

UNITED NATIONS CONFERENCE ON TRADE AND DEVELOPMENT

MAKING NORTH-SOUTH RESEARCH NETWORKS WORK

A contribution to the work on
A Common Vision for the Future of Science and Technology for Development by
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CONTENTS

	<i>Page</i>
1. Introduction.....	1
2. A typology of international research networks	4
3. The evolution of networks	9
4. Structure of research networks and their activities	11
5. Setting up North-South research networks: guidelines to success.....	17
6. Managing research networks: principal guidelines to success.....	21
7. Financial sustainability	24
8. Reduction of imbalances in North-South research networks	29
9. Web-based services by North-South research networks....	32
10. Conclusions.....	38
Appendix: Three case studies	41

1. Introduction*

In the industrialized countries of the North, the developments in science and technology are characterized by the increasing specialization of research and development; accelerating diversification of knowledge and skills; and a progressive decentralization of research capacities. The dynamics of these developments present the danger that the research gap between North and South, large as it already is, will widen even further. Therefore, strengthening research capacities in the South, pooling resources through various forms of North-South and South-South research cooperation, and improving global access to the scientific research information that is available in the North, have been given high priority on international policy agendas.

Networks as a way of organizing production processes are becoming a dominant feature of our times. Research networks as an organizational mechanism for linking scientists and institutions that are committed to sharing information and working together, are increasingly regarded as an important policy instrument to close the research gap between the North and the South. The United Nations Commission for Science and Technology for Development (UNCSTD) has therefore identified North-South research networks as one of the issues to be addressed in its “Common Vision for the Future of Science and Technology for Development”.¹

* This paper was prepared by R. J. Engelhard, an independent consultant in the field of communication in development, and Professor Louk Box, Director of the European Centre for Development Policy Management (ECDPM), Maastricht, The Netherlands, with financial support from the Government of Austria.

¹ At its Geneva meeting in December 1996, a panel of members of the UNCSTD identified four main issues to be considered in the formulation of a Common Vision. These are: (i) the concrete impact of science and technology; (ii) capacity-building in science and technology; (iii) the interaction of private enterprises, governments, academic institutions and civil society groups with science and technology for development; and (iv) assessment of international networks and work of organizations active in the field of science and technology.

Recent UNCSTD Expert Group Meetings in Malta and Geneva² have discussed the potential contribution of North-South research networks to science and technology for development. These meetings have concluded that a compilation of practical experiences with this type of networks is required; and that various policy issues that surfaced during their discussions needed further examination.

This paper addresses both these concerns. With a focus on the field of biosciences, the first part of this paper offers a set of practical recommendations for creating and managing North-South research networks. The second part of the paper discusses three policy issues: (i) the financial sustainability of North-South research networks; (ii) the problematic asymmetry that is prevalent in many of these networks, in that Northern partners or donors often dominate these partnerships; and (iii) the slow adoption of Internet technology to enhance information management and exchange.

Various individuals have candidly shared their insights and their hands-on experiences in North-South research networks. Among them, the authors would like to thank in particular Dr Ann Marie Thro, former coordinating secretary of the Cassava Biotechnology Network (CBN); Willemine Brinkman, coordinator of the European Tropical Forestry Research Network (ETFRN); Dr Ibrahim D. Khadar, Deputy Head of the Information Policies and Partnerships Department of the Centre Technique de Coopération Agricole et Rural (CTA); and Peter Ballantyne, Coordinator, Information Programmes of the European Centre for Development Policy Management (ECDPM).³

A systematic analysis and assessment of even a small number of research networks was beyond the scope of the preparations for this paper. However, research networks have been around for a long time,

² Expert Group Meetings on a Common Vision for the Future Contribution of Science and Technology for Development, UNCSTD, Malta, 28-30 September 1998 and Geneva, 8-10 December 1998.

³ The authors would also wish to thank the following individuals for their inputs and advice: Professor Dr Carlos Aguirre (Academia Nacional de Ciencias de Bolivia, La Paz); Kevin A. Painting (CTA, Wageningen), Professor Dr Bernd M. Rode (Leopold-Franzens-Universität, Innsbruck) and Dr Terry Smutylo (IDRC, Ottawa).

often forming “invisible colleges” where ideas are exchanged among groups of like-minded scientists, or through which collaborative research is planned and conducted.⁴ These networks became “visible” when, in the 1970s and 1980s, donors adopted them as tools for the implementation of their policies for North-South research collaboration. Several donor countries have created specific programmes or have established specialized institutions to promote and fund North-South research networks. The authors have been able to draw on the body of knowledge of North-South research networks that has been built up by these institutes over the past 20 years.⁵ Several research networks have been analysed more in depth. Details about these case studies are to be found in the Appendix to this publication. While not all of these cases have met the full criteria for “North-South networks”, they do involve several “North-South” elements or linkages and in each case the lessons learned were extremely useful for such research partnerships and networks.

⁴ Cronin, B. (1982). Progress in documentation: invisible colleges and information transfer, a review and commentary with particular reference to the social sciences. *Journal of Documentation*, No. 38, pp. 212-236.

⁵ The authors would like to recommend two studies in particular for further reading, i.e. Bernard, A.K. (1996). *IDRC Networks: An Ethnographic Perspective*, Evaluation Unit, IDRC, Ottawa, Canada; and Nelson, J. and Farrington, J. (1994). *Information Exchange Networking for Agricultural Development: a review of concepts and practices*, CTA, Wageningen, The Netherlands.

2. A typology of international research networks

In its Vienna Programme of Action of 1979, the UNCSTD urged that North-South research cooperation should be in keeping with development priorities determined by developing countries themselves, and that training components should be included in all collaborative research programmes. Various government donor agencies⁶ responded to this call for action: they started research grant programmes and began to support international, mainly North-South research networking initiatives,⁷ most of them initiated by universities and research institutes in the North and, in some cases, even by donor agencies themselves. More recently, South-South research networks have emerged, again with strong support from donor agencies. These networks aim to make optimal use of complementarity and economies of scale and scope, predominantly at the regional level.

North-South and South-South research networks have become a prominent policy tool of donor agencies. In spite of this, it is difficult to provide a plain, all-embracing description of a “typical” research

⁶ Among these initiatives were: The cooperative research programme of the International Development Research Centre (IDRC) funded by CIDA; the Partnership Research Programmes of the Swedish Agency for Research Cooperation with Developing Countries (SAREC) funded by SIDA; the Collaborative Research Support Programmes (CRSPs) and the Programme in Scientific and Technological Cooperation (PSTC), both funded by USAID; the Grants Program of the Board on Science and Technology for International Development (BOSTID), funded by the US National Academy of Sciences; the Danish Programme for Enhancement of Research Capacity in developing countries (ENRECA) funded by DANIDA; the Science, Technology and Development Programme (STD) funded by the European Community. See also: Gaillard, J. (1994), North-South Research Partnership: Is Collaboration Possible between Unequal Partners? in *Knowledge and Policy: International Journal of Knowledge Transfer and Utilization*, summer 1994, vol. 7, No. 2, pp. 31-63.

⁷ Due to their huge number, listing even the most important research networking initiatives would be a daunting task. In this paper a number of research networks are mentioned. Their inclusion does not imply that they perform better than networks that are not mentioned.

network. None of the existing networks are “look-alikes”, because each one is a creation in its own right. The notion of research networks is often used in a rather broad and all-encompassing manner. Many information dissemination activities and collaborative research programmes are mistakenly called “networks” because they actually consist of the regular activities of one research institute or of a joint project in which various institutes in a specific field pool their research capacities.

In fact, research networks can only be understood if they are seen as loose social organizations—as voluntary associations of individuals and their institutes who share a common interest in exchanging information and in rendering support to advocacy and research programmes. As such, research networks are seldom official entities with their own legal status. Their dynamics are characterized by their unstable nature due to their variable membership of individuals whose mutual affiliations are weak. The nature of the relationships among network members is informal, resembling those that exist among peers or members of a country club, rather than those characterizing an incorporated organization.⁸

Several classifications of research networks have been developed, generally focusing on the functions they perform.⁹ The strength of research networks is their contribution to decentralized action based on some informal division of tasks. From this perspective, three types of North-South research networks can be distinguished: the first focuses on sharing research information; the second aims at coordinating research priorities and projects in specific fields of science and technology; and the third concentrates on research policy coordination and on pooling resources for international advocacy purposes.

