

Foresight Research

Since 2001, ARC Fund has been developing its institutional capacity in the field of foresight as a new tool in science and innovation policy development. Over the years, ARC Fund has contributed to more than a dozen

projects at EU level, applying foresight methods in fields like research infrastructure, food quality and safety, participation of citizens in identifying future research priorities, environment and new energy sources.

SPRING

The Scoping China's Environmental Research Excellence and Major Infrastructure: Foresight, Potentials, and Roadmaps (SPRING) project aims to address the environmental implications of China's remarkable economic development and Europe's environmental challenges by the collaboration and knowledge sharing between European and Chinese researchers. Thus, SPRING will develop strate-

gies for attaining long-term viability of the Chinese and European economy and will ensure that environmental externalities of economic growth are minimized and/or reversed by shifting current production and consumption trends.

The main objective of SPRING is to create and provide a solid basis for future EU – China collaboration in the field of



Participants in the key technologies workshop, Beijing 2-3 July 2011

environment research. SPRING seeks to identify common needs and opportunities, analyze potential topics of research cooperation and initiatives, map competences and potentials of Chinese research and infrastructure, investigate strategic development plans and initiate roadmaps for future collaboration. SPRING also aims to analyze the hurdles, barriers and cornerstones that need to be addressed to enable better research engagement by EU researchers in China and vice versa. It will improve the visibility of research initiatives and strengths of Chinese regions to a wider audience in Europe.

ARC Fund is in charge of the forward-looking activities, whose goal is to develop strategic plans for strengthening the collaboration of EU-China environment research by using foresight and roadmapping. In order to set the groundwork for their proper execution, during 2011, ARC Fund made a thorough desk research and produced a short foresight manual, aggregated a summary of foresight studies from the EU and China and developed a paper that analyzes the megatrends, drivers and uncertainties influencing the Chinese, European and global environments.

ARC Fund also hosted a consortium meeting held in Sofia on April, 9th-10th 2011. During the meeting, project results were presented and upcoming activities were laid out and discussed. Participants gave their feedback on the megatrends, identified in the analysis and proposed additional ones. The revised version of

the analytical was finalised by ARC Fund in May 2011.

In the beginning of June ARC Fund developed the concept for the key technologies workshop in a special methodology paper. The workshop itself was held in Beijing on 2-3 July 2011. Ms Zoya Damianova and Ms Denitsa Marinova participated on behalf of ARC Fund. They guided the work of the moderators and executed control over the proper implementation of the workshop methodology so that optimal results were achieved. During the workshop, prominent environmental experts from China and Europe discussed the environmental dynamics in a global context and identified a total of 50 technologies with a strong potential to impact our lives in the following 15-20 years. These technologies fall within the six environmental domains under SPRING's scrutiny, namely climate change, water environment, atmospheric environment, biodiversity conservation, soil environment and natural disasters.

As a follow-up of the key technologies workshop, a key technologies questionnaire has been developed by ARC Fund and an online survey has been launched in December 2011. Activities in 2012 will continue with an analysis of the survey results as well as the preparation of another two workshops, including an EU – China success scenario workshop to identify joint priorities in environmental research and an EU – China roadmapping workshop which will aim to elaborate policy recommendations.

PACITA

In March 2011, ARC Fund became involved in the highly innovative project

entitled Parliaments and Civil Society in Technology Assessment (PACITA), sup-

ported through the EU's 7th Framework Program, and is one of 15 partners from 13 European countries. Partner institutions include national and regional parliamentary offices for science and technology, science academies, research institutions, universities, and civil society organizations. The project will run until March 2015.

In committing to this project, ARC Fund's ambition is two-fold. First, we seek to introduce the concept of (parliamentary) technology assessment (TA or PTA), particularly with regard to enhancing the understanding of scientific and technological novelties among policy-makers and the general public; and second, to mobilize relevant stakeholders in recognizing

PACITA Parliaments and Civil Society in Technology Assessment

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Parliaments and civil society in Technology Assessment: Broadening the knowledge base in policy making

PACITA is a four-year EU financed project under FP7 aimed at increasing the capacity and enhancing the institutional foundation for knowledge-based policy-making on issues involving science, technology and innovation, mainly based upon the diversity of practices in Parliamentary Technology Assessment (PTA). Such practices involve a range of methods of cross-disciplinary expert studies, stakeholder involvement, citizen consultation and parliamentary discourse.

The key practices in focus are interactive in the sense that they engage science, civil society organizations, stakeholders, citizens, parliaments and/or governments directly in the activities in order to activate different kinds of knowledge, engage the actors, create common ownership to the results and enhance the communication between the societal actors.

PACITA has 15 European partners from national/regional parliamentary offices for science and technology, science academies, research institutions, universities and civil society organizations coordinated by a PTA institution, the Danish Board of Technology.

