Seventh US-Japan Joint Science Policy Seminar

Appendix C: Plenary Session I: Expectations for Multilateral Cooperation

Abstracts of Remarks by:

Plenary Session I: Expectations for Multilateral Organizations

Overcoming Obstacles to International Scientific Cooperation: Role of the OECD Megascience Forum

Michael W. Oborne

Abstract

International co-operation in general is a strategic tool of preference for governments, but it can also a residual choice, often a second best one for many policy-makers. With respect to international co-operation in science, three major categories of actors appear as players at different levels:

- scientists themselves, who are the real players;
- science funding agencies, which are conduits of public funds; and
- higher levels of government, officials who intervene when large sums of money are at stake. Parliaments also play an increasingly important role.

This paper is based on the experience of the OECD Megascience Forum. The text studies the obstacles to international co-operation, which come into play when large regional or global co-operation in big science is in question. Besides the impediments originating in the scientific community - partly cultural, partly a result of normal competition - many obstacles emerge at the level of government entities, whether operating agencies or political bodies. Some hindrances to the successful search for balanced co-operation arise in the way governments work; these are largely non- conjunctural and can be analyzed as structural, technical, political, (non-cyclical) economic and ideological. Other difficulties are conjunctural and, in the field of big science financed by public funds, reflect the changes in the world scene due both to the end of the Cold War and public deficit crisis in most industrialized economies.

Plenary Session I: Expectations for Multilateral Organizations

Vicki Sara

Abstract

Science, technology and research play an important part in advancing a country's economic performance.

The increasing globalization of these activities emphasizes the need for policy makers at all levels of government and business to think in an international context. While before countries could have different domestic and international policies, the trend has resulted in the need for policy agendas to be integrated.

In the move towards globalization of economic activities, national interests are increasingly served by the development of strong bilateral, regional and multilateral cooperation strategies. Cooperative arrangements need to occur at each of these levels for opportunities for international cooperation to be maximized. Effective bilateral relationships for example, are the basic building blocks, which contribute to and complement regional and multilateral efforts.

On some issues however multilateral efforts are the most effective way of advancing national interest. Multilateral organizations have an important role to play in furthering international cooperation. They allow all member countries, irrespective of size, an opportunity to debate generic issues. They allow basic principles to be agreed upon and provide a base for more specific bilateral agreements. Importantly areas of strategic global importance such as the environment, food and energy benefit from multilateral cooperation.

It is important to remember however, that the multilateral system can only achieve that which member states are prepared to enable them to accomplish For a small country like Australia the international agenda is too large to involve itself in everything and there is a need to concentrate in areas where national interests are closely engaged. International environment negotiations are an example of the importance of ensuring that Australia's multilateral objectives are closely aligned to its national interests. There may be conflicts between fundamental national interests and international action in pursuit of global goals.

There is increasing use of regional and international multilateral fore to facilitate and enhance science, technology and research activities. At a regional level APEC is the most significant multilateral forum in which Australia participates. Active participation in APEC and other regional institutions demonstrates Australia's recognition that its future is inextricably linked to the future of the Asia-Pacific region.

APEC has the potential to play an important role in furthering international cooperation in science during the next century. Under current arrangements, this is accomplished through

APEC's Industrial Science and Technology Group, which was established to promote widespread access to and knowledge about industrial science and technology. The Working Group has identified six key priorities:

1. improved flows of technological information and technology;
2. improved researcher exchange and human resource development in industrial science and technology;
3. facilitation of joint research projects;
4. improved transparency of regulatory frameworks;
5. contributions to sustainable development/environment; and
6. enhanced policy dialogue and review.

Activities implemented to address these priorities should be of significant benefit to Australia and other member nations of APEC. In Australia there is evidence of a decline in international networks among Australian researchers which raises several fundamental questions: Does Australia need to build better linkages to international science and technology, what are the appropriate roles of the universities, the funding agencies and the government, what weaknesses in the current system present obstacles to the free-flow of people and ideas between countries, what is the appropriate balance between funding individuals, projects and teams and funding participation in international large-scale research facilities.

