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## **Thermostat or thermometer? A Finnish perspective on the overloaded role of sustainability indicators in societal transition**

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### Abstract

Various expectations are placed on national-level sustainability indicators. Ideally, they should serve as efficient tools for transformations, leading societies to sustainable paths by creating a comprehensive, reliable, timely, and easy-to-understand picture of the key ecological, socio-cultural, and economic trends. Most, if not all, indicator initiatives so far have been unable to meet such grandiose expectations. This has evoked criticism of and scepticism towards the indicator approach, but has also motivated improvement of indicator sets and knowledge brokerage processes. This article discusses the role of sustainability indicators in societal transition by examining the experiences gained from the preparation and launch of a sustainable development indicator set specifically aimed at supporting national-level policymaking in Finland. It is concluded that better recognition of the tensions between attempts to improve the quality of indicators and attempts to enhance their use in policy is key to meeting the expectations placed upon sustainability indicators.

### Keywords

Agenda 2030, indicators, participation, policy influence, sustainability assessment, Sustainable Development Goals

Sustainable development indicators (SDIs) and jokes share some characteristics. Humour researcher Arvo Krikmann (2009) has claimed that the role of Soviet jokes told in Estonia during the rule of the Soviet Union should be understood through the analogy of a thermometer rather than a thermostat. Even though Soviet jokes were based on humour heavily criticising the social structures of the oppressive regime, they did not effectively feed back into the societal processes guiding society towards new trajectories (Davies, 2007; Krikmann, 2009). Jokes served as social thermometers, not as systemic thermostats. In a similar vein, sustainability indicators can be seen as thermometers delivering potentially important messages about ecological, social, and economic issues, rather than thermostats helping to manage transformation towards sustainable development.

Such a thermometric function falls far behind the expectations often presented by indicator developers (e.g., Hák, Moldan, & Dahl, 2007; Hardi & Zdan, 1997; Lyytimäki et al., 2018). SDIs have been repeatedly requested and justified by their alleged policy impact— often assuming substantial impacts through direct use of indicators in decision-making. It has been argued that indicators are needed, in particular by policymakers, to focus attention on relevant issues, to support decisions by providing relevant information in easily digestible form, and to enable the evaluation of the outcomes of past decisions (Eurostat, 2017). These assumptions can be partly justified based on the high public salience and policy influence of certain indicators (Morse, 2018). Socio-economic indicators such as gross domestic product (GDP), inflation rate, national debt, or employment rate are examples of highly visible indicators routinely maintained by national accounting systems and used by economic and policy elites.

The debate over indicators going “beyond GDP” has highlighted the need to develop and implement new indicators complementing the dominant economic ones and covering relevant sustainability concerns in a more holistic way. Several candidates for alternative indicators have been developed (Barrington-Leigh & Escande, 2018; Singh, Murty, Gupta, & Dikshit, 2009). Prominent alternatives include ecological footprint and total material requirement, which focus on the environment and natural resources, and the human development index, happiness index, and genuine progress index, which focus on socio-economic aspects. In addition to single indicators and indices, various indicator collections have been developed. Perhaps the most notable recent efforts have focused on indicator sets under the framework of the United Nations' (UN's) Agenda 2030. The expert group working under the auspices of UN has prepared an indicator set aimed at providing a basis for international comparisons (UN, 2018), whereas others have proposed alternative international sets (e.g., Sachs, Schmidt-Traub, Kroll, Lafortune, & Fuller, 2018). International organisations (Eurostat, 2018; OECD, 2017; World Bank, 2018) have modified their indicator sets to better address the Agenda 2030 framework, and national governments have started to prepare sets tailored to address country-specific concerns.

This article discusses the development, use, and potential influence of national-level SDIs from the perspective of a sustainability transition (Chang et al., 2017; Parris & Kates, 2003). A core assumption is that a long-term and multilevel transformation process is needed in order to reach the ambitious targets outlined in Agenda 2030. Another core assumption is that indicators based on reliable statistics and science-based information can support the transition process, but such indicators often suffer from underuse or even misuse (Lehtonen, Sébastien, & Bauler, 2016; Lyytimäki, Tapio, Varho, & Söderman, 2013; Rosenström, 2009).

