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Advisory Council
for Scientific
Research in Development
Problems

# Supporting capacity building for research in the South

## Recommendations for Dutch policy

Publication no. 10

Contents

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## Preface

The present report, which was compiled by the Council at the request of the Minister for Development Cooperation, puts forward recommendations for future policy aimed at strengthening research capacity in developing countries. The Minister's request was contained in the 1992 policy document `Research and development cooperation', in which he made known that future policy would place greater emphasis on the building up and strengthening of the South's own scientific and technological capacity. The Minister then took the initiative by establishing a number of multiyear research programmes in countries with which the Netherlands has close development ties. As far as possible, responsibility for the elaboration and implementation of these programmes rests with the individuals and institutions in the developing countries themselves.

The Council has analyzed the body of issues related to research capacity-building, and has gained an insight into present Dutch policy and the programmes and instruments which have been developed to shape that policy. A number of objectives and avenues of approach in the development of future policy were identified, and have been elaborated in the report. The most important of these is the promotion of a broad, coherent approach to capacity-building which centres on three levels within the research system: the training of researchers (microlevel), the building up and strengthening of institutes (mesolevel), and the creation of conditions in society and government which are favourable to research (macrolevel). As there are often considerable differences between the starting situation in the various countries, this approach will have to be worked out within a country-specific framework. This will also make it possible to deploy the present, somewhat fragmented, Dutch policy instruments in a more coordinated fashion, so that the programmes complement one another and have a greater synergetic effect.

It is the Council's hope that these recommendations will be reflected in the future policies of the various bodies - ministries, research institutes, and intermediary organizations - involved in the preparation and execution of Dutch policy aimed at building up and strengthening research capacity in developing countries. Where appropriate, the Council will itself take the necessary measures to promote the implementation of these recommendations.

This report was prepared by a committee set up by the Council and chaired by Prof.dr. L. Reijnders. The other members were Prof.dr. E. de Kadt (chairman of the Council), Prof.dr. I. Wolffers (member of the Council), Dr. J. van Dam (adviser for the Ministry of Education, Culture and Science), Drs. P. de Haan (adviser for the Ministry of Foreign Affairs/Directorate-General for International Cooperation), Drs. A.P. Smits (acting Secretary of the Council) and Drs. M. Veldhuis (member of staff of the Council).

In analyzing the problems related to research capacity, the contribution of the South took two forms. During the preparatory phase, a field study was carried out in Kenya, Ghana, and Kerala (India). The aim of this study was to identify the primary needs of the research systems in the above countries, by means of interviews with researchers, policymakers and representatives of NGOs active in the field of agriculture and natural resource management. This field study was carried out under the auspices of the Council by Prof. Wesley Shrum of Louisiana State University. In addition, a number of Southern experts were asked to comment on a draft version of the present report. Their comments, together with the findings of the field study, have been incorporated into the final version of the report.

The present report likewise reflects the results of the background studies carried out at the request of the Council by the Centre for the Study of Education in Developing Countries (CESO) and by Dr. Frits Wils.

The Council would like to thank all those individuals and institutions that have contributed to the realization of this advisory report.

**Emanuel de Kadt**
**Chairman, RAWOO**

# 1. Introduction

## 1.1 Background and objectives

In the present report the RAWOO puts forward its recommendations to the Dutch government on future policy with regard to the building up and strengthening of research capacity in developing countries. It follows on the policy document of the government of the Netherlands `Research and Development' (1992), in which this subject was designated as one of the main policy issues on which the Council was expected to advise the government.

In the 1992 policy document, the Minister for Development Cooperation outlined his ideas and plans in the area of research and technology, together with the manner in which he intended to give them concrete form. A major new policy initiative was launched in the form of the so-called multiyear, multidisciplinary research programmes, which were to be set up in a number of countries with whom the Netherlands has a long-standing relationship in the area of development. With regard to the available resources, a gradual increase in the research budget was envisioned, from Dfl. 124 million in 1990 to Dfl. 205.7 million in 1995.[1]

The new research policy has now been operational for several years, while two government papers have recently appeared which are of importance for the further drafting of policy. The first (Herijkingsnota) focuses on the organizational consequences of the reassessment of Dutch foreign policy, and the other, Hulp in Uitvoering ('aid in progress'), draws the lessons of 50 years of development cooperation. Both policy documents stress the importance of an integrated country- or region-oriented policy; this involves determining the appropriate mix of policy and instruments for each individual country or region, in view of the increasing differentiation between developing countries.

In the light of the above, the present recommendations are intended to:

- develop a coherent vision on the issue of building capacity in the field of science and technology in developing countries

- examine the necessity and feasibility of making adjustments to Dutch policy on support for capacity-building in developing countries

- produce recommendations and proposals for the further development of policy, with special reference to the actors involved: the Dutch government (as represented by the various departments), the intermediary organizations involved in programme management, and the research institutions.

[1] The research funds which were to be made available through the Special Programme for Research were expected to increase from 22.8 million Dutch guilders in 1992 to 68 million in 1995. The policy document set target percentages for research expenditures: 5% of the total expenditures for a programme country or region, and 10% of expenditures within the framework of the three thematic Special Programmes.

## 1.2 Working method

Before embarking on the present report, the RAWOO organized a Donor Conference focusing on the experiences of those organizations that provide support in this area (Biervliet 1994, Dottridge 1994, Dubbeldam 1994, Thulstrup 1994, Wijkman 1994, RAWOO 1994). The conference identified a number of key issues and put forward suggestions for activities which could be undertaken by donor organizations. These are presented in the Conference Report.

The RAWOO also commissioned a number of background studies. Two of these were undertaken by the Centre for the Study of Education in Developing Countries, in order to collect and analyze material on previous Dutch activities in the field of research capacity-building. The first provided a general insight into Dutch activities, on the basis of the information provided by 122 project documents (Biervliet 1993). The second was designed to provide an in-depth view of such activities by studying a selection of projects in more detail (Biervliet 1995).

In order to gain more insight into the perceived needs of Southern research communities, field studies were undertaken in Ghana, Kenya and India (Kerala). Interviews were conducted with people involved in agricultural and environmental research, to gain an impression of the priorities of the researchers themselves (Shrum 1994).

The main literature on building up and strengthening research capacity in developing countries was reviewed and analyzed (Wils 1995); on the basis of the literature and the above studies, the review highlighted a number of policy issues. Taking this report as a starting point, the Council prepared a draft advisory report, which was sent to 17 experts in developing countries for their comments. Subsequently, two meetings were held to discuss the draft with Dutch experts in the field. In this way, the final version of the advisory report has benefited from many valuable suggestions and comments.

## 1.3 Structure of the report

Chapter 2 deals first with the question of why capacity-building in research is so important to the development process. The Council then sketches the perspective from which the concept of research capacity should be approached. At the core of the discussion is the necessity to devise a country-specific approach which promotes the various levels and elements of research capacity. Chapter 3 further explores the most important issues in the light of this perspective, and reviews the nature of Dutch efforts up to now. In Chapter 4 the Council puts forward proposals and recommendations for the further development of policy, with special reference to the various actors involved in the preparation and execution of Dutch policy.

## 2. Enhancing national research capacity: a policy framework

### 2.1 National research capacity for sustainable development

It is widely acknowledged that scientific research is essential to the process of economic and social development, whether the process takes place in industrial or industrializing countries. The importance of that research may be expected to increase in future, as the worldwide economy moves towards an increasingly science-based production process. At the same time, there is an enormous difference between developing and developed countries when it comes to their ability to create and use scientific knowledge. UNESCO's 1993 World Science Report points up the imbalances that exist within science and technology in terms of effort and expenditure. In industrial countries, the number of scientists per million head of the population ranges from 1900 in the EU to 3800 in the US and 4700 in Japan, whereas in Southern countries the figures are as low as 500 for Latin America, and 100 for sub-Saharan Africa and India.

Some countries have succeeded in bridging the knowledge gap, through heavy investment in the development of indigenous research capacity. The economic success of Korea, Singapore and Taiwan is due in part to their sustained efforts to promote science and technology for the benefit of industrial development. The NICs did not blindly pursue an indigenous science and technology capability, in the belief that this would automatically contribute to economic growth. Rather they based their science and technology policies on such factors as international market demand, foreign technology, and foreign investment (UNESCO 1993:114).

The successful science-based development of the NICs is often seen as a promising paradigm for other developing countries. However, the outlook for extensive investment in indigenous research capacity is often bleak. In many developing countries government expenditure on education and research has been curtailed since the early eighties, so that these sectors are becoming heavily dependent on outside funding. For many countries, the emergence of a self-sustaining research capacity is very much a long-term goal. And yet the necessity for indigenous research capacity is becoming ever more pressing, if countries are to improve the quality of their policy- and decision-making processes, and monitor their present activities, while remaining receptive to alternative and innovative policies.

The importance of a good knowledge infrastructure for developing countries has been reiterated at countless UN conferences, including the UNCED summit in Rio de Janeiro, and in international environmental treaties (such as those concerned with climate and biodiversity). Developing countries that strive to abide by the terms of such treaties will have to devise strategies of their own. They will need insight into the changes that are now taking place within the environment, the causes and possible consequences of those changes, and the possibilities for developing and implementing policy that contributes to a solution of their problems.

Many developing countries do not have at their disposal the human capacity or the resources to acquire the necessary knowledge and insights. By strengthening their research capacity on a local level, they will be in a better position to find answers keyed to the local situation, needs and potential. While a primary role in this respect is clearly reserved for the developing countries themselves, also in terms of South-South collaboration, Northern researchers and research institutes are in a position to collaborate with colleagues and partner institutes in the South, with a view to reinforcing the existing knowledge, strengthening the role of institutes, and training researchers.

Developing and strengthening research capacity is not an undertaking for which clear-cut procedures exist. Many studies and conferences have stressed the constraints acting upon efforts in that direction. In this report the Council has tried to make these constraints and tensions visible, and to put forward options for future action.

