

# Towards a harmonised methodology for statistical indicators

PART 3 — RELEVANCE OF INDICATORS FOR POLICY MAKING

2017 edition





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POLICY MAKING**

**2017 edition**

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## Foreword

Indicators more and more play a fundamental role in our modern societies and constitute an essential resource for policymakers, business leaders and the general public. They support evidence-based decision making, allow comparisons over time, between policies, countries and regions, social groups and industries, and contribute to increased transparency and accountability.

To fulfil this key role, indicators must be 'fit for purpose' and must be based on statistics that meet defined quality requirements. European statistics as produced and disseminated by Eurostat and the EU national statistical institutes meet the highest quality requirements. Being based on high quality statistics is a necessary but not a sufficient condition to make indicators policy relevant. Official statisticians, researchers and experts must be aware of the implications of the increasing role of statistical indicators in policy making. They have to engage with decision-makers to understand their needs and the expectations, but also to provide guidance for a correct interpretation and use of these indicators, and for their limitations.

This paper is the last in a series of three papers on statistical indicators published by Eurostat. The first paper on 'Indicator typologies and terminologies' was published in 2014. The second paper on 'Communicating through indicators' was released in February 2017.

This third paper, as the whole series, aims to help professionals who develop, produce and communicate policy indicators. It analyses how indicators are used at particular stages of the policy making process; it considers the implications of the increasing role of statistical indicators in policy making for official statisticians and indicator developers; finally, it includes recommendations on how to develop and maintain policy relevant indicators. And in describing the opportunities and pitfalls of indicator use in the policy making process, the paper will also be relevant for policymakers using the indicators.

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# Introduction

Indicators are important tools in the policy making process. Like road signs, they condense complex information into a simple pointer that can help us assess where we are headed — towards or away from our objectives. However, when information is consolidated in such a way, care is needed to interpret the indicators correctly and to understand what they do and do not say. While part of this responsibility lies in the indicator user's hands, those developing indicators also need to understand how and why indicators are being used, so the producers can design them in a way that best suits policy making.

This paper is the third and last in Eurostat's series 'Towards a harmonised methodology for statistical indicators'. It complements two previous publications on 'Indicator typologies and terminologies' <sup>(1)</sup> and 'Communicating through indicators' <sup>(2)</sup>. The former introduces the reader to the concept of statistical indicators by setting out their different characteristics and typologies. The latter focuses on the theoretical and practical aspects of indicator-based communication. This third paper aims at helping researchers and experts who develop indicators make these more policy relevant and provides a more detailed view on policy use of indicators in general.

The paper analyses how indicators are used at particular stages of the policy making process and discusses their purpose in the political process, referring to theoretical and practical examples. It considers the implications of the increasing role of statistical indicators in policy making, which official statisticians and indicator developers should be aware of. Most important, it includes recommendations on how to develop and maintain politically relevant indicators. And in describing the opportunities and pitfalls of indicator use in the policy making process, the paper will also be relevant for policy makers who use indicators.

This paper is structured as follows: Chapter 1 provides an overview of the concept of indicators and introduces the aspect of their use in policy making. Chapter 2 looks at the rationale for the indicator use in the policy making process. Chapter 3 explores the use of indicators in relation to different stages of the policy cycle as well as to different geographical levels of policy making. Chapter 4 discusses requirements for policy relevant indicators and key challenges of their development and maintenance. Finally, Chapter 5 suggests potential solutions to these challenges.

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<sup>(1)</sup> Eurostat, *Towards a harmonised methodology for statistical indicators — Part 1: Indicator typologies and terminologies*, 2014.

<sup>(2)</sup> Eurostat, *Towards a harmonised methodology for statistical indicators — Part 2: Communicating through indicators*, 2017.



# 1

## Indicators and road signs in the policy making process

Indicators can be considered as the road signs of policy making. Road signs help drivers to see if they follow the right direction on the way to their destination. Similarly, indicators help people to quickly understand complex realities, allowing them to assess where processes are heading and if goals are likely to be reached. Road signs condense a map's complex information to a simple indication 'This way' to a specific location.

Just like road signs, indicators are a simplification of reality; essential information is extracted from complex data sets to provide easily understandable message. This simplification helps users to absorb the information quickly, but it also increases the amount of context needed for them to interpret the information in the correct way.

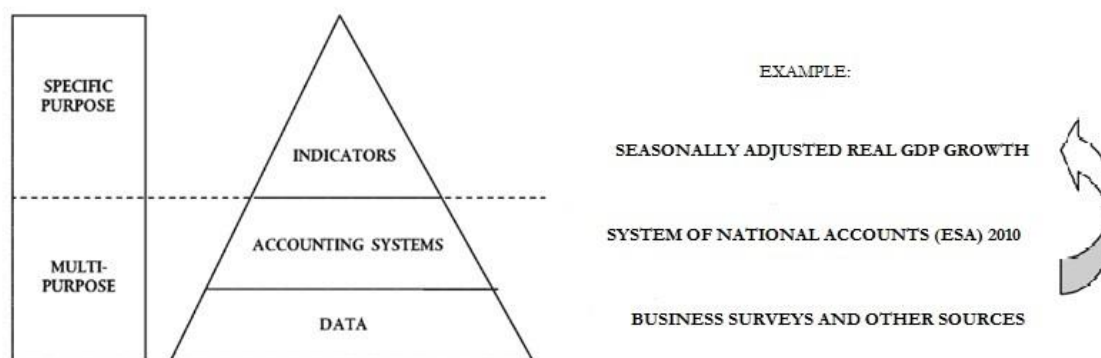
Indicators can be of a qualitative or a quantitative nature. Similar, road signs have in fact mostly qualitative (e.g. a stop sign) and sometimes quantitative character (e.g. distance to a city). Whereas both - qualitative and quantitative indicators — are needed in the policy process, this paper deals only with the quantitative indicators.

### Indicators as a special statistical product

Official statistics are produced through data collection conducted by national statistical institutes and presented in a clear format, often based on accounting frameworks. Data is information which can be collected via traditional statistical activities (for example, sample surveys and censuses) or from other statistical sources and can be differently used to serve different purposes. Accounting systems are coherent and integrated sets of accounts, balance sheets and tables that conform to agreed rules. They allow data to be compiled and presented in a consistent and comparable way, suitable for analysis and policy making <sup>(3)</sup>. These agreed processes and standards such as appropriate codes of practice, defined international standards, as well as the respect of impartiality and objectivity provide quality assurance to the data users. However, these tabulated data do not provide the context necessary to understand their meaning for specific policy questions or issues. Indicators, unlike the data from which they are derived, are measures designed for specific purposes determined by the context (see Figure 1). The same data can serve as a source to derive different indicators providing answers to different questions. Indicators thus provide condensed information, encompassing a quantitative measure and a contextual element.

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<sup>(3)</sup> See Annex to [Regulation \(EU\) No 99/2013](#) of the European Parliament and of the Council of 15 January 2013 on the European Statistical Programme 2013-2017, Official Journal of the European Union, L 39, 9.2.2013.

**Figure 1: Statistical information infrastructure**

Source: Adapted from the Annex to [Regulation \(EU\) No 99/2013](#) of the European Parliament and of the Council of 15 January 2013 on the European Statistical Programme 2013–2017, Official Journal of the European Union, L 39, 9.2.2013.

Developers of indicators consequently need to solve a trade-off between the amount of information the intended audience can handle and the amount they need to understand the problem, as shown in the pyramid above.

## Existing definitions of indicators

Indicators are measures designed for a specific purpose and there are several ways in which they can be defined. The term itself has its roots in the Latin words *indicare* (to point out, to show, to indicate) and *index*, literally meaning 'anything used for pointing' and 'the finger used for pointing'.

The European Statistical System Committee (ESSC) defines indicators as 'a particular subset of statistical information, directly related to a special purpose such as monitoring specific policy objectives'. In the Regulation No 99/2013 on the European Statistical Programme, indicators are described as 'a summary measure related to a key issue or phenomenon and derived from a series of observed facts. Indicators can be used to reveal relative positions or show positive or negative change' (4).

Several other national and international organisations provide similar definitions. The recurring message is that indicators are measures that condense information on policy relevant issues to facilitate decision making. This facilitation element is essential and will be explored in the following chapters. While this paper focuses on the use of indicators for policy making, it should also be noted that indicators are also used for other purposes such as administrative purposes.

It is also important to clarify the concepts of 'indicator set' and 'indicator system', as often several indicators are presented and used together. An indicator set can be defined as a list of indicators based on a policy reference, as opposed to an indicator system, in which the indicators rely on a specific conceptual framework. At European level, there are several examples of indicator sets such as the Europe 2020 indicators (5) used to monitor the European Union (EU) growth strategy (6) and the EU

(4) [Regulation \(EU\) No 99/2013](#) of the European Parliament and the Council of 15.01.2013.

(5) For more details see: <http://ec.europa.eu/eurostat/web/europe-2020-indicators/europe-2020-strategy>

(6) For more details see: [https://ec.europa.eu/info/strategy/european-semester/framework/europe-2020-strategy\\_en](https://ec.europa.eu/info/strategy/european-semester/framework/europe-2020-strategy_en)

Sustainable Development Indicators (SDI) (7) used until 2015 and related to the EU Sustainable Development Strategy (EU SDS) (8). As example of an indicator system serve the indicators derived from Eurostat's framework of national accounts. However, it is worth noting that in the literature, these definitions of indicator sets and systems are not uniformly used and indicators systems are often referred to as indicator sets.