There are many types of SDIs aimed at different target groups, variable uses, and a myriad of potential societal influences. The types of SDIs range from local to global and from sector-based to all-encompassing ones. SDI can be a highly aggregated index or a detailed time series pinpointing certain trend (Bell & Morse, 2018; Ramos & Caeiro, 2010; Singh et al., 2009; Steurer & Hametner, 2013). Here, the focus is on the Finnish national-level indicator set aimed to provide a wide

overview. The broad categorisation of instrumental, conceptual, political, and tactical uses of SDIs is taken as a starting point (Frederiksen & Gudmundsson, 2013; Gudmundsson, 2003; Hezri & Dovers, 2006; Morse, 2015). Instrumental use is about direct employment of SDIs in decision-making. Conceptual use occurs when SDIs catalyse learning and generate understanding. Political use aims at supporting a predetermined position with selected indicators. Tactical use includes different ways of substituting action or deflecting criticism, often with symbolic or ritualistic type of use of SDIs.

The likelihood of indicators becoming societally influential “boundary objects” generally increases if they are prepared and presented through a knowledge brokerage process specifically tailored to support their use (Holden, 2013; Martinuzzi & Sedlacko, 2016; Saarela, Söderman, & Lyytimäki, 2015). Much effort has been paid on the development of technical quality of SDIs (Hák et al., 2007; Lyytimäki et al., 2018). However, as cautioned by Turnhout, Hisschemoller, and Eijsackers (2007) it is unlikely that producing more accurate and reliable indicators will alone lead to enhanced policy uptake. The specific context of decision-making is not automatically favourable for the use of indicator-based information, and the content of indicators focusing on wide-spanning and long-term sustainability issues may be ill-suited for immediate short-term policy concerns.

This article uses a case study approach focusing on national-level SDIs to explore the preconditions of the societal influence. Methodologically, this study is a variant of insider action research, whereby the researcher collects data from their own organisation through opportunistic and planned interventions in real-time situations and generates knowledge in order to make new interventions influencing the processes studied (Coghlan, 2007; Coghlan & Brannick, 2014). Experiences from developing a new set of national-level sustainability indicators for Finland and setting up a process for their use in policymaking are used as a material. The data consists of (a) the minutes and observations from the meetings and correspondence of the interagency expert network responsible for the planning of the indicator set, (b) results from a workshop aimed at critically discussing the suggested indicators, (c) notes describing the discussions of the specific subgroup focusing on the development of environmental indicators, (d) experiences from the data collection and indicator preparation work, (e) public comments received on the published indicators during the period November 2017–September 2018, and (f) experiences from the high-level national stocktaking event aimed at employing indicators to evaluate government actions.

The article is organised as follows. First, the Finnish context is briefly introduced. Second, results describing the indicator development process and the new indicator set are presented. Third, the process supporting the use of indicators is opened up. Fourth, key obstacles and opportunities for a more impactful and user-sensitive sustainability indicator process are discussed. Finally, conclusions are drawn, focusing on the wider implications for effective use of indicators to induce social transformations aiming at sustainability.

## **2 A BRIEF HISTORY OF SDIs IN FINLAND**

Finland is one of the pioneer countries in terms of SDIs (Niestroy, Schmidt, & Esche, 2013; Rosenström, 2018). Inspired by the work of the Brundtland Commission (WCED, 1987), an extensive report identifying 250 national-level recommendations was published in 1989 (YKST, 1989). The Finnish National Commission on Sustainable Development (FNCSO) was established in 1993. It continues to serve as a high-profile multi-stakeholder policy forum supporting indicator work. The permanent General Secretariat on Sustainable Development, which first operated under the Ministry of Environment and from 2016 onwards under the Prime Minister's Office, has provided long-term support for and coordination of indicator work. Due to the limited resources of the secretariat, much of the development work of indicators has been conducted as separate research and development projects facilitated by temporary funding.