Although there are many ways to help Southern countries develop their research capacity, the notion that changes can be effectuated from outside is pretentious. What donors can do is to support activities initiated by actors within the research system in question. Donors must be aware of the constraints that are present, and of the possible counter-productive effect of their own actions.

### 2.2 Coherent approach to research capacity

The issue of how best to build up and strengthen research capacity is broad and complex. However, different components can be identified at different levels: personnel with the required qualifications, the necessary institutions, and an `enabling environment' which is willing to support and sustain research activity. These levels must be seen in relation to one another, as the component parts of a research system.

On the level of *individual researchers*, the following capabilities and requirements are of importance:

- the capacity to formulate a research problem and to carry out the entire research cycle (where necessary, in cooperation with the users of the research results)
- appropriate qualifications through further academic training (MA and PhD)
- motivation, and the opportunity to undertake research
- external contacts (national and international), networks, and membership in professional associations
- access to information (libraries, databases, etc.) and scientific equipment.

At the level of the *institutions*, capacity is needed for:

- the development of research policy; the development and management of research projects and programmes (priority- setting, research coordination, monitoring, and the publication and dissemination of results)
- the acquisition and management of research funds
- the training of researchers, and staff development
- the provision of adequate incentives and working conditions for researchers (time, financial resources, salaries, libraries, laboratories, equipment, funds for travel, etc.)
- a network of external contacts, which provide links to other research centres, funding agencies, voluntary organizations, businesses, government bodies, etc.

- monitoring and evaluation.

An *`enabling environment'* concerns such aspects as:

- commitment at the national level to a policy and a set of measures aimed at promoting and maintaining research capacity, including adequate and sustained funding of institutions and programmes

- mechanisms for steering research towards topics that are of relevance to the economic, social, cultural and political development of a society, and possibilities for various groups to articulate their interests

- links between research, policy, and practice (involvement of research users in prioritizing, implementing and disseminating research)

- a professional environment, including formal associations, standards, mobility, incentives, and a research tradition.

*A broad, multilevel perspective on research capacity consists in acknowledging the complexity of the issues and the inadequacy of isolated interventions. The various actors, levels, and components must be seen in relation to one another. A coherent approach implies that efforts designed to support research capacity must take into consideration the requirements to be met at the various levels, if those efforts are to be effective and sustainable. These points will have to be addressed when support programmes are set up.*

The problems facing developing countries may be related to economics, the environment, health, politics, or social and cultural issues. This means that the knowledge required to devise strategies aimed at development is often of a multidisciplinary nature. Within the context of strengthening research capacity, a special effort is often needed to train people to work in multidisciplinary teams and to manage multidisciplinary programmes. The lines of demarcation traditionally drawn between the various disciplines within institutions are not conducive to research of this kind. However, a good disciplinary grounding is a prerequisite for successful multi- or interdisciplinary activities.

### 2.3 Country differentiation

In any discussion centring on the development of research capacity, it is important to realize that there may be considerable differences between individual countries with respect to the level of research capacity already attained. Some countries have a well-developed research infrastructure, while others start from a minimal position.

A rough distinction can be made between three different phases. In an *`initial' stage*, research capacities are still quite limited on all three levels mentioned above (human resources, institutions and national environment); this is often the case in the poorer countries. A *`transitional' stage*, when local research capacity is developing on one or more levels, but progress is still quite uneven. There may be some research communities and institutions, but they are still deficient in such aspects as the regular financing of research. The broader context of research, including the setting of priorities and working conditions, remains haphazard. And finally, there is the *`developed' stage*, where the research system and the research community have become quite dynamic, well linked to the society and the economy, and self-sustaining (Wils 1995:8,9). A broadly similar distinction

between three categories of countries is given in a UNESCO study (Science and Technology in Developing Countries, 1992).[2]
There will be differences in the level of capacity, not only between countries but also between different sectors within countries. *This means that programmes aimed at developing research capacity will have to differ according to the level of capacity attained thus far. The needs of each country must be individually assessed, and programmes devised that promote a flexible mix of support activities tailored to a particular country.*

## 2.4 The international context

This emphasis on national research capacity should not be interpreted as a recommendation to opt for a purely national focus. It is inherent in the concept of scientific endeavour to have access to, participate in, and contribute to the global community of scientists. International contacts between researchers, the exchange of information and literature, and participation in international networks and programmes are part and parcel of a `world community' of researchers.

Thus it is vital to provide sufficient opportunities for Southern scientists to participate in, and derive benefits from, the international context. Participation in conferences, networks, exchange programmes and research programmes will enhance the quality of their scientific work, increase productivity, and have a motivating influence. For many countries, regional and international cooperation is vital in order to attain a critical mass around certain topics.

[2] This study differentiates between three levels of science and technology capabilities, on the basis of a combination of statistical measures, including percentage of GNP devoted to R&D, number of scientists and engineers per million inhabitants, number of R&D personnel in higher education, number of students in higher education per 100,000 inhabitants, number of potential scientists and engineers, and R&D personnel in industry as a percentage of total R&D personnel. The study distinguishes:

- countries with a limited S&T base (including Jemen, Benin, Burkina Faso, Cape Verde, Cameroon, Mali, Niger, Suriname, Chad, Botswana, Mozambique, Swaziland, Uganda, Zimbabwe, and Bangladesh)
- countries with fundamental elements of an S&T base (for instance, Bolivia, Jamaica, Ghana, Nigeria, Senegal, Kenya, Rwanda, Malawi, Zambia, Indonesia, and Sri Lanka)
- countries where the S&T base is well established (such as Chile, Colombia, Equador, Peru, Costa Rica, El Salvador, Nicaragua, Egypt, Sudan, India, Pakistan, Philippines, Thailand, and Vietnam)

UNESCO recommends using a different strategy for each of the three groups: first, establishing a scientific and technological base; second, exploiting the S&T base; and third, managing existing S&T resources. At the same time, it warns against generalization, as there will be considerable differences between countries within the same category.

## 3. Policy issues

This section contains a brief overview of the key issues identified thus far.

### 3.1 Individual research capacity

The basic requisite of an adequate research infrastructure is a body of qualified researchers, large enough to provide the critical mass which will enable them to undertake coherent research programmes, and to provide peer review.

Individuals who may be expected, in due course, to take charge of research projects must acquire the necessary qualifications and skills. They must be able to complete a whole research cycle (from priority setting to reporting and disseminating the results) independently. If one is to be capable of defining research questions, a solid grounding in theory and methodology and a broad knowledge of the field will be needed, as well as skill in disseminating results. Throughout the whole research cycle, the involvement of the end users of research results is an important factor, with a view to increasing the relevance and usefulness of the research.

All these skills are acquired by the individual researchers through formal schooling at university (MA, PhD, special courses, etc.) and through specialized training within research projects and programmes. `Learning by doing', broad field exposure, and a period of apprenticeship are important to acquire these skills. Experience has shown that training in writing up research project proposals also requires special attention.

Many developing countries are still heavily dependent on training in the North. Although degrees from Northern universities are generally considered preferable to local ones, many Southern experts recognize that it is far better to build up the training capacity at Southern institutions than to train in the North. This reduces the danger of brain drain, provides the institutions with research materials, and enhances the relevance of research. Over the last few decades, the trend among donors has been towards building up training capacity in the South. Not only initial research training, but also specialized training and Ph.D. training are increasingly becoming available on a country or regional level (South-South cooperation).[3] Constraints on the process of `indigenizing' research training include the difficulty of retaining qualified researchers, a problem encountered by many African and Asian countries. It is chiefly the highly qualified senior staff members who leave, which hampers the continuity of post-graduate research training.

The physical infrastructure needed for research (laboratories, inputs, computers, communication, and transport) is often deficient, outmoded or totally lacking. Not only the physical infrastructure must be provided, but also well-trained technical staff to maintain equipment.

Access to research publications and other material relevant to the area of study is often insufficient. Libraries often have few, if any, subscriptions to the main international and regional research journals. Researchers often have inadequate access to current literature, periodicals, data bases, library catalogues, and the like, which are made available through the use of modern information technologies.

[3] The volume `Profiles of institutions for scientific exchange and training in the South', compiled by the Third World Network of Scientific Organizations in collaboration with the South Centre and the Third World Academy of Sciences, contains the profiles of 208 institutions (evaluated by expert groups) in the physical sciences (including physics, chemistry, the earth sciences, and engineering science and technology) and the biological sciences (including agriculture, medicine, and biology), with a view to encouraging greater South-South cooperation.

Often researchers are employed in a working environment which is less than stimulating. There may be little opportunity - i.e., time and money - to do actual research; both status and salaries are low, and there is little or no contact with fellow researchers. Low salaries lead to a preoccupation with sidelines, such as consultancies, in order to supplement one's income. The problem of retaining researchers, both in their profession and in their country or region, is particularly pressing in Africa, but the phenomenon is by no means unknown elsewhere.[4]

The question of incentives for active research is an important one, for researchers as well as for donor organizations. Various possibilities present themselves, including a remuneration for activities related to fieldwork, schemes to supplement faculty or institutional budgets, prizes, payment for papers, the establishment of research foundations, and more contract research.

Contacts with *peers*, both in the same country or region and on an international level, are also incentives which increase both motivation and productivity, while enhancing the credibility and status of individual researchers. Such contacts can also be promoted by travel, national and international conferences, networks and research associations, participation in international research programmes, and access to national and regional research journals. Also the use of modern information and communication facilities can promote contacts with peers.

### 3.2 Institutional capacity

Research capacity is anchored within an organizational - primarily institutional - setting. Productivity, as well as the quality and relevance of research, will depend on the ability of institutions to 1) provide researchers with a good working environment, adequate training, and the necessary physical infrastructure; 2) acquire and manage the necessary research funds; 3) develop research policy and research programmes that are relevant to the needs of the society concerned; and 4) monitor and evaluate the research.