## Opinion-based vs. evidence-based policy making

Indicators should provide 'evidence' or should facilitate decision making by providing the information needed for a good decision. It is therefore important to specify further the concept of evidence in order to better understand how it relates to indicators. Evidence 'concerns facts (actual or asserted) intended for use in support of a conclusion' (9). Evidence should thus not be confused with a conclusion; it can support a conclusion, but it is not a conclusion in itself (i.e. it is a means to an end, not the end) (10). Furthermore, not all evidence is of the same quality and some research results are more convincing than others, based on factors such as the quality of the methodology (11). To sum up, evidence should fulfil two criteria: it should be relevant to the decision and have the required quality or accuracy for that decision.

This is essential in regard to the often-stated objective of achieving '**evidence-based** policy making' in which decisions are based on careful consideration of the best available evidence. Central banks tend to use this approach when formulating monetary policy to achieve macroeconomic stability. They rely on different macroeconomic indicators (for example employment rate, inflation rate, growth forecasts) to make decisions. Value judgements are also used, especially to define objectives. But when it comes to finding the best way to reach these objectives, central banks refer to quantitative evidence in the form of indicators.

On the other hand, in the '**opinion-based** policy making', decisions are driven by opinions and judgements that are not based on or tested against robust evidence. In this case, they are shaped by a selective, anecdotal or improper use of evidence (12). Opinion-based policy making could also be described as a qualitative assessment based on an agreed and legitimate theory. Non-evidence-based factors such as 'institutional constraints, interests, ideas (including values), and external factors like recessions' (13) can also influence opinions and, with that, opinion-based decision making.

In practice, there is always a mixture of **evidence-based** and **opinion-based** decision making which can be specified as '**evidence-influenced**' policy making. While monetary policy might lean heavily towards an evidence-based approach, policy announcements and policy decisions in pre-election times might lean more towards opinion-based decision making. Politicians competing for election will form their decisions not only on the basis of what they are convinced will work from **evidence**, but also

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(7) <http://ec.europa.eu/eurostat/web/sdi/indicators>

(8) [http://ec.europa.eu/environment/sustainable-development/strategy/index\\_en.htm](http://ec.europa.eu/environment/sustainable-development/strategy/index_en.htm)

(9) Lomas et al., 2005.

(10) Oxman et al., 2009.

(11) Id.

(12) Segone and Pron, 2008.

(13) Oxman et al., 2009.

on their perception of the electorate's **opinion** on what works. This helps to explain why, for example, many macroeconomic decisions have been removed from the election cycle by assigning them to independent central banks. Monetary policy might have been very different after the introduction of the single currency Euro, if it had been based on the perception of inflation, which at that time exceeded the measured inflation by a considerable margin <sup>(14)</sup>.

The use of evidence and indicators can improve policies by:

- helping to recognise a policy issue;
- providing information on policy design and choice;
- assisting with forecasting and modelling;
- monitoring policy implementation;
- evaluating policy impact <sup>(15)</sup>.

These five areas reflect the structure of the policy cycle, which will be discussed in Chapter 3. In the meantime, it is essential to note that evidence and indicators can reinforce each of these stages by providing information into policy making processes; improving the relevance, efficiency and effectiveness of policies or policy reforms; and legitimising decisions.

To help EU statistics provide the information needed to support the EU policy making, the **European Statistical Programme 2013–2017** was established by Regulation (EU) No. 99/2013 to regulate data collection. Its main purpose is 'ensuring that European statistics are focused on the information needed to design, implement, monitor and evaluate Union policies' <sup>(16)</sup>. Providing evidence for policy making at all levels is therefore one of the most important reasons for collecting information. Of course European institutions use not only indicators produced by Eurostat/European Statistical System (ESS) but also statistics collected by other European Commission Directorates-General (DGs) and by other specialised EU agencies.

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<sup>(14)</sup> Döhring et al., 2007, p. 5.

<sup>(15)</sup> Segone et al., 2008.

<sup>(16)</sup> See Article 2 of [Regulation \(EU\) No 99/2013](#) of the European Parliament and of the Council of 15.01.2013. The European Statistical Programme 2013-2017 is extended to 2018-2020 as indicated in the proposal for a Regulation of the European Parliament and of the Council [COM \(2016\)557](#) from 07.09.2016 for amendment of the Regulation (EU) No 99/2013.

# 2

## Why are indicators used in policy making?

Indicators can be used for different purposes in the policy making process; for example to either arrive at a decision or to explain a decision to the outside world. Understanding the different purposes and rationales for the use of indicators in the policy making process is the first step to understand why and how indicators become and remain relevant in political processes.

### Rationale for indicator use

The purposes and rationale for indicator use in the policy process have been analysed by different authors. The literature defines three broad categories of rationales by referring to the instrumental, conceptual and political functions of the indicators <sup>(17)</sup>.

**Instrumental use** refers to the use of indicators ‘as direct input to specific decisions’ <sup>(18)</sup>. In this case, policymakers use them to steer policy along the different stages of the policy cycle. Indicators play a crucial role in monitoring and assessment of the impacts of existing policies on political decisions, such as keeping, broadening or abandoning the policy measure in question. For instance, indicators can help in the decision making stage to choose among several policy options, or in the policy assessment stage to identify strengths and weaknesses and provide recommendations for improvement. The instrumental use can be illustrated by the example of policymakers using CO<sub>2</sub> emissions observed over time in different sectors to set priorities for the emission-reduction policy.

**Conceptual use** (enlightenment) is the use of indicators to shape conceptual frameworks for assessments, ways of thinking and mental models. It relates to the ‘percolation of new information, ideas and perspectives into the arenas in which decisions are made’ <sup>(19)</sup>. In particular, the use of indicators may help decision-makers to define a problem and to provide new perspectives and insights. The conceptual use differs from the instrumental use in that sense that indicators do not directly influence a decision but generally improve the user’s knowledge and information base.

**Political use** is the use of indicators as accountability tools or supporting arguments in the political discussion to promote specific ideas, such as sustainable development, transparency, improvement in social security level or trade liberalisation. For instance, indicators on the ‘working poor’ <sup>(20)</sup> showing a rise in poverty levels among households of employed persons might affect the plans for welfare policy.

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<sup>(17)</sup> Lehtonen, 2008.

<sup>(18)</sup> Id.

<sup>(19)</sup> Weiss, 1999, p.471.

<sup>(20)</sup> Such as ‘in-work at-risk-of-poverty rate’ which refers to the percentage of persons in the total population declaring to be at work (employed or self-employed) who are at-risk-of-poverty (i.e. with an equivalised disposable income below the risk-of-poverty threshold).

Political use can be further subdivided into three categories. Firstly, **legitimisation** is the use of indicators to justify decisions that have already been taken or policies that are already in place; often seen in a negative light but also essential to secure acceptance of policy in a democracy. In the case of **tactical** use, an evaluation is commissioned in order to postpone decision making. This can be also a type of indicator misuse. Finally, **symbolic** use can be identified when an indicator is primarily used for motivating existing policy positions or when there are clear instances of non-use or misuse. <sup>(21)</sup>.

The rationale behind the use of an indicator might change during the policy making process. For example, the above mentioned indicator on the 'working poor' might first only be used conceptually to provide insight into the development of work patterns and wage structures in the labour market. If this leads to the identification of an existing problem, the same indicator might be used instrumentally to arrive at decisions on how to best influence wages and work patterns of the working poor. Finally, once the decisions are taken, the indicator might also be used for political reasons to defend and legitimise the decision.

There are also other categorisations of rationale for indicator use which provide different perspectives and nuances, although many of these definitions overlap.

**Process use** can be observed when people involved in the research or evaluation process change their behaviour or understanding based on the indicators <sup>(22)</sup>. This means the indicators feed into the research or evaluation conducted.

**Ritual use** occurs when information is collected to maintain the appearance of compliance, but that information serves no practical purpose, which leads to production of useless reports and indicators <sup>(23)</sup>. Very often such ritual use is caused by legal obligations and is sometimes called **imposed use** <sup>(24)</sup>.

**Intended use** is observed in case when an indicator is used for the specific purpose that was considered when it was developed. Over time, however, people may start using it in different ways and interpreting it differently from its initial meaning, which results in an **unintended use**. For example, gross domestic product (GDP) was designed to measure and ultimately help steer the production of an economy (intended use), but over time it has started being used and communicated as an indicator of economic and even societal well-being (unintended use). While it remains a useful indicator to measure an economy's level of production, it is generally seen as unfit and even misleading when employed as an indicator of overall societal welfare.

Indicators can also be **misused** or abused when incorrect conclusions are deliberately reached from the data. For instance, indicators showing a cost shift can sometimes be wilfully misinterpreted as a cost savings. 'Programme exits' is a common indicator of the success of welfare programmes. However, few systematic attempts are made to discover why people leave welfare programmes, for how long and where they go. In some cases, individuals are merely transferred from one form of income support programme to another' <sup>(25)</sup>. Such misuse of indicators can happen more easily if no additional indicators and information are available to identify this misinterpretation. This behaviour is

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<sup>(21)</sup> Patton, 1997.

<sup>(22)</sup> Rosenström, 2009.

<sup>(23)</sup> Id.

<sup>(24)</sup> Id.

<sup>(25)</sup> Perrin, 1998.