The information exchange networks, the first type of networks, organize and facilitate exchanges of information, ideas and research results among their members. Whereas all research networks are based

⁸ Box, L. de la Rive and Wambugu, F. (1995). *Mid-term Review of the Cassava Biotechnology Network (CBN)*, Netherlands Ministry of Foreign Affairs, The Hague, The Netherlands; and Nelson, J. and Farrington, J. (1994), op. cit.

⁹ Several classifications of research networks have been developed. See for instance: Plucknett, D.L., Smith, N.J.H. and Ozgediz, S. (1990). *Networking in International Agricultural Research*, Ithaca, USA: Cornell University Press; Nelson, J. and Farrington, J. (1994), op. cit.; and Bernard A.K. (1996), op. cit.

on sharing information, few are “specialized” in information exchange among large numbers of institutional and individual members. Good examples of this type of networks are those managed by the Overseas Development Institute, i.e. the Agricultural Research and Extension Network (AGREN) with more than 1,400 members, and the Rural Development Forestry Network (RDFN) with 2,300 participants.

In the second type of networks, the research coordination networks, the members focus their research on common priority themes but conduct their experiments independently. Good examples of this type of networks are the so-called “commodity networks”. In these networks researchers of various agricultural research institutes simultaneously carry out similar experiments (on a specific crop or on a resource man-

References to websites of research networks

(mentioned in the text of this section)

Research networks	Websites
AGREN Agricultural Research and Extension Network	www.oneworld.org/odi
RDFN Rural Development Forestry Network	www.oneworld.org/odi
CGIAR Consultative Group on International Agricultural Research	www.cgiar.org
CORAF Conférence de Responsables de Recherche Agronomique Africains	www.refer.sn/sngal_ct/rec/coraf/coraf.htm
CBN Cassava Biotechnology Network	<i>(no website)</i>
NATURA Network of European Agricultural (Tropical) Universities Related to Agricultural Development	www.wau.nl/natura
ETFRN European Tropical Forestry Research Network	www.etfrn.org
ISSCT International Society of Sugar Cane Technologists	www.sugarnet.com
IUFRO International Union of Forestry Research Organizations	iufro.boku.ac.at
ASARECA Association for Strengthening Agricultural Research in Eastern and Central Africa	<i>(no website)</i>

agement problem) under different agro-ecological conditions and make their results available for comparative analysis. The institutes of the Consultative Group on International Agricultural Research (CGIAR) stimulate such research coordination networks. So too does the Conférence de Responsables de Recherche Agronomique Africains (CORAF), which has established this type of network among researchers in 26 agricultural research stations in French-speaking Africa for scientific work on crops such as rice, maize and cotton. The Cassava Biotechnology Network (CBN), which links researchers in cassava biotechnology projects around the world, also belongs to this category.

The third type of networks, the research policy consultation networks, brings together research institutes for the purposes of research policy consultations and advocacy. Typical examples of this type of research networks are the CGIAR, which brings together 16 international agricultural research institutes to form a strong advocacy group; NATURA (the network of European agricultural tropically and subtropically oriented universities and scientific complexes related to agricultural development), which links more than 35 European agricultural universities and research institutes; the International Union of Forestry Research Organizations (IUFRO), one of the oldest international non-governmental organizations;¹⁰ the European Tropical Forestry Research Network (ETFRN), which brings together European expertise in tropical forestry research; and the International Society of Sugar Cane Technologists, an association of over 1,500 scientists, technologists, institutions and companies from over 63 countries concerned with the technical advancement of the cane sugar industry and its co-products.

A recent development has been the emergence of “networks of networks”, regional networks composed of national- and local-level associations of scientists and institutions in a specific region. A good example of such “networks of networks” is the Association for

¹⁰ International Union of Forestry Research Organization (IUFRO) in Nair, C.T.S. and Dykstra, D.P. (1998), *Roles of Global and Regional Networks and Consortia in Strengthening Forestry Research*, ICRIS, September 1998, Federal Ministry of Agriculture and Forestry, Vienna, Austria.

Strengthening Agricultural Research in Eastern and Central Africa (ASARECA).¹¹

These three types of research networks share some key features. First, they all promote exchanges of information among their members. Secondly, they depend on a shared focus on common interests, themes, objectives or results. Thirdly, the success of the networks is largely determined by their members' ability to both contribute to and benefit from the information that is generated and assembled. Finally, networks tend to evolve over time, from the basic function of information exchange, to include coordination, resource exchange and allocation.

¹¹ ASARECA is the Association for Strengthening Agricultural Research in Eastern and Central Africa. Other examples of regional research networks in the biosciences are the Conférence des Responsables de Recherche Agronomique Africains (CORAF), South African Centre for Cooperation in Agricultural and Natural Resources Research and Training (SACCAR), Latin American Biological Network (RELAB); Latin America Biotechnology Network.

3. The evolution of networks

All research networks pass through a typical life cycle as they mature, achieve their objectives and change their activities or cease operating. The form in which networks manifest themselves depends very much on the stage they have reached on this evolutionary path. Many times, donor agencies play a pivotal role in the life cycle of research networks, because they often stimulate their creation, in many cases they are the principal sponsors, and frequently use them as instruments to implement their own research policies.

In their initial stages, research networks consist of informal groups of scientists that recognize common needs, objectives and interest. During this stage, networks rarely have sufficient means to provide services to their members, so that a well-established institute normally takes care of coordination, making staff time available for this purpose.

Evolving research networks can identify a broader range of members who have the potential to contribute to and gain from their activities. They often compile directories of scientists and their institutes, organize workshops to enhance exchanges and contacts between the growing number of members, and publish a simple newsletter. Normally, one institute becomes a key player, and provides accommodation and staff for a coordinating facility.

Finally, the research network may create a formal governance structure, take on a permanent institutional form, and may provide a range of regular services to its members. Fully consolidated networks tend to take on some of the characteristics of an incorporated organization, such as a board of trustees, a registered legal status, a secretary with executive powers, supported by permanent professional and administrative staff, and a physical infrastructure.

When a network grows out of its pioneering phase and begins to involve a broader range of members, time that is devoted voluntarily becomes insufficient on its own to support its operations: cash income is needed to cover the costs of communications, of the publication of a newsletter and, in more mature networks, of the salaries of (part-time) staff in a coordinating secretariat. The sources of such income can have a profound impact on the network, its agenda and on its sustainability.

Basically, the need for income can be resolved in two ways: by generating income from members (membership and subscription fees, etc.), or by soliciting subsidies from donors and technical assistance agencies. Research networks that rely principally on income from membership fees tend to become professional associations or scientific societies promoting a particular field of inquiry. This type of research network (such as IUFRO and ISSCT), which often unites scientists working in the South and the North, has a long history as the traditional means by which information is exchanged within the scientific community.

Research networks which depend on donor funding—ranging from small start-up subsidies to core funding of the network's coordinating secretariat and its activities—arose in the 1970s, when this organizational mechanism for linking scientists and institutions became a tool for donor agencies for implementing their research policy agendas. These networks (such as CBN, ETFRN and ASARECA) can only sustain themselves as long as the donors continue their support; consequently, much of their efforts are directed to securing this support. In the light of the declining budgets of donor agencies, the financial sustainability of these research networks has become an important policy issue, and will be discussed separately later in this paper.

4. Structure of research networks and their activities

Research networks share a number of common elements: (i) a membership, mostly structured in various “tiers”; (ii) a governance structure; (iii) a coordinating secretary; and (iv) a range of activities undertaken and products provided by the secretariat (information services, advocacy work) or organized by the members (workshops, conferences, jointly undertaken research projects). The manner in which these four common elements manifest themselves will determine the appearance, the strength and the potential impact of North-South research networks.

Network membership

The members are the basis of all networks. A membership base of a network may be institutions, individuals representing institutions, individuals acting in their own capacity, or a combination of these types of membership.¹² The membership of a network can vary from one or two dozen, to hundreds of scientists and the institutes they represent.

Networks tend to have different “tiers” of members, ranging from a core of active agenda-setters to a periphery of user-members. The first are key to all networks—they are their “spark-plugs”.¹³ This group typically consists of the network’s coordinating secretary, the chairpersons and members of the network’s board and of its scientific steering and advisory committees. In many donor funded networks, this group also includes representatives of donor agencies and of institutions responsible for specific programme operations. The latter group includes the scientists who belong to the network but operate as members-at-large, attending its workshops and conferences, and using its information and

¹² Goldsmith, A. (1996). *Research Networks: Tools for Development*, Evaluation Unit, IDRC, Ottawa, Canada.