The policy mandate for sustainable development work has been largely outlined by national sustainability strategies. The first national sustainable development strategy was officially approved in 1998 (MoE, 1998) and the second national strategy in 2006 (PMO, 2006). The current national strategy is a charter approved by the FNCSD in 2013 and updated in 2016 (FNCSD, 2016). The aim of the update was to ensure compatibility between the Finnish national approach and the global Agenda 2030, which was approved by the UN in 2015. Whereas the two first national strategies were extensive documents formulating several detailed goals, the current charter is a concise six-page statement of vision, principles, and eight general-level goals. As the title of the charter emphasises, the timeframe for action extends far beyond customary policy cycles: “The Finland we want by 2050—Society's commitment to sustainable development.”

Preparation of the first national set of SDIs started in the late 1990s based on testing of 134 indicators proposed by the UN. The testing showed a need for indicators adapted to the national context (Rosenström & Muurman, 1997). The national set, including 83 indicators grouped under 20 themes, was published in 2000 (Rosenström & Palosaari, 2000), and the online version of the set was updated and modified over the following years (Lyytimäki & Rosenström, 2008). A more focused approach based on 34 key indicators was adopted in order to address the key concerns of the 2006 strategy. A major update took place in 2009 when a new online platform called the Findicator was introduced. It presented 100 selected indicators for societal progress in a timely and user-friendly manner (Rosenström, 2018). In 2013, the SDIs were reorganised under the eight themes representing the main goals, as defined by the national strategy of 2013 (FNCSD, 2016). This separate list of SDIs, consisting of 39 indicators, was included in the Findicator portal. Fifteen of the SDIs were identical to the societal progress indicators. However, the SDI set suffered from a lack of regular updating and relatively low visibility as a side-stream of the Findicator portal.

### **3 SDI BASKETS**

#### **3.1 Preparation of new SDIs**

The revision process of the Finnish national SDIs was launched in 2016 under the auspices of Prime Minister's Office and FNCSD. The mandate for the update came from the Finnish Government (PMO, 2017), with the main aim of preparing a revised set of national SDIs and outlining a process supporting their production and policy use. One person from the General Secretariat on Sustainable Development coordinated the revision on a part-time basis. A supporting interagency expert network consisting of representatives of 31 organisations, including ministries, government research institutes, and interest groups was nominated for the term of October 6, 2016–May 30, 2017. No specific funding was available for their work. This approach, involving a wide variety of experts working on a voluntary basis, continued the participatory and consensus-driven tradition of Finnish indicator work (Rosenström, 2009; Rouhinen, 2014). However, representatives of the public were not involved as it was felt that outlining the indicators required detailed knowledge of data availability and science-based expertise on the key factors influencing the trends described by the indicators. Furthermore, the resources needed for a broad-based participatory approach were not available.

Previous lessons from indicator development and recent experiences from the Findicator portal provided some insights for the updating process. A key concern was the limited policy use of the SDIs. Probable reasons for the limited use were identified, including the inability of indicators to effectively describe changes in trends with high policy relevance, a lack of timely updates, and missing qualitative interpretations succinctly connecting indicators with topical policy debates. The indicator process lacked a clearly defined context for usage and a well-defined target groups for communications. Possible solutions initially identified focused on building a new set of updated indicators meeting specific quality criteria and developing a process aimed at enhancing the policy use of indicators. Several challenges were identified. A key challenge was to use indicators to create

a better connection between long-term goals and present-day policymaking. Inclusion of a long-term perspective was seen as particularly essential, given the national target year was 2050.

The existing SDIs and the eight main targets defined by the national sustainable development strategy served as starting points for the identification of a new indicator set. National priorities dominated the selection of indicators; the 17 international goals and preliminary indicators defined under Agenda 2030 had only a minor influence on the indicator selection process, despite the fact that the expert network's official title was "the expert network preparing the follow-up of the national implementation of Agenda 2030." The importance of international comparability was acknowledged, but national-level data availability and policy relevance were considered more important selection criteria. Data availability from existing datasets and institutionalised data providers was emphasised as a key criterion, as no additional resources were foreseen for data collection and compilation of new indicators.