*Universities* play a central role in the development of research capacity, since it is there that researchers receive their basic training. In addition to doing research themselves, universities also provide the human resources for more specialized research institutions.

The functioning of universities, especially their contribution to development, has recently been the object of a critical evaluation. The situation of African universities, in particular, has received considerable attention. Two recent publications of the World Bank, `Universities in Africa; strategies for stabilization and revitalization' by William Saint, and `Higher Education: the lessons of experience' outline the problems related to quality, relevance, and financial resources that universities in Africa and elsewhere are facing, and suggest ways to overcome them.

The criticism focuses on curricula, enrolment practices, management, etc. Student enrolment has risen dramatically and this has eroded the quality of training and research, and caused absorption problems on the labour market. Moreover, women are still heavily underrepresented in higher education. Often the curricula are not keyed to the development needs of the country in question,

[4] The study by Shrum (1994) points up the fact that researchers themselves do not see support for human resource development as a top priority. The capacity built up in the past often is often underutilized, because of adverse working conditions, such as low salaries and small research budgets. `Every developed and developing country must continue to devote substanial resources to the education and upgrading of research personnel. But it may be that the main positive effects of the long term donor emphasis on training have already been witnessed and the policy needs to be rethought in the light of user demand'.

notably with respect to problem-solving skills in agronomy, medicine, engineering, chemistry, computer sciences, government, and cultural/ethnic studies (Sawadogo 1994:13). In many cases, critical thinking is not stimulated.

In universities in the poorer countries - in Africa, but also in certain regions of Asia and Latin America, such as Bolivia, Bangladesh and Nepal - there are often more obstacles to research than incentives. The staff have heavy teaching loads and are underpaid, which requires them to look for a sideline, and research has a low priority. Many universities are unable to retain their qualified staff.

As they are nearly always pressed for money, the budgets which universities allocate for research tend to be very small. As a result, research has become dependent on foreign funds, which raises the question of the independent setting of research agendas.[5] Furthermore, both productivity and the relevance of research at Southern universities are often low. The difficulties encountered are related to:

- the development of research policy (setting priorities and designing research projects and programmes)

- the acquisition of funding and commissioned research

- the setting-up of networks of external contacts (clients, user groups, funding agencies, other research centres, etc.)

- the implementation, monitoring and evaluation of research (standards for time spent on research and relation to quantitative and qualitative output).

In the African context, discussions between the Association of African Universities (AAU)[6] and donors (united in the DAE Working Group on Higher Education, in which the Netherlands participates) have resulted in a number of recommendations to universities and donors with respect to the development of research capacity. Donors were advised to help universities to become stimulating research environments, instead of focusing on support for individuals; to stimulate the development of research planning on an institutional, faculty and departmental level; to provide

support for the `bases of research' (such as libraries and access to scientific information) and for `capacity development' (training and physical infrastructure), rather than for short-term projects; to

[5] Tertiary education has in general become dependent on foreign funding. For several decades now, donor organizations have provided massive support to universities in Africa, Latin America and Asia. This was - and is - done mainly through linkages between individual Northern and Southern universities. Many Southern universities have multiple linkage arrangements: the University of Zambia, for example, has partnership agreements with 15 to 20 Northern universities (see Siwela 1995). Institutions may encounter problems in submitting reports and accounting to donors for the use of funds, especially if the donors' requirements differ.

[6]. African universities are striving to tackle their weak points through collective action. The core programme of the Association of African Universities (AAU), which receives financial support from the Netherlands and other donor organizations, addresses such vital issues as regional cooperation in graduate education and research; strengthening the universities' capabilities with respect to leadership an management; and the professional development of university staff. Members are themselves actively involved in these issues. The top priorities for the AAU are 1) regional cooperation in postgraduate training and research, and in the development of university management, and 2) electronic communication between universities. The AAU also offers its members such services as staff exchange programmes, and fellowships for study and research within the region, but only a small portion of the applications can be honoured.

stimulate the development of postgraduate programmes via South-South as well as North-South cooperation; to stimulate regional cooperation between universities; and to increase job satisfaction among senior researchers (international conferences, exchange programmes, sabbaticals, etc.).

As for the universities themselves, they should consider introducing mechanisms to promote the retention of good researchers, and to develop research plans (Van den Bosch 1994:14-15).

In middle-income countries and the NICs, the situation is less problematic. Universities in countries like Thailand, Mexico and India have resources of their own to devote to research. Indeed, research has become a career in itself. The shortcomings mentioned by the Southern experts pertain to the relevance and applicability of the research: a preference for fundamental research over problem- and policy-oriented research, insufficient contact with the users of research results, and the lack of a premium on quality and productivity.

In view of the - often sharp - criticism levelled at the research performance of Southern universities, special attention should be given to ways in which productivity and relevance can be enhanced.

*Research institutes* generate knowledge in specific sectors (agriculture, health, environment, etc.) and translate that knowledge into applications for users. The emergence of such institutes is a sign of a maturing research system. They may be autonomous bodies within a university, or separate public or private institutions.

It is difficult to gain a clear impression of the productivity and relevance of research institutions in general. Some reports sketch a bleak picture.[7] African research institutes appear to suffer from many of the same problems that plague African universities.[8]

The picture in countries like Thailand, Vietnam, Mexico and India is reported to be different: here research institutes offer opportunities for research and are highly productive, sometimes outstripping the universities. In general, they are more oriented towards the users of research results, although there are exceptions. Research institutions in Latin America are said to lack the necessary orientation towards national and regional priorities.

However, even where they perform better than universities, there is clear room for improvement. Many of these institutes are reported to work below capacity. Management could be more efficient

[7] Gaillard notes that at the research institutes he studied, the academic level of researchers was lower than at universities, and the opportunities for refresher courses and scientific communication were scant. Researchers were left little time to systematically record their findings, and even less to analyze their results and prepare publications (Gaillard 1991:145).
Thulstrup makes the point that in many developing countries the available resources have tended to go to research institutes, whose contributions in the form of research and training are often meagre, despite the fact that many have expensive facilities for high-quality research which are lacking in universities. This leads him to conclude that `it will generally be advisable to concentrate research investments where the training takes place or to move research training to places where both research facilities and activities are strong' (Thulstrup 1994:67).
Wils also remarks on this situation: `...from the perspective of developing local research capacity, they often have their own drawbacks, even when situated as autonomous units within the context of universities. They rarely provide an adequate and systematic response to the need for training new researchers and they do not help to integrate research and teaching' (Wils 1995:14). According to Dr. A. P. Conesa, the national agricultural research institutes in developing countries are overstaffed and underfunded, do too little field research and are not interested in traditional agricultural systems (Wagenings Universiteitsblad nr. 2, 12/1/95).

[8] Gaillard points to such adverse conditions at African research institutions as high turnover, sloppy work and a high percentage of vacant posts. Productivity is often low. The study by Shrum shows that researchers at national institutes in the sector agriculture and national resources (Ghana, Kenya, and Kerala, India) experience the same problems as their colleagues at universities, but rank priorities as salaries and operating budgets for research a bit lower (Shrum 1994:104).

and devote more attention to the dissemination of results and to links with users such as policymakers, small and medium enterprises, NGOs.

A recent phenomenon is the emergence of *`research NGOs'*. In Kenya, for example, many NGOs are active in research, in particular those with an advocacy focus.[9] In Ghana, Kenya and Kerala (India), NGOs involved in research into natural resource management and sustainable agriculture have become a significant phenomenon.[10]

The issue of bolstering the research capacity of NGOs is one that requires careful consideration. Solid donor funding aimed at increasing the in-house research capacity of NGOs could result in redundancy and a further fragmentation of the institutional landscape.

It is clear that development NGOs and grass-roots- oriented NGOs have a role to play when it comes to utilizing research results coming in from elsewhere, and providing feedback to the research community. They are also in a position to articulate the research needs of the target groups they work with. This helps to ensure that the local population is involved in the process of defining research priorities, and that local initiatives and local knowledge are brought to the fore. Linking these development and grass-roots-oriented NGOs with universities and research institutes will help to make the research at the latter institutions more problem-oriented.
It will be clear from the above that support for institutional capacity must be based on an assessment of strengths and weaknesses within the institutional landscape. Only after such an assessment has been made will it be possible to decide what kind of support is suitable and feasible.

### 3.3 Enabling environment

*Links between policy, research and practice*
The problem of utilizing the research capacity that has been created and the lack of incentives and opportunities have both been mentioned above. However, the utilization issue must be looked at from a broader angle as well: often research is not sufficiently focused on the needs of policymakers and stakeholders in society, and research results are not always accessible to users. This interferes with the sustainable use of the capacity that has been created. Potential users and policymakers should be involved in research policy dialogues and agenda-setting; the usefulness of the research enterprise must be demonstrated to potential users of research results in the public and private sectors; and research-based knowledge must be offered to clients in a form they can use. In this way, research will become more visible and enjoy greater esteem within society, which may serve to increase local demand.

To forge better links between policy, research and practice, it is also important for policymakers to become more research-minded, so that they are better able to make use of research results. The

[9] `Kenya has almost 500 NGOs. .... many and especially those with an advocacy focus, have a serious research component. Among those which come most immediately to mind are: the Mazingira Institute, the African Centre for Technology Studies, the Institute for Policy Analysis and Research, the Centre for the Study of Adolescence, the African Medical Research Foundation, the Population Council, and the Law Research Institute.' (Court 1995:9)

[10] According to Shrum, NGO respondents said that they spent more hours on research per week than academic researchers. Links with users (farmers and extension services) are strong but, in the case of extension, no stronger than those of research institutes. In Kenya and Ghana links with the research sector are problematic (Shrum 1994:5).

translation and dissemination of research results to various users requires special skills, which researchers may not have, and it may be necessary to call upon the services of specialists.

