Guest editorial

FTA break new ground in response to grand challenges

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Abstract

Purpose – *This Guest Editorial aims to demonstrate the diversity of application fields in which FTA methods are being used and to offer a glimpse into possible consequences that grand challenges may imply for the development of FTA.*

Design/methodology/approach – *This introductory paper provides an overview of selected FTA 2011 Conference contributions for this Special Issue.*

Findings – *FTA approaches create spaces where an effective dialogue between key players in different policy domains facilitates vision-building and consensus-building for engineering major processes of transformation. Therefore, sound approaches of futures thinking will help to better address the grand challenges.*

Research limitations/implications – *From a large set of excellent papers presented at the FTA 2011 Conference, only a restricted number of papers could be included in this Special Issue highlighting the broad diversity of FTA application fields in response to grand challenges.*

Practical implications – *FTA can contribute not only to the steering of diverse innovation systems, but also to their adjustment, adaptability and ability to shape responses to grand challenges.*

Social implications – *The papers of this Special Issue point to the need for FTA to take into account user perspectives and to shape the social context.*

Originality/value – *This Special Issue brings together papers that explore not only the opportunities and limitations of implementing FTA methods in a variety of policy domains, but also their benefits in enabling a better understanding of complex systems that interact in each situation and in defining effective policy responses.*

Keywords *Future-oriented technology analysis, FTA, Grand challenges, Forward looking activities*

Today's grand challenges – from climate change to unemployment – go beyond current national policies. Grand challenges are usually interrelated and have an effect on different scales ranging from global to local. Often it is not clear how transitions can be oriented towards more sustainable pathways. The 4th International Seville Conference on Future-Oriented Technology Analysis (FTA) held in May 2011, illustrated the existing variety of FTA approaches to address structural and systemic transformations in a diversity of application fields responding to grand challenges. The presentations comprised themes surrounding creative futures, energy, governance, health, horizon scanning, innovation and sustainability, law, mobility, nanotechnology, and others. All contributions had in common that they were calling for appropriate forms of FTA to support and enable both organizations and individuals to anticipate, adapt and respond pro-actively to grand challenges.

In this context, this introductory paper provides an overview of selected FTA 2011 conference contributions and the diversity of application fields in which FTA methods are being used. Moreover, while some researchers combine established FTA methods, others bring in insights from new disciplines or techniques that originated in other disciplines. Thereby, they provide important insights to an epistemological debate that is based on the premise that qualitative and quantitative methods are hardly reconcilable. Finally, the papers point to the need for FTA to take into account user perspectives and to shape the social context. Thus, the following articles explore not only the opportunities and limitations of

implementing FTA methods but also their benefits in enabling a better understanding of complex systems which interact in each situation and in defining effective policy responses. In this way the quality and robustness of anticipatory intelligence and preparedness for disruptive events is enhanced through the use of systematic approaches and the development of shared insights. Furthermore, FTA approaches create spaces where an effective dialogue between key players in different policy domains facilitates vision-building and consensus-building for engineering major processes of transformation. Therefore, sound approaches of futures thinking will help to better address the grand challenges.

A first example looks at the application of FTA methods to transport planning. In this paper, Schippl and Fleischer demonstrate that a broad range of tools and methods can be used for assessing the impact of transport policy decision-making. They highlight the importance of assessing the potential effects of policy interventions to anticipate unintended effects and to reduce risks and uncertainties in transport decision-making.

In a second paper, Horton argues that policy-making needs to assume that unexpected disruptive events will happen even with the best horizon scanning system in place. Rather than focussing too much on accurate information, FTA techniques need to embrace different perspectives including those considered impossible now and to provide a holistic view. Such a view will enable users to identify overarching themes and to develop an understanding of their interconnectedness and their implications on potential policy options. Horton's paper, therefore, explores selected elements of complexity theory and their implications for FTA techniques, and later derives implications for the application of foresight in policy-making.

The aim of the scenario task presented in the paper by Heinonen and Lauttamäki was to map out processes that would enable the achievement of sustainable emission levels while retaining the current standard of living in Finland. Four scenarios were constructed by looking back to the present from the future state of 2050. The main purpose in using the scenario approach was not to predict but to construct several different futures and paths leading to them. Although all the scenarios were against current trends, they were still in the range of predictable futures (energy efficiency, restraining urban sprawl, self-sufficiency, and new technologies). Reflecting a broader discussion on the benefit and limits of combining different methods, it has to be noted that using numerical values to support decision-making may be a preferred procedure but that the longer the reviewed time horizon gets, the more uncertain the results become. Thus, participatory methods where views of various different experts are considered were highly recommended. Taking the participatory aspect further and also incorporating citizens in the process could increase the scope of different views and help in implementing the results.