Other key selection criteria included the long temporal coverage (preferably from 1990 onwards) and timeliness of data production. Furthermore, indicators capable of describing issues related to more than one sustainable development target were favoured in order to improve the ability of the indicator set to describe the interactions between different targets. Initially, it was outlined that indicators based only on qualitative information could be used, but in practice, the selection process focused on indicators with quantitative data series.

In practice, meeting these criteria was difficult. Only 13 of the published indicators included data starting from 1990 or earlier. The average time lag between the year of publication and latest year of data included in the indicators was 1.7 years. Only one indicator included data from the present year. This indicator was not a time series but a map describing Finnish participation in international crisis management. However, the timeliness of indicators has improved compared with earlier Finnish SDI sets, which had average time lags ranging from 2.4 to 1.8 years (Lyytimäki, 2012). The baskets presented indicators with an average time series of 18.8 years, spanning usually from about 2000 to 2016.

Despite the explicit focus on readily available data sources, various information needs and potential alternative indicators were intensively discussed. For example, there was strong demand for an indicator describing environmentally harmful public subsidies but due to a lack of reliable and timely data, as well as disagreements about the interpretation, it was not included. Other environment-related indicators identified as relevant but omitted from the final set included environmental noise, chemical risks, food waste, and sustainable public procurement. The main reason for omission was the inadequacy of data, despite the fact that Finland has one of the most extensive databases in the world describing the state of the environment (Niemi, 2012).

Besides the lack of data, another key reason for the screening out of indicators was the need to keep the indicator set manageable, in terms of both production and use. The initial aim was to select a limited set of key indicators capable of delivering a coherent and concise overall picture of sustainable development in Finland. A suitable maximum number of key indicators was assumed to be about 20, in order to allow for efficient data gathering and timely indicator production with the available resources. However, the discussions in the expert network showed that reaching a consensus on such a limited number of indicators would be extremely difficult because of the different interests of experts. Therefore, an alternative approach involving a limited number of indicator baskets was adopted. Each basket focuses on a topic considered relevant for several national sustainability targets and includes four to six indicators.

In order to keep the discussion during the preparation phase focused, a Prezi presentation was used to visually illustrate potential indicator baskets, proposed indicators, and their relationships under the framework of eight national sustainable development goals (Figure 1). The final number of indicator baskets that it was agreed would cover all nationally relevant areas of sustainable development was 10 (Table 1). In order to take into account the interdependencies, all indicator

baskets are supposed to describe more than one of the eight national sustainable development goals.

The members of the expert network held discussions on a regular basis at meetings and in small workgroups. The identification of individual indicators was organised mainly through working in small groups focusing on a single indicator basket. The groups identified possible indicators and evaluated their suitability. The entire network was informed and provided with an opportunity to comment. The workgroup coordinators later became the persons responsible for preparing the indicators, ensuring the necessary continuity of the preparation process.