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- EPTA Network
- pEPTA Conference (07/09/2011)

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Homepage of the PACITA project at www.pacitaproject.eu

the role of knowledge in devising sound policies. This will serve to support the formation of a strong domestic (P)TA awareness and practice in the country. Around the world, but most recently in Western Europe, PTA has gained significant prominence at the intercept among science, public policy, and society. Though traditions and practices across the different countries reflect great diversity with regard to institutionalization, methodology and its broader societal role and impact, PTA's key message remains the same everywhere. It supports the processes of democratic policymaking on issues involving science, technology and innovation, by providing comprehensive insight into knowledge on opportunities and consequences, by facilitating democratic processes of debate and clarification, and by formulating policy options. We strongly believe PTA has the potential to significantly enhance democratic praxis in terms of elaborating better policies, designing more consistent legislation, and raising public awareness of scientific and technological advances. In addition, PTA practices are very likely to strengthen society's trust in both policy-making and in the results of scientific research.

Within PACITA, ARC Fund collaborates closely with colleagues from the Dutch Rathenau Institute and the Austrian Institute for Technology Assessment. In 2011, ARC Fund and its partners set up an am-

bitious agenda within the PACITA project. Staff members visited the Rathenau Institute and conducted joint interviews with leading Dutch technology assessment professionals, a science journalist, a microbiology professor, and a Member of the Dutch Parliament. They also prepared a thorough overview of the supporting domestic infrastructure, in terms of policy and research institutions, and identified the initial opportunities to commence a more targeted effort towards the introduction of PTA, and the attraction of key stakeholders' support.

ARC Fund is also the responsible partner in the development of a shared database to store PTA contacts across the EU, and to make them accessible to all project partners. This will serve the purpose of greater communication and dissemination of project information and accomplishments.

ARC Fund is especially proud to be a pioneer in championing the PTA concept and practice within the domestic policy discourse, and is currently the only Bulgarian organization to promote PTA. We build on our strong track record in supporting the development and implementation of innovation policies, in performing high-quality applied research, in networking with policy institutions and science centers, and in mainstreaming technological advances and solutions.

RIFI: Research Infrastructures – Foresight and Impact

The RIFI project on “Research Infrastructures: Foresight and Impact” sought to advance impact studies by developing a comprehensive methodological framework for assessing socio-economic impacts of future Research Infrastructure (RI) projects on hosting regions and communities.

The Project Consortium was made up of 13 partners from 4 countries with a particular emphasis on Romanian and Bulgarian participation. This was reflected in the interest of the EC to build impact assessment capacity in countries that can benefit from the use of Regional Devel-

opment funds to create RIs.

Starting with a review of existing methods being used for socio-economic impact assessment of RIs, the project consortium developed a preliminary version of a holistic methodology with foresight elements being intertwined with impact assessment. This version has been tested and validated through six case studies of RI projects of different characteristics and pan-European, regional and national interest:

- Romanian ELI (Extreme Light Infrastructure) – Nuclear Physics (ESFRI project)
- EURO-ARGO (Global Ocean Observing System) (ESFRI project)

- Free Electron Laser FERMI@Elettra (under construction in Trieste, IT)
- Research Pavilion of the Colentina Clinic Hospital of Bucharest (RO national infrastructure)
- Institute of Renewable Energies of the Polytechnic University of Timisoara (RO national infrastructure)
- Molecular Medicine Centre of the Medical University of Sofia (BG national infrastructure).

Beyond the RIFI consortium, the Extreme Light Infrastructure Beamlines (ELI-Beamlines) project in the Czech Republic tested some parts of the draft RIAM (RI Impact Assessment Methodology) version and fed their experiences back for methodological

FenRIAM

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Reporting

The final report of FenRIAM needs to address the decision makers in the framework of the scoping document. From a support decision instrument perspective, the following principles are recommended when writing the final report:

- » *Provide a general introductory perspective of the impact lines.*
While a lot of data is collected during the different steps of the procedure, its significance in the final assessment may be revealed gradually. Therefore the final report may start with a short narrative depicting the main aspects of the RI and the region that contribute to the estimated impact, the main assumptions on future events and the main indicators in relation with the foreseen causalities.
- » *Ensure easy interpretation of the indicators*
FenRIAM modules involve a series of technical sections. All the aspects that enable calculations need to be identified, but before that a brief presentation of the indicators and their relevance in the specific context ensure a proper reading of the report.
- » *Acknowledge the constraints* in the application of the methodology, related to the data availability, stakeholders and experts involvement, changes in methods used etc.

FenRIAM on-line platform at www.fenriam.eu.

improvement. The observatory at Roque de los Muchachos in La Palma (Canary Islands, Spain) delivered insights into how to assess certain aspects of public opinion about an existing RI.

The final product of the project, the FenRIAM framework (Foresight enriched RI Impact Assessment Methodology) integrated the feedback from the case studies and was presented at the RIFI project concluding conference in Bucharest (30-31 May 2011).

FenRIAM features foresight and impact assessment modules which are interwoven through an “inputoutcome” interface. Success and baseline explorative scenarios developed by foresight feed the Impact Assessment Module for eliciting

socio-economic impacts in four domains: science & technology, ecological environment, jobs (work & population) and quality of life. Assessment of the associated risks is also structured in a module. The outcomes of the impact and risk assessments are used as inputs for developing alternative scenario hypotheses in the second stage of application of foresight methods.

Currently, FenRIAM is made available to stakeholders and interested parties by two complementary products: (1) an extensive leaflet, containing detailed information of FenRIAM, its background and its main functions, and (2) an interactive website (www.fenriam.eu), which offers access to several case studies on which FenRIAM is based.

