rawoo

Knowledge *makes* *a difference*

Science and the Millennium Development Goals

September 2006

RAWOO, the Netherlands Development Assistance Research Council, was established at the request of the Minister for Development Cooperation, also on behalf of the Minister of Education, Culture and Science, and the Minister of Agriculture, Nature and Food Quality. Its mission is to advise the government on matters of policy related to research in the area of development problems, and to keep the government informed of developments in this area.

RAWOO is part of the system of Sector Councils for Research and Development. Their job is to attune research to the needs of society and to ensure an optimal match between supply and demand in the different fields of research for which they are responsible. In the case of RAWOO, the needs in question are those of societies in developing countries. Sector Councils function on the basis of tripartite discussion between the government, researchers and the users of research.

The Council has fifteen members including the chair, plus one advisor from each of the three ministries. Six of the members come from developing countries. The members are appointed as individuals rather than as representatives.

Council membership:

Chair
Dr G. (Gerti) Hesseling

Members
Mr J.J. (Jaap) Bijl, MSc
Dr S. (Shamsul) Bari
Mr J. (Jaap) Dijkstra, MA
Dr J.(Julia) Gitobu
Ir E.L.P. (Enric) Hessing, MSc
Ms C. (Cecilia) López Montaño, MA
Dr H. (Hoda) Rashad
Dr A. (Arie) Rip
Dr E.J. (Koos) van der Velden
Dr M.C. (Michiel) van Walt van Praag
Dr A. (Akke) van der Zijpp
3 vacancies

Advisors:
Mr P.J.C.J. (Peter) Mulder (Ministry of OCW)
Ir A. (Ad) Tabak, MA (Ministry of OCW)
Ms C. (Caroline) Wiedenhof (Ministry of Foreign Affairs, DGIS)

Knowledge makes a difference

A seminar about science and the Millennium Goals, 24 March 2006

Introduction

Central Feature

Countries without an own and diversified knowledge system are not able to shape their development in accordance with their own wishes and circumstances.
Dutch government policies are characterized by
- *short-term, compartmentalized thinking,*
- *the domination of process over professionalism,*
- *and too absolute and too high expectations of research,*

and therefore fail to timely address knowledge questions on major societal problems.
Countries need countervailing knowledge: knowledge that governments do not appreciate.
Learning and partnership comprise the central feature that will allow knowledge to contribute to the MDGs.
It is crucial that 'the missing poor', ignored by policies, are enabled to do their own research.

These are just a few of the statements that were made during the international seminar on the Millennium Development Goals (MDGs) that RAWOO held on 24 March 2006. Why another seminar on the MDGs and why focus on the role of science?
Rich countries are increasingly giving their knowledge economies a boost. Innovation has become one of their top priorities. But has this notion been sufficiently applied in development cooperation and science policies? If knowledge and innovation are essential for the achievement of the MDGs, what are the consequences for current research policies and funding mechanisms, and for methodologies of agenda setting, modes of conducting research, and modes of research cooperation and learning? In our view, it should be the joint responsibility of politicians and researchers, in both the North and the South, to seek ways to make research more responsive to the challenges of the MDGs. This seminar built upon our earlier work in this field and was intended to fuel the dialogue on these questions.

Our reference to the concept of science needs some clarification. As part of the generally accepted intention to narrow the 'know-do gap', the words 'science' and 'research' are often replaced by, for instance, 'evidence-based knowledge', 'interdisciplinary research', 'trans-disciplinary research', 'Mode I versus Mode II' research, 'tacit versus codified knowledge', 'knowledge production', 'knowledge and innovation systems', to name just a few. Instead of defining these concepts, we preferred to allow the speakers to use their preferred concepts in the specific contexts to which they refer. In our view, however, the concepts of knowledge, knowledge production and learning assume that the very combination of different forms of knowledge production and dissemination will increase impact and promote development.

We had several reasons for organizing this seminar. The first was that the coming years will be crucial for a sustained commitment to the MDGs and the general idea behind them. Knowledge institutions have a role to play in achieving this by finding ways to remove potential obstacles and, if needed, in finding alternatives. In its advisory report

'Mobilizing knowledge to achieve the Millennium Development Goals', RAWOO indicates how the potentials of knowledge institutions can be mobilized for this purpose.[1] For example, the report pleads for the development of new approaches to capacity enhancement, namely one that is based on a dynamic knowledge and innovation system. It also proposes to mobilize the professional and budgetary support of other government ministries and to broaden the involvement of Dutch knowledge institutions, including those that have not been involved in development cooperation so far. Opening up means rethinking traditional boundaries. In its series of lunch lectures titled 'The Millennium Development Goals: rethinking science and aid', RAWOO stimulated the dialogue between policy makers and scientists.[2] We hoped that the seminar would show whether we are on the right track and what has to be done next.