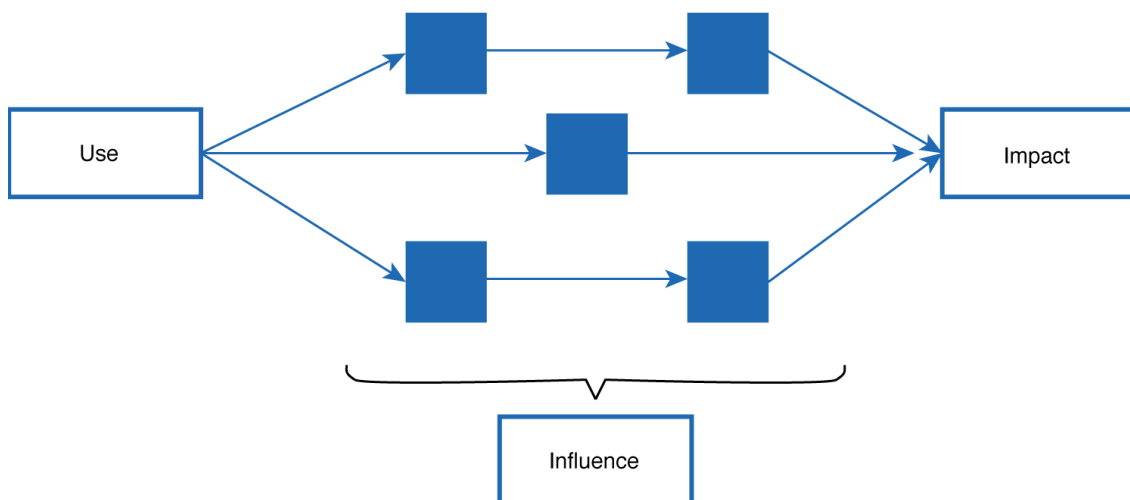
also sometimes called **deliberate manipulation**, which often appears in the form of ‘underreported negative changes in performance and disproportionately reported positive changes’ <sup>(26)</sup>.

**Illegitimate suppression** is the most extreme form of a deliberate manipulation and occurs when relevant information is not only underreported but is deliberately not published or made available.

## From ‘use’ to ‘influence’ and ‘impact’

Although the terms ‘use’, ‘influence’ and ‘impact’ tend to be applied interchangeably, they are distinct concepts. The use of an indicator is only the first step in a chain of reactions (influence) that ultimately lead to its impact, which can be desired or undesired.

**Figure 2:** The link between the use, influence and impact of indicators



Source: Own illustration.

**Use** relates to the handling of indicators in the policy context, whereas **influence** relates to the effects indicators potentially have on policies <sup>(27)</sup> and can be defined as ‘the subset of evaluation consequences that could plausibly lead toward or away from social betterment’ <sup>(28)</sup>. In other words, it encompasses the effects of indicator use which are likely to have an impact on policy (see Figure 2).

There are three levels of influence: **individual**, **interpersonal** and **collective**. While **individual** influence describes how an indicator’s results may lead a person to shape, change or reinforce an opinion, the **interpersonal** influence refers to the ability of one person to convince another person on the basis of the message conveyed by an indicator. Further to this, the **collective** influence is defined

<sup>(26)</sup> Kalgin et al., 2015.

<sup>(27)</sup> Gudmundsson et al., 2009; Henry et al., 2003; POINT final project report.

<sup>(28)</sup> Henry et al., 2003, p. 295.

as the ability to shape a whole political discussion in a group of people or in a society. Quantifying the influence of an indicator is very challenging as the opinion of most people is shaped by many factors that normally cannot be disentangled. Hence, 'indicator influence cannot be measured on a one-dimensional scale' <sup>(29)</sup>.

While influence relates to the process of changing or confirming the direction of policies, **impact** relates to the potential results stemming from the use of indicators and can be considered in two categories: 'direct intentional' and 'indirect' <sup>(30)</sup>. Indicators can be intentionally developed to change policies (for example, collection of poverty data to force political action against poverty). However, in many cases indicators that were developed a long time ago are still being used for recent political problems. One reason for this is that it takes long to develop indicators, making timely provision of new ones for the political process challenging. Therefore, the observed impacts of indicators are 'typically indirect, unanticipated and systemic' <sup>(31)</sup>. The impact of indicators should not be confused with the impact of policies, which indicators can help measure. This section refers to the impact of the use of an indicator in the policy making process (which could be for example assessing the impact of a policy; see Chapter 3).

The use of an indicator does not automatically imply that it has an influence on decision making, or that an indicator can only be influential if it is used by the decision makers. Even when not used actively by any policy actor, an indicator can have an impact on policies and society through various indirect pathways, like for example the shaping of public opinion which in turn influences policy making. The influence of an indicator can have different forms e.g. it can trigger changes in the targeted policy, as most often happens, or even changes to administrative structures or to the operations of democratic institutions. That indirect influence can also be caused by indicators used in the decision process. It happens when indicators 'open up' discussions instead of being used to provide an answer to important questions or to 'close' discussions <sup>(32)</sup>.

## Indicator development for different rationales

The various rationales and motivations for using indicators pose a challenge for indicator developers to provide indicators that at least support all the 'legitimate' rationales. To influence decision making, indicators need to be clear in their message and both the data and the metadata must be accessible to allow robust conclusions, both for the intended use and to prevent the unintended use.

The same is true for the political use of indicators, which requires the indicator developers to gain and retain a reputation of a trusted source. Indicators also need to be developed in cooperation with the potential users to keep up with the changing political discussion. Provision of accessible information to help robust interpretation is also needed for the political use, as it helps to identify misuse and wilful misinterpretation of indicators in the political discussion.

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<sup>(29)</sup> POINT synthesis report.

<sup>(30)</sup> Gudmundsson et al., 2009.

<sup>(31)</sup> Lehtonen et al., 2016.

<sup>(32)</sup> Eurostat, 2017b.

# 3

## When and how are indicators used in policy making?

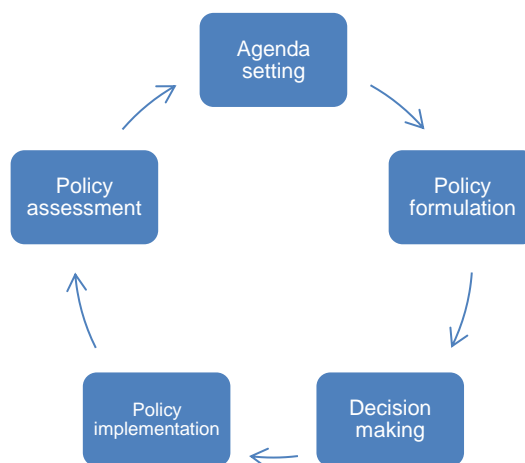
Indicators can be used at different stages of the policy making process and at different governance levels. Based on the timing and scale of their use and the needs of policy makers, the quality requirements for indicators can vary to a significant extent. Information needs may differ at each stage of the policy cycle; therefore it is essential to understand this process and to accommodate the 'fit for purpose' approach for the defined indicators.

### Concept of the policy cycle

The policy cycle is a well-known concept that helps visualise the different stages of the policy making. It describes a process that starts with the identification of a problem leading to the development of a policy measure, which is then monitored to gauge its success. That assessment might identify unresolved problems, which opens a new round of the cycle.

The literature provides different descriptions of the policy cycle consisting of a varying number of identified phases. One possible clear and simple description includes five stages <sup>(33)</sup>: agenda setting, policy formulation, decision making, policy implementation and policy assessment <sup>(34)</sup> (see Figure 3).

Figure 3: The policy cycle



Source: Own illustration

<sup>(33)</sup> Howlett et al., 1995.

<sup>(34)</sup> 'Policy evaluation' in Howlett et al., 1995.

The most important aspect of the policy cycle is that ‘at all stages, there is an information need where information can serve general audiences and individual public decision-makers’ <sup>(35)</sup>. Indicators can help fulfil this need — from agenda setting to policy assessment <sup>(36)</sup>. The role of the statistical community is to provide high quality data, in respect of the appropriate codes of practice, including defining international standards, ensuring adequacy of resources, quality commitment, statistical confidentiality, impartiality and objectivity.

The policymaker's information needs can differ depending on the stage of the policy cycle and this needs to be reflected in the process of indicator design. These changing needs are discussed in the section below.

In the phase of **agenda setting** policymakers need to understand and clearly define the problem they want to solve and the policy objectives they want to reach. Indicators can facilitate this by quantitatively capturing the problem that the agenda should address, and/or by quantitatively illustrating the objectives that should be reached. Indicators available in time series and for many different geographic units (such as countries, regions, sub-regions) help in agenda setting as they provide benchmarks and can be used for time and country comparisons.

Once objectives have been identified and quantified, policymakers need to identify the political options in order to reach them. This happens in the stage of **policy formulation**. Indicators can facilitate this task by providing clear information on the policy measures that worked in the past and the context in which they were used.

**Decision making** is the next step during which the political options available and their impacts are compared in order to opt for the best way forward. Indicators can add value in impact assessments by helping to understand the causality chains between measures and the impacts of the policy measure.

Once the decision on specific policies has been reached, they need to be implemented by the relevant authorities. Indicators can provide information on the administrative costs and the effectiveness of different **policy implementation** options.

Finally, in the stage of **policy assessment** indicators are used in the monitoring process, including the assessment of the effectiveness of existing policies. Indicators that help policymakers to understand trends and their drivers will enable them to see which policies work and which next policy actions might be necessary. The policy assessment can lead to a new policy cycle, starting with another agenda setting stage.

Some practical examples of indicators or indicator sets used in a specific stage of the policy cycle are presented in Table 1.

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<sup>(35)</sup> Vestman et al., 2008.

<sup>(36)</sup> Jann et al., 2007.