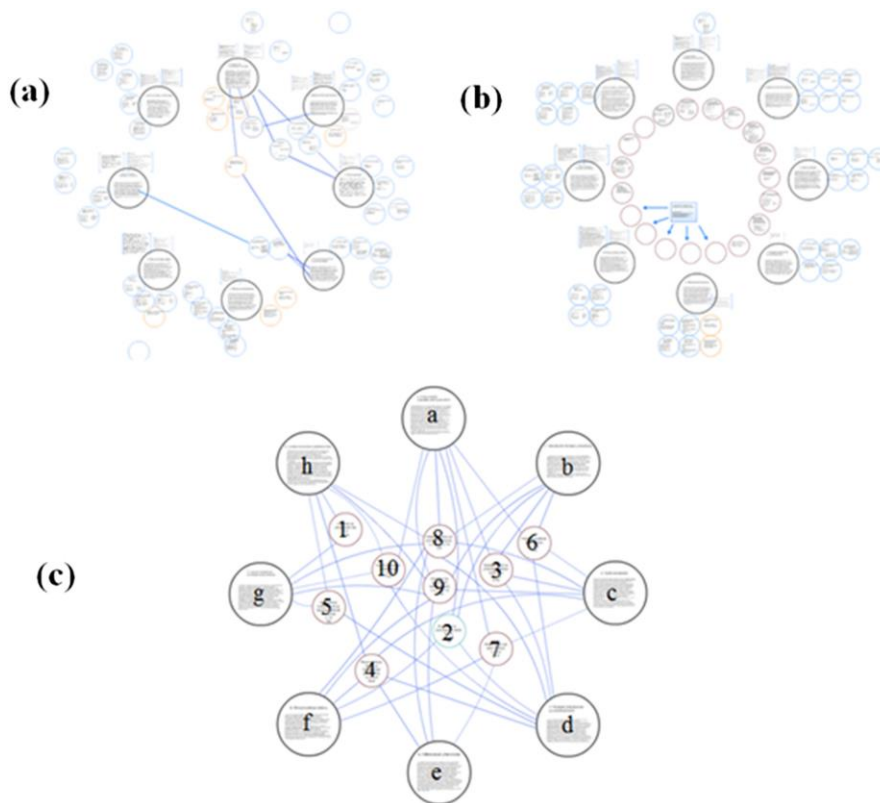


Figure 1. Visual representations aimed at aiding the preparation process. Preliminary suggestion from November 2016 outlining possible topics and selected key relationships (panel a), a version outlined based on initial expert and stakeholder comments (panel b), and the final framework outlining the relationships between national goals and indicator baskets (panel c). Explanations for goals (a-h) and final indicator baskets (1–10) are given in Table 1. Modified from Prezi-presentations by S. Pirkkala

Table 1. Indicator baskets, indicators, and key target areas

<i>Indicator basket</i>	<i>Indicators</i>	<i>Key linkages to the national Commitment 2050 goals</i>
1. State of nature and the environment	Dead wood in forests and high nature value farmland Phosphorus and nitrogen load on the Baltic Sea from Finnish rivers Atmospheric sulphur, nitrogen, and fine particulate emissions in Finland Environmental protection expenditure included in the statistics in Finland	(g), (h)
2. Housing and communities	Number of people over the age of 75 living in their own home Housing expenditure Intact community structures and conditions for public transportation Access to grocery stores Flood risk	(a), (b), (d), (f)
3. Social inequality	Income disparities (Gini coefficient, low income rate, income development in the lowest and highest 10th percentile) Numbers and regional distribution of beneficiaries of basic social assistance Satisfaction with life among young adults Numbers of quota refugees and asylum seekers/positive decisions on asylum applications	(a), (b), (c), (d)
4. Resource-wise economy and carbon neutral society	Greenhouse gas emissions and removals Growing stock increment and drain Share of renewable energy in energy use Tekes (Finnish Funding Agency for Technology and Innovation) funding for resource efficient and carbon neutral solutions Natural resource/raw material consumption, breakdown	(c), (d), (e), (f), (h)
5. Public procurements and consumption	Carbon footprint of consumption Consumption of vegetable-, meat-, and fish-based foods Average carbon dioxide emissions of cars and vans registered for the first time Trends in municipal waste	(d), (g), (h)
6. Social exclusion and inclusivity	Young people excluded from work or education Experience of exclusion or loneliness Voting rate Trend in Finland by the Corruption Perceptions and World Press Freedom indexes Confidence in the society and its future among the young	(a), (b), (c), (d)
7. Working life, quality, and change	The global responsibility of the working life Employment rate (Statistics Finland, Labour Force Survey) Good working life Women's average earnings compared with men's	(a), (c), (e), (f)
8. Global responsibility and policy coherence	Finland's developments using the sub-index of the Commitment to Development index in assessing Finland's trade policy Finland's imports and exports measured in tons and by material type Finland's development cooperation funding trend Finnish participation in international crisis management	Not specified, assuming connection to all target areas.
9. Education and development of competence	The number of day care centres, schools, and educational institutions with a focus on sustainable development Life-long learning and participation in training Research and development costs, share of GDP Societal skills and literacy	(a), (b), (c), (e), (f), (g), (h)
10. Prerequisites of health	Planned indicators (not yet published during the time of this study) Perceived well-being by age groups and regions Regionally equal health and well-being services Morbidity index Violence against women/use of refuge houses	(a), (d), (g), (h)

