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UNIDO Technology Foresight Initiative

Foresight Brief No. 45

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Sponsors:	UNIDO National Governments		
Type:	A global initiative that draws on and supplements national and regional TF initiatives.		
Organizer:	UNIDO along with the ministries of the various participating countries that deal with national economic and industrial development		
Duration:	Ongoing since 1996	Budget: N.A.	Time Horizon: +20 years

A Global Initiative on Technology Foresight

UNIDO is implementing a global initiative on Technology Foresight. This draws upon regional initiatives and aims at building the capability to use Technology Foresight as a practical tool for designing policies and strategies to exploit critical and emerging technologies for the benefit of developing countries and economies in transition.

Supporting Industrial Progress in Developing Countries

The UNIDO TF or 'Technology Foresight' Programme focuses on industrial development issues. In doing so it intends to assist developing countries to upgrade their industrial sectors from resource-based to technology-based capacity in order to better integrate their products in the regional or global economy.

National TF exercises would be packaged whenever possible into regional initiatives in order to enable cost effectiveness of preparatory and common awareness building and training activities together with networking arrangements.

The regional dimension of UNIDO TF initiatives help less developed or small countries to be more aware of global and regional trends which could provide advantages or pose challenges to their economies.

Finding National Competitive Advantage

The goal of UNIDO TF regional initiatives is to help developing countries, involved in or seeking to be involved in Technology Foresight to move ahead at regional level by building on national exercises already in progress. In practical terms the UNIDO TF initiative seeks to achieve the following:

- Identify conducive policy frameworks,
- Strengthen interaction, communication and cooperation between all relevant stakeholders of the national innovation system.
- Facilitate decision makers in identifying priority areas in selected industrial sectors of national competitive advantage to enable the national products and services to better access the regional and the global market.
- Build capacity at institutional and enterprise level to identify risks and opportunities on how to improve value chain competitiveness through the application and use of technology foresight analysis and methodologies.



- Establish a knowledge-based network related to national technology foresight initiatives, programs and activities in order to make available for reference at regional level sources of information, studies, expertise and comparisons.

In addition to achieving the expected benefits of a TF exercise, the UNIDO TF initiative aims at helping developing countries overcome potential difficulties and reduce excessive costs associated with the realization of full-scale technology foresight exercises at national level.

Methodology and Approach

Currently UNIDO is carrying out regional initiatives in Latin America, in Central and Eastern Europe countries and in the Newly Independent States of the Former Soviet Union – the so called CEE/NIS countries. Various approaches and methodologies are being employed depending on the type of activity. In NIS and Eastern European countries, UNIDO TF activities revolved around awareness building, capacity building, regional foresight and the development of a center for regional knowledge exchange.

In multi-country foresight exercises as conducted in Latin America the methodology can be summarized as the follows:

- Major technological trends are identified at a global level,

- Technologies or technological sectors of specific importance at regional level are identified and selected,
- Finally the results of national TF exercises help reveal the amount and type of work needed to match the challenges.

The aforementioned technological and organizational infrastructures provide a platform for such exercises of analysis and reflection.

- All participating countries in ongoing initiatives are part of a so-called '**dynamic foresight regional network**'. This network is supported by an information technology infrastructure that aids and facilitates the exchange of knowledge.

Foresight in Latin America

Technology Foresight activities in this region started in 1996. A programme to support national foresight initiatives was implemented from 1999 on the basis of financing provided by Italian authorities through the ICS or International Center for Science and High Technology, based in Trieste. ICS funding supported activities in Brazil, Chile, Uruguay and Venezuela until the first quarter of 2002.

In **Chile** a Delphi exercise was completed to identify strategic economic and technology sectors over a ten-year period. The Chilean TF Programme started in 2001 and is now a component of the National Programme on Innovation and Technology Development. It gets co-funding from the IDB or Inter-American Bank. In effect the UNIDO contribution provided the seed money to launch the Chilean TF programme and mobilize the necessary extra funding.

In **Brazil**, according to UNIDO, a methodological approach for industrial technology foresight was developed to address the needs of industrial production chains. TF exercises were concluded for three production chains:

- Textiles and Garments,
- Plastics and
- Wooded Furniture.

In **Uruguay** the national technology foresight programme was conducted within a framework established between UNIDO and the Secretary of President of the Republic with the support

of its National Council for Science and Technology. This foresight exercise focused on the most important economic sectors in terms of actual and prospective contribution to GNP. It aimed at addressing regional and international scenarios and factors which would influence the Uruguayan economy over a fifteen-year period. In 2002 the study phase was concluded for the following three macro-sectors:

- Food biotechnology,
- Energy, as well as
- Transportation and Logistics.

In **Venezuela**, UNIDO and the ICS provided support for TF activities managed by the Ministry for science and Technology. An example of such an activity was the 'Yucca in Gondola Agricultural Project'. An important aim was to apply the results of TF in the definition of policies and strategies for up-grading the technological capacity of selected industries in the country.