**Table 1:** Practical examples of the use of indicators at each stage of the policy cycle

Stage of policy cycle	Practical example
Agenda setting	<ul style="list-style-type: none"> <li>• The <b>Macroeconomic Imbalance Procedure (MIP) Scoreboard</b> <sup>(37)</sup> is an indicator set used by the European Union (EU) to detect economic imbalances in the Member States. The set consists of a scoreboard including 14 headline indicators selected to 'capture both shorter term rapid deteriorations as well as the longer term gradual accumulation of imbalances' <sup>(38)</sup>. Each headline indicator is accompanied by alert thresholds. For instance, the indicator '<i>3-year average of unemployment rate</i>' has an indicative threshold of 10%, meaning that when the value of the indicator surpasses 10%, an alert mechanism might be triggered. The scoreboard is not intended to be used mechanically and the headline indicators are complemented by additional indicators and other relevant information that help analyse, detect issues and draw informed conclusions.</li> <li>• At the national level, central banks in developed countries set inflation target rates. At the European level, the European Central Bank (ECB) aims at inflation rates of below, but close to, 2% over the medium term to avoid unexpected and high inflation creating perverse incentives and unwanted redistribution of wealth. As an indicator of inflation and price stability, the ECB uses the <b>Harmonised Index of Consumer Prices (HICP)</b> which is a consumer price index compiled according to a methodology harmonised across EU countries.</li> </ul>

<sup>(37)</sup> See <http://ec.europa.eu/eurostat/web/macroeconomic-imbalance-procedure/indicators>

<sup>(38)</sup> European Economy, *Scoreboard for the surveillance of macroeconomic imbalances*, 2012, p. 4.

Table 1 (cont.)

Stage of policy cycle	Practical example
Policy formulation	<ul style="list-style-type: none"> <li>• Eurostat publishes a set of indicators measuring <b>Quality of Life</b> <sup>(39)</sup>, which is based on a theoretical framework according to which quality of life can be disaggregated into 'eight plus one' dimensions/domains such as material living conditions, productive or main activity, health, education, leisure and social interactions, economic and physical safety, governance and basic rights, natural and living environment and overall experience of life <sup>(40)</sup>. For each of these areas, relevant indicators for which data are available have been selected. For example, the education dimension is currently measured by five indicators: <i>population's educational attainment</i>, <i>number of early school leavers</i>, <i>self-assessed and assessed skills</i> and <i>participation in life-long learning</i>. The indicators aim at helping policymakers to focus on policy objectives which directly affect the quality of people's life <sup>(41)</sup>.</li> <li>• The European Environmental Agency (EEA) collects data in Member States for the Council Directive 2003/96/EC on the taxation of energy products and electricity <sup>(42)</sup>. The indicator <i>transport fuel prices and taxes</i> considers the price of fuel in the EU, including cost price, excise duty and VAT and is used to advise European and national policymakers about energy tax levels and their structures <sup>(43)</sup>.</li> </ul>
Decision making	<ul style="list-style-type: none"> <li>• Many European countries and the EU as a whole <sup>(44)</sup> maintain frameworks for impact assessments that support decision making and use specific indicators. Impact assessments are carried out on initiatives expected to have significant economic, social or environmental impacts. These can be legislative proposals; non-legislative initiatives (e.g. financial programmes, recommendations for the negotiations of international agreements) or implementing and delegated acts. The type of indicators used depends on the impact assessment in question, including e.g. estimates of potential savings.</li> </ul>

<sup>(39)</sup> The indicator set is available here: [http://ec.europa.eu/eurostat/statistics-explained/index.php/Quality\\_of\\_life\\_indicators](http://ec.europa.eu/eurostat/statistics-explained/index.php/Quality_of_life_indicators)

<sup>(40)</sup> For a detailed description of the 'eight plus one' dimensions see [http://ec.europa.eu/eurostat/statistics-explained/index.php/Quality\\_of\\_life\\_indicators\\_-\\_measuring\\_quality\\_of\\_life](http://ec.europa.eu/eurostat/statistics-explained/index.php/Quality_of_life_indicators_-_measuring_quality_of_life)

<sup>(41)</sup> Eurostat, 2015b.

<sup>(42)</sup> See <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2003:283:0051:0070:EN:PDF>

<sup>(43)</sup> See <https://www.eea.europa.eu/policy-documents/council-directive-2003-96-ec>

<sup>(44)</sup> See [https://ec.europa.eu/info/law-making-process/planning-and-proposing-law/impact-assessments\\_en](https://ec.europa.eu/info/law-making-process/planning-and-proposing-law/impact-assessments_en)

Table 1 (cont.)

Stage of policy cycle	Practical example
Policy implementation	<ul style="list-style-type: none"> <li>• The <b>Principal European Economic Indicators (PEEIs)</b> are ‘used as a statistical support for the implementation of economic and monetary policies’ <sup>(45)</sup>. They provide information on labour, housing, consumer prices and many other economic variables, which help monitor the economy during the policy implementation process.</li> <li>• The <b>EU Sustainable Development Indicator (SDIs)</b> set was used until 2015 to monitor the implementation of the EU Sustainable Development Strategy. It included more than 130 indicators, grouped in 10 themes, each with selected headline indicator <sup>(46)</sup>.</li> <li>• In March 2017, the United Nations Statistical Commission (UNSC) agreed on a list of 244 global indicators to measure the progress towards <b>Sustainable Development Goals (SDGs)</b> <sup>(47)</sup>, which are at the heart of a global agenda for the years 2015–2030. At the same time, Eurostat has developed the <b>EU SDG indicator set</b> monitoring the SDGs in an EU context.</li> </ul>
Policy assessment	<ul style="list-style-type: none"> <li>• At the European level, for the monitoring of the <b>Europe 2020 strategy</b>, which aims to create smart, sustainable and inclusive growth, the EU has set eight quantitative objectives (‘Europe 2020 targets’) measured by nine indicators <sup>(48)</sup> in five thematic areas: employment, education, poverty and social exclusion, climate change and energy and research and development. For each of these topics, headline indicators were selected to help measure countries’ progress toward these targets. Eurostat analyses these headline indicators together with other contextual indicators in an annually released report on the Europe 2020 strategy <sup>(49)</sup>.</li> </ul>

The use of indicators has a particular meaning in the agenda setting and policy assessment, being the first and the last stage of the policy cycle. The following sections will explore these two stages in greater detail. Indicators play an important role also in the other three stages (policy formulation, decision making and policy implementation), but examples of indicator use can be more clearly illustrated on the example of the agenda setting and policy assessment stages, which explains the particular emphasis put on these aspects in the following section.

<sup>(45)</sup> Eurostat, 2011; for the detailed list of indicators see also <http://ec.europa.eu/eurostat/web/euro-indicators/peeis>.

<sup>(46)</sup> For the detailed list of indicators see <http://ec.europa.eu/eurostat/web/sdi/indicators>

<sup>(47)</sup> See <https://sustainabledevelopment.un.org/?menu=1300>

<sup>(48)</sup> <http://ec.europa.eu/eurostat/web/europe-2020-indicators/europe-2020-strategy/headline-indicators-scoreboard>

<sup>(49)</sup> For the recent report on the Europe 2020 strategy see <http://ec.europa.eu/eurostat/web/europe-2020-indicators/europe-2020-strategy/publications>

## Using indicators for agenda setting

Indicators can be useful in different ways in the agenda setting phase, helping to reflect on medium- and long-term goals during the **planning stage** <sup>(50)</sup>. They can be used to determine budget allocations by indicating where funds are most needed. For example, specific indicators are analysed in the reports published by the Organisation for Economic Co-operation and Development (OECD) to illustrate the state of different sectors, which during the planning stage can contribute to steering policy in a given direction.

Indicators can be used to **clarify and quantify policy objectives**. This provides a quantitative basis that can be clearly understood and implemented by all parties. In the European environmental policy, this is often done with a set of indicators that are used to determine good environmental status. The Ambient Air Quality Directive (2008/50/EC) <sup>(51)</sup>, for example, uses nitrogen dioxide as an indicator of air quality and provides a threshold level that should not be exceeded in the EU Member States.

Indicators can provide the quantitative basis for comparing several issues and help to **set priorities** determining which one(s) should be addressed first within the decision making process. For example, the EU Strategic Engagement for Gender Equality 2016–2019 <sup>(52)</sup> is a direct response to challenges and gaps within this area that were analysed with quantitative indicators on the current status of gender equality such as employment levels, the percentage of women as board members of listed companies, the proportion of women in national parliaments and governments, the proportion of female heads in institutions, the percentage of women entrepreneurs and several more <sup>(53)</sup>. The analysis of these indicators provided directly informative input into the priorities and key actions for 2016–2019 that are described in the strategy.

Indicators can also be used to **explore ambiguities and uncertainties** about the future in order to help setting priorities. The recent development process of new indicators for societal progress and well-being serves here as a useful example. Indicators used to monitor the trends on the labour market enable an analysis of potentially very disruptive trends in labour demand (like robotisation) and enable the users to explore trade-offs, uncertainties and ambiguities <sup>(54)</sup>.

It is worth noting that indicators are only one source of information for evidence-based policy, and should be interpreted in their context. Indicators can be used for continuous assessment but as they cannot track causal relationships or explain political context, they cannot replace evaluation. Research and evaluation is therefore needed in addition to continuous monitoring through indicators.

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<sup>(50)</sup> Lehtonen, 2008.

<sup>(51)</sup> <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:152:0001:0044:en:PDF>

<sup>(52)</sup> See <http://ec.europa.eu/anti-trafficking/eu-policy/strategic-engagement-gender-equality-2016-2019>

<sup>(53)</sup> European Union, *Strategic Engagement for Gender Equality 2016–2019*, 2016.

<sup>(54)</sup> Eurostat, 2017b.



## Using indicators for policy assessment

Indicators can also support performance analysis carried out by international organisations and governments at all levels. A performance analysis can be done for three purposes: monitoring, evaluating and benchmarking.

According to the European Commission's Better Regulation guidelines, '**monitoring** generates evidence on an intervention's activities and impacts over time in a continuous and systematic way' and is 'a necessary and integral part of Better Regulation' <sup>(55)</sup>. It is used for tracking whether a policy's general objectives are reached without analysing the reasons for which they were or were not achieved. The indicators can be used as monitoring tools; in this case, the results of indicators are observed to determine the direction they are moving in and whether progress towards predetermined goals can be reported <sup>(56)</sup>. An example of this type of analysis could be the monitoring of the Europe 2020 strategy targets conducted by Eurostat.