Also critical in facilitating science and technology cooperation is the internationalization of research training. Governments in most OECD countries for example, treat the international aspect of research training as an important and complex policy issue. Where most network structures and resources for international mobility used to be at the postdoctoral level and driven largely by the scientific community, the impetus is now also coming from the center with governments becoming more directive with regard to international exchange and mobility and research training programs becoming the focus of serious interest and debate in this regard. Internationalization strategies for research and research training need to target linkages and provide reciprocal exchanges for personnel at all stages of career with access to major facilities and cooperative research activities.

Most importantly the priorities of APEC will ensure the continued promotion and stimulation of excellence in science, technology and research. Through excellent international science we are able to contribute to and benefit from international deliberations on complex social, legal and ethical questions, and to discriminate between first rate and third rate science.

Plenary Session I: Expectations for Multilateral Organizations

Jean François Stuyck-Tallandier

Abstract

Introduction. There has been a rapid growth of international scientific bodies, organizations or programs, generally non-governmental organizations (NGOs), in the last decades. Two reasons can be found for this change:

- a gregarious instinct in human beings
- a tendency to try to avoid governmental red tape.

One of the most important NGOs active in the scientific field is, of course, mine: the International Council for Scientific Unions (ICSU).

What is ICSU? ICSU is an organization which has been in existence, in one form or another, since 1919. It is:

- one of the oldest and one of the largest scientific networks with a reputation of seriousness, impartiality and dedication in scientific matters;
- a non-governmental organization but with close association with governments, in the sense that we are not a union of individuals but in the case of our national Scientific Members, often linked to governments;
- a non political organization providing a neutral ground for scientific discussions;
- a large scientific pool of knowledge and expertise able to work as a scientific advisory body to various international, governmental or not, bodies.

ICSU is changing. During its long history, ICSU has been able to play a role adapted to the general situation. This was the case during the "cold war" as a link between East and West. Now, we have to adapt to a new situation and an international assessment was made in 1996. New statutes have been accepted recently in order to create more links between the different partners of ICSU: national bodies, unions and regional partners to allow them to collaborate more closely in interdisciplinary and socially relevant scientific programs.

What future for ICSU and other international NGOs? The usefulness of international NGOs could be in:

- the coordination of international and society-linked scientific programs;
- the participation of science in the global evolution of society.

Coordination is necessary at a time when the number of potential partners is increasing, when intergovernmental organizations are not always able to adapt to these changes and society is asking more and more questions, not always very logical, of science. A rapid survey of several NGOs of different size and origin and a comparison with ICSU:

- the European Science Foundation (ESF), a regional union of national scientific organizations;
- the World Conservation Union also known as IUCN;
- the International Institute for Applied System Analysis (IIASA) sponsored by a consortium of national members.

Roles of ICSU.

Co-ordination of international interdisciplinary and society-linked programs. Presentation of several examples of large programs initiated by ICSU alone or in partnership with several organizations:

- from Global Atmospheric Research Program (GARP) to the World Climate Research Program (WCRP) with the International Geosphere-Biosphere Program (IGBP) and International Human Dimensions of Global Environment Change Program (IHDP);
- from the International Biological Program (IBP) to DIVERSITAS;
- from the Global Observing Systems (GCOS, GOOS and GTOS aka G3OS) to the Integrated Global Observing Strategy (IGOS).

The participation of science in the global evolution of society. Among the most visible examples of the global scientific consciousness are the various Conventions, for example the Convention on Biodiversity or Desertification. ICSU plays a role of independent scientific advisor to these conventions.

An other manifestation of this new conscience is the proposed World Science Conference to be held in June/July 1999 in Budapest under the co-sponsorship of UNESCO and ICSU.