Technology Fair of the Future

In cooperation with UNCTAD, UNIDO organized and conducted a 'Technology Fair of the Future' on 13-18 June 2004 in São Paulo Brazil, as part of the UNCTAD XI General Conference. The Fair was financed by UNIDO and the Governments of Austria and Brazil. A total of 97 technology firms and institutions from 15 countries made use of the fair facilities and presented a wide range of innovative technologies in:

- Agro-food,

- Energy,
- ICT,
- Biotechnology,
- Aerospace,
- Materials,
- Electronics and nano-technology, as well as
- Innovation Support Services.

This involved 202 persons. Most of these were researchers, innovators, technology managers or CEOs of companies who attended the fair and participated in the discussions and meetings at different fair events.

Engagement in Central and Eastern Europe and NIS

Since 2001, UNIDO has been implementing the 'Regional Initiative for Technology Foresight' in the countries of the CEE (Central and Eastern Europe) and the NIS (Newly Independent States of the former Soviet Union).

This regional initiative aims at responding to the Central and Eastern Europe and NIS need for a mid- and long-term development vision of the region, as well as for bringing a more technology-oriented focus into the relevant national and regional knowledge-based institutions.

The initiative enjoys strong support from several countries. Reports indicate that it has received funding contributions from Austria, Czech Republic, Hungary, Slovakia, Turkey, Russian Federation, the United Kingdom and Ukraine.

Awareness Building Towards a Foresight Culture

UNIDO and the Hungarian Government have decided to establish a regular Technology Foresight Summit. The first summit took place in March 2003 in Budapest and its thematic highlight was the field of biotechnology. As one of the components of the summit, UNIDO launched a new activity - the 'Technology Fair of the Future'. Awareness building of the importance of Technology Foresight as a decision-making tool for long term strategy was further promoted through an international conference on 'New Advances of Technology Foresight' which took place in Kiev, Ukraine on 10-11 September 2002.

Capacity Building

To date UNIDO provides training at four distinct levels:

- **Module 1:** Basic training for organizers of foresight programmes
- **Module 2:** Methodology for practitioners

Using Technology Foresight for Production Chains

UNIDO helped in the development of a new concept for the use of TF for production chains. A first study was carried out with support from the Spanish government and focused on a multi-country production chain related to the fishing industry in the Pacific Coast of South America. The results were presented in a regional conference on 5-6 May 2005 in Manta, Ecuador.

- **Module 3:** Instruments for strategy and policy for decision makers
- **Module 4:** Corporate Foresight

Altogether approximately 300 professionals from 28 countries have been trained through the above mentioned exercises.

In 2004 additional training seminars at national level were organized in Kiev, Ukraine and in Sofia-Bulgaria in order to build and strengthen capabilities for the national exercises.

UNIDO is in the process of establishing a distance-learning programme on Technology Foresight at the Ukrainian Centre of Distance Education at the Kiev Polytechnic Institute.

UNIDO has also developed a manual on Technology Foresight.

The Regional Virtual Centre as Facilitator

In 2005 UNIDO, in cooperation with the governments of the Czech Republic and Hungary launched the organization of a 'regional virtual center' to facilitate the implementation of the Regional Initiative on Technology Foresight for the CEE/NIS.

The regional virtual center is conceived as a network of institutions and persons working in the field of Technology Foresight. It makes intensive use of modern information and communication technologies. It comprises one central unit and a series of selected focal points.

The intended participants and beneficiaries of the network are high level decision makers from policy institutions, officials and managers responsible for technology development in the countries of the CEE/NIS and other selected regions, as well as decision makers of enterprises working in these regions.

Foresight now a part of UNIDO Initiatives

An independent evaluation of the impact of the various UNIDO activities in Technology foresight is not available. Nevertheless UNIDO continues to support activities that are deemed successful and useful by its clients. According to UNIDO, at the 25th session of the Industrial Development Board its member countries acknowledged the successful implementation of the 'Regional Initiative for CEE/NIS' and this led to a recognition by the member countries that comparative advantage could be gained by promoting Technology Foresight in the framework of the organization's

regional programmes and initiatives. Technology Foresight therefore continues to be included among the new UNIDO initiatives.

The results of capacity building efforts have been deemed very encouraging by UNIDO. They are seen by the organisation as a pillar for the creation and improvement of national and regional Foresight processes and studies.

The aim of the programme is not only to deliver a finished package of assistance but also to establish a continuous and systematic instrument for advising governments and industrial actors about Technology Foresight and its implementation.

Sources and References

- Miyake, T. UNIDO Technology Foresight Programme & Business Incubation
- Technology Foresight Initiative for Latin America and the Caribbean countries: Spanish contribution. A 'PROJECT DOCUMENT'

- Dr. Ricardo Seidl Da Fonseca, TF Programme manager at UNIDO

See the websites at:

- www.unido.org/foresight
- www.4-sight-group.org/case_studies/latin_america/vucca.html

About the EFMN: Policy Professionals dealing with RTD, Innovation and Economic Development increasingly recognize a need to base decisions on broadly based participative processes of deliberation and consultation with stakeholders. One of the most important tools they apply is FORESIGHT. The EFMN or European Foresight Monitoring Network supports policy professionals by monitoring and analyzing Foresight activities in the European Union, its neighbours and the world. The EFMN helps those involved in policy development to stay up to date on current practice in Foresight. It helps them to tap into a network of know-how and experience on issues related to the day to day design, management and execution of Foresight and Foresight related processes.