

# Chapter 2: The role of NSOs in producing Leading, Composite and Sentiment indicators

---

## Contents

2.1 Introduction .....	1
2.2 Growing and changing user needs.....	2
2.2.1 Background .....	2
2.2.2 The statistical information infrastructure.....	2
2.3 pros and cons of LCS indicators .....	4
2.4 The role of Official statistics.....	5
2.5 Challenges and strategies .....	6
2.6 Strengths, weaknesses, opportunities and threats of NSOs producing LCS-indicators.....	8
2.7 Disseminating and Communicating LCS indicators .....	10
References .....	12

## 2.1 Introduction

There growing use and demand for Leading, Composite and Sentiment (LCS) indicators raises a number of challenges to NSOs in terms of their role in the production of such indicators, which involves both opportunities and risks.

Up to now most LCS indicators have been produced by other organisations than NSOs, including government organisations, research institutes or private bodies, or international organisations. However, many NSOs produce LCS indicators, or are considering whether to move into this area of statistical indicators.

Engaging in the production of LCS indicators is an opportunity to meet user needs, gain visibility and demonstrate the relevance of official statistics in meeting societies' need for statistics produced according to the principles of official statistics. On the other hand, LCS indicators may be considered to fall outside what NSOs should be producing. Measuring subjective or complex/multi-dimensional phenomena may not be seen as in line with the role of official statistics, and there is a risk that engaging in the production of such indicators could harm the trust of the NSO. However, if what matters is not measured, there is a risk that official statistics will lose visibility and may become marginalized.

TO respond to the demand for LCS indicators, NSOs therefore needs to consider the opportunities and risks of engaging in the production of LCS indicators in line with the requirements of impartiality and quality of official statistics.

Section 2.2 provides a brief background of the recent development of the demand for LCS indicators. Section 2.3 describes the main pros and cons of LCS indicators. Section 2.4 discusses briefly the role of official statistics in meeting user needs and providing impartial and relevant information to the society. Section 2.5 gives and overview of the main challenges faced by NSOs and describes different strategies applied by NSOs in relation to producing LCS indicators. Section 2.6 provides a general SWOT analysis by listing possible strengths, weaknesses, opportunities and threats of NSOs producing LCS-indicators. Finally, Section 2.7 looks into the disseminating and communicating of LCS indicators, which is seen a strategic factor for success.

## 2.2 Growing and changing user needs

### 2.2.1 Background

Over the last decades user needs have evolved quickly reflecting technological and economic developments. In a number of areas such as well-being, IT-investments, business cycle indicators, environment and sustainable development policy makers and societies have demanded more data and new types of statistics.

The Stiglitz –Sen-Fitoussi Commission<sup>1</sup> on the measurement of economic performance and social progress looked beyond the traditional GDP measure and suggested areas where more statistical information is needed. The report concluded, among other things, that many aspects of well-being remain difficult or impossible to measure in monetary units and greater importance should be attached to more quality-oriented indicators. Some of these non-monetary indicators remain objective but the report also recommends the use of subjective indicators.

Well-being or quality of life can be measured in many ways. The Stiglitz-Sen-Fitoussi Commission recommended three approaches for measuring well-being:

- 1) Satisfaction with life, i. e. a person's overall judgment of his life at a given moment
- 2) The presence of positive feelings or affects, i.e. the flows of positive emotions felt over a time period.
- 3) The absence of negative feelings or affects, i.e., negative emotions over a time period.

The Commission listed the following dimensions of well-being and quality of life that should be taken into account: material living conditions (income, consumption, and wealth), health, education, personal activities (including work), political voice, social connections and relationships, environmental conditions and physical and economic security.

The work of the Stiglitz -Sen—Fitoussi Commission was followed by an increased interest in measuring well-being, satisfaction with quality of life (including quality of employment), happiness and other 'subjective' areas of life and society that may fall outside what traditionally has been considered in scope of many statistical offices. This, in turn, increased the demand for composite socio-economic indicators covering different dimensions and measures of subjective well-being and triggered comprehensive research of new and more appropriate socio-economic indicators.

The financial crisis in 2008-2009 revealed a lack in economic statistics regarding data that describes such developments in a better way, taking the growing complexity in the financial markets and the intertwined relations between real and financial economics into account. As a result of the financial crisis a considerable amount of research have been devoted to developing business cycle indicators and indicators intended to forecast economic turning points.