*National policy on research*

At the national level, research policies need to be developed and implemented that will make the best possible use of human and financial resources, in the light of the country's development needs and objectives. Developing countries differ in this respect. In most Asian and Latin American countries national policy frameworks are functioning well, and research policies and programmes are defined on the basis of national needs and priorities. In Africa, however, the national policy framework is largely absent; often there is a lack of organizational and operational capacity and insufficient funds to formulate and implement these policies.[11]

Over the years initiatives have been launched by UN organizations to enhance the capacity for national policy-making in the field of science, technology, and research. UNESCO has actively encouraged governments to set out policies, and emphasized the impact and usefulness of investments in this sector. The UNDP has recently undertaken pilot projects in six countries (Cape Verde, Jamaica, Pakistan, Togo, Uganda and Vietnam), which are designed to promote national planning in the area of science and technology.[12]

Dialogues between policy-makers, researchers and user groups within a society are of vital importance in articulating national needs in the area of research and capacity-building.

Donor organizations have pledged their support for priority- setting in research, primarily in the agricultural sector. The Special Programme for African Agricultural Research (SPAAR) seeks to reach agreement on priorities for agricultural research in Africa. It is aim at a balance of national, regional, and international approaches. In Tanzania and Mali, Agricultural Research Master Plans have been developed which establish priorities for national agricultural research. The ISNAR helps governments to develop capacity-building policies for agriculture (National Agricultural Research Systems), while support for national health research policies is provided through the Commission on Health Research and Development (COHRED). This international NGO functions as a catalyst in getting dialogues among policy-makers, health professionals, and researchers off the ground, with a view to developing a realistic, locally based health research agenda.

However, many research support agencies are overly attached to their own priorities, and are not always willing to go along with the coordinated research policy that has been formulated.

*Long-term commitment*

[11] The importance of national research plans is widely acknowledged. `In Ghana, Kenya and Kerala (India), "setting research plans and priorities" was considered of major importance by researchers in the field of agriculture and the environment, ranking first in Kerala, and second in Ghana and Kenya, after "salaries" (see Shrum 1994:103). The comments made by experts from development countries point in the same direction: national plans help all research institutions and groups to focus on existing needs.

[12] Specifically, these projects are aimed at developing institutionalized decision-making mechanisms that are country- and demand-driven as well as cross-sectoral, and bring together the different domestic stake-holders. In addition, the projects are designed to mobilize and coordinate domestic and external resources (UN General Assembly 1993:24-26).

The long-term sustainability of research capacity is dependent on the host governments' commitment to providing adequate support for research and research institutions, both during and after the period of donor support. In addition, donor organizations must be prepared to commit themselves over a longer period of time.

In practice, the commitment of Southern governments is often minimal, either because research in general has a low priority or simply due to lack of money. In very poor countries where conditions are continuing to deteriorate, such as Mali, there is unlikely to be any real commitment to research, at any rate in terms of funds. This poses a problem for donor organizations: is it wise to go on investing in research development or not?

### 3.4 International contacts and cooperation

It is clear that international cooperation and contacts are vital when it comes to improving national capacities for research and development. Researchers in developing countries attach great importance to international networking and to links with the international research community. Cooperation between the countries of a particular region is important in achieving a critical mass around certain topics, and providing peer review. The importance of achieving a balance of national, regional, and international activities directed towards capacity-building and research has also been noted. Certain problems require a regional approach, while others are more location-specific.

Regional cooperation in training and research deserves much attention. In the African context, a strong response has been forthcoming at the regional level.[13] Organizations, associations and networks of researchers on the regional and sub-regional level are involved in defining the agendas for research and developing research capacity. They enhance critical mass, provide peer review, share resources (complementary training), and design research programmes.[14] Experience suggests that in Africa, in particular, networking between national institutions is to be preferred to creating regional institutions.

In general, networks appear to be a cost-effective way to strengthen national research capacity. They establish linkages between institutions (national, regional and international) and bring together researchers who previously had little or no contact. Sustainability, however, is problematic: many networks and regional scientific organizations will be unable to survive without external financial support.

### 3.5 Dutch programmes and policy instruments

Dutch support for research is channelled through a wide range of programmes, both multilateral and bilateral. The 1991 and 1992 figures on funding through the DGIS (DGIS 1994) show that the greater

[13] `This regional level may have gained in importance due to the small size of many of the poor African countries, and the similarities in ecological, agricultural and other types of development problems, all of which strengthen the case for a regional or subregional approach and level of cooperation' (Wils 1995: 22).

[14] There are a number of examples in the African context. The International Centre for Insect Ecology and Physiology (ICIPE), located in Nairobi, has set up a collaborative training programme with 24 African universities, creating the African Regional Postgraduate Programme on Insect Science (ARPPIS). It also coordinates Pestnet, a research and developing network involving 18 countries. The African Economic Research Consortium (AERC) runs a collaborative Master's training programme in which 19 universities participate, and a research programme that offers grants for research on specific policy-oriented themes, peer review, methodology workshops, and assistance with publications and the dissemination of research. The Special Programme for African Agricultural Research (SPAAR) has sought to promote collaboration between a number of Southern African universities by means of postgraduate training in agriculture and the conservation of natural resources.

part of the funds involved (some 125 million guilders annually) are channelled through the bilateral programme (65-70%) or the multilateral/international programmes (25%). The exact allocation of funds for research capacity-building (defined as activities geared towards developing the physical, institutional and disciplinary infrastructure) is not known, but 34 of the 124 multilateral/international research projects include research capacity-building activities, as do 139 of the 260 bilateral research projects (78 in Africa, 43 in Asia and 18 in Latin America). This represents 39% of all projects.[15]

Present DGIS support for research capacity through bilateral cooperation is channelled through various programmes. The Special Programme for Research (47 million guilders in 1994) funds multilateral, international, and bilateral research. It supports the 10-12 multi-year, multidisciplinary research programmes (MMRP) and runs the Biotechnology programme. The country or regional programme allocates part of its funds to research and research capacity-building activities (159 million guilders in 1992, 65 million of which was spent on pure research activities, including strengthening research capacity), as well as the three thematic Special Programmes: Environment, Women and Development, and Urban Poverty. In 1992 the latter spent 29 million, 6 million and 1 million guilders respectively on activities focusing exclusively or in part on research (including strengthening of research capacity).

The DGIS funds a number of programmes that support research training and training institutions: 1) the Joint Financing Programme for Cooperation in Higher Education (MHO programme; 38 million guilders in 1993); 2) the Cooperation Programme with Institutions that provide International Education (SIO), which in 1993 divided its 62 million guilders between the International Education Programme (IOP) and the Netherlands Fellowships Programme (NFP); the NFP received the lion's share (some 40 million guilders in 1994, one million of which went to the Ph.D. programme); 3) the Programme for Direct Support to Training Institutes in developing countries (DSO programme). Profiles of the different programmes are presented in Appendix 1.

The ministries of OCW and LNV also have cooperative programmes aimed at research capacity-building (see Wils 1995:33), and there are provisions for research training grants, such as the Ph.D. places at Wageningen Agricultural University.

A number of studies provide additional insight into the nature of the support for research capacity-building. Two studies were commissioned by the RAWOO on the basis of project documents; one was based on an inventory of 122 Dutch projects[16], the second (Biervliet 1995) on a selection of 29 projects in four countries (Bangladesh, Burkina Faso, Kenya, and Tanzania). The IOV conducted an evaluation (DGIS/IOV 1993) of programme for institutional cooperation (SV programme) in four African countries (Botswana, Lesotho, Swaziland and Tanzania). The main findings of these studies are reported below. However, a degree of caution is recommended when discussing these studies. Only the IOV study is an evaluation; those commissioned by the RAWOO are based on project documents. As these studies deal with projects that were in operation in 1990, it should also be noted that some of the findings may be somewhat `dated'. In 1992 modifications were made to Dutch support which led to

[15] These figures refer to activities focused exclusively on research; in the case of activities in which research is only one component, the division of funding between multilateral/international and bilateral is about fifty-fifty. This category comprises the predecessor of the MHO programme (SV programme) and the DSO programme. Expenditure was 167 million guilders in 1991 and 200 million in 1992. Some 39% of all projects with a research component contain activities for research capacity-building (DGIS 1994:30,39).

[16] This study covered 122 projects in 10 countries (5 African, 4 Asian and 1 Latin American) in four categories (research, capacity-building, mixed, research component). The projects were financed mainly through the country programme (44%), the research and technology programme (34%), the institutional cooperation programme (15%), and the DSO programme for direct support to Southern training institutions (7%) (Biervliet 1993:14).

changes in current programmes (thus the SV programme has been succeeded by the MHO and the IOP programmes), and new programmes have been set up, such as the Multi-Year Multidisciplinary Research Programmes (MMRP). Nevertheless, the findings are of interest, as they serve to highlight a number of key problems.

Country profiles of Dutch support in five countries (Bangladesh, Burkina Faso, India, Kenya and Tanzania) reveal a high degree of heterogeneity. Support is not guided by a programmatic approach, but is in fact somewhat haphazard.[17] Although the picture differs from one country to another, Dutch support does not appear to be a systematic endeavour aimed towards a mix of activities that address the needs of the specific country. It should be noted that there are no fundamental differences between the various categories of projects.[18]

In 40% of the 122 projects, support was given to *research training* in one form or another; training for technical staff was provided in 8% of the projects, and PhD training in another 7%. The staffing of projects is still traditional, making use of long-term Dutch technical assistance personnel. PhD training of key staff leads to gaps in staffing within the collaborating institutions, which are subsequently filled up by - expensive - Dutch experts.[19] The IOV study, which centred on SV projects, suggests that research training has neither been sufficiently operationalized nor adequately oriented towards specific needs; training within research collaboration has not been appropriate to a situation where no research tradition exists. The problem of sustainability was highlighted: fieldwork, which is an important component of research training, often ceased after termination of the project.