The second reason was that during the last decade, different research programmes have emerged, systematically seeking new ways to increase the impact on development. RAWOO has been proactive in stimulating new approaches, both by helping to design novel partnership programmes and by sharing its experiences with agencies that had taken similar initiatives. By looking back at these 'experiments' in design, we can learn what MDG-related policies can realistically expect from scientists and other knowledge workers.

This leads to the third reason: the emergence of 'knowledge and innovation systems' as a new concept in thinking about the relationships between research and development. The Council's earlier work has shown that the interaction with stakeholders and embedding research in the wider context of gender, equity and institutional reform are crucial for the actual uptake of research outcomes. Therefore, research programmes should link up with processes of innovation and learning. Globalization is affecting knowledge and innovation systems, at both the national and the local level. For RAWOO, this is reason to acquire a better understanding of the dynamics involved and how its recently initiated work on 'Knowledge, Research and Innovation Systems' could contribute to policy dialogues.

The fourth reason was that RAWOO had urged the Dutch government to spearhead knowledge in development cooperation policy, by for example helping to strengthen the knowledge systems of developing countries and linking such knowledge policies to the MDGs and PRSPs. In September 2005, the Netherlands' Minister for Development Cooperation presented her new research policy to the Dutch Parliament. The seminar could shed more light on the implications of it for research in general and new research partnerships in particular.

The Council regarded the seminar as an excellent opportunity to get feedback on its work and to learn lessons for the future. RAWOO asked Professor Louk de La Rive Box (rector of the ISS) to act as an impartial chair of the meeting.

In light of these considerations, the first part of the seminar (the morning session) addressed the roles of knowledge in society, while the second part focused on how these visions relate to novel forms of research cooperation.

[1] RAWOO, *Mobilizing knowledge to achieve the Millennium Development Goals,* The Hague, July, 2005.

[2] RAWOO, *Millennium Development Goals: rethinking science and aid, RAWOO lunch lectures,* The Hague, September 2006. The lunch lectures are accessible at www.rawoo.nl.

With respect to the roles of knowledge, we were keen to know whether current thinking about science and society in the Netherlands would be different from that in other parts of the world. The observations made by Mr Joop Sistermans (chair of the Dutch Advisory Council for Science and Technology; AWT) on knowledge policies in the Netherlands and those made by Professor Yaye Kène Gassama-Dia (Minister of Scientific Research of Senegal and chair of the Ministerial Council for Science and Technology of NEPAD) were remarkably similar. The panel members – Cecilia López Montaño (Colombia), Hoda Rashad (Egypt) and Kathleen Ferrier and Jan Hoekema (the Netherlands) – reiterated the importance of knowledge but questioned the way knowledge is dealt with in the context of combating poverty and globalization.

During the afternoon session, three programmes were discussed. Although all three were designed to help combat poverty, the contexts and the approaches were different. The Health Program in Ghana, for instance, was created to directly feed into the health sector reform process in that country, by pleading for both new priorities and new and equal partnerships. By establishing cooperation with patients and health workers, more impact of the research outcomes in the national health system was envisaged.

The Research Initiatives Bangladesh (RIB) emerged from the desire to create people's own research at the level of the poorest 10 % of Bangladesh' population. The presentation showed how, with new forms of research, the poor can improve their own situation and how researchers can contribute by adjusting their conventional approaches.

The case of crop post-harvest research, which was funded by the DFID (UK), elaborated on the notion of 'national systems of innovation' and how policies for research for development have been related. It was concluded that through its influence on the innovation systems in which it operates, DFID could add substantially more value to its research investments. There is no reason why this should not apply also to DGIS and other donors.

The three cases and the panel discussions show that development research work must meet the demands of scientific quality, relevance and reliability. They also show that linking research to the national systems of innovation is likely to increase its relevance and impact. However, this will make it more time-consuming, more complex to manage and, no doubt, more costly.

Knowledge production that proactively pursues interaction with local stakeholders is likely to make a better contribution to the empowerment of the poor. Linkages with university and higher professional education are essential. The ongoing erosion of these linkages must therefore be countered. Worldwide cooperation (including cooperation from Asian and Latin American countries) on these issues must be given highest priority if we are serious about achieving the MDGs. Building new types of networks and alliances, and strengthening existing ones, needs to be supported.