Monitoring should not be confused with **evaluation**, which the Better Regulation guidelines define as 'an evidence-based judgement of the extent to which an intervention has been:

- effective and efficient;
- relevant given the needs and its objectives;
- coherent both internally and with other EU policy interventions, and
- achieved EU added-value' <sup>(57)</sup>.

Evaluation goes beyond observing changes in indicators and aims to determine the contribution of the policy to these changes (as part of the change can always be attributed to other factors), which is also simply called the impact of the policy <sup>(58)</sup>. Evaluation is conducted at the policy assessment stage, but it can also be used in future policy formulations and decision making stages. Currently, the European Commission focuses on evaluation, in which in the next years all policy programmes will be evaluated to create an improved evidence base for future policy development. Indicators that provide evidence on the effectiveness of a policy can thereby be used in evaluation and impact assessment.

Finally, **benchmarking** is carried out, for example, by international organisations charged with overseeing binding international agreements or by national organisations responsible for overseeing the regional implementation of national policy initiatives. Benchmarking normally contains some elements of monitoring and evaluation, but additionally a formal benchmark against which the development of an indicator can be measured is agreed. For instance, monitoring greenhouse gas (GHG) emissions becomes a benchmarking if an international organisation uses the countries' emission reduction targets as a benchmark for progress.

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<sup>(55)</sup> European Commission, *Better Regulation Guidelines*, 2015b.

<sup>(56)</sup> European Union, *Guidance document on monitoring and evaluation – Concepts and Recommendations*, 2015.

<sup>(57)</sup> European Commission, *Better Regulation Guidelines*, 2015b.

<sup>(58)</sup> European Union, 2015.

## Using indicators at different levels of policy making

Indicators can be used at all political levels, from local to international, which implies differences in their characteristics and the requirements for the underlying data. Political decision-makers often need the statistics available at the level over which they have jurisdiction, but they can also look data available for other levels. For instance, the focus of the European Commission lies on data at the EU and Member State level. Local policymakers very often need data at the local level, while international policymakers may need information on an international or national level. If national policies have a local or regional focus, then national policymakers need local or regional data. However, policies rarely only affect one single governance level; their effects and implementation usually trickle down (or up) several levels. For this reason, an increasing number of policy initiatives aims to foster collaboration between multiple governance levels. The United Nations (UN) 2030 Agenda on Sustainable Development is a good example of a multi-level collaboration.

At the **international (global) level**, indicators become increasingly important for monitoring, for example, the implementation of conventions and international agreements. The global list of 244 indicators to monitor the SDGs provides a clear example of the need and actual use of indicators to track the progress of different countries towards common objectives.

Global phenomena, in particular environmental ones, are also often monitored using indicators. For example, for monitoring climate change, indicators such as global average temperature or Arctic sea ice extent <sup>(59)</sup> are used. The United States Environmental Protection Agency uses a set of 30 Climate Change Indicators <sup>(60)</sup> to monitor Earth's changing climate.

Indicators are also used at the European level. The euro convergence criteria, also referred to as 'Maastricht criteria' <sup>(61)</sup>, were designed to determine whether a Member State's economy is prepared for the adoption of the single currency. For this purpose indicators for measuring price stability, soundness and sustainability of public finances, exchange-rate stability and long-term interest rates are used.

Until 2015, Eurostat published biannually a report on the EU Sustainable Development Strategy <sup>(62)</sup>, based on the EU Sustainable Development Indicators (SDIs). Eurostat produces also regular annual reports on the progress towards the targets of the Europe 2020 strategy using the related indicator set <sup>(63)</sup>. The EU Resource Efficiency Scoreboard <sup>(64)</sup> published by Eurostat presents indicators covering themes and subthemes of the Roadmap to a Resource Efficient Europe <sup>(65)</sup>. The scoreboard aims to monitor the implementation of the roadmap, to communicate the link between resources and economy and to engage stakeholders. Indicators are arranged in three groups - lead, dashboard and theme-specific indicators.

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<sup>(59)</sup> See <https://nsidc.org/arcticseaicenews/>

<sup>(60)</sup> The indicator set is available here: <https://www3.epa.gov/climatechange/science/indicators/#learnmore>

<sup>(61)</sup> European Commission, *Who can join and when?*, 2015c.

<sup>(62)</sup> Eurostat, 2015.

<sup>(63)</sup> <http://ec.europa.eu/eurostat/web/europe-2020-indicators/europe-2020-strategy/headline-indicators-scoreboard>

<sup>(64)</sup> <http://ec.europa.eu/eurostat/web/europe-2020-indicators/resource-efficient-europe>

<sup>(65)</sup> [http://ec.europa.eu/environment/resource\\_efficiency/about/roadmap/index\\_en.htm](http://ec.europa.eu/environment/resource_efficiency/about/roadmap/index_en.htm)

At the **national level**, the EU Member States can use indicator sets to adapt goals and targets from EU strategies into national priorities and monitor their implementation. For instance, the government of the Czech Republic uses 27 of the 30 indicators proposed by the OECD in 'Towards Green Growth — Monitoring Progress: OECD Indicators' to monitor its Strategic Framework for Sustainable Development<sup>(66)</sup>. Belgium's Federal Planning Bureau established a Task Force on Sustainable Development (TFSD), which will publish a set of sustainable development indicators in line with the SDGs in 2017<sup>(67)</sup>.

Indicators can also be used to monitor the national economy as for example in Germany, where budget figures submitted by regional authorities are used for redistribution of the tax income.

The Swiss Federal Statistical Office (FSO) uses a system of 73 indicators called MONET<sup>(68)</sup> to monitor the national progress towards sustainable development objectives. The indicators are focused around four questions (How well do we live? How well are resources distributed? What are we leaving behind for our children? How efficiently are we using our natural resources?).

There are also several examples of indicators sets used at the **sub-national, regional or local level**. In Switzerland, a set of sustainable development indicators called 'Cercle Indicateurs' is used to compare cities and cantons with each other and for their own monitoring. There is a total of 35 'themes': 11 for the environment, 12 for the economy and 12 for society. Each theme is measured with a different indicator, in some cases with two indicators<sup>(69)</sup>. For more than one third of the themes, there is a different indicator used for cities and cantons. For instance, in cantons the biodiversity theme is measured with the indicator 'diversity of vegetal species', while in cities the indicator 'city nesting bird index' is used instead. Further, for the European Cohesion Funds and European Rural Development Funds, many economic indicators are made available on a regional level. Several examples of such indicators can be found on the Eurostat website related to regional statistics<sup>(70)</sup>.

The tension between local, regional, national and EU levels remains a major challenge for many indicator sets used at an international level. The relevance of indicators will vary at different levels and also for different regions or countries on the same level. The need for international comparability is often an obstacle to maximise the relevance of indicators for policy actors at the national and even more so at the sub-national level. An individual indicator can never be fully relevant at all governance scales and across different contexts observed in a country. Therefore, indicator systems should have a certain degree of flexibility, allowing different indicators to be employed, depending on the needs of the country or governance level.

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<sup>(66)</sup> See <http://www.oecd.org/greengrowth/greengrowthinactionczechrepublic.htm>

<sup>(67)</sup> Indicators.be, [Indicatoren van duurzame ontwikkeling](#), 2017.

<sup>(68)</sup> See <https://www.bfs.admin.ch/bfs/en/home/statistics/sustainable-development/monet.html>

<sup>(69)</sup> See <https://www.bfs.admin.ch/bfs/de/home/statistiken/nachhaltige-entwicklung/cercle-indicateurs.html>

<sup>(70)</sup> Eurostat, *Regions and Cities illustrated (RCI)*, 2013.



# 4

## Requirements for policy relevant indicators

After clarifying when and why indicators are used, it is important to determine how to develop indicators suited to their specific roles. From a statistical perspective, some key criteria need to be respected to create or select the right indicator or indicator set.

In the European Union, the quality standards for statistics are set in the **European Statistics Code of Practice** <sup>(71)</sup>, which was adopted by the European Statistical System Committee in 2005 and revised in 2011. The Code of Practice contains 15 principles <sup>(72)</sup> that must be followed by the statistical authorities <sup>(73)</sup>. The principles are grouped in three areas: Institutional Environment, Statistical Processes and Statistical Output. It is worth noting that the fulfilment of statistical quality criteria alone is necessary but not sufficient for indicators. As important as those criteria are, any indicator must clearly and correctly communicate its information to its target audience. Using the road sign analogy, a road sign that does not point in the right direction - for example, to the destination indicated on it - is obviously misleading. But even a road sign that points in the right direction can be unfit for purpose if it is misunderstood by users. Thus a road sign, as any indicator, must not only be accurate but also be correctly understood by users.

Users expect a high level of quality from official statistics and therefore from indicators derived from them. They want indicators to be relevant to their individual needs, measured accurately, provided in time and comprehensive yet simple, as evidenced by the progress in timeliness of the Principal European Economic Indicators (PEEIs) <sup>(74)</sup>. Furthermore, the quality of indicators comes under scrutiny when important decisions are being based on them. Clear quality assurance procedures for indicators should be defined. Performance management indicators are increasingly being 'used for control and management, often as part of mandatory monitoring, reporting, assessment, evaluation and performance measurement frameworks' <sup>(75)</sup>.

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<sup>(71)</sup> European Statistical System, *European Statistics Code of Practice*, 2011.