As regards the *physical infrastructure*, information on the sample of 122 projects reveals that funds were provided for the construction, equipping and renovation of laboratories (17% of projects); the construction and renovation of buildings (11% of projects); libraries (7%); and telecommunication (7%). In the subsequent analysis of a subsample of 29 projects constraints in the area of communication were noted, such as the lack of faxes and adequate telephone connections, but no improvements to the communication infrastructure were planned. Also the lack of running-cost budgets for the maintenance of physical infrastructure was mentioned.

It is not easy to ascertain whether particular projects were designed to address the problem of the *retention and utilization* of research staff. In project documents related to the SV programme, the restrictions imposed on anything but education-related research were noted as a constraint, as were the problem of overburdened staff and the lack of running-cost budgets for research. The IOV study shows how difficult it is to get local university staff really involved in research; motivation and interest were often lacking. The RAWOO material suggests that the degree of success in implementing research is disappointing, given the number of projects focusing on this aspect.

[17] In the case of Bangladesh, for example, it was noted that the projects (in different disciplines) form distinct units, instead of being embedded in a country approach or programme; project descriptions shed no light on research priorities or research needs, and provide no information on publications emanating from the study. The contribution of the research to the existing body of knowledge remains unclear (Biervliet 1993:43,44).

[18] In some cases, there is no correspondence between the official categorization of projects (`research', `capacity-building', `mixed') and the actual support that is given. Although research projects do indeed concentrate on the implementation of research, projects categorized as capacity-building projects and mixed projects often do the same.

[19] More insight into alternative models for this kind of training, will possibly issue from the overview of `models' of PhD training (and pros and cons) that the Centre for the Study of Education in Developing Countries (CESO) is preparing.

As for *links with other researchers and the users of results*, the inventory of 122 projects shows that support was provided for the dissemination of results (25%), local conferences (11%), and publications (7%). The more detailed analysis of 29 projects shows that some projects have developed systematic and comprehensive strategies for dissemination, including seminars participated in by researchers and users of research results. However, the analysis suggests that the issue of the interface between research and improved policy was not within the focus of the vast majority of projects. In many projects, publication output was restricted to project progress reports.[20]

The review of 122 projects shows that most Dutch projects link Southern institutions to Dutch institutions, involving - on the Southern side - government agencies (24 %), universities (23%), research institutes (17%), R&D centres (13%), and NGOs (3%). *Institutional development* is an explicit aim in the programme of interinstitutional cooperation (SV) and in the DSO programme. Elsewhere, the aim of strengthening the human and physical infrastructure of institutions involved in implementing programmes is less clearly formulated.[21] According to the IOV evaluation, the SV projects often lacked a detailed sectoral and institutional analysis. There was little insight into financial and human resources, and too little attention for managerial and administrative problems at the partner institutions. As Dutch support for research institutes is not concentrated in a number of focused programmes, as in the case of universities and training institutions (e.g., the former SV programme and the present MHO, IOP and DSO programmes), it is difficult to gain insight into efforts to build research capacity at these institutes.

With respect to the *enabling environment* for research, the analysis of 29 projects suggests that there were almost no major research-related thrusts beyond training researchers and implementing research. As noted above, the dissemination of research results and the interface between research and improved policy were not in the focus of the vast majority of projects. Compatibility with national research priorities was a criteria for the projects within the SV programme, but other projects devoted very little attention to this point. The IOV evaluation notes that the SV projects in the four countries studied took too little notice of national commitment to research, as reflected in remuneration and funding at the national level.

*Monitoring and evaluation* are of critical importance, not only as an instrument for process control, but also as an essential competency to be transferred, and a component part of any strategy of capacity-building. The issue of monitoring and evaluation, in particular, the problem of drawing up appropriate indicators, is one that many donor organizations are currently wrestling with.[22] Measuring the results of capacity-building is not the same thing as measuring research output. The objective of building or strengthening research capacity should therefore be clearly stated, and operationalized into a set of activities. The detailed study of 29 Dutch projects suggests that clear guidelines for the design of research and capacity-building projects, including a set of criteria, are lacking. There is often no clarity on the goals, the expected results, or the indicators by which to measure the results.

[20] As noted above, the findings of these studies do not necessarily reflect the present situation. Recently, more attention seems to have been paid to networking, support for Southern research journals, access to data bases, etc.

[21] The analysis of 29 projects shows that relatively little information is provided on the research mandate of partner institutions. Project documents do not attempt to map out the research environment of the project institutions involved.

[22] A review of donor organizations' current approaches to evaluation appears `to have resulted in insights into efficiency considerations, rather than insights related to the key issues of cost effectiveness, sustainability, and the link between research, policy-making and social change in the practical situation' (Biervliet 1994:34).

### 3.6 Donor coordination

It is clear that the development of research capacity is a long-term objective, and that donor organizations must be prepared to commit themselves over a long period of time. As in many countries funding for research and for developing capacity is scarce, the involvement of donors in research funding is a potential danger to autonomous agenda-setting in the receiving countries. Donor organizations should therefore also be prepared to coordinate their support with the perceived needs in Southern countries. This means that they must be flexible, and not limit their support to their own priorities and preoccupations.

Coordinated initiatives have been undertaken aimed at research capacity-building. The most elaborate framework is that of the Consultative Group on International Agricultural Research (CGIAR). This donor group - in which developing countries participate - has established a number of international agrarian research centres. One of these, the ISNAR, is aimed at developing national agrarian research systems by promoting appropriate agricultural research policies, sustainable research institutions, and improved research management. Recently more emphasis has been placed on the coordination of research at the different levels (international, regional and national). The Special Programme for Agricultural Research (SPAAR) was set up to coordinate priorities for agricultural research in Africa, and to achieve a balance between national, regional and international research in Africa.

In the area of health research, the Commission on Health Research and Development (COHRED) supports efforts to develop national health research policies; dialogues between policy-makers, health professionals and researchers form part of this process. In an effort to strengthen economic research capacity, the African Economic Research Consortium (AERC) has been established. In the area of environmental research and capacity-building, there are various coordinated efforts. The Global Change System for Analysis, Research and Training (START) is aimed at institutional capacity-building, human resource development, and policy development in the field of environmental change in Asia and Africa. The emphasis is on a comprehensive approach to capacity-building, encompassing regional research and training centres, data bases, electronic networks, visiting professorships, scientist exchange programmes, fellowships, small-grant programmes, short courses for policymakers and scientists, research in support of policy development, integrated assessments, and science policy forums. Another initiative is the UNEP/UNIDO project to establish clean production centres.

There are various ways of coordinating donor support for research capacity-building; it would be worthwhile to pursue further coordination between bilateral donors, and to investigate the possible role of the European Union.

# 4. Directions for future Dutch policy

In the previous chapter the Council analyzed the problems concerned with capacity-building, and indicated which issues will occupy a central place on the policy agenda. We turn now to the most important results of the problem analysis and the conclusions to which they lead, in the light of the points of departure sketched in Chapter 2. The resulting policy objectives are formulated and elaborated below, in the form of recommendations and activities designed to shape future Dutch policy.

## 4.1 Concluding observations

In the past few years considerable effort has been put into providing support for the building up of national research capacity in developing countries. However, that effort has been only partially successful. A major portion of the capacity which has been built up is either underutilized or not used at all. The Council concludes that the *maintenance and use of built-up capacity* often presents an even greater challenge than the training programmes originally designed to build up that capacity. For many countries, the *brain-drain* of senior research staff and the *underutilization* of qualified researchers are among the most serious problems they face. The phenomenon of brain-drain seriously hampers the sustainability of capacity-building. As it is mainly well-qualified, senior members of staff that leave, it is often difficult to develop high-level research capacity.

In other words, it is not only a question of more researchers and more facilities. Rather the emphasis has increasingly come to rest on creating the conditions necessary to promote the utilization, professionalization and social relevance of the existing research potential. For this reason, support programmes should focus on *increasing the qualifications of researchers as well as strengthening the utilization, quality, relevance and sustainability of built-up research potential.* This involves strengthening the institutional, professional, societal and policy context of research.

Key issues in improving the institutional and policy environment are the need for (i) *research policies* that respond to the needs of society (including the setting of priorities and the development of projects and programmes); (ii) an *incentives structure* that provides for research inputs (e.g., time and resources) and outputs; and (iii) *improved interaction* between the actors involved in research, policy and society, in order to enhance the relevance and utilization of research. In general, not enough attention is given to forging links with potential beneficiaries of research results. Ties with policymakers and stakeholders within society (the private sector, NGOs, community organizations, etc.) should be reinforced, in an effort to foster an interest in research and demonstrate its usefulness.

If we turn our attention to the policy pursued from the Netherlands in support of research capacity-building in the South, the following aspects present themselves:

(a) Dutch policy does not sufficiently recognize the fact that the building up and strengthening of national research systems in developing countries requires a coherent approach, keyed to the specific national context, and directed towards the training of researchers, the establishment of institutes, and the broader institutional and policy background (`enabling environment'). There is no detailed policy per country, rooted in the specific needs of the national research system.

(b) At present, Dutch bilateral efforts are highly fragmented, with respect to the number of countries where the Netherlands is active, as well as the number of programmes/instruments

developed to shape policy. There are a large number of quite wide-ranging programmes and policy instruments for financing activities designed to reinforce capacity-building and the institutional reinforcement of research and technology in developing countries. This is a pattern that has developed over the years, due in part to the involvement of higher education and research organizations in the Netherlands. Some programmes are administered by the DGIS itself, while others operate under the auspices of intermediary organizations, such as Nuffic, NWO/WOTRO, and the Tropenbos (tropical forest) Foundation. This has resulted in a high degree of fragmentation. The many larger and smaller programmes form a kind of disjointed conglomeration. There is little or no cohesion between the activities financed by the various programmes, and the coordination of the programmes/instruments on the level of countries or regions leaves much to be desired.

