
Editorial

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1 Introduction

Sustainable development – or sustainability as a short form – has its roots in environmental and development policy. As such, sustainable development mirrors the efforts of the international community to meet the recent social, economic and environmental challenges we are facing today, for example, among others, population development, food, health protection, combating poverty and global environmental problems.

Although the idea and concept had a number of predecessors in the 1970s, the term ‘sustainable development’ first became popular in the wake of the so-called ‘Brundtland report: Our Common Future’ of the World Commission for Environment and Development in Stockholm in 1987 (WCED, 1987). This conference was initiated under the banner of the United Nations (UN) and guided by the Norwegian Prime Minister Gro Harlem Brundtland. International leading experts prepared a comprehensive

programme of recommendations for the above-mentioned global problems. The ‘Brundtland report’ was a turning point of the environment and development policy at that time, in that the assumption of industrialisation in developing countries seemed no longer tenable without a profound rethink of the lifestyles and consumption levels in industrialised countries.

The ‘Brundtland report’ created the foundation for the current understanding of sustainable development. In a nutshell, sustainable development aims to create economic living conditions that enable all the Earth’s population to satisfy their needs today, without compromising the ability of future generations to satisfy them. This brings two concepts of justice into play:

- firstly, *intragenerational* responsibility concerning all human beings alive today and
- secondly, *intergenerational* responsibility for the relationship between today’s and future generations.

Hence, sustainable development must be regarded as a *normative concept* in the sense that it reposes on the two ideas of justice mentioned above: Though there is no formulation of an explicit goal, sustainable development promotes a vision or a ‘regulative idea’ - in the sense of Immanuel Kant, the eminent German philosopher (1724–1804) – on how all human beings could lead a decent life today and in the future. Furthermore, sustainable development discusses the minimum conditions that *should* be respected for this aim.

2 Sustainability: from an environmental and development policy term to the goal for a long-term liveable future

Sustainable development was included in the United Nations’ action programme for the 21st century, the so-called ‘Agenda 21’, at the conference for environment and development 1992 in Rio de Janeiro (Brazil) to serve as an orientation for subsequent measures such as social and economic aspects like population dynamics, reduction of poverty, health preservation, conservation and management of natural resources and stakeholder dialogues. Since then, sustainable development is regarded as the unifying aim for a long-term globally liveable future. The Summit for Sustainable Development at Johannesburg (South Africa) in 2002, the ‘Rio+10 conference’ confirmed the global standing of the aim of sustainable development.

Sustainable development does contain a *regulatory* dimension as well: any decision-making at local, regional, national or global levels must be implemented in such a way that any costs are not borne by uninvolved parties, future generations or nature. In other words, the three criteria of:

- environmental integrity
- social justice and
- economic quality

should always be respected (Deutscher Bundestag, 1998) and by all social actors, be it individual persons as well as groups or institutions (e.g. families, universities, companies or countries). This regulative idea underscores the processual character of sustainable development, that is to say, providing guidance, but not an explicit goal.

The roots of the concept of sustainable development are believed to come from the ideas of 18th century forest management, whereas the concept's etymological origins can be traced back much further, to the 12th century. 250 years ago, revenues of forest owners collapsed when more and more forests were cleared. This led to the insight of only cutting as many trees in the future as would be newly planted. Thus, by respecting an economic principle of conservation of capital, forest revenues were stabilised for long-term benefit.

Not just the concept of sustainable development, but also its current interpretations have its roots in forest management:

- On the one hand, 'strong' sustainability stipulates living solely off the interest of natural capital. The latter must be preserved in its total amount, non-renewable resources should not be utilised and renewables only to the extent of their regeneration rates.
- On the other hand, adherents of 'weak' sustainability want to keep constant the sum of natural and human capital only, allowing therefore substitution of natural by human capital.

3 Technological progress, economic prosperity and social change – trefoil of (sustainable) development

Little less than 20 years after the Brundtland report 'Our Common Future', today sustainability is increasingly being recognised as the vital challenge and thus it is being applied to the 'trefoil of development' (Müller-Merbach, 2000, pp.172–173). This trefoil of development covers the most powerful forces influencing society's future development entering the 21st century, that is:

- technological progress
- economic prosperity and
- social change.

