financial resources for developing countries from multiple sources
- 17.4 Assist developing countries in attaining long-term debt sustainability through coordinated policies aimed at fostering debt financing, debt relief and debt restructuring, as appropriate, and address the external debt of highly indebted poor countries to reduce debt distress
- 17.5 Adopt and implement investment promotion regimes for least developed countries

Technology

17.6 Enhance North-South, South-South and triangular regional and international cooperation on and access to science, technology and innovation and enhance knowledge-sharing on mutually agreed terms, including through improved coordination among existing mechanisms, in particular at the United Nations level, and through a global technology facilitation mechanism

17.7 Promote the development, transfer, dissemination and diffusion of environmentally sound technologies to developing countries on favourable terms, including on concessional and preferential terms, as mutually agreed

17.8 Fully operationalize the technology bank and science, technology and innovation capacity-building mechanism for least developed countries by 2017 and enhance the use of enabling technology, in particular information and communications technology

Capacity-building

17.9 Enhance international support for implementing effective and targeted capacity-building in developing countries to support national plans to implement all the Sustainable Development Goals, including through North-South, South-South and triangular cooperation

Trade

17.10 Promote a universal, rules-based, open, non-discriminatory and equitable multilateral trading system under the World Trade Organization, including through the conclusion of negotiations under its Doha Development Agenda

17.11 Significantly increase the exports of developing countries, in particular with a view to doubling the least developed countries' share of global exports by 2020

17.12 Realize timely implementation of duty-free and quota-free market access on a lasting basis for all least developed countries, consistent with World Trade Organization decisions, including by ensuring that preferential rules of origin applicable to imports from least developed countries are transparent and simple, and contribute to facilitating market access

Systemic issues

Policy and institutional coherence

17.13 Enhance global macroeconomic stability, including through policy coordination and policy coherence

17.14 Enhance policy coherence for sustainable development

17.15 Respect each country's policy space and leadership to establish and implement policies for poverty eradication and sustainable development

Multi-stakeholder partnerships

17.16 Enhance the Global Partnership for Sustainable Development,

complemented by multi-stakeholder partnerships that mobilize and share knowledge, expertise, technology and financial resources, to support the achievement of the Sustainable Development Goals in all countries, in particular developing countries

17.17 Encourage and promote effective public, public-private and civil society partnerships, building on the experience and resourcing strategies of partnerships

Data, monitoring and accountability

17.18 By 2020, enhance capacity-building support to developing countries, including for least developed countries and small island developing States, to increase significantly the availability of high-quality, timely and reliable data disaggregated by income, gender, age, race, ethnicity, migratory status, disability, geographic location and other characteristics relevant in national contexts

17.19 By 2030, build on existing initiatives to develop measurements of progress on sustainable development that complement gross domestic product, and support statistical capacity-building in developing countries