a) Equal prospects for well-being; (b) a participatory society for citizens; (c) sustainable employment; (d) sustainable society and local communities; (e) a carbon-neutral society; (f) a resource-wise economy; (g) lifestyles respectful of the carrying capacity of nature; and (h) decision-making respectful of nature.

### 3.2 Factors influencing the uptake of the indicators

The specific aim of the revision was to improve the policy relevance of indicators and to increase their use. In order to achieve this, a specific communication and interaction process aimed at supporting the policy uptake and use of indicators was designed. The process was outlined primarily by the General Secretariat on Sustainable Development and presented to the expert group for comments. The aim of the process is the publication of an updated indicator basket roughly once a month, an annual high-profile multi-stakeholder stocktaking event, and a 4-year cycle of major external assessment.

In May 2017, the indicator baskets and the follow-up system were presented to the FNCSD. The first indicator basket was published in November 2017, focusing on the state of the environment and nature. The second basket, focusing on housing and community development, was published in December 2017. The last indicator basket, focusing on prerequisites for health, was not yet published at the time of this study (September 2018). Delays have been caused by a lack of resources for the preparation work as well as difficulties in reaching an agreement on the most suitable indicators.

Delays were also related to the widely distributed responsibility for preparation of indicators, which made coordination challenging. Widely shared responsibility was a necessity because of the lack of resources for centralised indicator preparation. It also facilitated the participation of several actors with different knowledge bases. Writing of the qualitative interpretations of the indicators was challenging, partly because of the consensus-based editing process involving multiple parties. Finalising the interpretation texts describing sensitive issues required several rounds of commenting and discussions among the experts participating in the preparation process. The maximum recommended length of the indicator descriptions was 1,200 words. However, the length of the final descriptions varied between 923 and 1,953 words (mean 1,412), indicating considerable difficulties in keeping the discussion focused.

The aim of the communication and interaction process was to encourage widespread participation by providing the opportunity for online commenting to all interested parties. The commenting takes place on the monitoring platform available on the sustainable development website of the Prime Minister's Office (in Finnish, [www.kestavakehitys.fi/seuranta](http://www.kestavakehitys.fi/seuranta)). The number of publicly presented comments received after the publication of the indicator baskets remained low, especially when compared with the intense internal expert debate during the preparation phase. On average, seven comments were received per indicator basket. The first published basket received 21 comments, whereas the number of comments varied from three to eight for the other baskets. Expert voices dominated the debate, as comments were mainly expert opinions critiquing the baskets or proposing alternative interpretations, data sources, or new indicators. The relatively low volume of debate can partly be explained by the consensus-based editing process eradicating potentially controversial claims. Furthermore, it is likely that not all potentially interested parties were aware of the possibility to comment and that some stakeholders were too busy or unwilling to present their views in public. Anonymous commenting was possible, but registration was required. In order to widen the discussion and gain additional expert views on the selected indicators, the Helsinki Institute of Sustainability Science organised a series of workshops where each indicator basket was critically discussed.

In Finland, indicators have been a key component of the promotion of sustainable development to the Government and Parliament (Rosenström, 2009, 2018; Rouhinen, 2014). The current communication process includes utilisation of indicators at the annual high-level multi-stakeholder event "The State and Future of Sustainable Development in Finland." The event is a part of the official Government reporting to Parliament. The first annual event featuring a presentation partly based on the new sustainable indicator set was held on May 30, 2018. The event was coupled with



the activities of the EU sustainable development week, aiming to increase awareness of sustainable development both nationally and at EU level. The event aimed primarily to raise awareness of sustainable development and also to measure and take stock of progress in the implementation of sustainable development, focusing on national-level goal setting. In addition to the annual event, indicators will be used in the evaluation of the national implementation of sustainable development, conducted once every 4 years.