Plenary Session I: Expectations for Multilateral Organizations

Fumio Kodama

Abstract

Notions of cost sharing and task sharing have dominated international cooperation. However, dividing up costs and tasks suggests that an option has already been selected. Indeed, the soaring costs involved in large engineering projects is due, at least in part, to the increasing number of options and to the pressure imposed on a single government to cover all the costs involved in exploring all the options simultaneously. Only through international cooperation, is it feasible to pursue all potential options

In the face of huge *ex-ante* uncertainties concerning the uses of new technological capabilities, private firms can depend upon the market mechanism, and it encourages exploration along a wide variety of alternative paths. In national programs, however, we cannot rely on the market mechanism. Therefore, I will come to propose a new idea for international cooperation, i.e., *option sharing*. Option sharing is a concept which entails dividing up the burdens and responsibilities for pursuing each of the possible scientific and technological *options* in a given area. I will argue that a thorough search of all possible options should be the main objective of future international cooperation.

Covering all possible options through international cooperation would have a profound effect on the development of technology. While science aims at an absolute truth, technology aims at relative superiority. Determining the most meritorious technical option, therefore, is not possible unless all the options are demonstrated and compared. Option sharing should not be looked upon as a scheme whereby a country relies on advances made by competing projects of other countries. Instead, the other countries will provide a *calibration* of the state of art of technical advance, with transparency provided through an appropriate multilateral organization.

The calibration argument gives us a technological rationale behind cooperation, but it might not give enough economic incentives. However, by sharing information about all the options to be tried, a nation with physical and human capital focused on a losing option could be helped in catching up with the nation that happened to develop the winning option. This information sharing could be assured by allowing a free flow of researchers across national borders. After researchers had freely chosen the option they wished to pursue in accordance with their own views, convictions and career objectives, they would work in the country pursuing that option. Once the best option had been determined, researchers would return to their respective countries, thus ensuring information on the option will be disseminated throughout participating countries.

Of course, this cooperation scheme should not permit one country to force the option it has selected on other countries. Each country should have the right to choose which option it wishes to pursue. Given the need to ensure that all possible options are covered, of course, there would have to be a certain amount of compromise and adjustment, which might be better arranged by multilateral organizations.

In the case of projects in which scientific value outweighs the merits of diversity, prior agreement would have to be sought for sharing costs and tasks to implement the scientific principles as a truly international facility. In these areas, even a single national government's involvement is no longer sufficient; thus, a multilateral cooperation will be necessary, because none of us, Europe, North America, or Japan, can easily afford the total cost. Moreover, the smaller nations share a desire for access to the best facilities for these scientific researches. Even in these areas, however, there still remain options regarding when a project should be started. Public policy discussions including multilateral negotiations, therefore, should be centered around the allocation of time as well as the cost.

Through option sharing, it is possible to resolve the inherent tension that exists between international cooperation and national autonomy. Through the principle of cooperate *and* compete, nations in the industrial world may capitalize on parallel interests. There are growing fears that the shift toward technological protectionism will turn into a minus-sum game for the world as a whole. It can be said that only through option sharing can a plus-sum game be assured. In a world in which techno-nationalism is the prevailing mood, international cooperation through option sharing may offer the breakthrough that can make the ideal of techno-globalism the new reality.

Plenary Session I: Expectations for Multilateral Organizations

Multilateral Research Cooperation: an Industry Perspective

James C. McGroddy

Abstract

The value of a strong multilateral component to industrial research is evident from the ease with which one can produce a list of important collaborations. These examples easily span all the forms such collaboration can take. (One can find examples spanning the dimension of institution type, with universities, with national laboratories, or with industrial partners. The range of research focus areas includes medical and pharmaceutical research, basic physics and chemistry, as well as information and electronic technology. The structure of the collaborations range from within-the-company laboratories in multiple countries to trans-national participation in government funded projects to fully collaborative structures. What I will cover in the few minutes allotted to this subject is the motivations that drive industrial companies to such collaborative relationships, the value which industry aims to achieve, some of the challenges to creating and managing effective international collaborations, and some of the principles which result from experience with these issues.