ANNEX 3

Published VLRs

	AUTHORITY	COUNTRY	YEAR/S	SUB-REGION	LEVEL OF GOVERNMENT	LANGUAGE
1	Accra	Ghana	2020	Africa	Metropolitan area	EN
2	Alhaurío de la Torre	Spain	2019	Europe	City	ES
3	Asker	Norway	2021	Europe	City	EN
4	Barcarena	Brazil	2017	Americas	City	PT
5	Barcelona	Spain	2019, 2020	Europe	City	ES, EN
6	Basque Country	Spain	2017, 2018, 2019, 2020	Europe	Region/State	ES
7	Bergen	Norway	2020	Europe	City	NO
8	Besancon	France	2018, 2019, 2020	Europe	City	FR
9	Bonn	Germany	2020	Europe	City	EN
10	Bristol	United Kingdom of Great Britain and Northern Ireland	2019	Europe	City	EN
11	Buenos Aires	Argentina	2019, 2020, 2021	Americas	City	ES
12	Busia	Kenya	2019	Africa	Province/County	EN
13	Canterbury	United Kingdom of Great Britain and Northern Ireland	2019	Europe	City	EN
14	Cape Town, South Africa	South Africa	2019	Africa	City	EN
15	Cascais, Portugal	Portugal	2020	Europe	City	PT
16	Castilla-La Mancha	Spain	2019	Europe	Region/State	ES
17	Catalonia	Spain	2018	Europe	Region/State	ES
18	Cauayan city	Philippines	2017	Asia	City	EN
19	Chimbote	Peru	2020	Americas	City	ES
20	Ciudad Valle	Mexico	2019, 2020, 2021	Americas	City	ES
21	Cordoba	Spain	2020	Europe	Province/County	ES
22	Dengin	Republic of Korea	2020	Asia	City	EN
23	Deging	China	2017	Asia	Province/County	EN, CH
24	Durango	Mexico	2021	Americas	City	ES, EN
25	Espoo	Finland	2020	Europe	City	EN, FI
26	Florence	Italy	2021	Europe	Metropolitan area	IT
27	Ghent	Belgium	2020, 2021	Europe	City	EN
28	Gladsaxe	Denmark	2021	Europe	City	EN
29	Göteborg	Sweden	2019	Europe	City	EN
30	Guadalajara	Mexico	2021	Americas	City	ES
31	Guangzhou	China	2021	Asia	City	EN
32	Hamamatsu	Japan	2019	Asia	City	EN
33	Harare	Zimbabwe	2020	Africa	City	EN

34	Hawaii	United States of America	2020	Americas	Region/State	EN
35	Helsingborg	Sweden	2021	Europe	City	EN
36	Helsinki	Finland	2019, 2020	Europe	City	EN
37	Izmir	Turkey	2021	Asia	City	TR
38	Jaén	Spain	2019	Europe	Province/County	ES
39	Kaohsiung	China	2021	Asia	City	EN
40	Kelowna	Canada	2021	Americas	City	EN
41	Kitakyushu	Japan	2018	Asia	City	EN
42	Kwale	Kenya	2019	Africa	Province/County	EN
43	La Paz	Bolivia (Plurinational State of)	2018	Americas	City	ES
44	Lima	Peru	2021	Americas	City	ES
45	Lincoln	Argentina	2019, 2020	Americas	City	ES
46	London, UK	United Kingdom of Great Britain and Northern Ireland	2021	Europe	City	EN
47	Los Angeles	United States of America	2019, 2021	Americas	City	EN
48	Madrid	Spain	2021	Europe	City	ES
49	Málaga	Spain	2018, 2019, 2020, 2021	Europe	City	ES
50	Malmö	Sweden	2021	Europe	City	EN
51	Mannheim	Germany	2019	Europe	City	EN
52	Marsabit	Kenya	2019	Africa	City	EN
53	Mérida	Mexico	2021	Americas	City	ES
54	Mexico City	Mexico	2018, 2021	Americas	City	ES
55	Mexico State	Mexico	2021	Americas	Region/State	ES
56	Montevideo	Uruguay	2020	Americas	City	ES
57	Mare gg Romsdal	Norway	2021	Europe	City	NO
58	New Taipei	China	2020	Asia	City	EN
59	New York City	United States of America	2018, 2019	Americas	City	EN
60	Ngora	Uganda	2020	Africa	Province/County	EN
61	Niort	France	2018, 2019, 2020	Europe	City	FR
62	Niterói	Brazil	2020	Americas	City	PT
63	Normandie	France	2020	Europe	Region/State	FR
64	NR-Westfalen	Germany	2016	Europe	Region/State	EN
65	Oaxaca	Mexico	2019	Americas	Region/State	ES
66	Occitanie	France	2020	Europe	Region/State	FR
67	Orlando	United States of America	2021	Americas	City	EN
68	Pará	Brazil	2020, 2021	Americas	Region/State	EN