#### **4 POTENTIAL FOR IMPROVING THE SOCIETAL INFLUENCE OF SDIs**

The assumption of instrumental use as the key avenue for societal influence dominated the preparation process. The focus was predominantly on the use of SDIs in domestic policy processes. As the current national strategy document outlining sustainable development goals for 2050 is a very brief statement without detailed descriptions (FNCSO, 2016), the indicators can exercise considerable power in defining the content of sustainable development. The eight general-level goals (see Table 1) do not provide clear target levels. Together with the long timeframe of the national strategy, this makes it difficult to use indicators as measures of policy performance. Furthermore, definitions of long- and medium-term target levels are clearly needed in order to improve the potential for instrumental use of indicators.

The UN's Agenda 2030 and the framework for indicators related to Sustainable Development Goals (SDGs) were acknowledged during the preparation process, primarily as general-level background factors. The relationship between the SDG indicators and national indicators was considered problematic. The widely agreed starting point adopted for the national work was that the international SDG indicators alone are unable to provide a sufficient knowledge base on which to address Finland's national key challenges (see also Rosenström, 2009). The differences were perceived to be so great that instead of a nationally adjusted set of SDG indicators, an additional and independent set of national indicators was considered essential. The compilation of a national set of SDG indicators aimed at serving international reporting needs was started later as a separate project coordinated by Statistics Finland. In the future, this will create a situation of the parallel existence of two SDI sets for Finland. This is likely to create some confusion and create room for tactical and political use of SDIs but also provide opportunities for conceptual use and social learning.

As shown by the growing number of national, sector-based, and international indicator initiatives, sustainability indicators have increased in popularity since the seminal report of the Brundtland Commission (WCED, 1987). However, this does not necessarily mean a corresponding improvement has taken place in instrumental or conceptual use and societal influence of the indicators. Research in the area is scattered, but the studies available suggest a rather limited policy use and influence of national SDIs (Hildén & Rosenström, 2008; Frederiksen et al., 2013; Lehtonen et al., 2016; Martinuzzi & Sedlacko, 2016). As Bauler (2012) bluntly points out, organisations are awash with indicators, but very few of these exercise any effective agency. In particular, the direct use of sustainability indicators as a basis for decision-making appears limited, and it has been suggested that indicators may have more influence through indirect effects such as long-term societal learning and awareness raising (Rinne, Lyttimäki, & Kautto, 2013).

Earlier research focusing on the Finnish SDIs has noted that a key route of societal influence is through an indicator preparation process involving a wide variety of actors from various sectors and levels of society (Rosenström, 2009). The experiences gained from the Finnish SDI baskets generally support earlier research. A wide-based preparation process involving representatives from most of the Finnish ministries, key research institutes, and key stakeholder organisations was likely to increase awareness of SDIs. However, this sphere of influence was limited, and wider audiences had not yet been reached. One explanation is that the consensus-based and collaborative preparation process generated rather conventional indicators and interpretations

with little novelty. Thus, the news value of indicators was low, and they did not generate any major media coverage. In turn, this was likely to decrease interest from policymakers, as public and policy agendas are intertwined (Koch-Baumgarten & Voltmer, 2010). Relying on conventional indicators was, in part, a necessity because of the lack of the resources that would be needed to produce new indicators. It was also a conscious choice aiming to ensure the reliability and data availability that formed the key criteria in indicator selection. Overall, the experiences emphasise the importance of trade-offs between different dimensions of the usability of indicators (Holden, 2013).

Future update rounds of the indicator baskets will provide opportunities to increase the policy impact and public salience of indicators. Responding to the critiquing and suggestions for improvements is a prerequisite for more effective communication and interaction (Saarela et al., 2015; Turnhout et al., 2007). However, properly addressing all concerns requires adequate resources. This challenge will be even greater if new audiences with additional questions and concerns are reached during the future update rounds. A lack of resources is likely to lead to routine updating with minor changes and “reporting fatigue” (Niemann & Hoppe, 2018). Indicator practitioners face fatigue because of the overwhelming workload, whereas potential indicator users and audiences of indicator communication easily become frustrated if they feel that their feedback is ignored or leads only to marginal improvements.

