

GUEST EDITORIAL PREFACE

Special Issue on Sustainability Assessment: Developing ‘Green Thinking’ Towards Sustainability

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During the last two decades academic and political discussions about the potential of environmental innovations to meet grand challenges have increased. With the topic's greater popularity, the discussion has become more substantial and dedicated to the elements of environmental innovations. During the 1990s one could understand environmental innovation as a new buzzword frequently referenced by politicians and scientists but hardly understood and accepted by society. Instead resistance among the population began to develop because of insufficient understanding of the discussions. From today's perspective, it seems that the 1990s and 2000s saw numerous glorious events on the theme which were frequently reported by the media; however, citizens did not appreciate the use and value of such events. Meanwhile discussion became more targeted to selected issues with a clear scope and offering the opportunity to explain the impact more understandably to citizens in the first instance. Consequently

the terms ‘green’ and ‘sustainable’ received wider awareness in different context. As late as the 2000s, ‘green’ and ‘sustainable’ were considered more frequently from a systemic point of view. In other words, people began to a greater extent to examine the ideas of ‘green’ and ‘sustainable’ by looking at the fundamental interrelationships – both existing and potential – between the sustainability strategies of private sector organizations, the policies adopted by governments and other public sector entities, and the joint discussions on matters of sustainable development between NGOs, scientists and managers to tighten regulation of international corporations' activities regarding environmental safety, energy and production efficiency. In this light corporate sustainability assessment in different industries, the relative effectiveness of specific systems and structures for developing sustainability measures, and tools in various institutional contexts and stages of development are becoming increasingly important. In this

context, 'effectiveness' is to be judged on the basis of policies that provide concrete benefits for both corporate and economic welfare i.e. benefits that contribute to environmental and social improvements as well as economic development. The current special issue has been designed to discuss these questions.

Green energy has long been a subject of discussion and practical technology development. In this special issue Fillipov, Mikova and Sokolova discuss the prospects of green energy. They demonstrate the potential of green energy in helping to address the challenge of climate change as well as other issues. Undoubtedly, the potential exists but to leverage it additional challenges must be solved. Of relevance is the case of Germany, one of the countries which have taken the most ambitious actions towards supporting green energy in the national energy mix. Yet Germany's experience shows that green energy need to be considered in a broader context and not just energy generation and consumption of energy. Transmission of energy and developing the necessary infrastructure are serious challenges for changing the national energy mix in Germany. Although renewable or green energy accounts for a significant share of Germany's overall energy generation, the country still has to address the problem of nationwide energy transmission. This is surprising as political will is strong and clearly communicated; however the initial policy design phase failed to consider the existing legal constraints which later turned out to have a serious impact on the upgrading of the German electricity grid, a key step to fully develop the potential of the green energy mix. Fillipov, Mikova and Sokolova propose a methodology which goes beyond common practice in technology Foresight. It enables a broader spectrum of expert knowledge to be included in the process, wider than purely technology knowledge expertise. Their methodology is well thought through and developed, and looks set to become a promising instrument capable of broadening the perspective of technology monitoring by including surrounding and complementary fields and

discovering related developments which are not immediately obvious.

Plant, Yusen and White contribute to the discussion about 'green' from the perspective of supply chain management and reverse logistics. It is entirely justified to look at supply chains and the meaning of 'green' and sustainable solutions in supply chains especially in the light of industry and market globalization. In this context supply chains show different facets of 'green.' First the awareness of 'green' varies substantially between countries and regions depending on the country's level of economic development. It is widely known that 'green' and 'sustainability' are considered less important and relevant in less developed countries. Accordingly few measures are taken to improve the situation which is a short term economic win for companies but a long term loss for the country. However due to common management practices the short term wins are often rated more highly than the long term perspective. Second even if there were awareness and willingness to upgrade logistics according to 'green' standards and philosophy this would require substantial investment which in turn would likely have an impact on the competitiveness of locations. Third it seems plausible that in less developed regions and countries in particular, low awareness of 'green' is because of peoples' wishes to catch up with the 'leading' nations and to improve their living standards quickly and at any costs.