Fernández Güell and Redondo discuss in their paper the opportunities and benefits of linking territorial foresight tools to urban planning procedures. In addition, they suggest ways to reinforce the scenario design method with more in-depth analysis, without losing its qualitative nature and its strengths for communication and stakeholder engagement. Major findings were obtained on the feasibility of a systematic approach that provides anticipatory intelligence about future disruptive events, possibly affecting the natural environment and the socio-economic fabric of a given territory. In addition, the study confirms that foresight offers interesting opportunities for urban planners, such as anticipating changes, taking the user perspective into account, fostering participation and building networks. Such an understanding is in contrast to its perception as a mere story-telling technique generating oversimplified visions without the backing of rigorous analysis. Therefore, foresight methods represent an emerging approach that works with few technical constraints and shows an increased adaptability to environmental changes. This research represents a starting point for interaction between urban planners and futurists. If this is achieved, the chances are high that foresight will elicit less technical skepticism in the urban planning realm.

Last but not least, Andrade's paper proposes the application of FTA to Law. As Law traditionally reacts after events and is resistant to change and transformation, the article argues for equipping legal activities with a set of tools, methods and approaches that enables them to acknowledge and anticipate the various possible futures that will guide

society. Based upon several case studies, the article explains the various benefits that the application of specific FTA methodological approaches (such as scenario-planning, modeling techniques and backcasting) may bring to three specific legal fields: legal research, legislative drafting and law enforcement. The application of FTA to Law is important not only to orient and streamline legal research, but also to identify the most relevant topics and areas that law will need to take care of, to analyze and test the potential impacts of different (and forthcoming) hypothetical laws, contributing to the modernization of current legislative processes, and to reinforce the means and procedures through which law can be enforced. The article also examines the prospective perils that systematically applying FTA to Law may bring about. While the introduction of FTA tools and techniques to Law is deemed extremely important and useful, the paper also draws attention to the problems and challenges that this entails, indicating paths for future research.

To sum up, the articles in this special issue demonstrate a variety of FTA application fields and offer a glimpse onto possible consequences that grand challenges may imply for the development of FTA in the coming years. The scale and direction of innovation is determined by a mix of factors, many specific to a national domain though increasingly less so, as economies and societies become more globalized. Innovation is both a source of and response to disruptive transformations, if broadly conceived in technological, social, organizational and institutional terms. Hence, it will be important to be able to manage inclusion and to make the perspectives of different stakeholder groups heard and seen. FTA can contribute not only to the steering of innovation systems, but also to their adjustment, adaptability and ability to shape responses to grand challenges.

About the authors

Vicente Carabias, who has a MSc in Environmental Sciences from ETHZ in 1996, is responsible for European cooperation and for coordinating foresight activities as well as the research area on sustainable energy systems at the ZHAW Institute of Sustainable Development. Having led the former Swiss contribution to PASTILLE (EESD-FP5; Promoting Action for Sustainability Through Indicators at Local Level in Europe), INTELCITIES (IST-FP6) and REFORM (RoK-FP6), and currently leading OPTIMISM (TPT-FP7) and IFA International Foresight Academy (FP7) and contributing to various FP7 projects (EFP, SESTI and ERA.Net RUS) recently at JRC-IPTS, he is experienced in multi-cultural collaboration and networking. Within international projects, he has contributed to cross-cultural comparative research, stakeholder involvement, sustainability and foresight research by applying monitoring and evaluation systems, Delphi survey, SWOT analysis and scenario development methods in various contexts over the last ten years. He is a Board Member of the Swiss Academic Association for Environmental Research and Ecology (SAGUF), Swiss Expert for the International Energy Agency (IEA) Demand-Side Management (DSM) Task XXIV on Behaviour Change, and Swiss Management Committee Member for the COST Action TU1104 on Smart Energy Regions. Furthermore, he contributes to knowledge transfer from research into teaching. Vicente Carabias is the corresponding author and can be contacted at: cahu@zhaw.ch

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