We should like to thank the speakers and the participants for their willingness to travel, for sharing their views and for their help in finalizing this publication.

Welcome

Professor Gerti Hesseling
Chair of RAWOO

Ladies and Gentlemen

As the chair of RAWOO – the organizer of this seminar – I should like to give you a warm welcome. I am very pleased to see many familiar faces, and am even more pleased to see new faces, not only scientists, but also policy makers and politicians. Ms Ferrier, welcome. Your colleague from the opposition party, Ms Thea Fierens, will be here this afternoon. Politicians are busy people!

It is a great honour for us to have in our midst the honourable Minister for Scientific Research of Senegal, Professor Yaye Kène Gassama-Dia. Apart from being a Minister in Senegal, Madame Gassama-Dia is the Chair of the African Ministerial Council for Science and Technology, AMCOST. We all know by now that the African Union and NEPAD have expressed a keen interest in strengthening the science and technology base in Africa. I refer you to the resolutions in your folder. We are all very interested in hearing more details and about how you think this relates to development in Africa. I hope that you will also say something about your own country, Senegal, which throughout my career I have visited, with so much pleasure, for my professional work, just as you have so often visited France. I have to explain to the audience that 'Madame le Ministre' is not an ordinary minister. She is also an excellent scientific researcher with an impressive CV and a long list of publications. Madame le Ministre: we are very proud to have you here today.

We are also very pleased that we have Mr Joop Sistermans, the chair of the Dutch Science and Technology Council, the AWT, amongst our speakers. He will refer to the advisory report of his council to the Dutch government, on its vision on making the Netherlands a 'knowledge economy'. Mr Sistermans, a very warm welcome to you. We are very eager to hear how this advisory report has been received by the Dutch government, and what it will do with it. But we are also very interested to learn whether we – that is, those of us in the North and those of us in the South – have common visions and shared concerns. In that respect I look forward to the reactions of the panel members, Cecilia López Montaño, Hoda Rashad, Kathleen Ferrier, Jan Hoekema and, of course, Madame le Ministre.

The kick-off for today will be done by Mr Jan Hoekema, Ambassador of Culture, Education and Research of the Ministry of Foreign Affairs. We are grateful to Mr Hoekema for fulfilling this task on behalf of the Minister for Development Cooperation, Ms Van Ardenne, who has to attend the cabinet's weekly meeting. We all know that your minister has recently sent the new research policy to parliament. So we know the policy. But we are keen to learn from you more specifically what scientists must do if they wish to contribute to achieving the MDGs.

I should also like to welcome the other speakers. Professor John Gyapong, who came for this purpose from Ghana, will share his experiences with a demand-led North-South research programme in Ghana – the Health Research Programme, or 'HRP'. It is an interactive research programme based on cooperation between researches and other stakeholders from Ghana and the Netherlands.

Dr Shamsul Bari from Bangladesh, who is deeply committed to the people who live in absolute poverty, will tell us how the programme 'Research Initiatives Bangladesh' empowers the poorest of the poor in Bangladesh to improve their own situation.

Last but not least, a warm welcome to Dr Andrew Barnett, our neighbour from the UK. As you may know, the UK has a long tradition in research for development. Therefore, we Dutch often think that they do a better job than we do. Today we want to hear how they do that. Andrew will tell us about very innovative research that links research and innovation.

Science and the Millennium Development Goals is the topic of the seminar. Last July, RAWOO submitted its advisory report on this topic to the Dutch government. Before that it organized several consultations and held several lunch lectures at the Ministry of Foreign Affairs. You have all read the report and the summary. We also gave you some official reactions, such as the reaction of the Dutch Minister for Development Cooperation.

The purpose of today's meeting is to see if we can take these recommendations one or more steps further, without repeating them. This is because giving advice is difficult, but implementing it – and having a sustainable impact – is much more difficult, especially when you are dealing with scientists. As a former director of a research institute, I know this by experience. Having said that, I am equally convinced that the support of the knowledge institutions is essential for knowing how to achieve the MDGs, or to come up with better ideas, if needed. The other stakeholders are increasingly becoming the natural partners.

For this reason, we are very pleased that this afternoon's three speakers agreed to join us today, because they have been developing new forms of cooperation and partnership. By bringing science closer to innovation, they are challenging the old paradigms of research utilization, including those behind the MDGs.

I expect a lot from the panels: a nice arena of politics, science and practice. If they do not disagree with each other, the audience will help them to do so. If not, Professor Louk Box – today's chair – will give them a helping hand. I think Louk has already challenged the MDGs and the high expectations that they might arouse. But he also likes to challenge the idea of demand-driven research. Today, we will all be able to benefit from his critical and independent mind.

