Developing a Sectoral Sustainability Indicator Set: the case of the European Aluminium Industry

Michael Kuhndt and Justus von Geibler
Wuppertal Institute for Climate, Environment, Energy
Eco-Efficiency & Sustainable Enterprises Team
Döppersberg 19, D-42103 Wuppertal, Germany
Email: mkuhndt@cityweb.de

ABSTRACT
This paper examines the development of a sectoral indicator set to promote sustainable development. Indicator sets at the sectoral level help to consider fundamental differences between distinct industry sectors by drawing a sector specific picture of industry’s economic, social and environmental impacts. In this way, sectoral indicators are a prerequisite for appropriate measurement and systematic management of an industry sector’s sustainability performance. Additionally, a sectoral approach provides the opportunity to link sustainability initiatives at the macro-economic level with those at the micro-economic level. A methodology how an sustainability indicator set for a industry sector can be developed and some results from applying this methodology to the European Aluminum Industry are presented. Conclusions are drawn on how this approach to indicator development can capture the specific characteristics of sustainable development.

INTRODUCTION
Today at the beginning of the 21st century, it still remains a formidable challenge to put sustainable development into action. The understanding of sustainable development that evolved from the Rio Conference in 1992 assumes this concept covers environmental, economic and social aims of equal importance. For the practical implementation of these aims, indicators are accepted management and accounting tools, which have been developed within a number of initiatives and for a number of actors within the society. For example, United Nations, the OECD, the European Commission or the UK Department of the Environment, Transport and Regions have put forward related initiatives for the macro-economic level. [1,2,3,4] The Global Reporting Initiative (GRI), the OECD Guidelines for Multinational Enterprises, SA 8000, ISO 14031, CSR Europe are examples of initiatives to promote activities for sustainable development at the micro-economic-level. [5,6,7,8,9] However, the communication and harmonisation at the micro, meso and macro-level and with in each level are important elements of sustainable development, as illustrated in Figure 1.

As the differences between the initiatives point out, the work on suitable indicator sets is not yet finished or harmonised on any level of socio-economic activity. Especially on the meso and micro-level, differences between companies and sectors complicate the development of commonly accepted, internationally harmonised and practicable methodologies, which enable comparisons of the corporate performance to other economic levels (nations, regions, sectors) or to other enterprises including targets and indicators for all dimensions of sustainability. However, the similarities between companies within a sector, e.g. their common process technologies and related impacts, common framework conditions and similar market positions, can be used to specify what sustainable development means for companies within this sector.
One of the key challenges for the selection of indicators for business is the variety of different business characteristics. While it is tempting to presume that there could be one "universal" set of indicators that would apply to all sectors, in practice decision making groups have to distinguish between core and specific indicators. Core indicators are generally internationally agreed indicators. They relate to a global sustainability concern or value and they are relevant and meaningful to virtually all businesses. These indicators provide data that can be aggregated from micro- to meso- or macro-level. In order to capture the specific nature of a business, specific indicators are used, which provide information at micro- or meso-level only.

This paper outlines a methodology for the development of an sectoral sustainability indicator set. It represents some results of its application with the European aluminium industry. Finally, conclusions on the practical implementation of the sustainability concept will be made.

**METHODOLOGY**

Since theoretical concepts like sustainability are too abstract and broadly formulated to directly define indicators to measure them, it is necessary to specify their content. For the purpose of defining a sectoral indicator set, the COMPASS [10] method developed by the Eco-Efficiency and Sustainable Enterprises Team at the Wuppertal Institute was adopted.[11] Hereby a method called concept-specification or dimensional analysis is used (Figure 2). This approach has been developed in social sciences and is used to break down the concept of sustainable development into dimensions, categories and aspects.

Categories and aspects are defined as follows: Categories are broad areas, or groupings, of economic, environmental, or social issues of concern to stakeholders (e.g. air, energy, labour practices, local economic impacts). Aspects are the general types of information that are related to a specific category (e.g. greenhouse gas emissions, energy consumed by source, child labour practices, donations to host communities). A given category may have several aspects.[5]
The identification of relevant dimensions, categories and aspects is based on a review of a number of sustainability agendas (some of them are mentioned in the introduction), the analysis of sector specific focus areas and the consideration of stakeholder expectations. The identified categories and aspects help to “draw a picture” of the sector-specific sustainability context. This “picture” serves as a basis for the selection of appropriate indicators in the next step.

In order to select indicators for the indicators set, the context needs to be considered in which sustainability indicators obtain their relevance. This context, the “framework of sustainability indicators”, consists of two components, a content-related one and a use-related one. As shown in Figure 3, both components consist of several elements.