At a national level, a considerable future opportunity for enhancing policy relevance is provided by the Government's attempt to mainstream sustainable development into the state budgeting process (PMO, 2017). An assessment of sustainable development is required in each main section of the state budget, creating a new opportunity to use SDIs. However, the current indicators generally lack monetary estimations, and their direct inclusion in the budgeting procedures is therefore unlikely without substantial modification. Furthermore, the structure of the indicator basket framework differs from the structure of the state budget.

Strengthening compatibility with the state budget process or other national policy processes could provide an avenue through which to enhance the instrumental use of indicators; however, it could also divert attention from the conceptual frameworks of sustainable development (Janoušková, Hák, & Moldan, 2018; Ramos & Caeiro, 2010; Spangenberg, 2016). Data availability and perceived policy relevance have increasingly guided the selection process for the recent sets of SDIs in Finland (Lyytimäki & Rosenström, 2008; Rosenström, 2018). These were the key criteria for the selection of the indicator baskets as well. The role of theory-advised sustainability frameworks was secondary when compared with these more practical considerations. For example, concepts such as “planetary boundaries” were not directly used to organise the formulation of indicator baskets or the selection of the indicators (Steffen et al., 2015).

The most important influencing factors were earlier experiences from indicator exercises, national-level strategy and policy documents, and expert understanding of current key policy challenges related to sustainability. Emphasis on nationally relevant sustainability concerns has meant that comparisons with other countries or international initiatives such as SDG index (Sachs et al., 2018), and the indicators produced by the OECD (2017) and World Bank (2018) were noted but not systematically taken into consideration as starting points. The low impact of EU-level sustainability frameworks is worth noting. The influence of EU-level sustainability strategies and indicators was nearly non-existent despite the fact that as an EU member state, Finland is committed to adhering to the EU sustainability initiatives. This reflects the weakness of the EU-level sustainability agenda (Steurer & Hametner, 2013). However, the latest version of the EU SDIs published during the preparation process of the national indicators provides opportunities to build connections between national and EU levels during the future updating rounds (Eurostat, 2018).

## 5 CONCLUSIONS: INDICATORS MAKING A DIFFERENCE

SDIs struggle between high expectations regarding their use and limited real-life direct policy influence. Realistic expectations should be set for SDIs. On the basis of the case study focusing on the development process of the Finnish indicator baskets, a realistic goal may be that national-level SDIs manage to attract some policy attention and are found interesting by certain key target groups, including the media. This can lead to increased public awareness and further instrumental and conceptual use of indicators. A key lesson is that SDIs should not be seen only as one-way communication but a part of complex and dynamic public interaction.

Another realistic goal is widening the sphere of social learning related to the production of national SDIs. Indicators are one core element of informational governance. Opening up the production process, limitations of, and opportunities presented by indicators may provide decision-makers with a deeper understanding of the underlying knowledge and uncertainties. Transparent preparation process of indicators is a necessity in order to minimise the risk of tactical or political use of the indicators. Furthermore, costs and benefits of producing and updating indicators should be clearly communicated in order to avoid unrealistic expectations. Better recognition of the tensions between attempts to improve the quality of indicators and attempts to enhance their use in policymaking is a key to meeting the expectations placed upon sustainability indicators.

The influence of indicators unfolds in complex and sometimes unforeseen ways. Indicator developers may benefit from a lesson from humour research (Davies, 2007): In some cases, jokes (and sustainability indicators) that at surface level criticise the existing social structures and power relations may in fact strengthen the existing situation. Therefore, increased use of SDIs should not be seen uncritically as the “silver bullet” for sustainability transitions. Instead, it should be seen as one part of social learning process involving both the indicator developers and users.

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