<sup>(72)</sup> These include professional independence, mandate for data collection, adequacy of resources, commitment to quality, statistical confidentiality, impartiality and objectivity, sound methodology, appropriate statistical procedures, non-excessive burden on respondents, cost effectiveness, relevance, accuracy and reliability, timeliness and punctuality, coherence and comparability, accessibility and clarity.

<sup>(73)</sup> Eurostat, national statistical institutes and other national authorities responsible for the development, production and dissemination of European Statistics.

<sup>(74)</sup> Eurostat, *Principal European Economic Indicators*, 2009.

<sup>(75)</sup> Lehtonen, 2008.

Regular exchanges between producers of statistics and their political stakeholders is essential for a quick response to new policy demands and increases the likelihood of relevance of indicators for decision making and usage. Additionally, the development of relevant indicator sets for policy making also requires close cooperation between statistical offices and other indicator experts to establish common standards and improve methodologies.

## Key quality criteria for policy relevant indicators

According to the Quality Assurance Framework of the European Statistical System <sup>(76)</sup>, five criteria must be followed to ensure the quality of statistical output being in such way relevant for indicators:

- **Relevance**

Indicators must 'meet the users' needs'; if they do not measure anything useful to policymakers, the public or researchers, they will probably not be widely used. Indicators should also be unambiguous in showing which direction is 'desirable' <sup>(77)</sup>.

- **Accuracy and reliability**

Indicators must 'accurately and reliably portray reality'; an inaccurate indicator can lead to erroneous conclusions, steer the policy making process in the wrong direction or let negative effects go undetected.

- **Timeliness and punctuality**

Indicators must be released at a time that not only complies with European and international release standards, but is also relevant to the end user.

- **Coherence and comparability**

Indicators should be 'consistent internally, over time and comparable between regions and countries. This is particularly relevant for indicators used for policy monitoring and assessment.

- **Accessibility and clarity**

Indicators should be 'presented in a clear and understandable form, released in a suitable and convenient manner, available and accessible on an impartial basis with supporting metadata and guidance.' For indicators, this will be interpreted differently depending on the target audience. What is clear to a scientist may not be clear for a policymaker, and what is accessible to a policymaker might not be accessible for the general public.

Further, three another key criteria can be specified to summarise the user-friendliness of indicators <sup>(78)</sup>. First, they refer to **credibility** which relates not only to the scientific quality of the indicator, but also to the reputation of its author as indicators are believed or disbelieved on the basis of who has been developing and calculating them <sup>(79)</sup>. Further, **salience** refers to the fitness of the indicator for its

<sup>(76)</sup> See <http://ec.europa.eu/eurostat/documents/64157/4392716/ESS-QAF-V1-2final.pdf/bbf5970c-1adf-46c8-afc3-58ce177a0646>

<sup>(77)</sup> Eurostat, 2016b.

<sup>(78)</sup> Lehtonen, 2008.

<sup>(79)</sup> Lehtonen, 2016.

intended purpose, i.e. whether it addresses the intended issue <sup>(80)</sup>. Finally, the **legitimacy** is determined by the political acceptability of the indicator and relates to the political objectives that the indicator measures.

Not all of these criteria can always be met simultaneously — as ‘there are obvious trade-offs between the three criteria’ — and the importance accorded to each can vary depending on the situation and user <sup>(81)</sup>. Therefore, at least there may be some tensions observed between them. Large indicator sets will always limit the communicability and prevent the general picture. Some topics — such as for example sustainable development — are however broad and encompass different areas. A proper coverage of all the dimensions requires a relatively large indicator set. The EU Sustainable Development Indicator set, for instance, included about 130 indicators. Communication of such broad indicator set is obviously a challenge. A clear, hierarchical structure of the indicator set, including headline indicators, themes and sub-themes play a key role in this respect <sup>(82)</sup>. To deal with these challenges, a group of international experts developed the ‘Bellagio Principles’ <sup>(83)</sup>, which as guidelines originally conceived to establish sustainable development indicators are also applicable more widely in the practice (see Box 1 <sup>(84)</sup> <sup>(85)</sup>).

### Box 1: The ‘Bellagio Principles’

The Bellagio Principles guide the measurement of progress towards sustainable development, including the choice and design of indicators, their interpretation and communication of results. While there were originally 10 principles, the 2009 revised version — called the Bellagio Sustainability Assessment and Measurement Principles (Bellagio STAMP) — contains the following eight principles:

1. Guiding vision
2. Essential considerations
3. Adequate scope
4. Framework and indicators
5. Transparency
6. Effective communications
7. Broad participation
8. Continuity and capacity

All of the criteria for indicators listed above show that the source and its credibility are important factors in developing indicators that are actually used. If potential users suspect the data is produced to foster a hidden agenda, then the data will not be trusted and the indicator’s influence will diminish.

For indicators used to monitor a policy implementation, the European Commission’s Better Regulation Toolbox <sup>(86)</sup> notes that indicators should be ‘RACER’, which stands for:

<sup>(80)</sup> Id.

<sup>(81)</sup> Lehtonen, 2008.

<sup>(82)</sup> See also Eurostat, *Towards a harmonised methodology for statistical indicators — Part 2: Communicating through indicators*, 2017

<sup>(83)</sup> The revised principles can be consulted here: [https://www.iisd.org/pdf/2009/brochure\\_bellagiostamp.pdf](https://www.iisd.org/pdf/2009/brochure_bellagiostamp.pdf)

<sup>(84)</sup> The experts met in response to a call of the UN World Commission on Environment and Development (Brundtland Commission) to assess progress toward sustainable development.

<sup>(85)</sup> Pintér et al., 2012.

<sup>(86)</sup> European Commission, *Better Regulation "Toolbox"*, 2015d.

- **Relevant,**
- **Accepted,**
- **Credible** for non-experts, unambiguous and easy to interpret,
- **Easy to monitor,**
- **Robust** against manipulation.

These criteria are broadly similar to the Bellagio Principles.

A practical example of principles and criteria used for the selection of the indicators can be derived from the establishment process of the Eurostat EU SDG indicator set. In line with the Better Regulation Toolbox of the Commission, the EU SDG indicator sets had to fulfil the RACER criteria to the largest possible extent. To achieve these requirements in a transparent and efficient manner, a series of specific quality criteria was applied to indicator proposals. The selection criteria were structured in a hierarchical order. The following three step approach was applied to indicators considered for the EU SDG indicator set:

- Requirements on policy relevance: indicators had to be either part of existing indicator sets monitoring EU policies or designed to monitor a policy or initiative as reported in the Staff Working Document 'Key European action supporting the 2030 Agenda and the Sustainable Development' <sup>(87)</sup> accompanying the Communication COM (2016) 739 'Next steps for a sustainable European future <sup>(88)</sup>'.
- Admissibility requirements: indicators must be produced and disseminated in line with the principles stipulated in the European Statistics Code of Practice. The admissibility requirements could only be relaxed in areas where there is a genuine lack of indicators that meet these criteria. In these cases, users should be appropriately informed about the limitations of the affected indicator.
- Requirements on data quality: indicators must achieve a minimum quality score according to a quality rating on frequency, timeliness, geographical coverage and comparability as well as length of time series and comparability over time.

This process aimed at maximising the relevance and quality of the EU SDG indicator set, thus allowing a solid and reliable measuring of progress towards the SDGs in an EU context.

## Achieving both policy relevance and scientific accuracy

In addition to ensuring that the road sign is pointing in the right direction and is easily understood, it is also crucial for the sign to point to a destination that users want to travel to. If an indicator is accurate and well understood but the information it provides is of no interest for the current policy making process, it will have no policy relevance. Figure 4 illustrates the factors that come into play when balancing scientific accuracy and policy relevance.

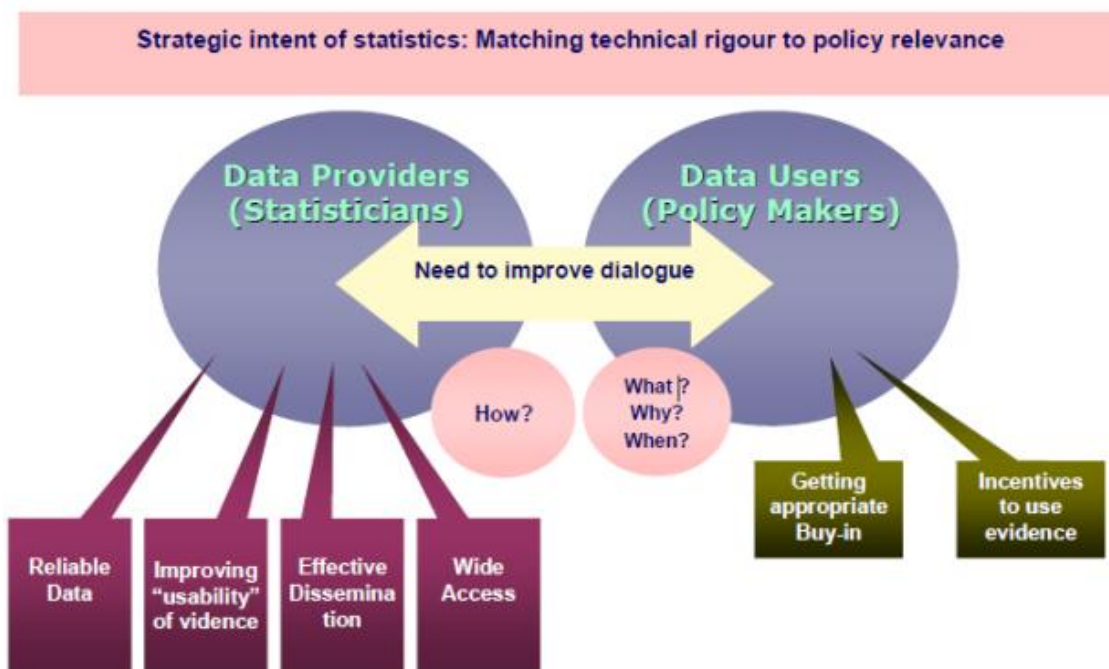
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<sup>(87)</sup> [http://ec.europa.eu/europeaid/sites/devco/files/swd-key-european-actions-2030-agenda-sdgs-390-20161122\\_en.pdf](http://ec.europa.eu/europeaid/sites/devco/files/swd-key-european-actions-2030-agenda-sdgs-390-20161122_en.pdf)

<sup>(88)</sup> [https://ec.europa.eu/europeaid/sites/devco/files/communication-next-steps-sustainable-europe-20161122\\_en.pdf](https://ec.europa.eu/europeaid/sites/devco/files/communication-next-steps-sustainable-europe-20161122_en.pdf)



Figure 4: Strategic intent of statistics: improving the usability of evidence



Source: Segone and Pron (2008, p. 3)

It is essential to establish an ongoing interaction between data providers (indicator developers) and data users (mainly policymakers) <sup>(89)</sup>. Similarly, 'close cooperation between policy making and statistical spheres needs to be ensured, with policymakers assessing the relevance of proposed indicators for a given policy and statisticians assessing the measurability of policy targets', in an 'iterative process with statisticians being involved from an early stage' <sup>(90)</sup>. Improving the dialogue between the two groups is seen as the key to producing high quality statistics that are also policy relevant <sup>(91)</sup>.