Obvious, societies will continue to change as will the demands from users of official statistics.

Evidence-based decision making will increase the demand for coherent and relevant statistics at national level. At the same time, continuing globalisation will increase the importance of the data being international comparable in order to perform comparisons between countries and regions.

### 2.2.2 The statistical information infrastructure

It is useful to look at LCS indicators in the context of the statistical information infrastructure<sup>2</sup> as illustrated in Figure 1.

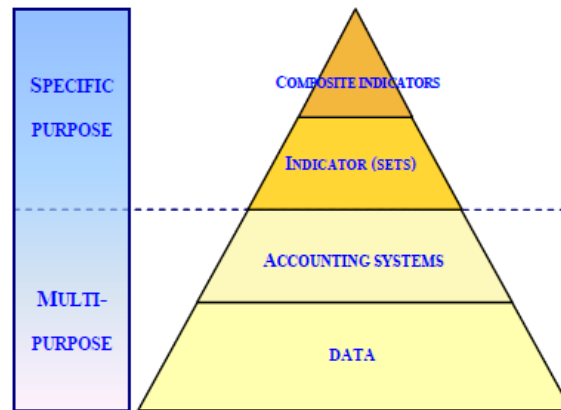
**Figure 1: The statistical information infrastructure**

---

<sup>1</sup> INSEE (2011)

<sup>2</sup> Rademacher Eurostat (2010)

# Statistical information infrastructure



Source: Eurostat 2010: *Measuring progress of societies*.

The base of the pyramid consists of statistical data, e.g. surveys and register data. This primary information is input for the accounting systems in the next stage. The bottom layers are multipurpose statistics that can have many different usages. So far, consistency have not been a demand between these variables , but in the future the statistical base has to be consistent to secure quality of the accounting systems and the indicator set at the top of the pyramid that are calculated using this information.

The top layers consist of indicators for specific purposes. This can be dashboards of indicators such as the EU MIP (Macroeconomic Imbalance Scorecard) or the IMFs SDDS (Special Data Dissemination Standard) that present the statistical indicators in a special framework.

It can also be composite indicators constructed for special purposes such as a sentiment indicator such as Consumer Confidence, or a Composite Leading Indicator. These indicators are widely used but are not yet part of the official statistics, even though they are often based on data from the official statistics.

The need for more coherent statistics has increased over the previous decade, and in 2013 UN presented the Guidelines on Integrated Economic Statistics<sup>3</sup>. Within the EU area similar approaches has developed both for economic statistics (FRIBS<sup>4</sup>) and social statistics (IESS<sup>5</sup>) that aims to integrate surveys within both the economic and social statistical areas. The main benefits from integrated statistics can be summarized as facilitating production of more coherent and better quality statistics and increased efficiency in the statistical production process. Hence, the production of LCS indicators by NSOs on basis of a coherent or integrated statistical information infrastructure will facilitate production of better and more coherent LCS indicators, for instance in terms of coverage and comparability with established statistical series, calculation methods, classification and dissemination and documentation.

<sup>3</sup> UN (2013)

<sup>4</sup> <http://ec.europa.eu/eurostat/documents/10186/6937805/FRIBS-roadmap-update.pdf/e380d686-1999-4f5c-b5cd-689f81f18d62>

<sup>5</sup> <http://ec.europa.eu/eurostat/about/opportunities/consultations/iess>

## 2.3 Pros and cons of LCS indicators

Leading, composite and sentiment (LCS) indicators cover a broad group of statistical measures, which in different ways aims to provide information about the society and its individuals. The main pros and cons of the different types of indicators are summarised below

### Composite indicators

Pros	Cons
<ul style="list-style-type: none"> <li>• Can summarize complex, multi-dimensional realities</li> <li>• Are easier to interpret than a battery of many separate indicators</li> <li>• Can assess progress of countries over time</li> <li>• Reduce the visible size of a set of indicators without dropping the underlying information base</li> <li>• Thus make it possible to include more information within the existing size limit</li> <li>• Place issues of country performance and progress at the centre of the policy arena</li> <li>• Facilitate communication with general public and promote accountability</li> <li>• Help to construct/underpin narratives for lay and literate audiences</li> <li>• Enable users to compare complex dimensions effectively</li> </ul>	<ul style="list-style-type: none"> <li>• May send misleading information</li> <li>• Invite to simplistic conclusions</li> <li>• Subjective misuse of the indicator to support a desired policy</li> <li>• Use of weighting that could be subject of political disputes</li> <li>• May disguise serious failings in some dimensions and increase the difficulty of identifying proper remedial action, if the construction process is not transparent</li> </ul>