¹³ Bernard, A.K. (1996), op. cit.

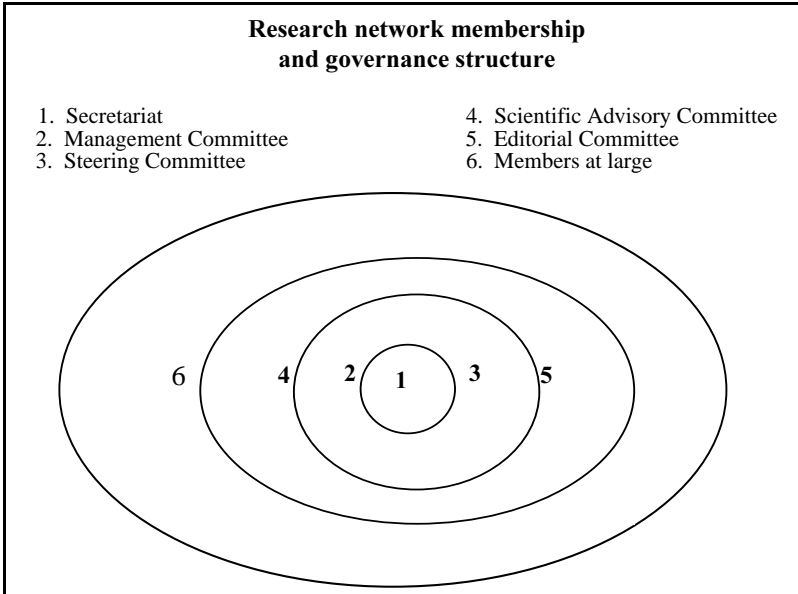
products (such as newsletters, abstracts, etc.), but contributing few inputs of their own.¹⁴

Governance structure

The governance structures of research networks vary widely, and usually reflect the institutional ties of the founding members and the interests of the institutes they represent. In mature networks, a management or steering committee sets the policy agenda and oversees its implementation. The major institutional stakeholders who initiated the network are normally represented in such governing bodies. Global networks may have made arrangements for the appointment of regional representatives who can provide linkages with the researchers or institutes in specific regions. For that same reason, regional networks normally appoint representatives of the countries they intend to cover with the work. Appointments to governing bodies may be made through election by the members of the network, through nomination by major institutional stakeholders, or by co-optation. Large research networks with complex aims may set up—in addition to these governing bodies—one or more scientific advisory or editorial committees which can render advice on specific scientific issues or oversee the quality of the materials the network produces and disseminates.

The importance of well-thought-out governance structures is often underestimated. Wrongly so, because the structure of its governance most clearly reflects the actual ownership of a research network. For instance, in North-South research networks the Northern members often dominate the governance structures, and hence the process of setting the network's agenda and of publishing its results. In the real world beyond policy papers and funding proposals, this asymmetry reduces the development relevance of many existing research networks. This issue is discussed in more depth in a later section of this paper.

¹⁴ Box, L. de la Rive and Wambugu, F. (1995), op. cit.



Coordinating secretary

The need for administrative and logistical support, in particular when networks have gone through their initial stages of formation, is substantial and often underestimated. Due to their voluntary character and their variable membership, research networks need strong coordinating secretaries. The importance of the appointment of a competent secretary with both scientific and administrative experience cannot be stressed strongly enough, and often appears to be the key to success of a network.¹⁵

Effective secretaries are often described in terms of their ability to accommodate new ideas, to mediate between the various members of the network, and to coach its weaker members. In addition, they should be able to identify resources and to relate effectively with donor agencies. They are the spiders in a complex web of conflicting interests. It is there-

¹⁵ English, P. (1996) *Governance Structures of Networks in Sub-Saharan Africa*, Evaluation Unit, IDRC, Ottawa, Canada; and Bernard, A.K. (1996), op. cit.

fore important that they have a clear understanding of their reporting relationships, because the donor's agenda and the aspirations of the membership of a research network seldom coincide.¹⁶

Research network activities

Network activities are numerous and vary according to its aims and objectives, the degree of institutionalization, and the availability of funds. An overview of the most common activities of research networks is presented in the box on the following page. Networks that implement their activities on the basis of donor funding rather than of membership contributions face a situation that is not always positive: members may become "free riders", which is not conducive to enhancing the feeling of network ownership among the members at large, nor consequently to the sustainability of the network itself.

Most donors and technical assistance agencies have made capacity-building in the South a core element of their research programme policies. They consider North-South research networks as important means of strengthening research capacities in the South. They do so because the basis of this organizational mechanism for linking scientists and institutions is their commitment to sharing information and to working together around mutual interests in a theme or problem. Consequently, donors often ask research networks to administer and implement training and scholarship programmes or small research grant funds on their behalf.

The administration of scholarships, small research grants and training programmes requires adherence to strict procedures and a high degree of accountability, which often cannot be enforced in most research networks due to the loose, informal character of their organizational set-up. In addition, the implementation of such programmes demands considerable skills, time and energy, often going beyond what can reasonably be asked of unpaid volunteers.

¹⁶ Personal communication by e-mail from Ann Marie Thro, former coordinator of the Cassava Biotechnology Network (CBN) (26 December 1998). Similar opinions have been expressed by Willemine Brinkman, Coordinator of the European Tropical Forestry Research Network (ETFRP) and others.

Diversity of activities of North-South research networks

All North-South research networks

- Publishing*: newsletters, workshop proceedings, directories of members
- Information exchange*: workshops, electronic conferencing, personal exchanges of information

Information exchange networks

- Publishing*: research papers, abstracts, books
- Information exchange*: exchange visits, agenda of events
- Library and database services*: libraries with information received from members and product information (collections of 'grey' literature); library services such as Selected Dissemination of Information and signposting; electronic databases (computer-based, CD-ROM)
- Question and answer services*: expert databases, help desk, clearing house

Research coordination networks

- Publishing*: research papers, abstracts, books
- Information exchange*: exchange visits, agenda of events
- Collaborative research activities*: coordination of research priorities; "commodity networks"; informal study groups
- Other activities*: provision of early warning systems, e.g. in dealing with transboundary pests

Research policy consultation networks

- Publishing*: research papers, abstracts, books
- Information exchange*: exchange visits, agenda of events
- Advocacy*: policy research and analysis, conferences, advocacy work aimed at policy makers and donor agencies, representation of sectors in various policy committees
- Capacity-building*: training and scholarship programmes, small research grant programmes

Donors should be cautious in pursuing their policy goal of capacity-building through research networks. In fact, for many information exchange and research coordination networks that derive their unique strength from their loose social organization, undertaking decentralized action based on some kind of informal division of tasks, such capacity-

building activities will involve far too large a responsibility. “Mature” research policy consultation networks, with strong governing bodies and coordinating secretariats, which can delegate implementation responsibilities to their member research institutes, are likely to be the only networks able to assist in the implementation of capacity-building donor agendas.

5. Setting up North-South research networks: guidelines to success

There are four principal guidelines to success for those who wish to set up a new research network, or revamp an existing one. These are (i) establish a strong common focus around a concrete, widely shared problem or goal; (ii) plan for the mid-term evaluation at the project start-up (particularly in a donor-supported network); (iii) set up a formal governance structure with transparent decision-making procedures; and (iv) plan realistic strategies for working towards solutions, but preserve a culture of informality.¹⁷

Establish a strong common focus around a concrete, widely shared problem or goal

An issue of common interest is essential for generating cooperation and exchanges of information among scientists working in different institutional and geographic settings. The identification of a concrete, widely shared problem or goal is therefore generally highlighted as one of the key pillars supporting networks. Networks that fail to develop such a focus do not survive their infant years. For instance, the goal of “identifying, coordinating and supporting bamboo and rattan research consistent with priorities set by national programmes” is the underlying strength of the International Network on Bamboo and Rattan (INBAR), a well-defined, topic-specific research network in South-East Asia.¹⁸ As another example, the development of alley farming methods in sustain-

¹⁷ These guidelines have been derived from interviews with network coordinators of ETFRN, CBN, EUFORIC, ASEA-UNINET, CTA staff and from a literature survey.