69	Pays de la Loire	France	2020	Europe	Region/State	FR
70	Penang Island	Malaysia	2021	Asia	City	EN
71	Pittsburgh	United States of America	2020	Americas	City	EN
72	Provence-Alpes-Côte d'Azur	France	2021	Europe	Province/County	FR
73	Rio de Janeiro	Brazil	2020	Americas	City	PT
74	Santa Fe	Argentina	2019	Americas	Region/State	ES
75	Santana de Parnaba	Brazil	2019	Americas	City	PT
76	São Paulo	Brazil	2019	Americas	Province/County	TP
77	Scotland	United Kingdom of Great Britain and Northern Ireland	2020	Europe	Region/State	EN
78	Shah Alam,	Malaysia	2021	Asia	City	EN
79	Shimokawa	Japan	2018	Asia	City	EN
80	Shkodra	Albania	2021	Europe	City	SQ
81	Skiathos	Greece	2020	Europe	City	EN
82	Stockholm	Sweden	2021	Europe	City	EN
83	Stuttgart	Germany	2019	Europe	City	DE, EN
84	Subang Jaya	Malaysia	2021	Asia	City	
85	Sultanbexli	Turkey	2021	Asia	City	TR
86	Surabaya	Indonesia	2021	Asia	City	EN
87	Suwon	Republic of Korea	2018	Asia	City	EN
88	Tabasco	Mexico	2021	Americas	Region/State	ES
89	Taichung	China	2021	Asia	City	EN
90	Taipei City	China	2019, 2020, 2021	Asia	City	EN
91	Tajita Taveta	Kenya	2019	Africa	Province/County	EN
92	Taoyuan	China	2020	Asia	City	EN
93	Tokyo	Japan	2021	Asia	City	EN
94	Toyama	Japan	2018	Asia	City	EN
95	Trujillo	Peru	2020	Americas	City	ES
96	Turku	Finland	2020	Europe	City	EN
97	Uppsala	Sweden	2021	Europe	City	EN
98	Valencian Community	Spain	2016	Europe	Region/State	EN
99	Vantaa	Finland	2021	Europe	City	EN
100	Victoria Falls	Zimbabwe	2020	Africa	City	EN
101	Viken	Norway	2020	Europe	Region/State	NO
102	Wallonia	Belgium	2017, 2020	Europe	Region/State	FR
103	Winnipeg	Canada	2018, 2019, 2021	Americas	City	EN
104	Yaounde	Cameroon	2020	Africa	City	EN, FR

105	Yiwu	China	2021	Asia	City	EN
106	Yokohama	Japan	2021	Asia	City	EN
107	Yucatan	Mexico	2020	Americas	Region/State	ES

ANNEX 4

COMPARISON OF VLR RECOMMENDED BUILDING BLOCKS IN GUIDES AND PUBLICATIONS

Building blocks	Deininger et al. (Deininger et al. 2019)	Voluntary Local Reviews: a handbook for UK cities Fox and Macleod 2019b)	Global Guiding Elements for Voluntary Local Reviews (VLRs) of SDG implementation (UNDESA 2020)	Asia-Pacific Regional Guidelines on Voluntary Local Reviews (ESCAP 2020)	Draft Guidelines for the Development of Voluntary Local Reviews in the ECE Region (Economic Commission for Europe Committee on Urban Development Housing and Land Management 2021)	"Africa Voluntary Local Review Guidelines" (UNECA, UN-Habitat, and UCLG Africa. 2022)
Opening Statement	Commitment of the Mayor, administration		Opening Statement	Opening Statement		Foreword (abbreviation, list of tables, table of contents, etc.)
Highlights	Executive summary > highlights		Highlights	Highlights		Executive summary > highlights
Introduction	Introduction	Introduction (Background to your city Why are the SDGs important to your city)	Introduction	Introduction	City vision and goal statement	Vision
Organizational alignment and institutional process	Organizational alignment and institutional process					Stakeholder mobilization
Structural issues and challenges	Structural issues and challenges				Economic and social situation in the city (Legal, financial and institutional framework for city development)	
Methodology	Methodology (Metrics and Data)	Methodology (Quantitative evaluation, Qualitative evaluation, if relevant, also summary of stakeholder consultation mechanism)	Methodology and process for preparation of the review	Methodology and process for preparation of the review		Methodology (Literature review, Institutional mechanism)