Source: Handbook on constructing composite indicators, OECD 2008

### Leading indicators

Pros	Cons
<ul style="list-style-type: none"> <li>• Can be used to give early warnings of changes in the business cycle</li> <li>• Can be used for forecasting possible turning points</li> </ul>	<ul style="list-style-type: none"> <li>• May prove to provide poor predictions/forecasts</li> <li>• Underlying methodology may be questioned</li> </ul>

### Sentiment indicators

Pros	Cons
<ul style="list-style-type: none"> <li>• Can provide information of sentiment/subjective issues not elsewhere available</li> </ul>	<ul style="list-style-type: none"> <li>• May be open to criticism of being subjective.</li> </ul>

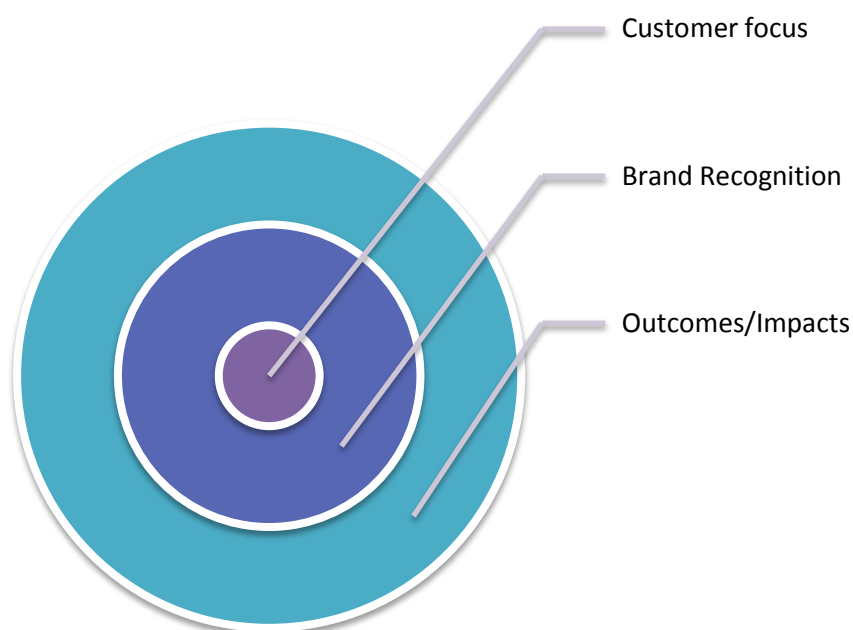
## 2.4 The role of Official statistics

Producing official statistics to meet societies' needs for relevant and reliable statistical information is a key purpose of national statistical offices (NSOs). As societies are changing, NSOs have to develop and refine statistics to meet the changing user needs. Indeed, it can be argued that NSOs need to continuously develop their statistics to reflect the changes in societies and stay relevant.

According to the Fundamental Principles of Official Statistics, official statistics should provide relevant and impartial statistics to be made available with equal access to the citizens. To retain trust in official statistics, the NSOs need to decide according to strictly professional considerations on the methods and procedures for the collection, processing, storage and presentation of statistical information.

Figure 2 illustrates three key dimensions of the value of official statistics. *Customer focus* is in the centre, underlining the responsibility of NSOs to meet society's need for relevant and impartial information. *Brand recognition* means that statistics produced by NSOs (or others) according to the principles of official statistics is being recognized as impartial and reliable and of high quality. The *outcomes/impacts* dimension refers to the use of official statistics. The value added of official statistics increases with an increasing use of the data. Hence, user needs should be in focus of the NSOs planning and production of statistics.

**Figure 2: The Dimensions of the Value of Official statistics**



*Source: The UNECE guideline on the value of official statistics*

However, the principles of official statistics does not spell out in detail what to be considered as official statistics, or how official statistics in detail should be published, i.e. what types of graphical layout, tables or indicators should be used to present data to users.