¹⁸ Nair, C.T.S. and Dykstra, O. (1998). *Roles of Global and Regional Networks and Consortia in Strengthening Forestry Research*, ICRIS in Forestry, Ort/Gmunden, Austria.

able farming systems is the issue that links widely different institutions in the Alley Farming Network for Africa (AFNETA).¹⁹

The key in achieving sufficient focus is to ensure that, on the one hand, the goals of the network are sufficiently concrete to encourage new members to join, and on the other hand, their formulation has not been cast in stone, as members will wish to be involved in their ongoing articulation and refinement. Hence donors must display considerable flexibility, allowing networks to adapt and refine their own goals, while gradually realizing their programmes of work.²⁰ One of the “lessons learned” by CBN, for example, is that such flexibility can only be realized if a “good fit” can be achieved between the philosophies, interests and objectives of the donor on the one hand, and those of the principal leaders of the network on the other.²¹

Plan for mid-term evaluations at project start-up

The “lessons learned” by CBN and ETFRN include the need to plan and prepare the terms of reference (ToR) of a mid-term evaluation at project start-up. This can be achieved by circulating draft ToR, including lists of criteria on which the network is to be judged, and by making sure that there is agreement among all parties involved (donors, steering and management committees, coordinator). Such early preparations may help to avoid situations in which a mid-term review team evaluates the achievements of a network principally in terms of components that the network itself did not perceive as its dominant activities. They will also force all parties involved to reaffirm the goals and the expected achievements of the network—free of the pressures that surround funding negotiations: any period spent off-track will represent time and opportunities lost, that will be difficult if not impossible to recover later on.

¹⁹ Nelson, J. and Farrington, J. (1994), op. cit.

²⁰ Bernard, A.K. (1996), op. cit.

²¹ Lessons learned from CBN, e-mail communication from Ann Marie Thro, former coordinator of CBN, dated 26 December 1998.

Set up a formal governance structure with transparent decision-making procedures

Research networks usually evolve from collaborative initiatives by small groups of scientists. In their early stages, informality characterizes all interactions and decision-making. However, as the membership grows and income from membership fees or from donor funding allows for expansion and scaling up the initial activities, small groups of active members can easily hijack a network; by “pumping” information through the network’s systems they may begin to dominate its agenda-setting and bend its activities to their will and benefits. The emergence of such “cliques” and “old boy networks” is often the beginning of the end of spontaneous collaborative contacts among the network members at large.

The key to the long-term success of any research network is the introduction of a formal governance structure with transparent decision-making procedures. The actual make-up of the governance structure should reflect the various external research, political and sociocultural environments that form the network’s constituencies. Members should be able to feel that they are represented and that their voices are heard in the governance structure: “the success of networks depends largely on members working within the network, not for it; not simply performing the business of the network, but taking responsibility for ensuring that that business remains important, beneficial and well implemented”.²²

Another important lesson learned by both CBN and ETRN is the importance of formal procedures to deal with situations in which no consensus on important (policy) issues can be achieved within the governance structure. Without such mechanisms, research networks will be unable to take strong, consistent positions on a variety of important issues, and they will be ineffective in situations that require energetic leadership.

²² Quote from the Thai Qualitative Research Network, in Bernard, A.K. (1996), op. cit.

Plan realistic strategies for working towards solutions, but preserve a culture of informality

Network activities cannot be selected and implemented at random; they should be guided by a strategy, work plans and budgets that offer good prospects of achieving given objectives and adequate tools for assessing and evaluating their implementation. An excellent example of successful thorough preparations is the case of ASARECA, which carefully planned its strategies and plans for strengthening collaboration in agricultural research in Eastern and Central Africa.²³ Networks that embark on their work without such thorough preparations tend either to break down in their early stages, or to benefit small core groups of active members only.

This planning requirement needs to be incorporated into a culture of informality that is so essential for research networks, and which distinguishes them from other forms of organizations. Strategies and plans are necessary to get the job done; however, the culture of informality is essential to create commitment and a feeling of shared identity and ownership. A balance needs to be struck between these two requirements: “a research network should resemble a family, but with a structure of professionalism”.²⁴

²³ An excellent example of such a strategic plan is ASARECA (1997). *Regional Collaboration in Agricultural Research: development of a long-term strategic plan for regional agricultural research in the Eastern and Central African Region*, ASARECA, Entebbe, Uganda.

²⁴ Quote of the Deputy Director of PhilDHRRA (Philippines Development of Human Resources in Rural Areas) in Bernard, A.K. (1996), op. cit.

6. Managing research networks: principal guidelines to success

Network management requires a great deal of patience and a good feeling for social relationships and group interactions. Network coordinators have limited resources at their disposal and are always dependent on the voluntary inputs of time and resources by others. Due to the huge variety of research networks and the different objectives they pursue, it is impossible to generalize the lessons learned in one network into a generally applicable advice as to how one “gets the job actually done”. However, from a perspective of the quality of the networking process, a number of generally applicable guidelines can be formulated.

Network processes depend on voluntary cooperation among the members. Hence, network management can be regarded as successful if it adequately promotes this cooperation and can bypass or remove obstacles that obstruct the process of social interaction among members. This general norm for assessing network management can further be elaborated in the form of basic guidelines to success, such as (i) activate members’ time and resources; (ii) achieve win-win situations; (iii) limit interaction costs; (iv) secure commitment; and (v) focus on quality and transparency in the interaction processes.

Activate members’ time and resources

The impetus for network activities comes from the members themselves, who value the common cause, are attracted to the social interactions that their voluntary contributions of time and resources generate, and are willing to take responsibility for a variety of activities. Network management needs to concentrate on promoting and sustaining this enthusiasm of members for the common cause and the opportunities offered by the social interactions, for instance through

intensive internal public relations work, proper acknowledgements of individual members' contributions, and achieving win-win situations. The fact that this type of management is time- and skill-intensive must be recognized and accommodated in the plan of work of any network's coordinating secretariat.²⁵

Achieve win-win situations

Individual network members will remain active only as long as they perceive that the network's activities have added value to their own work. Therefore, network secretaries need to concentrate on proactively creating win-win situations for all those involved in specific collaborative activities (instead of focusing on meeting the requirements of individual members). It will often be impossible to create situations in which all participants equally feel that they are gaining from the time and resources they have invested. In such cases, circumstances could be fostered in which members consider non-participation in the network's activities less attractive than actual participation.²⁶ Good network management implies both asking members for their voluntary inputs, and helping them to benefit optimally from the network's collective outputs.

Limit interaction costs

Network members largely pay the interaction costs themselves, be it telephone bills or travel expenses. Good network management will attempt—on behalf of its members—to keep such costs within reasonable limits. In addition, expenses that members are expected to incur for participating in a workshop or a study group should be kept proportional to the perceived benefits to be gained. Network secretaries should proactively restructure, avoid or end interactions among members that lead

²⁵ Lessons learned from CBN, e-mail communication from Dr Ann Marie Thro, former coordinator of CBN, dated 26 December 1998.

²⁶ Teisman, G.R. (1992). *Complex Decision Making: a pluricentric perspective on decision making* (in Dutch), VUGA, The Hague, The Netherlands.

to win-lose and lose-lose situations,²⁷ or which are to be considered a waste of time and resources.

Procure commitment

Voluntary contributions of time and resources are two basic ingredients that make networks hum. A third ingredient is the members' commitment to complete activities in which they wish to participate. Without such "voluntary binding", network secretaries will be confronted by members pulling out, often at crucial moments. To a large extent, this widespread phenomena of members withdrawing early or not fulfilling their promises can be curbed by securing their commitment to specific, concrete activities, whether it is in the form of an informal verbal agreement, or a more formal covenant or contract.

Focus on quality of output and transparency of interaction processes

Network management needs to promote the quality of the output of network activities and the transparency of its interaction processes. Collaborative projects may produce external effects and the members must be aware that the network as a whole will be held responsible for them. Small groups of members may wish to strive to obtain a stranglehold on decision-making processes to bend the network's activities to their own will and for their own benefit, and they should know that such actions will easily frustrate members' enthusiasm to participate in network activities. Therefore, without a continuous focus on the quality of the output and the transparency of the process, any network is likely to flounder sooner or later.

²⁷ Koppenjan, J.F.M. (1993). *Managing the Policy-Making Process: a study of policy formulation in the field of public administration* (in Dutch), VUGA, The Hague, The Netherlands.

