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Future-Oriented Technology Analysis (FTA): Impact on policy and decision-making — The 2006 FTA International Seville Seminar

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Introduction

The contributions included in this special issue build on material presented at the Second International Seville Seminar on Future-Oriented Technology Analysis (FTA)[1] that took place on the 28th and 29th of September 2006. The Seminar was sponsored and organised by the Institute for Prospective Technological Studies (IPTS) which is part of the Directorate General Joint Research Centre of the European Commission. A Technical Committee was supporting the scientific content preparation of the Seminar, and was done together with the European Techno-Economic Policy Support (ETEPS) Network. This International Seminar was founded on the success of the joint EU–US Seminar on Future-Oriented Technology Analysis (FTA) that was organised by JRC-IPTS in 2004. JRC-IPTS is currently organising this international seminar on FTA with ETEPS on a biannual basis and the next conference is scheduled for the 16–17 October 2008 in Seville. This biannual event is becoming a reference within the FTA communities to increase understanding of the advances occurring in the field of FTA for academics, practitioners, and public and private sector decision makers from all regions of the World.

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[1] The FTA acronym refers to strategic foresight, forecasting and technology assessment.

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The six articles included in this Special issue were presented in 2006. The overarching theme was the "impact of FTA approaches on policy and decision-making,"[2] placing emphasis on the delivery of valued policy outcomes and impacts from FTA activities.

1. FTA assumptions, methods and approaches

Four of the six contributions address a specific theme of the Seminar on the evolution over the years of *FTA assumptions, methods and approaches*. In fact, in the past 10 to 15 years, FTA activities have multiplied across a wide spectrum of settings and at different levels. They have had multiple objectives and rationales, and have used different methodological designs. Furthermore, expectations of outcomes and impacts tend to be context-dependent, and vary from concerns with the take-up of FTA knowledge in policy and decision processes, through to organisational vision-building, or the active inclusion of normally excluded groups in decision-making processes. Of course, this variety might suggest that different objectives, methodologies, and expected impacts can somehow be related to different contexts and conditions.

The first paper from Eriksson and Weber, presents the methodological concept of Adaptive Foresight. This concept was developed by using elements from adaptive strategic planning in order to address shortcomings of more conventional Foresight and to ensure a better link between Foresight and its impact on decision-making processes. The paper discusses adaptive Foresight and underlines that Foresight needs to go beyond the level of a collective process and get to the level of individual actors' strategies. The contribution provides a process outline and examples of Adaptive Foresight, including a critical assessment of its potentials and methodological challenges to be addressed.

The second paper by Brummer et al. addresses the challenges of organising future-oriented consultation processes that are promoted at the international level and, in the precise case by the European Commission, as contribution towards the establishment of common research policy (i.e. the so-called European Research Area (ERA).[3] This contribution refers to a very specific project and sector (i.e. the European forest sector) that aimed to create an international research agenda, based on the recognition of long-term challenges of this sector and the identification of gaps and opportunities in wood material science and engineering. The paper describes the embedded foresight process implemented to achieve a shared vision-building among different stakeholders, and the shaping of new research and technology development networks in European-wide innovation policy coordination. It also describes the major methodological challenges involved in the process.

In the paper 'Regulatory Foresight: methodologies and selected applications,' Blind illustrates three methodologies for performing regulatory Foresight. Regulatory Foresight addresses approaches allowing future fields of regulatory actions to be identified, which could also contribute to new markets. The view of the author is that Regulatory Foresight is an instrument for regulatory bodies to identify, in advance, future challenges for their regulatory regimes, thus allowing them to possibly reshape or develop new frameworks. These would require long-lasting decision processes within the public, the political decision structures, and the public administration. The concept is based on the tradition of regulatory impact assessments and foresight exercises. Regulatory foresight is conceived as strategic activity undertaken by governments and policy-makers responsible for regulatory regimes to shape, pro-actively, innovation-promoting regulatory framework conditions, which are crucial for the competitiveness of national or regional innovation systems.

[2] http://forera.jrc.ec.europa.eu/fta/intro.html.

[3] For further information: http://ec.europa.eu/research/era/index_en.html.

The contribution describes methodologies and approaches developed for the purpose. The conclusions provide a brief critical evaluation of the methods and an identification of requirements for future research.

The fourth paper, by Robinson and Propp, addresses the important issue of alignment of actors for innovation policy to succeed. To increase the possibilities of successful policies, decision makers should identify and anticipate possible directions and options. Only in this way they would have the required elements to make strategic choices and influence technology emergence in advance. Essentially, these are challenges for strategic technology intelligence and forward-looking tools. This is especially the case for implementations around emerging S&T fields. These depend on strategies requiring coordination of research activities from different research actors, and enabling of interactions with companies in creating and sustaining an innovation chain. The paper informs on the outcomes of a project on the simulation of alignment tools to allow the creation of innovation chains in the field of micro and nanotechnology. It explains the development of a particular variation of a roadmapping technique, the so-called 'multi-path mapping' (MPM) toolset by exploring its prospects and outlook.