Also, the border of official statistics is not static. As societies change, NSOs need to review and eventually change the way in which statistics is produced and develop new statistics to remain relevant, while adhering to the principles of official statistics. Recent examples includes, e.g. the frameworks to compile sustainable development indicators and for measuring quality of

employment, in which areas only recently NSOs have engaged in the production of statistics<sup>6</sup>. The development of the System of Environmental-Economic Accounting is another example of a framework that allows NSOs to engage in production of statistics which earlier were not undertaken by NSOs.

Producing LCS indicators adhering to the principles of official statistics would help ensuring the quality of the indicators. However, it is up to the NSO to decide whether to engage in the production of LCS indicators.

## 2.5 Challenges and strategies

Many NSOs are already involved in producing LCS indicators or are considering whether to produce such indicators to meet user needs. Several NSOs have good experience in producing LCS indicators and have found that the statistical expertise and impartiality of the NSO puts them in a good position for compiling and disseminating such indicators. Compiling and disseminating LCS is seen as an opportunity for NSOs to demonstrate the relevance and value of official statistics and an opportunity to reach out to new user groups and gain visibility.

Other countries do not see LCS indicators as a priority area, or they find that LCS indicators are out of scope of what the NSO should produce. The methods involved in their production not considered in line with the principles of official statistics since they may involve value judgements or subjectivity in the selection of data sources and methods, and the quality of the indicators may not meet the quality standards for official statistics. There is also a concern that producing LCS could harm the general trust and reputation of the NSO and compromise its role as the provider of impartial statistical information based strictly on professional considerations. Being a new area for many NSOs, the dissemination of LCS may also constitute a risk, including on how to react on misuse or misunderstandings or explain unexpected developments of the indicators.

### **Challenges of producing LCS indicators**

#### ***Leading indicators***

Many NSOs restrict their statistics to cover only historical periods for which data can be obtained, and are not involved in producing forecasts or estimates of what might happen in the future. There may be a division of labour according to which NSO produces historical data, while it is left to the users of the statistics to produce forecasts or estimates of future developments.

#### ***Composite indicators***

Compiling composite indicators involves selection of individual component series and weighting these together to one composite measure. Assigning weights to the component series may be seen as difficult or beyond the role of official statistics. Composite indicators require a solid theoretical framework for deciding on weights and aspects to be measured, which must be established

#### ***Sentiment indicators***

Sentiment – or subjective – indicators are sometimes viewed as dubious and of inferior quality compared to traditional quantitative based statistics. Hence, producing sentiment indicators may be seen as outside the scope of what the NSO should be engaged in, and e.g. not in line with producing “objective” statistics.

The growing demand for LCS indicators possesses strategic challenge to NSOs in terms of both opportunities and risks. On the one hand, engaging in the production of LCS indicators is an opportunity to produce such indicators according to the principles of official statistics, meeting user demand, reaching out to new user group and demonstrate the relevance of official statistics.

---

<sup>6</sup> Measuring Sustainable Development (UNECE 2014), Handbook on Measuring Quality of Employment (UNECE 2015).

Producing LCS indicators may also be a first step in developing standardized indicators aimed to measure such phenomena as the Sustainable Development Goals (SDG) or Beyond GDP/Quality-of-life concepts, as they can be adapted for specific purposes.

On the other hand, broadening the scope of official statistics to areas that have traditionally been considered outside the competence of NSOs can be a risk. Measuring subjective or complex/multi-dimensional phenomena may be controversial and can be seen as non-compatible with objectivity and impartiality, and could reduce trust in official statistics. However, if what matters is not measured, there is a risk that official statistics will lose visibility and may become marginalized. In addition, not engaging in the production of LCS indicators do not imply that these are not produced by others, but they may be produced in a less standardized way and not adhering to the principles of official statistics, and hence may be of poorer quality.

The main challenges that come with the demand for LCS indicators may be summarized as follows:

- a) Should the NSO engage in the production of LCS indicators, or leave this to others? And what are the opportunities and the risks of engaging or not engaging?
- b) If the NSO decides to engage in production of LCS indicators, how should the compilation and the dissemination be organized within the quality framework of official statistics?
- c) What role could the NSO play in relation to other organisations producing LCS indicators, e.g. in terms of providing data input and methodological expertise?
- d) How to continue work towards developing and harmonising the production of LCS-indicators as part of official statistics?