(c) The quality of policy implementation and the administration of programmes and projects is deserving of greater attention. Studies undertaken on the initiative of the Council indicate that improvements in this area are both necessary and possible. Steps have already been taken to professionalize programme management. Future improvements will have to be sought in a more systematic assessment of project proposals and the development of methodologies for monitoring and evaluation which make it possible to measure the progress and the results of capacity-building projects, and to learn from the experience gained.

With regard to the coordination of donor activities, there is close multilateral collaboration and coordination between donors in a number of areas. On the bilateral level, however, donors tend to `go their own way', giving preference to their own priorities and methods over a common approach. In the view of the Council, there are possibilities to foster closer cooperation and to coordinate activities which at present are clearly underutilized, for example, among like-minded donor organizations. On the European level, too, the collaboration is far from optimal, in particular, when it comes to coordinating EU policy and that of member states. The European Commission has, however, launched initiatives aimed at improving the coordination of future S&T policy, including research collaboration with developing countries. Presently, RAWOO is preparing a report for the Dutch government on the relation between the EU S & T policy for development and that of the Netherlands.

### 4.2 Main policy directions

On the basis of the above, the Council feels that changes to the present policy are necessary in order to increase the *sustainability, effectiveness and coherence of Dutch efforts*.

The desired policy changes should be directed towards the following objectives:

(a) *Promoting a broad, integrated approach, based on the coherence between the various levels and elements of capacity-building*

This entails a greater degree of cohesion in Dutch policy designed to support and strengthen national research systems in developing countries. Support must take into consideration the conditions, constraints and requirements at various levels, with a view to ensuring sustainability. A coherent approach must be directed towards the individual level (research training as well as a better utilization of the built-up capacity); the institutional level (reinforcing institutions designed to develop, apply and disseminate knowledge); and the `enabling environment' (the policy and societal environment of research).

(b) *The development of a country-specific approach, keyed to national requirements and priorities*

The support provided by the Dutch government should be better targeted to the specific national requirements of the various countries. The considerable differences in level of development and starting situation between countries call for a country-oriented policy, keyed to the specific context and situation. Given the considerable differences between countries with regard to the level of capacity, there is an urgent need for a country-specific mix of programmes and instruments for building up and/or strengthening research capacity.

(c) *Strengthening of the role of developing countries in the preparation and implementation of policy*

The parties representing science, policy and society in the South should be more involved in the formulation of research policies and the administration of programmes than is presently the case. Policies must be steered by the actors involved at the country level (researchers, the authorities, and users), in keeping with national requirements and priorities. Giving developing countries more influence on decision-making pertaining to research priorities, and more of a say in the administration and management of programmes and projects, will increase their involvement and commitment, and have a favourable effect on the sustainability of their efforts.

(d) *Improving the coordination of policy, on a national and international level*

The above recommendations will have organizational implications. The country-specific, coherent approach advocated by the Council must be reflected in the future design of policy. The activities undertaken from the Netherlands must be keyed to one another, and policy instruments consolidated and coordinated. On a bilateral level, country, regional, and sectoral policy should be better integrated, along the lines indicated in the memorandum on the reassessment of foreign policy (`Herijkingsnota') and the memorandum on lessons of 24 years of development cooperation (`Hulp in Uitvoering'). Wherever possible, programmes with a limited set of instruments should be combined to form a new and broader programme, capable of marshalling a flexible combination of instruments. There is no need for new instruments; it is more important to see to it that the existing instruments are better coordinated, so that they reinforce one another and produce a greater impact.

(e) *Strengthening international contacts and collaboration, notably South-South cooperation*

The development of national research capacity will benefit from intensive scientific contacts and collaboration with fellow researchers and colleagues in other parts of the world. The Council is of the opinion that the emphasis should be on fostering South-South collaboration, not only because many of the problems encountered (in the area of the

environment and development, for example) require a regional approach, but also because regional cooperation is often necessary in order to consolidate the limited national capacity level and increase the effectiveness of the efforts.

(f) *Improving the management of programmes and projects*

Improvements to programme management will have to be directed towards the assessment of project proposals and the further development of monitoring and evaluation systems. Important points of attention here are the development of methodologies to measure the results of capacity-building projects and training in the use of these methodologies.

The details of these points are worked out below.

### 4.3 Towards a country-specific, coherent approach to bilateral policy

In the Council's view, the development of a country-specific, coherent approach will do much to increase the efficacy of Dutch bilateral development policy in the area of research and capacity-building, and increase the impact of those efforts. The core of such an approach will consist in:

- developing a broad, country-specific programme, which acknowledges the different levels and elements of capacity-building and the interrelationship between them

- seeing to it that in the developing countries the parties involved steer the process and give direction to policy, on the basis of a dialogue on national requirements and priorities. Against this background, a clear commitment must be forthcoming from the national authorities, wherever possible in a financial sense.

In time this approach will reduce the present fragmentation by concentrating Dutch efforts on a smaller number of countries and further consolidating and coordinating the existing Dutch policy instruments.

The `Herijkingsnota' stresses the importance of a differentiated approach, one which acknowledges the diversity of the countries involved and the differences in initial situation and present stage of development. The Council endorses this view, emphasizing that in the area of education and research, too, the aim must be to develop a differentiated approach in which the available policy instruments are deployed in a more coherent and coordinated manner, geared to the specific circumstances and needs of individual countries and regions. This can be effectuated by the planned reorganization development cooperation, whereby country and sector policy are to be integrated according to a matrix model. This move is also related to plans for a new sector unit in DGIS `Education, research and culture', within which a number of the existing policy instruments will be consolidated.[23]

The new approach should be based on assessments of the various countries, notably a thorough analysis of the national research system and current research needs. This will make it possible to draw up policy options aimed at building and strengthening research capacity. Such assessments, which should preferably be carried out by institutions or experts from the countries themselves, will take into account the different levels and elements of research capacity.
The articulation of needs and priorities is a matter for developing countries themselves. The process should be guided by the outcome of the dialogue between policymakers, researchers, and users of research results, rather than by donor-driven research agendas. Donors can, however, facilitate and

[23]. See the memorandum `Hulp in Uitvoering' for the new organizational plan for Dutch development cooperation (DGIS 1995b:91).

encourage this process. When a developing country has defined its own research and science policies, these should be adopted as guidelines for the support provided by the Netherlands.

A broad, country-specific approach will create a framework in which the existing Dutch programmes and instruments can be better coordinated and keyed to each specific context. On the basis of country studies designed to produce concrete proposals for strengthening capacity, it will be possible to oversee the activities which can be undertaken from the Netherlands, those aspects which are deserving of extra investment, and the role which the existing instruments can play in these processes. The essential objective is to deploy the present arsenal of policy instruments in a more coordinated manner, so that the various programmes complement one another and increase the synergetic effect of, say, programmes aimed at training and those keyed to research.

The Council's recommendations centre not only on keying Dutch policy instruments to the needs of individual countries, but also on a better coordination of the activities of the various donors. To that end, a group of interested research donors could be formed per country or region, who could then undertake to coordinate their support for capacity-building programmes. The needs and plans of the developing country in question must be the point of departure, and serve as the main issue in a policy dialogue with the support group.

**Recommendation 1**
**In the light of the present reassessment of foreign policy, the Council considers it of crucial importance that every effort is made to achieve a country-specific, coherent approach to bilateral policy in the area of knowledge-building and the institutional reinforcement of science and technology in developing countries. Existing policy instruments must be better coordinated in order to produce a synergetic effect. By way of experiment, the DGIS could take the initiative in giving concrete form to this approach in one or two programme countries, or groups of countries, with which the Netherlands has a close cooperative relationship. If necessary, the Council is prepared to assist in the further elaboration of this proposal.**

The following section deals with various elements of the coherent approach envisioned by the Council, in particular the recommendations 2 through 7.

### 4.4 Improving the existing policy instruments

The Council presents here its proposals for improving and adapting the existing arsenal of policy instruments, in the light of the policy lines sketched in the previous sections (4.2 and 4.3). The main points of attention are:

- measures to improve the education and training of researchers
- more emphasis on measures and initiatives to make better use of the existing capacity, and to combat `brain drain'
- increased attention for the reinforcement of the institutional and policy environment
- greater emphasis on strengthening international contacts and networks.

*Improving research training*

The focus on research capacity is a dual one: not only must research be rooted in adequate conceptual and methodological expertise and experience, it must also be oriented towards the needs of society, and have demonstrable relevance for development and policy. This means that future researchers must be trained to complete a whole research cycle (from design to dissemination) and acquire skills in using methods which actively involve users in the preparation and implementation of research. Special attention should be given to training in multi- or interdisciplinary research. Training in multi-/interdisciplinary methodologies, which presupposes a good disciplinary grounding, should be part of research training programmes.

**Recommendation 2**
**The Dutch programmes concerned with research capacity- building through training, such as PhD programmes and the MHO and the IOP programmes, should ensure that training is focused on the whole research cycle, as well as on multi- or interdisciplinary, and user-oriented methodologies.**

*Maintenance and utilization of built-up capacity*
Not only is it appropriate to emphasize the importance of training where new fields - including interdisciplinary studies - are to be established, Dutch programmes should also redouble their efforts to see that the existing capacity is maintained and utilized, in particular where it is of high quality.

A major concern for many developing countries is staff retention. In order to address this problem, Dutch support programmes should devise measures to improve the research climate and the working and living conditions of qualified research personnel. Programmes that provide incentives for talented and promising researchers are of major importance here.