7. Financial sustainability

All research networks incur expenses, in spite of the fact that they are intrinsically voluntary associations. Unpaid volunteers can devote significant amounts of time to network activities only if they have a specific budget to cover the costs of communications, travel or distribution of information. Moreover, network coordination is time- and skills-intensive, and the volume of work involved may quickly reach a level at which it can no longer be done on a voluntary, unpaid basis.

A research network's budget typically consists of expenses for activities and for overhead. The latter may be kept to a minimal when networks are small and informal and do not employ coordinating staff. However, overhead expenses tend to increase steeply when a network becomes consolidated and takes on the characteristics of an organization. If networks rely on donor funding, they should address the issue of their financial sustainability before entering the stage of consolidation.

Financial sustainability includes a complex set of interrelated concerns, including the sources of funding, their levels and long-term reliability; the willingness of members to contribute to their network in kind as well as in the form of annual fees or payments for services; and sound fiscal planning and management.

Many existing North-South research networks have been initiated and are funded by donor agencies in the OECD countries. Since the early 1990s, the budgets of these aid agencies have continued to decline and many research networks have recently been confronted with the bleak prospect that their funding will be reduced, if not withdrawn. Arguing over the decline of donor funding seems to be an inadequate answer to this threat to the continuation of a network. New mechanisms of funding need to be established to increase their independence from donor funding and to guarantee their long-term financial sustainability.

Two alternative ways for raising funds to cover the expenses of networks are available: (i) the identification of outside funding sources

other than donor agencies; and (ii) the generation of income from membership fees and from payments for network services.

Outside funding sources other than donor agencies

In the OECD countries the decline in aid budgets has coincided with stringent budget restrictions on their own universities and public research institutes. These traditional centres of research are now being encouraged to seek opportunities for cooperation with and funding from private sector organizations. In line with this policy, donor agencies are advising North-South research networks to do the same, and to search for funding from other donors and to explore public-private partnerships as a promising new funding mechanism. Various network coordinators have done so, only to come to the conclusions that

- the donor agencies often present unforeseen obstacles in the search for new sources of funding. These may be caused by a lack of experience with the widely different donor requirements and procedures on the part of the network's coordinating secretary,²⁸ or by the fear of potential new donors that investments on their part would not receive sufficient recognition because of the network's previous strong association with one long-time donor.²⁹
- private industry has little interest in funding research networks. Whereas some firms may show interest in collaborating in specific research projects,³⁰ or in buying specific research and consulting services from individual member institutes,³¹ they are defi-

²⁸ E-mail communication by Professor B. M. Rode commenting on fundraising efforts by the network of European and Asian universities ASEA-UNINET (dated 16 December 1998); see also the websites of IUFRO and ISSCT, where membership fees for different types of members are listed.

²⁹ Personal communication by e-mail from Ann Marie Thro, coordinator of the Cassava Biotechnology Network (CBN) (dated 26 December 1998).

³⁰ Personal communication from B.M. Rode, of ASEA-UNINET (dated 16 December 1998).

³¹ ASARECA plans a service for its membership institutes (National Agricultural Research Institutes (NARIs) in East Africa) by carrying out an extensive review of commercial arrangements currently in practice among individual NARIs and the private sector. See ASARECA (1997). *Regional Collaboration in Agricultural Research: development of a long-term strategic plan for regional agricultural research in the Eastern and Central African Region*. ASARECA, Entebbe, Uganda.

nitely not prepared to fund network coordination expenses. Granting one or two exceptions, public-private partnerships as a promising new funding mechanism for North-South research networks will remain a dream. As CBN's coordinator formulated it firmly: "Clearly, in my opinion, no there are not, because if there were, I would have found them by now!"³²

Generating income from membership fees and from payments for network services

Generating income from membership fees and payment for services is a more realistic mechanism to achieve a degree of long-term financial sustainability. Early research networks such as the IUFRO, the ISSCT and others have exploited such sources of income for a long time. Membership fees charged to individual members, to member institutes, or even to governments in the case of regional based research networks, could be fixed according to the members' affluence and actual interests.³³ Fees could be charged for advisory and consulting services. Subscriptions could be introduced for newsletters, research papers, abstracts, books and workshop proceedings, and directories of members could be sold rather than made available free of charge.

A policy of generating income from a network's membership is likely to succeed only if the services actually meet the needs of the members, and if they offer sufficient value added for members that they are willing to pay for them. Such an income-generating policy therefore encourages demand-oriented fixing of focus areas, the bottom-up development of services and activities, and the growth of the network on the basis of demand. However, in order to implement such a policy, many networks will need to adopt a new conceptual framework for their operations, one

³² Personal communication by e-mail from Ann Marie Thro, coordinator of the Cassava Biotechnology Network (CBN) (dated 26 December 1998). Similar opinions have been expressed by Willemine Brinkman, Coordinator of the European Tropical Forestry Research Network (ETFRP) and others.

³³ This principle of "balanced contributions" is being successfully applied by ASEA-UNINET. E-mail communication by Professor Dr Bernd M. Rode (1998).

that emphasizes—alongside mutual cooperation and voluntary contribution—values such as self-reliance and social entrepreneurship.

For many research networks a transition from donor funding to sustainable income generation will be difficult. Members may decide to resign from the network when membership fees are introduced.³⁴ In addition, institutional obstacles may make it difficult to generate income from within a network's membership. For instance, most research networks do not have their own independent legal status, and consequently they are not entitled to operate bank accounts or otherwise to engage in "business". They normally borrow "legal status" from one of their member institutes, which may not favour additional fiscal responsibilities. Transfer costs, especially to and from developing countries, may be prohibitively high for small payments. And, the secretariat may just lack the business acumen and administrative skills to send out bills and to confirm that they have been paid.

Developing new mechanisms for and sources of sustainable funding requires institutional innovation, strategic planning and experimentation. Such new income-generating policies do not imply that donor agencies should stop supporting research networks altogether. On the contrary, North-South research networks support have become important instruments to implement their research policy agendas. In addition, abruptly ending long-term funding relationships (that have created dependency relations) would represent irresponsible administrative behaviour. Continuation of current donor support North-South research remains crucial:

- to enable existing research networks to make the transition to new sustainable funding mechanisms;
- to support new research networks to become financially sustainable on the basis of a membership of a sufficient size;
- to help the research network to continue activities that will never become self-sufficient (such as advocacy work including independent policy research and analysis; special support activities for members in the South; etc.); and

³⁴ This fear was expressed by EFTRN's coordinator, who explained that most member institutes would most likely withdraw if the EU were to stop its funding.

- to facilitate active participation of Southern partners in the various bodies of the governance structures of North-South research networks.

However, such a new donor policy approach implies that funding is gradually shifted from direct contributions to overhead and activities to deficit financing up to explicitly pre-arranged levels.

8. Reduction of imbalances in North-South research networks

Donor policies regarding North-South research cooperation have changed considerably over the past 30 years. In the 1960s, research cooperation consisted of technical assistance from the North to the South. The late 1970s saw the emergence of strengthening research capacities in developing countries themselves, and of improving access to sources of scientific information in the North. In the early 1990s, the policy emphasis shifted to fostering collaborative research networks in which Northern and Southern partners participate on equal terms, including both concrete collaborative research projects and research training programmes for Southern partners.³⁵

In particular this last shift to balanced North-South research networks has remained problematic: Northern partners often continue to dominate such collaborative networks and tend to reduce their development relevance.³⁶ They usually have more funds at their disposal than their Southern colleagues to develop the ideas for collaborative initiatives. They often “pump” the bulk of the information through the network, and consequently gain both high visibility and influence on the process of setting the network’s agenda. Also, their research centres frequently host the network’s secretariat in its early years until adequate funding has been obtained.

The dominance of Northern scientists and research institutions in North-South research networks is not necessarily intentional. Balanced agendas are also of interest for Northern partners. Enthusiasm and

³⁵ Gaillard, J. (1994). North-South research partnership: is collaboration possible between unequal partners? in *Knowledge and Policy: the International Journal of Knowledge Transfer and Utilization*, summer 1994, vol. 7, No. 2, pp. 31-63.