![Diagram](image)

**Figure 3: Framework of sustainability indicators. Source: Kuhndt, Geibler and Eckermann (2002).**

The content-related component of the framework describes current – rather traditional economic – targets and goals formulated by the sector (e.g. by its associations) and – if existing – the sustainability vision of the sector. Furthermore, it lists the categories and aspects derived by using the approaches described in the previous section. In contrast, the use-related component provides information concerning, on one hand, the application of the indicators (purpose of use, user, area of application) and on the other hand the scope of the object inspected including a definition of its system boundaries.

Indicator selection finally takes place based on the content and use-related information. To facilitate this step indicator selection criteria should be defined. Such criteria help to evaluate indicators and assure the selection of adequate indicators. Selection criteria are, for example, reliability, validity, relevance, comprehensibility, data availability, and reasonable cost. In addition to these generally used and accepted criteria, it might – according to the approach to indicator development – useful to consider the relevance of the underlying aspects from the stakeholders viewpoint, the internal relevance for the sector involved and the possible level of aggregation (e.g. on the process level / product level / site level / company level / sector level).

**RESULTS FROM PRACTICAL APPLICATION**

The figure 4 presents a comparison on the type of information do internal and external stakeholders expect from the aluminium industry.

With the surveys it was observed that there is more consensus on environmental information, whereas there is less consensus on information regarding social and economic issues so far. This finding can be explained by the fact that environmental information and indicators have been in public discussion and scientific reviews for a long time (over 20 years). In contrast, the setting up of economic and social information/indicators has played a lesser role in stakeholder discussion until recently. This is changing in the current debate. This situation has also been described in the GRI reporting guidelines (Fig. 5).
The selection criteria applied and the indicator selection have been discussed in a dialogue process involving the potential users of the indicator set in the aluminium industry. As a result of the multitude of potential users, 115 indicators have been identified for 24 categories and 47 aspects. In order to operationalise the application of the set a prioritisation should be given, e.g. according to audience (e.g. financial market vs. governmental organisation), according to user profile (SMEs vs. multinational
companies), according to today’s/future measurability. Additionally, methodological sheets for the indicators (e.g. definition, aggregation potential, measurement method, limitations, interlinkages) should be given. It is reasonable to set a specific timeframe (priority) in which an indicator should be measured.

To portray the complexity of sustainable development it is crucial to consider the interlinkages within the indicator system. The indicator set designed is of temporary nature. It needs to be revised from time to time to adapt the indicators to changing stakeholder demands, significant modifications in the underlying sector, e.g. technological innovation, and progress made in research on sustainability indicators. Revision on a regular basis is a common management practice aimed at continuous improvement.

CONCLUSIONS – LESSONS LEARNED

The experiences gained from developing a sectoral sustainability indicator set for the European aluminium industry showed that the presented approach addresses major characteristics of sustainable development as highlighted in Figure 6.

For the actors involved in the indicator development it is crucial to get a more tangible view of the conceptual character of sustainable development. This can be achieved by reviewing and understanding the current sustainability debate, identifying relevant focus areas and considering stakeholder expectations. Instead of developing integrated indicators directly for sustainability, indicators are developed for identified aspects, which are considered to be relevant. One of the main challenges to the realisation of sustainable development is the interrelation between numerous categories and aspects. This complex diversity can, as a first step, be addressed by developing a set of indicators. Within the set, the interlinkages between the different aspects can be highlighted and should be considered when using it.

Figure 6: Putting the concept of sustainable development in practice. Source: Kuhndt, Gebler, Eckermann (2002).

The stakeholder approach taken considers the specific context of the organisation in focus. Thus, the involvement of stakeholders is an important element when a sustainability indicator set is developed. Once stakeholders are involved effectively, the development of an indicator set is more transparent and the stakeholders build up trust for a long-term relationship. Thus, stakeholder involvement follows the trend of recent public initiatives, for promoting sustainable development, which have drawn on the stakeholder approach as a means of creating a broad consensus among different societal groups (examples are: the UN Global Compact, the Global Reporting Initiative, the UK Roundtable on Sustainable Development, and the German Council for Sustainable Development). Generally, the regional context might be very influential. The importance of some aspects, such as drinking water consumption or the importance of employment, is likely to be different in different geographical regions. The regional differences are likely be taken into account through the consideration of specific national or regional agendas and/or stakeholders.

Sustainable development relates to an unlimited time horizon and is an on-going dynamic process. The dynamic character of sustainability has been considered in the development of the indicator set when considering two issues: Firstly, the COMPASS methodology outlines a dynamic discussion process through a sequence of workshops. Secondly, the flexible timeframe, as suggested for the implementation of the
indicator set, makes adaptations possible for a specific organisational context. Over time single aspects might be added if stakeholders demand information on additional issues. Experience from environmental reporting shows that more aspects tend to be added than are dropped. To make use of its potentials, it is suggested to integrate the sustainability indicator set into the management accounting system. The information gathered could then be presented in a sectoral sustainability report. This can be seen as an important step for an ongoing stakeholder dialogue as an important element of sustainable development.

REFERENCES