Concern about the utilization of built-up capacity should be made explicit in the design of programmes. Research capacity that has been built up should be put to better use. The Council outlines various ways of bringing this about, such as (i) training local researchers in the skills needed to draw up research proposals (these are often lacking); (ii) a better linkage between training programmes and research programs so that, following their training, researchers are actually able to put their knowledge and skills into practice; and (iii) making use of local researchers as advisers. Whenever possible, instead of hiring expensive European consultants, the services of local researchers should be enlisted. The use of local expertise will serve to strengthen research capacity by giving young researchers hands-on experience and reinforcing the financial basis of the institutions.

**Recommendation 3**
**Dutch research support programmes concerned with capacity-building should devise policy measures and incentives aimed at improving the research climate and the working and living conditions of qualified (senior) researchers. This would include improvements to research infrastructure (information and documentation facilities, laboratories, etc.), sabbaticals, conferences, exchange of scholars, and contributions to endowment funds.**

**Recommendation 4**

**Programmes should also give explicit attention to follow-up activities that will enable trained researchers to actually engage in research. This can be done either by reserving a portion of the available resources for this purpose, or by forging links between training programmes (such as the PhD, MHO, and IOP programmes) and those focusing on research proper (such as the MMRP programmes). In cases where some or all of the research training takes place abroad, this will require special provisions, such as re-entry grants.**

*Enhancing the institutional and policy environment*
Research should be steered towards topics that are relevant to the economic, social, cultural and political development of the society concerned, taking due account of the interests of underprivileged groups. The formulation of national research policies should be guided by the dialogue between policymakers, researchers, and the users of research results. At present, such policies are often non-existent or poorly developed. Donor organizations should therefore increase their efforts to improve the capacity of Southern countries to design and implement science and technology policies on a national, sectoral and institutional level, including the capacity to manage research programmes. The experience of organizations which have pioneered such efforts (for example, the ISNAR in the area of agriculture) can serve as examples here.

The institutional environment of the research should be carefully assessed in order to establish the strengths and weaknesses. Special attention should be given to the manner in which institutions draw up and implement their research agendas, with special reference to how `relevance to development' is defined. The preparation and implementation of research and the role played in agenda-setting by the users of research results (government officials, NGOs, the private sector, etc.) should be examined.

Linkages between researchers, policymakers and practitioners should be improved, in order to make research results more relevant and of more benefit to the ultimate users in government and in society. While there are various ways to improve these linkages, the involvement of users in the research process is of primary importance.

As regards universities, the fostering of links with research institutes is one way of making research training more need-oriented. Universities and research institutes can also increase the relevance of their work by developing closer contacts with government agencies, NGOs, and the industrial sector, especially small and medium-sized enterprises.

The commitment of Southern governments to research capacity-building should be fostered, in order to make donor-sponsored support programmes more sustainable. Extremely poor countries, where conditions are deteriorating, are a special case; it is unlikely that they will be in a position to demonstrate their commitment in financial terms. The Dutch government, together with other donor organizations and Southern governments, must look for ways to tackle the problem of commitment and sustainability. It is important to demonstrate the usefulness of research, and to gear that research to the needs of the individual country, with a view to strengthening commitment and promoting sustainability. However, consideration should also be given to the possibility of making support conditional.

**Recommendation 5**

**The Council recommends that Dutch programmes which contribute to research capacity-building increase their support for the development of local expertise to design and implement national science and technology policies. This will include the institutional capacity and human resources required to set research priorities, formulate research programmes, coordinate and manage the implementation of research, and monitor and evaluate the results.**

**Recommendation 6**
**Dutch capacity-building programmes should incorporate objectives aimed at improving links between policy, research and practice, in particular between research organizations (universities and research institutes) and the potential users of research results in government and society: government agencies, NGOs and the private sector. These objectives should be elaborated in proposals submitted within these programmes.**

*Strengthening international contacts and networking*
Contact with peers is important, in that it has a positive effect not only on the quality of research but also on motivation, credibility, and status. And yet in many countries the required critical mass of researchers centred around a certain topic is not likely to be forthcoming. Moreover, if a strong national research capacity is to develop, the research community must also participate in wider, international forums.

A regional approach to capacity-building can help overcome problems related to the lack of critical mass and the shortage of funds. African universities, for instance, have set up programmes aimed at fostering cooperation in the area of postgraduate research training and collaborative research (e.g., AERC in the field of economics). Regional organizations and networks, as well as North-South and North-South-South contacts are useful and necessary complements to national activities.

In the Council's view, Dutch policies and programmes should promote networking, as a flexible and cost-effective instrument in building research capacity and strengthening international and regional cooperation. There are already a number of scientific contacts at the regional level. Expanding the possibilities for South-South cooperation and networking will enable Southern researchers to study the increasingly complex development problems which present themselves and the interrelationship with environmental problems. In this way, they will also be in a better position to apply their scientific expertise to the development of policy responses and strategies that can help to solve these problems.

The North-South collaboration between Dutch and Southern partners should be flexible enough to incorporate North-South-South collaboration. Where training capacity is available in the region, it should be utilized. Regional cooperation in postgraduate training and research can be further facilitated through the DSO programme and incorporated into the MHO and IOP programmes.

**Recommendation 7**
**Dutch support programmes should work out a network approach designed to strengthen international and South-South cooperation, in particular on the regional level. A portion of overall research funding should be set aside for this purpose.**

### 4.5 Multilateral/international policy

In several areas there is already close collaboration and coordination between donors. The CGIAR, a consortium of bilateral and multilateral donors, supports a number of international agricultural research institutes. One of these, ISNAR, is involved in the development of national agricultural research systems. In the field of cleaner technology, a coordinated effort directed by the UNEP/UNIDO focuses on the establishment of clean technology centres in the South.

The Council on Health Research for Development (COHRED), an international non-governmental organization consisting of 34 constituent countries, agencies and organizations, supports the development of national health research strategies in Southern countries. The ICSU recently launched the 'START initiative', which is aimed at building up regional training and research centres devoted to studying global environmental change by means of a coordinated international effort.

**Recommendation 8**

**With a view to fostering donor coordination, the Council advocates continuing Dutch support for multilateral and international initiatives directed towards setting up national research systems in developing countries. In the Council's view, this support should also be extended to include any new areas of research which present themselves, such as environmental studies.**

### 4.6 Improving implementation

The Council considers it desirable to improve the management of capacity-building programmes on a number of points, and to systematically review the quality of the programmes implemented.

To begin with, clear guidelines and criteria should be drawn up for the assessment of project proposals aimed at research capacity-building in the developing world. The Council suggests that the DGIS might take the initiative here; on the basis of existing overviews and the recommendations in this report, it could draw up a checklist to assist organizations involved in the execution of capacity-building programmes.

In the meantime, monitoring and evaluation systems will have to be set up, in order to assess the progress and results of programmes and projects. In this connection, attention should be given not only to developing methodology for measuring the results of capacity-building programmes, but also to learning from previous experiences, fostering experimentation and innovation, and providing the necessary feedback to those responsible for developing new policy.

The organizations entrusted with the management of research capacity-building programmes (in particular the DGIS, Nuffic, and NWO/Wotro) should work together more closely to develop systems and methods which can contribute to improved research management.

**Recommendation 9**

**The Council recommends that the organizations entrusted with the management of research capacity-building programmes devote more systematic attention to the quality of the policy implemented, by setting up a system of quality control aimed at the development of methods and instruments for the assessment (ex-ante and ex-post) of programmes and projects.**

## ANNEX 1 PROFILES OF RELEVANT DUTCH PROGRAMMES AND POLICY INSTRUMENTS

### Country and Regional Programmes

Research funds (targeted at 5% of country or region budget) can be allocated to any of a number of different activities, including 1) study and analysis; 2) applied research; 3) strengthening of research capacity (as part of a more general activity or as one of the main objectives of a cooperative activity or programme); 4) strategic research; and 5) activities aimed at reinforcing the interdependence of research, policy and implementation. Research is seen as an instrument to improve the quality of development policy and activities relating to the alleviation of poverty, to sustainable environmental management, an to the improvement of the position of women (DGIS 1992:29). In 1992 some 65 million guilders went to activities or projects devoted exclusively to research activities (including strengthening of research capacity). About 90 million guilders was spent on approx. 110 projects in which research activities formed one of the components. About two-thirds of all these research activities took place in African countries (DGIS 1994:32, DGIS 1994b). The List of Activities compiled by DGIS (DGIS 1994b) shows that projects are mostly short-term. Examples of longer term (at least 4 years) projects/programmes that were operational in 1994 and were aimed at capacity-building are: Food and Nutrition Studies Programme (Kenya), Drainage Research Institute (Egypt), Integrated Pest Management (Sudan), Nile Valley Project (Sudan), Kenyan Agricultural Research Institute (Kenya), Soil Survey (Mali), Agricultural Production Systems (Mali), Cattle-breeding in Semi-Arid Zones (Mali), Farming Systems Research (Tanzania), Health Systems Research (Southern Africa), Soil Survey (Mozambique), Plant Resources of South-East Asia, Central Soil Salinity Research Institute (India), National Ship Design and Research Centre (India), Institute of Policy Studies (Sri Lanka).

The *IDPAD programme (Indo-Dutch Programme on Alternatives in Development)* aims at research cooperation between social scientists from India and the Netherlands. The programme is administered by Nuffic/CIRAN.