³⁶ Bunders, J.F.G. and Mukherjee, C. (1998). *North-South Research Partnerships*, paper presented to the Working Group on Science and Technology Partnerships and Networking for National Capacity-Building, UNCSTD, Malta, 28-30 September 1998.

commitment from Southern partners are both essential for North-South research networks and stimulating and challenging for the Northern scientists who wish to get involved in innovative research that could benefit the South. Most Northern scientists are therefore prepared to adjust their research to the needs of developing countries. However, such adjustments are usually difficult to realize because the Southern partners are often insufficiently organized to collectively assess their needs and effectively present their agendas.³⁷

In the early 1990s, a number of effective South-South research networks have been set up, mostly with a regional orientation.³⁸ From their experiences, some guiding principles can be obtained which, if applied in North-South networks, may result in better balanced relationships. These “lessons learned” are:

- ❑ facilitate Southern researchers and their institutions to organize themselves around a common scientific interest, and ask them to formulate research policy priorities to be used for setting network agenda for the network that is strongly embedded in the Southern social, economic and cultural context;
- ❑ aim for a network programme that consists of clear win-win opportunities for both Southern and Northern members;
- ❑ ensure the optimal participation of Southern researchers in the various bodies of a formally arranged governance structure, and allocate sufficient travel funds to enable them to participate effectively; and
- ❑ secure strong personal commitment among Southern researchers by encouraging them to participate by contributing information and the results of their research activities to the network as a whole.

Donor agencies can also play an important role in helping North-South research networks to achieve balanced relationships. Their assessment of funding proposals could include considerations such as the actual involvement of Southern partners in the setting up, planning

³⁷ Bunders, J.F.G. and Mukherjee, C. (1998), *op. cit.*

³⁸ For instance: ASARECA (Association for Strengthening Agricultural Research in Eastern and Central Africa), Kampala, Uganda; AERC (African Economic Research Consortium), Nairobi, Kenya.

and governance of the research network. In addition, funds could be made earmarked to enable the Southern partners to organize themselves and to ensure that the network's agenda is embedded in research policies priorities of the South.

9. Web-based services by North-South research networks

Few North-South research networks have started to explore ways in which Internet-based information management technologies could enhance the quality and outreach of their work. Of course, network members now use e-mail to communicate with each other, but few networks have replaced their publishing activities, their library and database services with web-based information services. This is at least remarkable considering the pivotal role the scientific community in the North has played over the last 15 years in making the Internet the successful global data communication network that it is today.

The limited use of Internet-based information management systems by North-South research networks should of course be placed in the context of connectivity problems, which many scientists and their institutions in the South still face. Internet connectivity in developing countries is rapidly improving in spite of the dilapidated state of the telecommunication infrastructures and the restrictive telecommunications legislation in these countries. Public telecom operators have brought full Internet connectivity on steam in most developing countries. In addition, a growing number of local, commercial Internet service providers are serving a booming Internet clientele. The remarkable rapidity with which these developments are taking place is a clear indication of the importance these countries have attached to making the Internet widely accessible.³⁹ However, these improvements relate to the growing numbers of individuals who are using the Internet to exchange messages and files by e-mail. In sharp contrast stands the continued lack of institutional connectivity among agricultural research institutes and other organizations that together form the National Agricultural

³⁹ Mike Jensen (1998). At website address www.sn.ap.org/africa/afstat.html.

Research Systems (NARS), particularly of those that are not directly linked to international research networks such as those of the CGIAR.⁴⁰

However, there are other obvious reasons for the absence of North-South research networks, including:

- ❑ the shortages of both professional capacity and the funds required to undertake new initiatives, which are the common reality in most network secretariats; and
- ❑ the notorious lack of interest in the Internet as a new development tool that still exists within most donor agencies.

In addition, there is another, deeper lying reason. Most research networks are firmly organized around a central, coordinating secretariat, the initiatives it undertakes, and the services it renders to its members. The very introduction of the Internet to support its dispersed operations represents change, and the network—both the secretariat and its members—will have to reconsider the ways in which they have organized and are managing their information-related activities. From small things, like ensuring that all members start archiving electronic files in a uniform way, to a total overhaul of the secretariat's publishing work to adjust current activities to the technical requirements of the Internet. Change always requires extra effort from all involved and many network secretaries have learned the hard way that the transformation of members' enthusiasm for new endeavours into concrete collaborative action is often a laborious and daunting task.

The Internet is making unstoppable headway. The current range of users has far outgrown the scientific community that invented it. Private companies, governments, multilateral organizations, political parties, churches, schools, civil society organizations and private individuals are increasingly using the Internet to disseminate information, to advertise their products and sell their services, and to retrieve information, compare and order products. Sooner rather than later, North-South research networks will be urged to create a web presence, a thematic

⁴⁰ Engelhard, R.J. (1999). *State of the art of the opportunities offered by new ICTs in building of cooperation programmes in agricultural research for development*, paper presented at the European Forum on Agricultural Research for Development, 7-8 April 1999.

**Internet web services
for North-South research networks**

- North-South research network websites***
examples: www.cgiar.org; www.sugarnet.com; www.etfrn.org;
iufro.boku.ac.at
- Electronic libraries and bookshops***
Full-text books, articles, reports, workshop proceedings, catalogues, abstracts, ordering services, selected dissemination of information
examples: www.fao.org/waicent; www.idrc.ca; www.cta.nl;
www.dainet.de; www.ids.susx.ac.uk/eldis;
www.wau.nl/agralin/agralin.html; www.sciencedirect.com;
www.barnesandnoble.com; www.cabi.org
- Directory services***
Members, relevant research institutes, funding agencies, etc., electronic mailing lists
examples: www.etfrn.org; iufro.boku.ac.at; www.idrc.ca;
www.neosoft.com
- Information services***
News services, job opportunities, events and agendas
examples: www.oneworld.org; www.euforic.org;
www.newscientist.com; www.panos.org
- Gateway services***
Search engines, links, etc.
examples: www.dainet.de/eaierd/infosys;
www.ncsu.edu/cicp/countries; sdgateway.iisd.ca; www.unsystem.org;
www.sosig.co.uk; www.shared.org; www.uia.org;
wbln0018.worldbank.org/egfar
- Discussion groups***
Thematic discussions
examples: www.oneworld.org (think-tanks); www.worldbank.org
(development forum)
- Advisory services***
Question and answer services, expert databanks
examples: www.etfrn.org; www.agromisa.nl; www.cta.nl

focal point and thematic gateway to the vast source of information and services scattered across tens of thousands of websites on the Internet. As connectivity in the South improves, the impetus to create web services may well come from the South. For scientists in the North, the Internet is yet another source of scientific information. For scientists in the South, however, it is becoming an essential tool to implement their scientific work properly, a comparatively low-cost medium to disseminate the results of their scientific work and to retrieve scientific information available in databases that are scattered around the world.

A good example of a network that uses the Internet as the platform for most of its interactions and services is the European Forum for International Cooperation (EUFORIC).⁴¹ This network consists of a group of European research institutes, government donor agencies and inter- and non-governmental organizations active in the field of North-South development cooperation. EUFORIC's principal aim is to provide its members with reliable and current policy information that can be used for enhancing cooperation between Europe and developing countries. The network uses the Internet to improve immediate access to information that is made available by organizations scattered throughout Europe and developing countries, to foster information exchange among its members, and to provide opportunities to debate topical issues by means of electronic conferences rather than traditional workshops.⁴²

From this pioneering case various basic guidelines can be deduced.⁴³ EUFORIC's website emerged from a single organization, the European Centre for Development Policy Management (ECDPM, Maastricht), in late 1995, which initially developed its content and paid for designing and testing various trials and web tools. Two years later, however, EUFORIC reinvented itself as the founding member of the network

⁴¹ See the website www.euforic.org.

⁴² In developing its web strategies, EUFORIC was able to benefit from the work of the Internet Webcasting and information provider OneWorldOnline (OWO). As of late 1995, EUFORIC and OWO have collaborated closely in developing the conceptual and technological bases of the respective website. See www.oneworld.org (perspective UK-based NGOs) and www.oneworld.org/europe (Continental Europe-based NGOs).

⁴³ Ballantyne, P., Europe's Forum on International Cooperation (EUFORIC); a co-operative approach to web-based information resources, *New Review of Information Networking*, No. 3, 1997, pp. 203-212.

created as a legal entity, in the form of a registered cooperative. They assigned this small incorporated organization the management of the website and the task of generating income, principally from membership fees, to cover its costs. This institutional framework allowed EUFORIC both to delegate management responsibilities to its members, and to pool resources to pay for central tasks.