An iterative approach can also be suggested to allow policy goals serving as a 'normative basis for the development of indicators', while also allowing indicators to help define 'more specific policy objectives [...] for specific policy areas' <sup>(92)</sup>. This iterative approach is especially useful when dealing with emerging issues, as they often lack clear data sources and precise targets. This dynamic process of review and update is essential, because indicators 'may change as scientific knowledge, policy concerns and data availability progress' <sup>(93)</sup>.

<sup>(89)</sup> Segone et al., 2008.

<sup>(90)</sup> European Statistical System Committee (ESSC), Lisbon Memorandum, 2015; see p.1.

<sup>(91)</sup> Eurostat, *Towards a harmonised methodology for statistical indicators — Part 2: Communicating through indicators*, 2017.

<sup>(92)</sup> Hildén et al., 2008.

<sup>(93)</sup> OECD, 2003, p.5.

The iterative process corresponds to the learning process. The **Macroeconomic Imbalance Procedure (MIP) Scoreboard** <sup>(94)</sup> provides a good example of an iterative approach as it has been enlarged twice. Similarly, the **Principal European Economic Indicators (PEEIs)** list has been enlarged once. It is nonetheless important to stress that the set does not change completely and that most of the original indicators are retained to allow for uninterrupted monitoring of the related policy.

To maximise policy relevance of indicators a broad participation of stakeholders and the public in this iterative process is necessary. Participation is vital in particular in the early stages during the discussion on the framing and definition of the indicators. It might be also essential at the more technical stages of establishment of indicators dealing with decisions on quantifications and the underlying framework, enhancing the use and influence of indicators.

Dependent on the subject, participation can engage a broad group of citizens, or a restricted group of experts, citizens and stakeholders. The importance of civil society organisations is now more important than ever and should be emphasised in this context, as they can play a significant role in mediating between policymakers, experts and the citizens.

A good example of participation of the governmental and non-governmental actors is the establishment process of the SDG global list of indicators agreed in March 2017.

## Key challenges of developing and maintaining policy relevant indicators

When developing indicators for policy making, official statisticians or any other data scientist should take into account a number of challenges.

A first one is understanding statistical indicators as a transformation of quantitative information into knowledge, and to see them as one element in the 'information package' together with qualitative information (i.e. underlying framework, contextualisation) and expert analysis <sup>(95)</sup>. Communication is more than just dissemination; it should ideally be a two-way exchange. Therefore, fostering **exchange with policymakers and media**, as well as educating them, is an essential task of official statistics.

Another potential challenge for official statistics is the **relation with policymakers**. In particular, in case of important policy initiatives policymakers tend to control the development of related indicator sets. Often policy targets are expressed in numerical terms and can be directly measured by indicators. A widespread — but often not true — idea is that only what can be measured is important and that what cannot be measured may become irrelevant. A frequent expectation of policymakers is also that suitable indicators exist or can be easily produced for any policy initiative or phenomenon potentially interesting from a policy perspective. These expectations can result in challenging discussions between policymakers, who are publicly accountable for their choices and official statisticians, who can face significant pressure during the creation of indicator sets and the dissemination of the results of a statistical monitoring. The opposite challenge may also exist: politicians make 'post-factual' statements and take decisions disregarding factual evidence and sometimes deliberately against it. They prosper on a larger and larger share of public opinion that sees 'numbers' as tools of institutions

<sup>(94)</sup> See <http://ec.europa.eu/eurostat/web/macroeconomic-imbalance-procedure/indicators>

<sup>(95)</sup> European Statistical System Committee (ESSC), Lisbon Memorandum, 2015.

they do not trust. In that sense, the public debate is shaped rather by appeals to emotion and personal beliefs than by objective facts.

There are numerous additional challenges in the process of developing indicators for policy making, which can be clustered into six groups: comparability, aggregation, decontextualisation, goal displacement, misuse and maintenance.

### **Geographical comparability and consistency over time**

The ability to compare data is vital for European policy and essential for building meaningful EU aggregates and comparing country performances (between each other but more importantly against benchmarks, such as the Europe 2020 targets). The value of such rankings or comparisons clearly depends on the comparability of the data within the different jurisdictions and over time <sup>(96)</sup>. Ensuring the comparability of statistics between geographical areas, population groups or business sectors and over time is difficult due to differing priorities and data availability across countries, differently defined economic sectors and changing conditions. However, for issues that are of global or regional importance, mechanisms to define standards are normally coordinated between international organisations, which over time have led to a significant increase in geographical comparability in many statistical domains.

Metadata play a crucial role in documenting concepts, methods and data sources behind the calculation of statistical indicators, because they allow users to identify potential limitations for the comparison across countries. The analysis of that comparability is also an important aspect of the continuous improvement of indicators.

It should also be noted that policymakers use both European and other statistics to derive indicators for policy making. There are two main reasons for this. Firstly, the European Statistical System (ESS) is not always competent for some statistical areas, such as biodiversity or climate change. Other data providers such as the European Environment Agency (EEA) and the International Union for Conservation of Nature (IUCN) can provide data for those areas. Additionally, the resources in national statistical institutes are increasingly limited, which makes it difficult to cope with new data needs.

### **Disaggregation**

The level of disaggregation should reflect policy needs. For decision-makers, having information at the level of aggregation that reflects their governance level is crucial to helping them understand both the challenges they are facing and the potential impacts of their decisions. Hence, the disaggregation for many indicators along territorial, demographic and socio-economic characteristics is essential <sup>(97)</sup>.

However, disaggregation comes at a cost: the smaller the unit of disaggregation, the more extensive the data coverage needs to be as many statistical methods of completing datasets depend on sufficient data points for robust extrapolation. That leads to higher financial resources needed to collect information. For instance, collecting data on the number of underemployed people <sup>(98)</sup> by gender, education attainment, single-year age group, in small regions at NUTS 3 level on a monthly basis would be an extremely resource-intensive task.

Modelling techniques such as small area estimation may help in getting highly disaggregated data. However, model-based estimates may not be sufficiently reliable to be used for policy making.

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<sup>(96)</sup> Hildén et al., 2008.

<sup>(97)</sup> See [Lisbon Memorandum](#).

<sup>(98)</sup> People, who would like to work more hours than they can.

## Decontextualisation

Decontextualisation is one of the most common and yet complex risks in the use of indicators. It occurs when indicator information is taken out of context and interpreted in an incorrect way. In such case other information that may be important for understanding the problem at hand might be ignored <sup>(99)</sup>. One commonly used example for decontextualisation is the use of energy efficiency indicators developed to show whether a country or an industry is progressing towards creating more economic prosperity with less environmental impact. In some cases energy efficiency can increase without the industry or the country truly becoming more efficient in their energy use, e.g. if a country stops producing energy-intensive products and imports them instead.

One way to ensure that indicators are interpreted in a correct context is to present them in scoreboards, dashboards or indicator sets. As individual indicators are more prone to being taken out of context, having a set of indicators that complement each other in a logical structure is one way to avoid decontextualisation. For instance, the EU Resource Efficiency Scoreboard is a scoreboard which features several indicators relating both to resources and the economy, and thus making the user consider individual indicators in a broader context. Other similar examples are the indicator sets to monitor the Europe 2020 strategy or the global list of the UN Sustainable Development Goals indicators.

The metadata that accompany an indicator or indicator set can also help avoid decontextualisation, provided it clearly explains what the indicator (set) measures and describes common interpretation mistakes and possible limitations.

If the strengths and limitations of indicators are clearly understood, the limitations can be overcome with additional, supplementary indicators. Measuring Progress <sup>(100)</sup>, a green economy indicator search engine, helps prevent decontextualisation by providing fact sheets in which the research team identifies blind spots or potential misinterpretations of each indicator. Complementary indicators are provided that could be used to fill the identified blind spots. Using the example of energy efficiency, Measuring Progress provides a link to indicators on trade and energy efficiency in different sectors to explain the drivers of energy efficiency. For instance, it suggests using indicators based on raw material equivalents (RME) to complement the domestic material consumption indicator.

The method of adding explanatory indicators <sup>(101)</sup> can in some cases lead to the creation of indicator clusters <sup>(102)</sup> where the information of some indicators can provide context for the others.

## Misinterpretation and misuse

Selection and correct interpretation of an indicator is, for all the reasons mentioned above, a challenging task. Some indicators are better suited for some purposes than others. For example, the

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<sup>(99)</sup> TA-SWISS, 2010, p. 5.