Based on practices in different countries three main strategies can be identified:

#### ***The proactive strategy***

NSOs with a proactive strategy are already producing LCSs, and are not waiting for international guidelines or recommendations. Focus in this strategy is to meet user needs and being visible in the realm of data being published by other institutions than the NSO. The strategy presume availability of methodological expertise (or this need to be developed) and involves some degree of learning-by-doing. It is also necessary to develop dissemination and communication practices. Advantages includes gaining early experiences and reaching out to new user groups. On the disadvantage side, published data and underlying methods may be questioned and there is a risk that the impartiality and the general trust of the NSO may be harmed. This strategy is relatively resource demanding.

#### ***The pending strategy***

NSOs with a pending strategy consider producing LCS indicators but are in doubt and wait for more international guidelines or recommendations. This group also includes NSOs that produce one or two simple sentiment indicator or a composite index, but would like to do more. The strategy requires less in-house methodological resources than the proactive strategy. It benefits from using methods developed by others and is less resource demanding. The risks of making mistakes, for being criticised or harming the general trust to the NSO should also be reduced, compared to the situation with the proactive strategy.

#### ***The non-producing or non-involving strategy***

A number of NSOs find that compiling and disseminating LCS would fall outside of what they should do and do not see this as a priority of official statistics. It may also be that the NSO does not feel to have the necessary expertise or, more generally, the resources to allocate to this area. It may also be the case that LCS indicators are produced by other organisations, so there may not be a significant demand for the NSO to move into the area. While a safe strategy, abstaining from producing any LCS indicators may lead to loss of visibility and criticism reaching out to new user groups. However, not producing LCS indicators as part of the output of the NSO may still allow the NSO to become involved, for example as provider of input data or methodological expertise to other producers of LCSs.

The strategies are not static. An NSO can have different strategies for different types of LCS indicators, and the strategy for a particular type of indicator may change over time.

## 2.6 Strengths, weaknesses, opportunities and threats of NSOs producing LCS-indicators

This section looks into possible strengths, weaknesses, opportunities and threats for NSOs engaging in producing LCS indicators. Strengths and weaknesses are considered to catch factors that are *internal* to the organisation, while opportunities and threats generally relate to *external* factors.

### Strengths

Strengths would include advantages of NSOs compared to other organisations in the production of LCS indicators. What puts the NSO in a better position than other organisations in terms of knowledge, IT, economic, legal or other factors. It also includes what the public would consider a strength of the organisation. Strengths would include:

The brand of official statistics and the general trusts in NSOs as provider of impartial and high quality statistics provides an advantage of NSOs compared to organisations outside the national statistical system.

- a) The fundamental principles of official statistics and cooperation among NSOs provide a global network of recommendations and statistical competences that NSOs can draw on by cooperating and exchanging experiences and good practices.
- b) NSOs possess substantial statistical and methodological expertise and have wide knowledge of and access to data sources, which puts them at an advantage over other organisations. Producing LCS indicators in NSOs offers possibilities to align these with existing official statistics and improve coherence.
- c) Producing leading indicators could boost the image of the statistical office as a provider of more timely data.
- d) Because of good access to a large variety of data and the statistical production infrastructure in place, NSOs may be able to produce LCS more efficient and at lower costs than other organisations.
- e) Experiences in communicating statistical information and existing tools and platforms can be used for disseminating LCS and relevant documentation. NSOs also have the possibility to publish an LCS indicator as “experimental statistics” for a period to gain experience.
- f) NSOs could also help with their expertise in assessing the quality and reliability of LCS indicators produced by other organisations and research institutes.
- g) Using international recommendations on methods, including these provided by OECD, Eurostat and UNSD, and international classifications, can help improving the quality and international comparability of LCSs.

### Weaknesses

Weaknesses are considered to cover internal factors that may prevent the organisation from engaging in the production of LCS indicators, or make this difficult. Weaknesses may also be limitations, such as e.g. the need for NSOs to compile statistics according to the principles of official statistics, which on the other hand also presents a strength of NSOs. Weaknesses could include factors such as:

- a) LCSs indicators in general are not seen as a priority of many NSOs, or are not found to be in scope of what the NSO should be producing. It may be seen as falling outside the scope of official statistics, and resources rather allocated to other areas. It may also be the case that the production of LCS is not supported by the statistical law or other legislations.