EUFORIC differs from most website strategies in that it crosses institutional boundaries and, using Internet technology, combines the libraries and databases of the member institutes into one virtual library of full-text electronic documents, reports and other forms of information. Individual members continue to manage their own databases and contribute, in an editorial sense, to thematic guides, diaries of events, and directories of organizations. Meanwhile, a small secretariat takes care of central tasks, such as the development of new web tools, the management of core databases, the support to members in the form of training, and the promotion and marketing of EUFORIC's web services.

In pioneering applications of Internet technology to its information exchange network, EUFORIC has learned that, given the massive growth of information on the site, it had to concentrate on "content" while buying-in the necessary technical expertise; and that moving to a cooperative entity and transforming initial enthusiasm into concrete collaboration was particularly difficult because all member organizations had to reconsider their own internal procedures for organizing and structuring information. However, EUFORIC was able to overcome these challenges because it focused its services, restricting their scope to the interests and capacities of the member agencies. As a result, EUFORIC has become a successful and frequently used gateway to news and background information on international development policies, both at the level of the European Union and that of individual EU member States.

The EUFORIC case illustrates that setting up Internet-based services implies much more than just launching a website. Their introduction requires organizational change to be planned, introduced and coordinated both at the level of the network secretariat and at that of the individual network members. This is certainly not an easy task for a research network that depends on voluntary contributions by a variable member-

ship of institutes and individuals whose mutual affiliations are weak. At the same time, EUFORIC shows in an exciting manner the potentials of the Internet for North-South research networks: (i) a force that binds scientists who are geographically scattered into one, mutual information exchange network; (ii) a place (in a virtual sense) where they can meet, exchange information and news and involve themselves in thematic discussions; and (iii) an access point through which they can obtain a wide variety of scientific and other information.

10. Conclusions

This paper has discussed North-South research networks and their enormous variety, both in terms of the manner they manifest themselves and the activities they carry out. To explain the formidable strength as well as the pertinent limitations of research networks, their informal organizational arrangements and inherent instability due to a variable membership have been highlighted. Against this backdrop, some guiding principles for setting up and managing North-South research networks have been presented.

Networks of researchers are part of a long tradition of sharing scientific information. Over the past 20 years, donor agencies have realized the potentials of North-South research networks as a mechanism for strengthening research capacities in the South and for improving global access to the scientific information available in the North. These networks have obtained their current prominence largely because donor agencies embraced this form of North-South scientific collaboration as a tool to implement their own agendas for international research cooperation. These donor agencies got involved in setting up, financing and developing research networks, and often became members of their governance bodies. Actually, they themselves benefited from their close association with research networks, in that they could rely on their members for advice and helpful hints regarding their development policies in general. As a consequence, the future of most North-South research networks depends as much on future donor policies as on the results and impacts of their activities.

Over the past five years, funding sources for North-South networks have become tight in the light of declining aid budgets. Network secretaries have been encouraged to explore other funding mechanisms in order to reduce the donor dependency and to improve the financial sustainability of their activities. In doing so, they have been confronted

with the changeable policies of donors, their competition and “territorial” squabbles, and their lack of programme coordination.⁴⁴ The much discussed “public-private sector partnership” has appeared not to be a viable new funding mechanism due to the fact that private industry is reluctant to sponsor typical “network activities”. This paper has argued that generating income from membership fees and from payments for network services is the only way open for North-South research networks to achieve a certain level of financial sustainability.

Donor agencies are bound to help existing research networks to make the necessary arrangements for a successful transition to improved financial sustainability. They can assist new networks to build a membership base of sufficient mass to become financially sustainable. Such help should be rendered on the basis of deficit financing up to explicit pre-arranged levels rather than by direct contributions to overhead and activities. Networks that appear to be unable to generate sufficient income from their membership, or are confronted with serious fall in their membership as a result of their new fiscal policies, should seriously question their *raison d'être* in their current form.

The imbalances in many North-South research networks reduce their development relevance. Balanced agendas are of interest for both the Northern and Southern partners, in that the former wish to get involved in innovative research that could benefit the South. If the network's agenda setting is dominated by Northern scientists, adjustments can be made. However, the success of such adjustments will depend very much on the Southern partners' ability and willingness to collectively assess their needs and effectively present their agendas.

The Internet is there, albeit in its infant stage. Connectivity in developing countries is still poorly developed but will certainly and rapidly be improved. This prospect makes the application of Internet technology

⁴⁴ In 1995, the research departments of six donor agencies decided to enhance the coordination of their respective programmes. For that purpose they created Bellanet, a donor network supported by a dedicated electronic meeting place on the Internet. After two and a half years and a lot of excellent work by Bellanet to try to bring donor coordination on stream, the agencies had to conclude that the assumption, underlying this experiment (i.e. that they actually wished to coordinate their respective programmes) had been proven to be too optimistic. See www.bellanet.org.

in North-South research networks a realistic, exciting option to bind their members closer together, to enhance information exchange and to improve services. The introduction of “web service” will not be easy, since it requires coordinated change in the information management systems of individual members. However, the introduction of such services is highly desirable if only for the reason that it will provide Southern members with a tool that allows them to access and retrieve scientific information available in the North, and to disseminate the results of their scientific work rapidly and independently, without the interference of others.

Regrettably, many relevant questions related to the good functioning of North-South research networks could not be explored in the context of this paper. For instance, could governing bodies, with their inherent politicking, infighting and institutional interest, be disposed of? Is there a proven remedy for the “old boys culture” that prevails in the governance bodies of many research networks and often paralyses their decision-making? How could the (reporting) relationship between a network secretary and the managing committee be structured in order to avoid the recurrent situation in which the actions of the former are hampered by the indecisiveness of the latter? What key organizational changes need to be made in the information management systems of research institutes to allow for the efficient application of Internet technology and the introduction of web services by North-South research networks?

Donor funding or no donor funding, governing bodies or no governing bodies, Internet or no Internet, one thing is certain: the scientific tradition of sharing mutual information is strong and over the last two centuries has survived many periods during which the free circulation of results of scientific research was suppressed. Northern and Southern scientists will continue to share the results of their scientific work irrespective of conditions that prevail in their research networks.

Appendix

Three case studies

European Tropical Forest Research Network (ETFRN)

The European Tropical Forest Research Network was established as an initiative of the European Commission's Directorate General XII (Science, Research and Development) in 1991. ETFRN aims to contribute to international efforts towards the conservation and wise use of forests and woodlands in tropical and subtropical countries, for the benefit of their peoples, and for the global benefits they provide. ETFRN seeks to achieve this aim by promoting the involvement of European research expertise in tropical forest and woodland conservation programmes. In particular, ETFRN seeks to improve exchanges of information on tropical forest research among the European scientific community, its partners in developing countries and European policy makers; to facilitate cooperation among scientists; and to coordinate policy management decisions and donor support. ETFRN contributes to the wider coordination approach envisaged under the European Initiative on Agricultural Research for Development (EIARD).

ETFRN's structure consists of four elements: (i) ETFRN members; (ii) National Nodes; (iii) a Steering Committee; and (iv) a Coordination Unit.

ETFRN *membership* is open to European research institutes specialized in the conservation and sustainable use of (sub-) tropical forests and related land-use issues (membership is not open to individual researchers). National nodes provide focal points for networking activities in each of the EU member States, Switzerland and Norway. These national nodes are leading forestry research policy makers who represent the member institutes of their respective countries in the network's Steering

Committee. They also carry out a wide range of ETFRN activities at the national level. The Steering Committee is ETFRN's governing body and identifies emerging trends in tropical forest research, decides on the network's strategies, approves annual work plans and monitors their implementation by the Coordination Unit. This small secretariat acts as focal point for coordination and communication within the network. This Coordination Unit is the network's engine and facilitates its various activities.

ETFRN's activities include:

- an information service, providing easy access to constantly updated information on planned, ongoing and completed tropical forest research;
- a newsletter that is 3-4 times per year distributed among over 2,000 researchers, and policy makers in Europe and over 1,100 outside Europe;
- a directory of forestry research institutions in Europe;
- various databases, including one with information on relevant European research institutes, and one with data on tropical forestry research projects. Current efforts revolve around the development of a "meta-database", which will provide access to relevant project databases of research institutes and other networks via the Internet;
- a forum for dialogue, for researchers in Europe and developing countries and for EU/EC policy makers. This forum includes workshops and discussion groups and active interfacing with the European Commission and the European Parliament.

