

REGIONAL DEVELOPMENT

Rebuilding a Lasting Fabric

Prior to being severed during the east-west confrontation, there existed, well before World War II, a multitude of links and direct personal, economic and cultural exchanges integrating eastern and western Europe. Reconstructing this fabric has been taken up by several initiatives. One approach has been to provide help by evaluating, on the basis of independent expert advice, policies and strategies. An important meeting in this context was held in Vienna on 6-7 July 1995. It brought together the Working Group on Science and Technology of the Scientific Committee of the Central European Initiative (CEI) with members and observers of the UNESCO Physics Action Council (PAC) Working Group for Large Facilities and of several other organizations.

The participants were well aware that their efforts represented only a minor part in the process of reconstruction. But they believed that scientific, technological and educational interchange constituted a very fruitful and decisive part of the needed

development. This belief was based on central Europe's past achievements in science and education and their impact on modern civilization, which owed many of today's technologies to developments and people based in the region.

A very cost-effective contribution has come from supporting carefully selected initiatives and ensuring their growth through collaboration between scientists from several countries and institutions. This will allow many young people working in teams to tackle very demanding problems. They will then keep and share common achievements throughout highly visible and very mobile professional lives involving both the training of others or the application of research to new technology.

The Vienna meeting, in evaluating proposals (see table) for scientific and technological activities within a number of centres and initiatives in central Europe, aimed to advise governments, funding agencies and international organizations on the most cost-

effective policy options for reconstructing east-west interactions and mobility based on the highest standards.

Central European Initiatives

The various initiatives taken up by the UNESCO/CEI Evaluation Committee had already been considered in the context of funding by national governments and/or funding bodies. The UNESCO/CEI evaluation essentially aimed to go one step further by identifying the possibilities for internationalization and the advantages in so doing. While ranging widely in size, content and scope, the initiatives (see table) could be classified in terms of their impact as follows:

- A) Existing large laboratories or networks for multidisciplinary use possessing unique technical facilities or know-how typically involving each year the interaction and turnover of tens to hundreds of scientists in a collaborative and training environment.
- B) Proposed new centres or networks with unique technical facilities or know-how.
- C) National centres with facilities or know-how of regional relevance which are able to support exchanges and collaborations when

Central European initiatives: summary and recommendations

A) EXISTING LARGE LABORATORIES & NETWORKS

<p>ELETTRA Synchrotron Laboratory, Trieste World-class, ultrabright, soft-x-ray synchrotron source. Commissioned 1994; open for general use shortly.</p>	Support any activity that extends & increases internationalization.
<p>Budapest Neutron Centre, Budapest Based at Budapest Research Reactor; upgrade to 10 MW ended in 1994. 100 coop. agreements; instruments: 5 operating; 3 near completion; 3 in 1996.</p>	Support access & new equipment. Support acquisition & use of a proposed cold neutron source.
<p>High Pressure Research Centre, Warsaw Comprising 7 labs with unique expertise & experimental facilities. Founded in 1972; new facilities under construction.</p>	Support activities, notably by external users, via specific int. grants.
<p>Centre for Computational Materials Science, Vienna Founded in 1994 by groups from the TU Vienna & Vienna Univ. Extensive network of collaborations involving many young scientists.</p>	Support access & an extension with international funds.

B) PROPOSED NEW CENTRES OR NETWORKS

<p>Austron Neutron Spallation Source Medium energy, high current neutron source located near the Austria/Hungary/Slovakia border envisaged by a recently completed feasibility study commissioned by the Austrian government.</p>	Continue support & build international involvement by strongly urging the Austrian government to reconfirm its willingness to support 1/3 of construction costs if matching funds are found.
<p>Computing and Networking Initiative 1992 proposal to improve access to and training in networking facilities remains valid in spite of general improvements in networking capabilities.</p>	Urge governments to promote competitively priced, high-capacity interconnections & to support network servers.
<p>International Centre for Dense Magnetized Plasmas Proposal for a centre to study & apply non-linear & turbulent phenomena.</p>	Evaluation Committee referred to other international evaluations. Support completion of feasibility study and eventual localization in Poland (if the initiative is judged to be suitable).
<p>Heavy Ion Laboratory, Warsaw K-160 cyclotron commissioned in 1994 offering medium-energy heavy ions. Several international collaborations in place; full capability in 2 years.</p>	Support a final effort to help the facility reach final specifications so it can increasingly attract international users.