The article by Plant, Yusen and White looks at Chinese managers' perceptions of 'Green' supply chain initiatives. Moreover they provide valuable insights into managerial views and equally importantly into the perceptions of SMEs, thereby helping to avoid the biased perception of large multinational companies. Thinking 'green' already implies thinking 'sustainably.' Nevertheless sustainability has often been used in discussions at various levels. Some scholars restrict sustainability to environmental aspects, meaning that any economic operation is the subject of a voluntary commitment to environmental protection and the responsible use

of natural resources. Ultimately, this argument implies the conservation of the environment for lasting economic operations. However a broader perception of sustainability for companies would involve including environmental awareness and activities, as well as many other aspects more closely associated with actual business operations, in the company's future-oriented strategic direction. To achieve broader sustainable business operations, a coherent business strategy is desirable which takes into account the different, sometimes even contradictory, dimensions.

White, Sparong and Ndrecaj illustrate the meaning of regulations and operational challenges for sustainable packaging on business operations. It is clear that accounting for the substantial regulations inherent to the environmental dimension of sustainability is a costly undertaking, especially for SMEs. In many cases SMEs structures and operations are not ready to take on the additional burden of sustainability.

One prominent industry which illustrates the impact of sustainable thinking on people is agriculture. In particular, the primary sector of the agriculture industry (namely the production of raw agricultural products) illustrates the impact of sustainable operations. However sustainability is not limited to the primary agricultural sector but involves all stages of the industry's value chain. In this regard agriculture is an industry where the transportation of raw products and processed goods is critical. As a result of the opening up of world markets, the agriculture industry has become more global with processing facilities becoming larger in scale and transported volumes increasing. This puts additional pressure on the industry to meet the respective standards.

Morissey and Dunphy analyse the agri-food system from the perspective of the industry value chain. They argue that the industry needs new regulations and upgrading of the existing infrastructure to meet the requirements of sustainability. Yet to date, there is no regulation which is applicable for the overall agriculture industry in all stages of the value chain. Moreover there are inherent conflicts between existing and po-

tential regulations of the different value chain stages because activities and processes in each stage are significantly different, thus requiring special regulations. Consequently there is a danger of overregulation from the value chain perspective. There are also elements in the value chain which are not exclusively dedicated to the agriculture and agri-food industries: for example, selected means of transport are, in principle, applicable to other industries as well but may be limited in their multiple uses by regulations. A sustainability assessment of the industry value chain would be useful including a review of the potential double use of equipment and processes in other value chains.

In their study, Morissey and Dunphy show the advantages of sustainability assessment which goes beyond pure assessment to include action. It can be assumed that industry standards are a reasonably powerful approach to enforce the transition from pure 'green thinking' to 'sustainability'. Hasselmann illustrates this using the case of energy transition and certification. She argues that ISO standards can force the alignment of energy transition and environmental management giving the ISO standard a new meaning and creating incentives for changing attitudes. However this requires additional conceptual work to align the current company accounting practices which focus on capital expenditure (capex) and operational expenditure (opex) with the broader systemic view on sustainable company operations. Accordingly the standards in practice today should be enriched in a way that it can enforce energy transition and environmental management. In this regard standards can provide a fertile ground for thinking 'green' and 'sustainably' as a starting point to change perceptions and mindsets of individuals and corporations. Even though many people are now aware about these issues, there is still a lack of concrete actions and measures. Of the many ideas on how to bring the 'green' and 'sustainability' concepts to life, only a few have been developed beyond the idea or concept stage. Kasimov, Alekseeva, Chulok and Sokolov identify a range of prospective products, services and markets which

are based on 'green' and 'sustainability' in the environmental context. To date, a reasonable number of studies which aim at selected, rather narrowly defined applications for products and services mainly related to environmental issues have been completed and published. However due to the focus on dedicated niches these studies lack a comprehensive overview and thus lack potential to identify multiple applications for technology and science platforms underlying products and services.

To overcome the limitations of the previous studies in the field of 'green' and 'sustainability', Kasimov, Alekseeva, Chulok and Sokolov in the current issue link 'green' and 'sustainability' to the grand challenges broadly and develop an interesting outlook for scientific, technological and economic activities in the wider environmental field. This includes not only the pure scientific and technical dimensions but also the social and soft skills dimensions. Soft skills involve personal skills of human resources and the education of human resources which are desirable for developing products and services in the environmental sphere. There is also a big difference between marketing environment

related product and services and the established marketing routines for end user products or industrial equipment. Hence the increasing importance of environment related products brings greater demand for additional skills of scientists, engineers and managers. In the end environment related innovations (such as products, process and services and also business models) require a new skill set to be established and diffused successfully.

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