- b) Because of lack of international guidelines or established and recognized good practices to lean on, NSOs may withdraw from producing LCS indicators.
- c) LCS indicators are produced for specific needs and not standardized as such, and require specialised competences. Cooperation with researchers/academia may be required as well as communication with potential users, e.g. policy makers.
- d) LCS indicators may not live up to the existing quality standards of the NSO, and the NSO may not have sufficient expertise to disseminate the indicators and react on misuse or misunderstandings or explain unexpected developments of the indicators.
- e) Producing LCS according to principles of official statistics involve assessing regularly the methods used and the quality of the statistical production process and the indicators. To this end, a suitable quality assuring programme should be implemented.
- f) Producing LCS indicators will involve development costs (including on education/training of staff and new software) as well as increased regular production costs, which may restrict NSOs from engaging.

### Opportunities

Opportunities may come from changes in demand and in technologies, or changes in government policy related to official statistics. When assessing opportunities it is useful to look at the organisation's strengths and ask whether these open up any opportunities. Alternatively, one may look at the weaknesses and ask whether eliminating these would open opportunities.

Opportunities would include factors such as the following:

- a) The role of the NSOs as coordinator of national official statistics gives the organisation a unique role to compile and disseminate LCS indicators and demonstrate the relevance and value of official statistics that they produce.
- b) Producing LCS indicators is an opportunity to meet changing user demands and reach out to new user groups and gain visibility, while ensuring that data are produced according to the principles of official statistics.
- c) It is difficult for users to assess the quality of existing or new LCS indicators that emerge and which not produced according to the principles of official statistics. Producing LCS indicators with the stamp of official statistics may increase trust in the indicators and facilitate broader usage of these as tools for policy making and business decisions.
- d) With growing demand of LCSs indicators engaging in the production of these types of indicators is likely to offer future opportunities for NSOs to demonstrate their relevance.
- e) Engaging in production of LCS indicators may led to better/more use of official statistics already produced, as input into LCS indicators.
- f) New IT-tools and new data sources make the production of LCS indicators easier and less risky than before. The technical development and growing data transformation capacity also offer new possibilities to produce more complex data with a more detailed structure.
- g) LCS indicators open for engaging in partnerships with other producers of LCS indicators.

**Strategic partnerships.** Most official statistics in Sweden is produced by Statistics Sweden. Official statistics not produced by Statistics Sweden is produced by other agencies adhering to the principles of official statistics, whit whom Statistics Sweden cooperates. One example is the **Business Cycle Barometer for Sweden**, which is a composite sentiment indicator produced by the National Research Institute. The indicator is part of official statistics, and Statistics Sweden provides statistical and methodological support and advice to the National Research Institute on the production of the indicators, including on the weighting of component series etc.

*Source: The Swedish national research institute*

## Threats

Threats include external factors which one way or the other may provide risks or obstacles to the NSO. This could include activities of competitors or budget restrictions, or technological development, for instance. Threats for NSOs may include:

- a) Compiling and disseminating measures of subjective well-being or multi-dimensional phenomena may be seen as non-compatible with the objectivity and impartiality of official statistics and could lead to criticism of the NSO and reduce trust in official statistics.
- b) The risks for misinterpretation or misuse may be higher for LCS indicators than for other, well-established statistical series.
- c) Influence from outside the NSO on the compilation or the dissemination of LCS indicators would be a serious threat to the quality of the indicators and could harm the general trust of the NSO as the provider of impartial statistics.
- d) Poor performance of LCS indicators may lead to criticism and questioning methods applied (for instance, country rankings based on composite indicators create a lot of media attention while they are highly sensitive to changes in the compilation methodology, which may be difficult to explain).
- e) Lack of resources, including budget constraints, on which the NSO have little or no influence, may keep the NSOs away from engaging in producing LCS indicators.

The above only cover what could be considered to be of general concerns to all or most NSOs. NSOs may conduct their own SWOT, or similar analysis, taking more detailed and country specific factors into account.