<sup>(100)</sup> See <http://measuring-progress.eu/>

<sup>(101)</sup> It is crucial to note that explanatory indicators should be added only if needed. The Bellagio principles call for 'a *limited* number of indicators or indicator combinations to provide a clearer signal of progress'. Point 2 of the Lisbon Memorandum states that 'Indicator sets should include a limited number of indicators, a few of which are identified as key indicators, to make the set relevant, of analytical value and practically manageable and to ensure clear and concise communication.' Thus indicators should only be added if they contribute to the key message and do not conflict with parsimony and effective communication.

<sup>(102)</sup> See for further reference: The Swiss Federal Statistical Office (FSO), [Creation of clusters to supplement legislature indicators. Methodology report](#), 2015.

ecological footprint<sup>(103)</sup> may be useful for communicating with the public but not for taking concrete policy decisions on measures to improve resource efficiency.

For users not familiar with indicators or rarely using them, there is always a risk of ‘simple’ **misinterpretation**. Some might compare values without knowing in which direction the indicator should be interpreted. For instance, it might be difficult to assess if an increase in the Genuine Progress Index<sup>(104)</sup> for a country means a positive or negative development or what level of improvement would be sufficient or desirable.

Obviously, misinterpretation is not always unintentional. Indicators used in the political process may be intentionally misinterpreted to influence public opinion. For instance, reporting apparently alarmingly significant growth rates of crimes based on very low overall numbers is just one way of using the correct indicators in a misleading way. Another example would be choosing only those indicators that support certain pre-established policy objectives, rather than taking the entire set of indicators in order to provide a ‘balanced’ view.

Providing knowledge on the interpretation of indicator results and potential pitfalls in that process is therefore an important strategy against possible misinterpretation, both intentional and unintentional.

### Goal displacement

Goal displacement is another problem associated with the use of indicators<sup>(105)</sup>. Goodhart’s law, named after the British economist Charles Goodhart, states that ‘when a measure becomes a target, it ceases to be a good measure’<sup>(106)</sup>. When a goal is represented by a specific measure, stakeholders will often start striving towards that measure and lose sight of the goal behind it. For example, if a country focuses on the ‘number of physicians per thousand people’ as an indicator of quality of health services, the target might be shifted towards increasing that number while neglecting the quality of the service provided by these physicians, the state of medical facilities and other essential elements of healthcare.

This challenge has already been explicitly addressed in the Macroeconomic Imbalance Procedure (MIP) Regulation<sup>(107)</sup> according to which ‘the indicators should not be understood as goals for economic policy in themselves but as tools to take account of the evolving nature of the macroeconomic imbalances within the Union. Further, it specifies that ‘conclusions shall not be drawn from a mechanical reading of the scoreboard indicators’<sup>(108)</sup>.

That shows once again that providing context is the most important method to avoid goal displacement. Target setting should always involve an analysis of the potential harmful incentives the target may cause and include a selection of appropriate indicators to measure whether negative impacts are occurring. Metadata can also help to avoid goal displacement if it clearly presents what an indicator can and cannot provide.

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<sup>(103)</sup> See <http://ecologicalfootprint.com/>

<sup>(104)</sup> The Genuine Progress Index (GPI) measures the economic growth of a country, like GDP, but includes both the positive and negative effects of economic growth in the calculation. An increase in GPI indicates an increase of economic welfare, while a decrease of the value is considered undesirable. Find more information on the GPI here: <http://measuring-progress.eu/genuine-progress-index-gpi>

<sup>(105)</sup> Perrin, 1998.

<sup>(106)</sup> Goodhart’s original formulation is: ‘As soon as the government attempts to regulate any particular set of financial assets, these become unreliable as indicators of economic trends.’ See Goodhart, 1975.

<sup>(107)</sup> [Regulation \(EU\) No 1176/2011](#) on the prevention and correction of macroeconomic imbalances.

<sup>(108)</sup> Chapter II, Art. 3, par. 2.

### **Irrelevance due to lack of maintenance or changing goalposts**

As shown above, the usefulness of an indicator increases if it is reported over longer time frames. Many indicators are created as a result of political initiatives, and statistical offices have to maintain them for years after they were launched. To keep the indicator relevant for users, data sets and sometimes the indicator itself, need to be constantly updated, maintained, evaluated, and regularly reviewed with involvement of stakeholders, concerned policymakers, academics, citizens, social partners etc. Both the updates and potential reviews compete for scarce resources in the statistical offices, so often priorities need to be set by determining which indicators are most likely to be relevant in the future and where resources should be spent. New indicators (sometimes established from new sources) become available over time, adding to the pressure to set priorities. Therefore, the scarcity of the resources available to statistical offices will also affect the availability of relevant indicators. Using existing data sources is therefore an effective way of compiling relevant new indicators.

Over time the relevance of indicators can change if the associated targets become obsolete, either because they are reached ahead of time or because they become unattainable. Targets are always based on some prediction of the future and over time they can change significantly, making the connected indicator more or less relevant.

# 5

## Recommendations

Indicators are used throughout the entire policy cycle for numerous reasons. In the context of policy making, the development of statistics needs to foster the creation of indicators that provide information to policymakers for important political decisions. Hence, indicators need to simultaneously provide correct information and be understood and interpreted correctly (as described in Chapter 4). This communication process which uses quantitative indicators has many challenges (see Chapter 4 and Part 2 of this series), but developers and providers of statistical information can help tackle these if they keep the communication process in mind. The section below outlines the most important aspects that can help meet these challenges.

### **International standardisation of indicators**

Standardising indicators across countries and over time is a prerequisite for tackling problems that can only be solved through international cooperation. Ensuring that robust comparisons between jurisdictions and over time can be made is important for both national and international policy making. Even if full standardisation cannot be achieved, it is important to provide the right metadata to help users understand to what extent data can be compared. This includes also identifying poor data quality. The Lisbon Memorandum <sup>(109)</sup> formulates a commitment to ‘further developing an indicator terminology and methodology, capturing both the statistical aspects and the guidelines for adequate dialogue with users’. Particularly important is the close cooperation with other partners such as the United Nations (UN) and the Organisation for Economic Co-operation and Development (OECD). Indicators that have been standardised using the common terminology developed at the global scale can be used in the context of international policies or endeavours conducted, for instance, by the UN. Indicators that cannot achieve this level of standardisation will always be restricted to use only at the national or even local levels. Standardisation is important not only for the creation and definition of indicators but also for the definitions and methods of the underlying statistics.

### **Compliance with the quality criteria of official statistics**

Only indicators that are trusted will be relevant for policy making, therefore gaining and keeping the trust of users by providing high quality statistical output based on stringent criteria and impartiality is crucial to making the produced indicators policy relevant. While official statisticians have always been meticulous in observing statistical quality criteria, a clear and sound set of quality criteria such as the ones specified in the European Statistical System Code of Practice or the Bellagio Principles provide guidance to ensure that indicators are policy relevant and can be interpreted correctly. Principles for indicator development help to improve the communicative value of indicators and applying those principles should be a common standard for indicator developers.

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<sup>(109)</sup> European Statistical System Committee (ESSC), 2015



### **Quality control of third-party statistics**

The limited resources of official statistics and the increasing availability of 'non-official' data (e.g. big data) suggest that official statistics will not be the only source of information. It is worth debating if and in which cases statistics can use their reputation of probity and independence to provide quality control for third-party data. Such a quality control role could result in development of more trusted data.

### **Presenting indicators in the right context**

Each high quality indicator provides some insight and has some limitations which are important to acknowledge for a correct interpretation. Understanding those limitations and presenting indicators in the right context by providing accessible metadata and complementary indicators helps reducing the misinterpretation and misuse of indicators.

### **Providing information on interpretation and on statistical quality**

All providers of statistics need to find a balance between preserving their neutrality and reputation and helping the users understand what an indicator means and what it does not mean. Providing not only information on statistical features but also on the potential pitfalls of interpretation (that are sometimes the effect of statistical features) will help increasing indicator literacy and limiting the misinterpretation.

### **Organised cooperation between statisticians, data scientists and policymakers**

Increased support for the interaction between these three groups is necessary for all the other aforementioned recommendations to work. This could be done through research networks, research projects or permanent committees of potential users. Regardless of the form it would take, it is important to organise this cooperation and ensure proper roles for each group in the process. Policymakers using indicators should also interact with statisticians and data scientists in order to explain what type of indicators they need for taking informed decisions. While statisticians work with data and generate indicator sets, data scientists interpret them. These two groups should work closely together to ensure the intended meaning is correctly portrayed by the indicators.



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# Towards a harmonised methodology for statistical indicators

## PART 3 — RELEVANCE OF INDICATORS FOR POLICY MAKING

Indicators more and more play a fundamental role in our modern societies and constitute an essential resource for policymakers, business leaders and the general public. They support evidence-based decision making, allow comparisons over time, between policies, countries and regions, social groups and industries, and contribute to increased transparency and accountability.

To fulfil this key role, indicators must be based on statistics that meet defined quality requirements. European statistics as produced and disseminated by Eurostat and the EU national statistical institutes meet the highest quality requirements. Being based on high quality statistics is a necessary but not a sufficient condition to make indicators policy relevant. Official statisticians, researchers and experts must be aware of the implications of the increasing role of statistical indicators in policy making. They have to engage with decision-makers to understand their needs and the expectations, but also to provide guidance for a correct interpretation and use of these indicators, and for their limitations.

This paper is the last in a series of three papers on statistical indicators published by Eurostat. The first paper on 'Indicator typologies and terminologies' was published in 2014. The second paper on 'Communicating through indicators' was released in February 2017.

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