Policy and enabling environment	Policy & enabling environment	Policy and enabling environment (What is the history of the SDGs in your city, How does your city use and understand the SDGs , Who is responsible for the SDGs)	Policy and enabling environment (Engagement with the national government on SDG implementation, Creating ownership of the SDGs and the VLRs, Incorporation of the SDGs in local and regional frameworks, Leaving no one behind, Institutional mechanisms, Structural issues)	Policy and enabling environment (Engagement with the national government on SDG implementation, Creating ownership of the SDGs and the VLRs, Incorporation of the SDGs in local and regional frameworks, Leave no one behind, Institutional mechanisms, Structural issues)		Policy and enabling environment SDGs and Agenda 2030? prioritization (linking priorities an integration of the social, environmental and economic dimensions and LNOB principle)
Review of the Goals	Review of the Goals	Review of SDGs (Statistical portrait of progress Qualitative examples of projects and initiatives)	Progress on Goals and targets	Progress on Goals and targets	Assessment of city performance using KPIs for SSCs, including progress towards achieving SDGs at the city level	Data methodology and processing, SDG ownership and Progress on Goals and targets
Means of implementation			Means of implementation	Means of implementation (Finance, technology and innovation, Capacity-building , Policy and institutional coherence, Multi-stakeholder partnerships, Data and monitoring)	Financial framework for supporting city efforts to achieve the SDGs	Means of implementation
Discussion/ recommendations		Discussion (Analysis of gaps, challenges faced in production)			Recommendations from the assessment for achieving SDGs at the city level	Outcomes and follow up
Conclusions	Conclusions	Conclusions and future initiatives	Conclusion and next steps	Conclusion and next steps	Conclusions and proposals for next steps	Conclusion and next steps
Annexes			Annexes	Annexes		

GETTING IN TOUCH WITH THE EU

IN PERSON

All over the European Union there are hundreds of Europe Direct information centres. You can find the address of the centre nearest you online (european-union.europa.eu/contact-eu/meet-us_en).

ON THE PHONE OR IN WRITING

Europe Direct is a service that answers your questions about the European Union. You can contact this service:

- by freephone: 00 800 6 7 8 9 10 11 (certain operators may charge for these calls),
- at the following standard number: +32 22999696, or
- via the following form: european-union.europa.eu/contact-eu/write-us_en.

FINDING INFORMATION ABOUT THE EU

ONLINE

Information about the European Union in all the official languages of the EU is available on the Europa website (european-union.europa.eu).

EU PUBLICATIONS

You can view or order EU publications at: op.europa.eu/en/publications. Multiple copies of free publications can be obtained by contacting Europe Direct or your local documentation centre (european-union.europa.eu/contact-eu/meet-us_en).

EU LAW AND RELATED DOCUMENTS

For access to legal information from the EU, including all EU law since 1951 in all the official language versions, go to EUR-Lex (eur-lex.europa.eu).

EU OPEN DATA

The portal data.europa.eu provides access to datasets from the EU institutions, bodies and agencies. These can be downloaded and reused for free, for both commercial and non-commercial purposes. The portal also provides access to a wealth of datasets from European countries.

The European Commission's science and knowledge service

Joint Research Centre

JRC Mission

As the science and knowledge service of the European Commission, the Joint Research Centre's mission is to support EU policies with independent evidence throughout the whole policy cycle.



EU Science Hub
joint-research-centre.ec.europa.eu



@EU_ScienceHub



EU Science Hub – Joint Research Centre



EU Science, Research and Innovation



EU Science Hub



EU Science