In 1998, the ETFRN Coordination Unit launched a well thought-out website through which it supports the activities of the network's National Nodes and makes its services available to a wide public, including the member institutes and researchers in developing countries. This website has enabled ETFRN to start expanding its services to include: (i) the publication of a regularly updated timetable of international conferences, meetings and training courses; (ii) a "clearing house mechanism" providing links to other websites and databases; and (iii) a Question and Answer service that helps in finding research cooperation partners and

specific information, and in identifying potential funding sources for research projects. The website and its services have gained high visibility on the Internet as a result of its creative, enterprising promotion efforts.

ETFRN is part of an emerging worldwide forestry research information network, for which it wishes to serve as a European focal point. Other (regional) focal points in this network are the FAO, IUFRO, CIFOR and regional networks such as APFRI, AAS, CORAF-Forêt and CATIE.

ETFRN's current funding arrangements with the EU/EC will end by the end of 1999. An external evaluation is planned to take place in April/May 1999. The review will focus on an assessment of the networks achievements so far, and on helping to resolve some issues that have proven difficult to tackle. Among these issues are (i) the concept of "balanced national representation" within ETFRN's governance structure; (ii) the need to develop a more self-sustaining financial basis and to explore possible new sources of income, such as the introduction of membership fees and payments for ETFRN services; and (iii) the desirability and possibility of arranging an independent legal status for ETFRN.

The Cassava Biotechnology Network (CBN)

The Cassava Biotechnology Network developed from the Cassava Advanced Research Network (CARN), an initiative undertaken by cassava researchers in 1988 and coordinated by Centro Internacional de Agricultura Tropical (Colombia). In mid-1992, CARN was transformed into CBN under the influence of a donor to whom CARN had presented a funding proposal. This donor approved funding under various conditions reflecting its own research policy agenda. These conditions included: (i) CBN's membership base should be regional networks in order to prevent it from becoming a think-tank of international scientists; and (ii) end-user networks (farmers' associations) should be represented in CBN's governing bodies. With the addition of these two concerns, CBN became explicitly oriented to the needs of both small-scale users of relevant biotechnology in cassava and researchers in the field of

advanced biotechnology. Over the years, attempts to build bridges between these two groups have proven difficult.

CBN's aims are (i) to identify priorities for cassava biotechnology in which the perspectives of small-scale cassava end-users are incorporated; (ii) to stimulate complementary, collaborative biotechnology research on topics of established priority; and (iii) to foster free exchanges of information on cassava biotechnology research, including techniques, results and materials.

CBN's structure includes (i) its members, including about 150 regular participants of CBN's workshops and international conferences and 1,000 subscribers to the newsletter; (ii) a Scientific Advisory Committee (SAC), an advisory body to CBN and its coordinator; (iii) a Scientific Committee, responsible for policy planning and priority setting and for the approval and monitoring of annual plans and budgets; (iv) the CIAT Cassava Biotechnology Working Group (CBW) in which the International Institute for Tropical Agriculture (IITA, Nigeria) is represented. This group has no direct bearing on the CBN's governance but renders advice on operational issues; and (v) the CBN coordinator. All of those involved in CBN's governance do so on a voluntary basis, except for the coordinator.

CBN's activities include:

- a newsletter that is distributed among over 1,000 subscribers, and the publication of articles about and by CBN in international scientific journals;
- research priority-setting workshops and international conferences (including the development of an information system, based on extensive research literature reviews, to enhance the quality of the priority setting process);
- farmers' perspective case studies in Tanzania and China;
- the development of a "cassava rapid rural appraisal" methodology (by the CBN Needs Assessment Working Group, in collaboration with the Natural Resources Institute in the UK);

- ❑ the administration of a Small Grants Programme, which grants small subsidies (between \$5,000 and \$10,000) to innovative research projects in areas of high policy priority. This Small Grants Programme disburses a total of about \$100,000 per year;
- ❑ the brokerage between researchers and donors, and support to National Agricultural Research Systems (NARS) in the field of project development and in the formulation of research programmes.

CBN's initial funding horizon was a period of five years, i.e. 1992-1997. An important mid-term evaluation took place in mid-1995. The conclusions and recommendations of this review were generally accepted, although their actual implementation was hampered by stormy developments in the donor's Biotechnology Programme (CBN's principal sponsor). This Programme was itself evaluated in 1996/97 and its policies and organizational set-up were restructured in 1997/98. As a consequence of these developments on the side of its principal donor, a final review of CBN's achievements (which would prepare the ground for the extension of funding arrangements for a further five years) was not carried out. Meanwhile, the philosophy and policy objectives of the donor's Biotechnology Programme began to diverge from those of CBN (which had been heavily influenced by the donor in the past!): "To access [the donor's] funding for CBN, would require a rapprochement between the entire SC (not just one or two representatives of the SC) and the donor, a precise statement of mutual understanding on philosophy and objectives. Probably both groups would have to agree to make changes in their positions. Because [the donor's] position is in response to its constituency—the voters of the [donor country]—this might require intensive advocacy work with the public" [*sic*] (quote from an e-mail communication by the former CBN coordinator, 26 December 1998).

In 1998, the donor decided to continue its support for CBN, but on a much smaller scale, and focusing on a very specific participatory research project in Latin America. CBN's efforts to raise funds from other sources to continue its much broader agenda remained unsuccessful. Other donors felt that their investment would receive insufficient recognition due to CBN's earlier strong association with [the donor].

Private industry showed no interest in funding “coordinating/overhead costs”.

Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA)

The Association for Strengthening Agricultural Research in Eastern and Central Africa was established in October 1994 by the National Agricultural Research Institutions (NARIs) of 10 countries in the region. ASARECA was established after extensive consultations with relevant stakeholders in Eastern and Central Africa (ECA), such as faculties of agricultural sciences, non-governmental organizations, donors, and with the Special Programme for African Agricultural Research (SPAAR). Thanks to its extensive and thorough preparations, ASARECA was able (i) to focus its policies and activities on the felt needs of a wide range of stakeholders, and (ii) to rally the support of most major donor agencies (including the World Bank, USAID, CIDA, IDRC, the EU, DANIDA, SDC, SIDA and others).

ASARECA is a South-South research network and forms a platform for regional cooperation in agricultural research for development. ASARECA aims at “strengthening and increasing the efficiency of agricultural research in EAC [. . .]” through a wide range of policies, which include:

- ❑ providing a forum for consultation and information exchange on the constraints to agricultural production in ECA and for laying out strategies for overcoming these constraints through regional collaborative research;
- ❑ helping National Agricultural Research Systems (NARS) and their collaborating partners to identify, prioritize and coordinate the implementation of regional research programmes, projects and networks;
- ❑ establishing harmonized systems of scientific and technological information and documentation, and the exchange of this information among NARS;
- ❑ establishing a regional strategy for the development and management of human resources;

- identifying and promoting the adoption of best practices in technology development and transfer, including the exchange of germplasm, among its members and stakeholders; and
- articulating the interests of the NARS in ECA in Africa-wide and international fora.

ASARECA's governing body is the Committee of Directors, which comprises the heads of the 10 NARIs that founded the network. A secretariat with an executive secretary, a finance officer and a small number of support staff has taken charge of daily affairs. ASARECA's policy is to keep this coordinating unit small because regional collaborative research activities are domiciled in member NARS as part of capacity-building efforts. The Committee of Directors and the secretariat are supported by a large number of steering committees and task forces.

As a "network of networks", ASARECA's activities focus on strengthening the member NARS with programmes that include:

- building databases with information on research projects conducted by the member institutions;
- training programmes and short courses for researchers and other staff of NARS;
- conducting an agricultural policy analysis programme;
- building up information and documentation services, in close cooperation with the Information and Documentation Service of CTA (Wageningen, The Netherlands);
- facilitating linkages between technology development and transfer institutions;
- liaising with regional organizations;
- advancing research institutes and universities outside ECA; and
- liaising with donors for mobilizing funding.

Within five years, ASARECA has been able to position itself as important focal point and an engine for agricultural research collaboration in ECA. It has recently mapped out innovative sustainable financial policies and strategies to deal with felt imbalances within the

governing body, due to the large variations in the size of the NARIs, and the increasing number of regional research networks that form its membership base. ASARECA seems to have been able to strike a balance between professionalism (to get the job done) and a culture of informality (to create feelings of commitment, a shared identity and ownership among its members).

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