All these developing forces are intertwined and influencing each other.

Despite considerable efforts that have been undertaken in recent years, however, it is not yet clear, just how we will actually approach sustainability, especially as a more holistic understanding crossing traditional borders of disciplines, schools of thought and concepts are necessary to achieve long-term progress.

This Special Issue Edition intends to shed some light on promising movements delivering forward-looking concepts, latest empirical findings and best practice examples striving for sustainability, be it focused on technologies, businesses, society and its mutual interrelations. As such, the selected papers may contribute to provide the current state of the art for an interdisciplinary readership from the political-, corporate- and academic-world as well as representatives from the civil society.

In response to the international IJESD call for papers, a total of 16 manuscripts from all over the world were submitted for possible publication. In order to provide a Special Issue Edition of high quality, a *double blind review* was applied. All papers have been reviewed by at least by two reviewers, who are outstanding scholars and leading researchers with unique expertise and international reputation in the field related exactly to the focus of the paper to be reviewed.

Particularly, we are very grateful to (in alphabetical order): Christoph Bey, Anthony Chiu, Frank Ebinger, Frank Figge, Klaus Geschka, Arnim von Gleich, Albrecht Gnauck, Jasmin Godemann, Cheng Guo-jie, Michael von Hauff, Jens Horbach, Robert Holländer, Jiří Hřebíček, Joseph Huber, Michael Huesemann, Janne Hukkinen, Horst Junker, Hartmut Kaebernick, Martina Keitsch, Walter Leal Filho, Emil Morhardt, Christian Plas, Claus Rautenstrauch, Inge Røpke, Ortwin Renn, Matthias Ruth, Stefan Schaltegger, Stefan Seuring, Michael Sonnenschein, Frederick Steiner, Nguyen Xuan Thinh, Walter Vermeulen and Ute Vogel, for sharing their knowledge to improve the contributions. Further, we thank Peter Hills, Editor-in-Chief of the IJESD, for his valuable support while providing this Special Issue Edition.

4 Sustainable developments in technologies, businesses and society

The Special Issue Edition covers five main subjects presenting important developments striving for sustainability:

- A shift in technology management and strategic *innovations in sustainable technology*, described along the case of fuel cells for vehicles (Stuart Peters and Anne-Marie Coles).
- A forward-looking *sustainability management framework* focused on dealing with dilemmas and boundaries and outlined for autonomous cooperating transport logistic processes (Ina Ehnert, Lars Arndt and Georg Müller-Christ).
- The ‘integrative sustainability triangle’, a *tool* to be used as a methodologically sound approach to classify different areas of action and highlight relevant indicators of a *sustainability strategy* (Michael von Hauff and Alexandro Kleine).
- An *empirical study* providing current findings in the field of *sustainability reporting* at corporate level and stressing emerging trends on corporate triple bottom line reporting from the Libanese context (Dima Jamali, Toufic Mezher and Hiba Bitar).
- A new *methodology for stakeholder involvement* that contributes to make debates on technological solutions less confused and helps to improve transparency described along the potential contribution of using new biotechnologies (Ad van Dommelen and Geert de Snoo).

On the one hand, the subjects covered in this Special Issue Edition are illustrating considerable efforts, actors on different levels have undertaken since the concept of sustainability became prominent, two decades ago. Closely linked to the still increasing relevance of sustainability, on the other hand, there is a lot of work that needs to be done to actually approach a sustainable development path and make sustainability really happen.

5 Perspectives for the future

Can we create a sustainable path, be it at company level, locally, in regions, for nations or globally and on a world-wide scale? Even if we leave our personal convictions aside for the moment, we can see clearly that no one of the driving forces alone could manage such a groundbreaking shift, be it technological progress, economic prosperity and social change. Furthermore, it seems to be clear, too that a narrow perspective and traditional disciplinary concepts may not be sufficient for such a complex task. Whether in a prudent or in an optimistic way, we need to be able to weigh the opportunities and risks of any decisions. On the one hand, fears need to be taken seriously and accepted as indicators for risks, without giving in to pessimism and panic. On the other, the opportunities that a widely accepted strategic path offer merit exploiting and not a categorical refuse.

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