## 2.7 Disseminating and Communicating LCS indicators

A crosscutting issue regarding the opportunities and threats for NSO involvement in producing LCS indicators is communication. Communication should ensure that the indicators are made available to users according to the principles of official statistics, including ensuring the indicator's credibility, accessibility and interpretability.

Communication of LCS indicators is not a trivial issue. Each leading, sentiment and composite indicator must be able to "tell a story" adapted to different user groups such as policy makers, media or the general public. It must also be written in a journalistic style with great attention to structure and language.

In communicating LCS indicators a focus on user needs is even more important. In the case of each indicator, the NSO needs to consider target user groups and decide in which way to disseminate the indicator. What user groups are the indicators aiming at? Are the explanations detailed enough? Is there a need for "story-telling"? It's important that the indicators are presented in a form that meet the needs of the users, allow them to make correct use of the statistics and prevent misunderstanding or misuse. One option is to present the indicators in different ways i.e. both by graphs or tables and with suitable explanatory text. Dialogues with users may help to find a suitable form. Staff should be available to reply to questions.

When an indicator is developed the NSO has the possibility to publish the indicator as "experimental statistics" – i.e. not with the stamp of being part of official statistics published by the NSO, but where reservations can be made for the quality of the indicator. This can be used to gain experience and eventually, when the indicator is found to live up to required quality standards, it can be published without reservations.

Transparency is essential and users should be provided with the necessary explanations and documentation of data sources and methods to allow users making correct use of the statistics and avoid misinterpretation. Users of LCS indicators may wish to analyse underlying data series. When

possible, it is therefore recommended to refer to underlying series or show these in relation to the indicator sets.

Web-based application or platforms can be important ways of communicating LCS indicators. Many users and analysts are active within the social Medias, such as twitter, Facebook or Instagram, which may be sued for the dissemination, in addition to making the information available from the NSO's website. If possible, the indicators may be produced in formats that allow communication through different platforms or applications and reaching out to different user groups.

There are many ways in communicating statistical indicators and it is important that graphic presentation or visual models of the indicators provides correct signals. While not specifically targeted at LCS indicators, the UNECE guidelines on *Making data meaningful*<sup>7</sup> may be useful when considering different ways of representing and disseminating the indicators

---

<sup>7</sup> The guidelines are available from the UNECE website <http://www.unece.org/stats/documents/writing/html>

## References:

OECD/JRC European Commission: Handbook on Constructing Composite indicators, Methodology and User Guide (2008) Paris

UN Handbook of Cyclical composite indicators, draft (2016) New York

Eurostat manuals and guidelines; towards a harmonized methodology for statistical indicators, Part 1: Indicator typologies and terminologies (2014)

Eurostat manuals and guidelines; Towards a harmonized methodology for statistical indicators, Part 2 – Communicating through indicators (2017)

European Joint Research Centre; Tools for composite Indicator building (2005)

UN. Handbook of Cyclical Composite Indicators, draft (2016), New York

Eurostat : Measuring progress in society: Contributions of European Statistics,  
PPT Walter Rademacher (2010)

Eurostat: DGINS conference 24 sept 2015: Composite indicators, synthetic indicators and scoreboards: How far can we go?

[INSEE: Recommendation of the Stiglitz-Sen-Fitoussi Report; A few illustrations, G 2011/07](#)[Url: Clerc M, Gaini, M, Blanchet D: INSEE: G2011/07 Recommendations of the Stiglitz-Sen-Fitoussi report](#)

[UNECE/CES: Recommendations on the value of official statistics, \(2016\) Geneva](#)

[United Nations: Guidelines on Integrated Economic Statistics, New York \(2013\)](#)

Palm, Viveka; how statistics became indicators and who is using them for what purpose; with examples on past and current experiences, (2015) Nordic meeting PM Stockholm

Nelson Edberg, Monica: Changing user needs raise demand for useful indicators, paper at Q2016, Madrid

Lehtonen Markku, Using indicators in a decision making process – challenges and opportunities PPT EASAC workshop The Hague 10 may 2016

Rademacher, Baigorri, Delcambre, Kloeck, Linden; Terminology relating to the implementation of the vision on the production method of EU statistics (2009)

De Smedt, Marleen; Indicators for decision making and policy monitoring (2016)