

ELEMENTS OF L-20 COMMUNIQUE ON INTERNATIONAL COLLABORATION IN SCIENCE AND TECHNOLOGY

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International scientific collaboration has increased rapidly in recent years. One of the best indicators of international scientific collaboration is the number of published scientific papers that are co-authored by scientists from different countries. During the decade 1990 until 2000 the number of internationally co-authored papers as a percentage of all published papers doubled and at the end of the decade amounted to 15% of all papers. Most of this increase has involved collaboration between scientists in the industrially advanced countries. But as a few developing countries have rapidly expanded their research capabilities, they too have collaborated actively with scientists in other countries. Unfortunately the scientific communities in most developing countries are still too small to play active roles in the development of these networks.

Much of the stimulus for this growth in collaboration has come from the international scientific community itself and the evolution of networks of collaborating scientists has become a major characteristic of international science. More formal collaborations around issues as varied as big science, biodiversity, energy, agriculture and health have been promoted and financed by governments and not for profit Foundations. These too have contributed to the development of networks of collaborating scientists.

The L20 welcomes these developments. They are not only good for science, but they also promote international understanding and foster wider cooperation between countries. The Framework Programme within the European Union is a good example of a programme which has both political and scientific objectives. When the collaboration involves scientists from the developing world these activities frequently help to strengthen the scientific and technical capabilities of these countries. We wish to encourage both the contribution of new knowledge to the solution of global problems and also the building up of scientific and technological research capabilities in the developing world.

Problems of Collaboration

Although most of the collaboration arrangements appear to be beneficial to all the participating partners, we also learned of problems which require careful consideration.

The first of these problems sometimes occurs when collaboration takes place between scientifically stronger and scientifically weaker partners. We heard of several instances where the stronger partner tended to exploit the relationship for their own benefit. When this happened the stronger partner designed the project, determined the research methodology, published the results in papers with their name only and tended to own any resulting intellectual property. The weaker partner was used only as a research assistant.

Such “collaboration” does little to build research capacity in the country of the weaker partner and is deeply resented in those countries.

The degree of resentment reached a peak in India some years ago when the then Prime Minister Mrs Indira Ghandi asked the Pugwash Movement on Science and World Affairs to investigate the issue and make recommendations. The Pugwash Group established a Working Party which drafted a set of guidelines on international scientific collaboration which were widely distributed at that time. These guidelines still provide a useful framework for the conduct of international collaborative research. We commend them for general consideration.

A second matter of concern to the L20 was the evidence, much of it still anecdotal, that relatively little of the research carried out over the past 50 years on science and technology for poverty alleviation has had much impact on the lives of poor people. There have been a few striking successes as with the green revolution, and policy research seems to have been more fruitful. Most governments and international donors support research in the expectation that the results of that research will be both useful and used.

It seems that supporting research on its own not enough. Consideration must also be given to ensuring that that the research results are used and become innovations. In future we intend that any L20 initiatives will take an innovation rather than just a research approach in their design and implementation.

Funding collaborative research

Funding for scientific and technological research comes mainly from the private sector in most industrialized countries. Sometimes governments supplement this funding when they believe it is in the national interest to do so, or when the results of the research are expected to lead to the development of global public goods. The net result over the past fifty years or so has been a relative lack of support for research in both public and private sectors which addresses the problems of global poverty. In 1970 the UN World Plan of Action on S&T for Development, aware that OECD statistics at that time indicated that approximately 2% of OECD country expenditure on R&D were devoted to the problems of poverty, proposed that there be a reorientation of research goals such that within ten years time, 5% of non-military R&D be devoted to development objectives. This figure was never attained, but recently a few OECD countries, including Canada, are endeavouring to reach a more modest target of 5% of national government expenditures which are devoted to the issues of global poverty.

These efforts are welcomed by the L-20, especially when the research is performed in collaboration with partners in the developing world. Such partnerships not only lead to the generation of new knowledge, but also help build scientific and technological capacity in the developing countries. We gave some consideration to setting international targets, but could not arrive at a consensus on this issue. We concluded that it should be left to individual countries to set their own targets.

Specific collaborative research initiatives

Most international scientific and technological collaborative ventures are determined by priorities set by the international scientific community or according to the needs of the private sector and individual government departments. However, some issues are either so politically sensitive or are so vast in their scope that they require the initiative of world leaders. In this L-20 meeting we discussed a number of possible topics which fell into this category and finally selected four topics for further consideration.

1. The Millennium Development Goals

We remain committed to the attainment of the Millennium Development Goals and believe that proper investments in science and technology could make a major contribution to the achievement of these goals. Collaborative research to generate new knowledge and new technologies could be one element of these appropriate investments in science and technology, but we would not want the emphasis on research in this communiqué to detract from other non research science and technology investments which are also required.