### Special Programme for Research

In 1994 the funds available to the Special Programme for Research amounted to 48 million guilders; that figure is expected to rise to 63 million guilders in 1999. The Special Programme finances a number of multi-year, multidisciplinary research programmes (MMRP); these programmes will be reviewed below. A significant portion of overall funding is channeled through multilateral and international initiatives 25 million guilders in 1991, DGIS 1992:46), chiefly core funding for CGIAR institutes (about 12 million guilders in 1992). The *Biotechnology programme*, operating under the Special Programme, is aimed at priority-setting, networking and research, primarily in Kenya, Zimbabwe, Colombia and India. In 1991, expenditure totaled three million guilders, rising to an expected twelve million in 1995 (DGIS 1992:46) Examples of other longer term projects/programmes operation in 1994 and aimed at capacity-building are: System Analysis and Simulation for Rice Production, SARP (Asia), Traditional Techniques of Microclimate Improvement, TTMI (Kenya, Sudan, Nigeria, Tanzania), SADAOC food security research (Burkina Faso, Ghana), Tanzania-Netherlands Project on the Development of AIDS and HIV Control, TANERA. The Special Programme also finances a Ph.D. grants programme for students from developing countries. This programme is administered by WOTRO.

### MMRP

The Multi-year Multidisciplinary Research Programmes (MMRP) are a new instrument set up to implement the new policy guidelines on research. The main characteristics/objectives of the MMRP are:

- independent development of the research agenda
- focus on local needs
- multidisciplinary approach
- involvement of policymakers (not only governments and NGOs, but also representatives of grassroots organizations)
- embedded in national and international research networks
- emphasis on reinforcing existing capacity, rather than setting up institutions that cannot be financed by the country itself
- process approach
- responsibility for devising and implementing links with relevant parties in developing countries (steering committees consisting of local parties, administration by local organizations, etc.).

In some cases, the MMRP provides Ph.D. fellowships for young researchers participating in the programme. In 1996 support will be given to programmes in nine countries: Uganda, Tanzania, Zambia, Mali, Nicaragua, Bolivia, Vietnam, Bangladesh and India.

**Special Programmes (thematic)**

The Thematic Special Programmes (Environment, Women and Development, and Combatting Urban Poverty) are expected to target 10% of their funds to research. In 1992, funding for projects and programmes consisting exclusively of a research activity amounted to 18 million guilders for the Environment; 0.9 million for Women and Development; and 0.5 million for Combatting Urban Poverty (accounting for 14.2%, 6.2 % and 13.2% of total funds respectively). If we include projects and programmes that are partially research-oriented, the 1992 figures are 29 million, 6 million and 1 million guilders respectively. The Special Programme on the Environment makes explicit mention of research capacity-building (in the areas of environment and technology and environment and health issues).

**MHO programme**

The Joint Financing Programme for Cooperation in Higher Education (MHO) is designed to promote cooperation between universities and institutes for professional education in the Netherlands and universities in Southern countries. The MHO budget is 38 million guilders, at least 50% of which will be spent in Africa. The programme concentrates on ten universities (in Mozambique, Tanzania, Zambia, Kenya, Burkina Faso, Eritrea, Bolivia, Costa Rica, the Philippines, and Vietnam), providing long-term support for human resource development and institution-building. In 1996 the programme will be expanded to include one university in South Africa and one in India. MHO funds can be spent on various activities: establishing new departments, fields of study and study programmes, or improving existing ones; setting up new education-related research programmes, or improving existing ones; training or retraining members of staff (at the counterpart institution, within the region, or in the Netherlands) and providing grants; strengthening capacity in such areas as management, planning and administration, and monitoring and evaluation; support - in the form of equipment and training - for libraries, laboratories, and computerization and printing projects; support for external relations with other institutions in the region (working visits, seminars, etc.). The programme offers possibilities for Ph.D. degrees, but these do not have priority. A portion of the funds are geared to building up or

strengthening research capacity (in 1992 the predecessor of the MHO and IOP programmes spent an estimated 45% of its funds on activities with a research component).

The programme envisages long-term interinstitutional linkages. The striving for sustainability is given high priority. To be selected, the institution in the developing country must guarantee local funding of activities after external support is terminated. Commitment must be demonstrated by a willingness to take responsibility for the local costs. (Only in exceptional cases can running costs be paid out of the MHO budget.) Institutions must have a detailed institutional development plan and be capable of adequately implementing that plan; they must also be able and willing to monitor and evaluate projects internally. Staffing levels should be reasonably stable. The institution will preferably be located in a country where essential conditions are fulfilled are fulfilled to a reasonable degree (guarantee of sufficient autonomy and adequate financial resources). The strengthening of relations with government and society is seen as part of institutional capacity-building. This programme is consistent with Dutch development policy, in that it takes into account the contribution to combatting poverty and environmental degradation, and the promotion of access for women, ethnic minorities and deprived groups. The NHO programme is administered on behalf of DGIS by Nuffic, the Netherlands Organisation for International Cooperation in Higher Education.

**IOP and NFP**

The International Education Projects Programme (IOP) funds long-term cooperative projects involving, on the one hand, 14 institutes for international education in the Netherlands and, on the other hand, training institutions in developing countries (educational institutions, government agencies with in-service training, and research centres that also train researchers). The main objectives are institution-building and manpower development. Training is provided in the form of courses leading to a diploma, and is geared to applied research. At least 50% of IOP funds are spent on African training institutions. In 1995 the IOP was administering some 90 different projects in about 25 countries; 63 of these were in the implementation stage and 25 in the preparatory stage (five of them already approved). The projects are not evenly distributed over the participating countries; the following countries have five or more projects in the preparatory or implementation stage: India (13), Egypt (8), Vietnam (6) and Zimbabwe (6). Three or four projects are planned or in operation in Colombia, Philippines, Sri Lanka, Yemen, Burkina Faso, and Tanzania. The IOP is presently administered by the DGIS; from January 1997 onwards, however, part of its activities will be administered as a programme by a recently created foundation (SAIL) of five institutions for International Education (IHE, IHS, ISS, ITC, and RVB/MSM), together with the Agricultural University of Wageningen. SAIL has been allocated three million guilders to develop multidisciplinary research projects involving researchers from these institutions and from developing countries.

The Netherlands Fellowship Programme (NFP) provides grants to people in developing countries to follow courses at the Institutes for International Education. There is a fund consisting of one million guilders for 35 Ph.D. grants (20 at the ISS, and the rest divided among the IHE, IHS, ITC, and RVB/MSM). In all, the IOP and NFP programmes receive some 63 million guilders from the DGIS, the majority going to the NFP programme (40 million guilders in 1994).

**DSO**

The aim of the DSO (Programme for Direct Support to Training Institutions in Developing Countries) is to strengthen educational and training institutions in developing countries, from intermediate

vocational education to postgraduate courses. The support is given directly, and no Dutch institutions are involved. The objectives of the programme are institution-building (including the development of education-linked research); the development of skilled manpower (such as staff training and grants); and the promotion of South-South cooperation in education and training. The underlying principle is that strong institutions make available the knowledge, experience, and facilities needed to strengthen less developed institutions. Bodies wishing to propose a project must meet a number of conditions; for example, they must be willing to bear the running costs after completion of the project, and to give preference to women and members of disadvantaged groups in awarding grants. In addition, projects must be in keeping with overall Dutch development policy in the country or region. Ideally, project activities have regional relevance, and preference is given to those which are poverty-oriented or focus on environmental issues; more than half of the funds are allocated to African institutions. The programme is a wide-ranging one: in 1995 it provided funding for 89 activities set up by 48 institutions in 23 different countries. The 1992 figures show that about a quarter of those funds were spent on projects that had a research or research-capacity element. Programme expenditure in 1995 totalled 18 million guilders and is expected to reach 23 million in the coming years. Organizations that receive funds out of the DSO programme are for instance the AAU and the ICIPE. The NIRP programme (discussed below) is also financed from DSO funds.

**NIRP**

The Netherlands-Israel Development Research Programme (NIRP) is aimed at strengthening research capacity, and focuses on projects in which researchers from developing countries (chiefly Africa) carry out the research, under the supervision of senior staff from Israel, the developing country, and the Netherlands. The NIRP budget is two million guilders a year. The focus is on Ph.D. research training and international networking by researchers and research institutions. The programme is administered by Nuffic/CIRAN.

**Tropenbos programme**

The Tropenbos (tropical forest) programme stimulates research, networking, institution-building and training in the area of tropical forestry. The partners in developing countries are universities, research centres, and government departments and agencies. The programme has a yearly budget of 2.2 million guilders. Research sites have been established in Colombia, Guyana, Ivory Coast, Cameroon and Kalimantan (Indonesia). The programme is administered by the Tropenbos Foundation.

**Appendix 2 List of Abbreviations**

| | | |
|---|---|---|
| AAU | - | Association of African Universities |
| AERC | - | African Economic Research Consortium |
| CGIAR | - | Consultative Group on International Agricultural Research |
| COHRED | - | Commission on Health Research and Development |
| DGIS | - | Directorate-General International Cooperation/Ministry of Foreign Affairs |
| DSO | - | Programme of Direct Support to Training Institutions in Developing Countries |
| EU | - | European Union |
| ICIPE | - | International Centre for Insect Physiology and Ecology |
| IO(P) | - | International Education (Projects) |
| ISNAR | - | International Service for National Agricultural Research |
| LNV | - | Ministry of Agriculture, Nature Management and Fisheries |
| LUW | - | Wageningen Agricultural University |
| MHO | - | Joint Financing Programme for Cooperation in Higher Education |
| MMRP | - | Multi-year Multidisciplinary Research Programmes |
| NARS | - | National agricultural research systems |
| NFP | - | Netherlands Fellowships Programme |
| NIRP | - | Netherlands-Israel Research Programme |
| Nuffic | - | Netherlands Organisation for International Cooperation in Higher Education |
| NWO | - | Netherlands Organization for Scientific Research |
| OCW | - | Ministry of Education, Culture and Sciences |
| SPAAR | - | Special Programme for African Agricultural Research |
| TWAS | - | Third World Academy of Sciences |
| UNDP | - | United Nations Development Programme |

| | | |
|---|---|---|
| UNEP | - | United Nations Environment Programme |
| UNESCO | - | United Nations Educational, Scientific and Cultural Organization |
| WOTRO | - | Netherlands Foundation for the Advancement of Tropical Research (NWO) |

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