C) NATIONAL FACILITIES & CENTRES OF REGIONAL RELEVANCE*

<p>Cyclotron Laboratory, Rez-Prague Proposed upgrade of the U-120M cyclotron commissioned in 1977. Used for education, training and isotope production.</p>	} Detailing of the possibilities for joining NuPECC & regional accelerator-based networks. Evaluate further to better define their best uses in expanding scientific & academic networks.
<p>Regional Cyclotron Centre for Applied Nuclear Research, Bratislava Proposal for a new regional centre based on a Russian-supplied, 2 m cyclotron.</p>	

The initiatives are given in the order of size and number of users (*i.e.*, the number of links which they could introduce in rebuilding the cultural, scientific and operational network between east and west).

*: Several generally smaller facilities & centres for physics & chemistry in Ljubljana, Rijeka and Zagreb were also considered by the UNESCO/PAC Evaluation Committee. It recommended further analysis to better define opportunities for support within a framework of regional centres.



networked at an international level. The centres considered at the meeting involved condensed matter, chemistry and nuclear physics facilities in Bratislava, Ljubljana, Prague, Rijeka, and Zagreb.

Wide Ranging Criteria

The evaluations were based on oral presentations followed by discussion according to the following criteria:

- Scientific quality.

- Friendliness and advantages for **external users** and the capability to give high quality support for research and education and to increase regional mobility on both individual and interdisciplinary bases.

- Impact on technical **education** and transfer in terms of both present and potential exchange with industry or with social and health services.

- The need to avoid a long-term **brain-drain**, to promote the optimum utilisation of past investments, and to induce a more widespread recovery of research and technological activities.

- The extent to which evaluation explicitly helps funding agencies choose between excellent activities in the light of different institutional and political **missions** (for example, the opening to international use of unique facilities, the involvement of educational institutions, the impact on human or cultural mobility, etc.)

Recommendations

1. General recommendations

The joint UNESCO/CEI Evaluation Committee recommended that national and

CEI-UNESCO Evaluation Committee

The Joint Meeting of the Working Group (Chair.: H. Schopper) on Large Facilities of the UNESCO Physics Action Council (PAC) and of the Working Group on Science and Technology of the Scientific Committee (Chair.: C. Rizzuto) of the Central European Initiative (CEI) was held in Vienna on 6-7 July 1995. Present were members of both Committees as well as observers and delegates of governments and funding institutions, the European Commission, IUPAP and of EPS. The participants acted as a joint Evaluation Committee for initiatives brought to its attention through the CEI, PAC and the EPS. The meeting was sponsored by UNESCO and the Austrian Ministry for Science and the Arts.

Existing and proposed facilities will help rebuild a lasting fabric of personal and institutional links throughout central Europe.

●: sites of facilities considered by the UNESCO/PAC Evaluation Committee;
○: sites of existing major physics facilities in western Europe.

international funding agencies support a series of such initiatives because the development and expanded use of several planned or operating facilities in central Europe can make important contributions to rebuilding and strengthening a lasting fabric of personal and institutional links. They would help expand the growth of science and technology in the region by inducing mobility and high intellectual standards without creating a long-term brain drain. Priority should be given to supporting new users of existing unique facilities, to upgrading to a unique level existing facilities, and to constructing unique new facilities.

2. Specific recommendations

Specific recommendations (see table) were based on internationalizing existing world-class laboratories and networks in Budapest, Trieste, Vienna, and Warsaw, and on creating and linking new regional-level laboratories and educational and technology-transfer initiatives. Although the evaluation was limited mainly to physics and materials science it is believed that it addressed most of the major multidisciplinary initiatives that have been proposed.