The Millennium Development Project has recommended that by 2015 the international donors should be contributing seven billion dollars per year towards research relevant to the Millennium Development Goals. Specifically, the authors of that report recommend \$4 billion a year should be spent on health research, \$1 billion per year on agriculture and natural resource research, \$1 billion per year on energy and \$1 billion a year on climate change research. These are large sums of money but the report from that project did not elaborate either on the research objectives, nor on the mechanisms for conducting research. Nor did the report explain how the research once undertaken would be used to help achieve the goals. Before we are in a position to decide on the research needs of the Millennium Development Goals we believe that further work must be undertaken to elucidate these issues. In the final part of this communiqué we will address our proposed follow up actions

2. Energy and Global Warming

A second topic which is relevant to most nations, but which we felt was appropriate for the L20 to take an initiative, is the topic of energy and global warming. There is much international discussion on what might succeed the Kyoto Protocol as a means for reducing greenhouse gas emissions. This debate must continue, but whatever the outcome, it is evident to all of us that further research to develop new and cleaner energy technologies will be required. We recognise that the development of these technologies will depend heavily on the private sector, but also recognise that public participation through such initiatives as Public Private Partnerships, and the provision of government incentives will also be important. We have chosen two issues that we consider to be of particular importance for further research.

Carbon Capture and storage

The issue here is how to capture and store the carbon that is emitted from thermal power stations rather than continue to emit the carbon into the atmosphere as carbon dioxide. If this problem was solved then coal could once again become a major source of energy. The main economic beneficiaries would be the main coal producing countries such as China , the United States, and Australia, But the rest of the world would also benefit from reduced greenhouse gas emissions.

The United States has already established the Carbon Sequestration Leadership Forum which is examining the issue. It is likely however that an L20 initiative could result in a wider international effort that could lead to greater use of abundant coal and at the same time reduce green house gas emissions.

Biofuels

Biofuel has been identified as one source of renewable energy along with wind, water and tidal power. It seems however that amongst these sources the potential for biofuels has been relatively neglected. We are aware that Sweden and Brazil are taking major initiatives in this area, but believe that it is a topic which should be of interest to all countries. It will require research which cuts across the interests of several government departments such as energy, agriculture, industry , transportation and environment. For this reason we believe it to be an appropriate topic for the L20 and recommend that it be investigated further.

3. Nuclear Waste Disposal

The current renewed interest in several countries in nuclear energy as a clean source of energy has revived concerns about nuclear waste disposal. These concerns are particularly focussed on the disposal of those radioactive elements with half lives which run into hundreds of thousands of years.

We agree with those countries that propose that disposal of radioactive wastes should be the responsibility of the country which produces the wastes and should occur within their national boundaries. We also concur with those who argue that deep geologic disposal provides the best long term disposal mechanism. The choice of the best geological sites remains a local issue and hence is not an issue for the L20.

There is however a problem which does need urgent attention and which could benefit from international collaboration. That is the issue of interim storage facilities for nuclear waste. What is required is new ways of storing highly radioactive waste material which is both highly durable and is terrorist proof. These facilities would need to be capable of being able to safely store the waste for several decades until such a time that the deep geological sites which are suitable have been found. The problem is mainly one of engineering, but once a solution has been found then the technology must be available to those countries which choose to develop their nuclear energy options.

4. Private Sector Collaboration and Technology Transfer

Most of our deliberations were about scientific and technological research. One further issue was raised and discussed by the L-20 which, though not strictly a matter of research, does impinge greatly on the use of technology in the developing world. This is the terms and conditions under which technology is transferred between enterprises in different countries. This has been a topic which has been subjected to much debate and discussion, especially within UNCTAD where several years ago attempts were made to negotiate a Code of Conduct on Technology Transfer. These negotiations failed.

We discussed briefly whether this is an issue which should be revisited. Our conclusion was that this would not be particularly useful at the present time. One of the reasons why it was such an issue in the 1970s was that at that time it was difficult to get information about the terms and conditions of technology transfer and this led to possibilities of onerous conditions being set by suppliers to unaware recipients. Today there is more openness and easier access to information. Also, the process of globalization has encouraged much increased foreign direct investment which often brings with it new types of technology partnership. A compulsory Code of Conduct would be likely to inhibit these partnerships and be against the interests of the developing country enterprises.

Next Steps

The L20 meeting identified a number of promising areas where further collaborative research might bring major benefits to the world. In each of these areas additional analyses and studies are required before the L20 can decide to commit resources or agree on mechanisms for conducting the research. It has therefore been decided to establish a Task Force for each topic to review the subject and to make recommendations. Each Task Force will consist of up to twenty experts and each will be served by a small secretariat. They will be required to report back within twelve months proposing a plan of action. We will then decide at our next meeting on the most appropriate course of action.

Although the precise Terms of Reference of each task Force will vary each will be asked to address the following aspects:

- To review the background to the problem for which research is required
- To propose specific research programmes, with an assessment of their scientific feasibility.
- To identify the cost implications of the programmes.
- To identify ways in which the research might lead to innovations.
- To identify the urgency of the problem to be addressed and to suggest a balance between resources invested to solve the problem quickly and resources invested to build scientific capabilities in the developing world.
- To identify what public policies or incentives might lead to further private sector involvement.
- To identify how intellectual property arising from the research might be shared among the participating partners.