2. FTA evaluation, impact and learning

Another very important theme addressed by the FTA 2006 International Seminar relates to *FTA evaluation, impact and learning*. The objective of tackling this issue was to address sponsor concerns for better accounts of demonstrable impacts. In fact, without better and fuller accounts of impacts, the future sponsorship of FTA activities (and certainly their wider diffusion and expansion) is likely to be more difficult and places the whole activity under threat. The logic behind this theme was to recognise the work already done in closely related areas, such as programme evaluation, futures studies, planning, and the study of evidence-based policy and scientific advice regimes. Nonetheless, there was a push to extend concepts and theoretical insights from these areas to a larger variety of social sciences and humanities disciplines, such as epistemology, political science, sociology, economics, and management and organisation of science. These disciplines could provide frameworks to analyse some of the advantages and benefits of FTA approaches. For example, knowledge generated through the application of FTA methods, FTA as a process of co-production of stakeholder communities (i.e. social capital), and FTA as a collective learning mechanism through the sequential interplay between codified and tacit knowledge could be examined and assessed.

The fifth paper included in this Special Issue, by Amanatidou and Guy, was a contribution to the above described theme. The overall aim of the paper is to develop an impact assessment framework for foresight exercises to assess the degree to which they promote the development of 'participatory knowledge societies.' The paper presents a conceptual framework outlining the major characteristics of emerging knowledge societies, based on a review of the available literature. Then, a 'logic model' approach is used to develop an 'objectives hierarchy' describing the relationships between higher level goals and the lower level sets of goals that have to be attained if the higher levels goals are to be realised. In parallel, a 'logic model' approach is also used to provide checklists of the foresight inputs and activities likely to lead to the attainment of both lower and higher level system goals, together with checklists of the internal and external factors likely to affect overall performance and goal attainment levels.

3. FTA on specific issues

Two themes of the 2006 FTA International Seminar put FTA into contexts. The two issues are *FTA in a business context and FTA on Higher Education*. The objective of the first was to collect knowledge, and

thus advance the existing literature, on how the business sector (e.g. industry, industrial associations and foundations) uses FTA tools for a variety of reasons. These include horizon scanning (e.g. of weak signals), strategy setting, development of corporate visions, portfolio analysis, and as an aid in the management of supply chains. For FTA on Higher Education, the objective was to stimulate forward-looking, strategic reflections and vision-building on universities. These are increasingly facing new challenges brought on by a number of major disruptive drivers including, amongst others: globalisation and the accompanying mobility of students and scientists; the impacts of new technologies (e.g. the impacts of the internet on teaching); demographic change; increased competition and the need to do well in national and global rankings; demands for a greater emphasis upon problem-oriented interdisciplinary research; and a continuing reassessment of relationships with the private sector and the innovation-related Knowledge Economy agenda (e.g. through third stream activities).

The last article in this Special Issue entitled 'Devising Futures for Universities in a Multi-level Structure: a methodological experiment' by Havas, is a contribution to the Higher Education theme. The paper starts with the assumption that global drivers and challenges are prodding European universities to undergo a series of reforms to position themselves as relevant players in the knowledge society. Given the complexity of the context, it is crucial to support any reform by systematic analyses and vision-building exercises. However, a review of recent works on the future of higher education shows that the approaches implemented present three major shortcomings: (i) the broader socio-economic systems are not addressed in these analyses, (ii) the huge diversity of higher education systems and individual universities cannot be reflected; (iii) the role of other research actors, and more importantly, the links among universities and those other research players are often disregarded. In his paper Havas suggests a methodological approach outlining how prospective activities can be conducted on the higher-education sector. He does this by using European Universities as a case example and he addresses the above listed shortcomings.

4. Concluding remarks

We note some of the issues presented in the concluding session of the 2006 FTA International Seville Seminar. These stem from an address[4] given by the Chair and a Member of the Technical Committee of the 2006 FTA Seminar, Prof. Luke Georghiou and Prof. Ron Johnston. These issues could be considered as reflections linking back to the main objective of the Seminar — to advance and provide knowledge on the impact of FTA approaches on policy and decision-making:

– It is becoming evident that FTA is a useful tool to facilitate, inform and improve policy-making.
– The way forward for FTA lies in the accumulation of experience that has to be carefully evaluated and validated.
– In order to have an impact and be effective, it is important that FTA practitioners understand the policy-making process. This could be achieved by adapting and fine-tuning FTA activities to fit particular context and clients.
– The challenge remains to have FTA activities more closely integrated within the policy-making process. However, influencing policy-making and decision-making requires addressing the cloudy world of the relationship of knowledge to power.

[4] http://forera.jrc.ec.europa.eu/fta/conclusions.html.

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