Personalities

The European Commission has formally confirmed the appointment of **Jorma Routti**, currently President of the Finnish National Fund for Research and Development, as the new Director-General of DG-XII (Science, Research and Technology). He replaces Paolo Fassela. Professor Routti was formerly Dean of the Department of Technical Physics, Helsinki University of Technology.

Jan Borgman, the chairman of the European Science and Technology Assembly (ESTA), reports that ESTA has advised on common criteria for handling Framework proposals (to make decisions more transparent) and pushed for more inter-Directorate collaboration (new EC task forces for specific areas partly meet this need). ESTA working groups will consider programme evaluation, coordination with national programmes, academic-industrial research links, 5th Framework (F5), and ways for ESTA to address other topics. Advice on F5 is a priority since the EC seeks input by April 1996. He thinks Framework, in going beyond pre-competitive research, should promote research aimed at profitable innovations within 5-10 years and strategic industrial alliances in selected areas.

The winners of the 1995 ITALGAS Prize include **Olli Lounasmaa** (Finland) for physics and **Maurizio Cumo** (Italy) for energy sciences. Possibly the most valuable European prize in science, it is awarded every year by ITALGAS, in collaboration with the Academy of Sciences of Turin, to three scientists working in one of the European Union countries. Subject fields alternate between physics, materials science, energy, chemistry, ecology, and communications. Further details from: S. Bocca, Segreteria del Premio IALGAS, Via XX settembre, 41, I-10121 Turin (fax.: +39-11-239 43 06).

It was felt that national authorities and international funding institutions would have a definite advantage and increased impact by accepting advice based on the meeting's evaluations.

3. Policies

Policies for science and technology were considered, and the Committee urged that every avenue for generating joint support for multilateral cooperation and/or access to facilities of major intellectual and technical interest must have the highest priority. This applies, in particular, to ensuring that European Union (EU) Framework Programme projects remain open to scientists and groups from central and eastern Europe, to the advantage of both east and west. The Committee therefore urged the EU to establish, as soon as possible, the administrative procedures for participation in the current Framework programme and to aim to improve the fairly limited opportunities for EU support for the types of activities in basic science that were being evaluated.

This report, based on the minutes of the Evaluation Committee meeting, was prepared by the Editor in consultation with H. Schopper and C. Rizzuto.

Herwig Schopper, the EPS President, has been elected as an Honorary Member of the Hungarian Academy of Sciences, Budapest.

In the Wings of Physics by **Maurice Jacob** (EPS President from 1991 to 1993) that recounts some of the "backstage" activities in scientific research has been published by World Scientific.

Erdal Inonu who chaired the 1981 EPS General Conference has been appointed Turkey's Foreign Minister.

Robert May (Oxford, UK), an Australian-born theoretical physicist turned mathematical ecologist, has been appointed as the UK Prime Minister's Chief Scientific Adviser.

The Senate of Germany's Max Planck Society (MPS) has appointed **Hubert Markl**, professor of biology at the University of Constance, as the MPS President (replacing Hans Zacher). **Barbara Bludau**, Hamburg's Minister for Industry and Research, replaces Wolfgang Hasenclever as the MPS General Secretary.

Some 51 national teams of 5 students competed at the 1995 **Physics Olympiad** held in Canberra, Australia on 5-13 July. China was the top team (Chinese students came 1st, 2nd, 5th, and 6th) followed by the US and Iran. Germany came 6th and the UK 7th. In a change around, Vietnam came 4th and Korea 5th, replacing east European countries that have historically come in the top seven. The 1996 **Olympiad** (Oslo; 30 June-7 July) will be organized by the Norwegian Physical Society.

Grenoble's European Synchrotron Radiation Facility has launched a competition **100 Years of X-rays** for the best 1000-word article by 18-25 year olds on the most imaginative future application of X-rays. Closing date: 30 September 1995; entries to X-ray Competition, ESRF, BP 200, F-38043 Grenoble.