Louk, before I hand the chair over to you for the rest of the day: thank you for hosting us at your Institute of Social Studies. This debate needs to be held at an institute like the ISS, one that hosts so many top professionals and researchers from both the South and the North. Thank you for accepting the invitation to be our chair today.

Opening speech

Professor Louk de la Rive Box
Chair of the Seminar, Director of the
Institute of Social Studies

Ladies and gentlemen, welcome to the ISS – the Institute of Social Studies.

The Institute currently has about 220 students, of whom 200 come from the South. Many are from Asia, a good and increasing number come from Africa and an even larger number come from Latin America. Of these students, about 160 are doing their Master's and about 60 are doing their doctorate here at the ISS. I'm very happy that some of these students are present at today's seminar.

The ISS has about 150 staff members, of whom 75 are doing research in areas ranging from quantitative economics to qualitative gender studies, and everything in between. Those are the types of studies we do here, and if you would like to meet any of my colleagues, please let me know and we shall be glad to introduce you.

As the chair of RAWOO has already said, we are here to discuss the topic of knowledge and the MDGs. Yesterday, here at the ISS, a lecture was given by Diane Elson – professor of feminist economics – who together with a number of her colleagues calculated the cost of achieving the MDGs that are related to gender equity. The figure they came up with is shocking: to achieve these MDGs ìn particular would cost approximately 40% of the total cost estimated for achieving all the MDGs! If you look at the calculations that are being made at the moment, you will see that we increasingly depend on knowledge that we thought was there, but isn't.

So, if we wish to achieve any of these politically established goals, there is a great need for research – and not so much research in the North as research in the South. That is the key topic for today. We're very happy, as Gerti Hesseling said, that our group is so diverse. So I will not take up any more of your time, but will hand the floor to Mr Jan Hoekema.

Part one: The role of knowledge

Opening address

Jan Hoekema, MSc
Director of Culture, Research and
Education, Ministry of Foreign Affairs,
the Netherlands

Introduction

What general aims make us organize or attend a seminar? We hope to acquire knowledge by meeting interesting people, finding out about state-of-the-art knowledge and discussing our own and others' experiences. This requires an active interest in the topic, a willingness to learn and share, intense networking and open communication. Seminars, in other words, are meant for learners – and I'm happy to see so many of that species here today.

Today's seminar is particularly special: we have come together to acquire more knowledge about knowledge. When I read the programme and the other valuable material RAWOO provided to accompany the lunch lectures on the topic, I deduced several assumptions that might be interesting to reflect on today. These assumptions are implicit in the very title of the seminar: 'Knowledge makes a difference: a seminar about science and the MDGs'. What knowledge would make a difference? What difference would it make? What is the relationship between knowledge and science? And what difference can science make for the MDGs?

These and similar questions were used in formulating the new policy memorandum entitled Research in Development, which was published last September. This memorandum focuses on knowledge, research and innovation as tools for combating poverty and bringing about sustainable development. In other words: as tools for attaining the MDGs. We feel that research should be regarded as a form of knowledge acquisition from which both the developing and the developed world can profit. It is one means of achieving innovation in problem-solving. Therefore, the focus should be not on new research – not on research for the sake of research – but on research for development.

Knowledge management

We should concentrate on actually using the knowledge that results from this research and applying it in policy and practice. A good way to enhance the relevance of this sort of knowledge is to apply good knowledge management. Management is necessary because knowledge is not generated automatically nor is it always applied in practice. But there is more to knowledge than just the results of research. Knowledge also includes intuition, interpretation and contextual insights. Furthermore, knowledge is created not just by scientists and academics, but also by civil society organizations and businesses – the private sector. The need for knowledge cannot be met by research alone.

Research and knowledge should therefore be embedded both in policy and in practice. Social embedding will facilitate better cooperation and communication. This in turn will make it easier to put knowledge and research into practice or to translate it into policy. In other words: in our view, research is part of a larger system in which interaction between all groups of society is necessary to bring about social and economic improvements.

The realization is dawning upon us that both development and economic growth are based on knowledge. As we grow aware of that, we are faced with a gap between North and South in the ability to tap into the globalizing knowledge economy. Enlarging the

research capacity in the South is therefore still an essential component of our policy; that is what we are trying to do. The importance of capacity development is reflected in our programmes for both higher education and research. Our policy provides the scope to support national knowledge and innovation strategies, as well as advisory mechanisms for research and knowledge policy. One particular element of capacity building in the Netherlands is a more interactive process between policy makers and researchers. We should increase our cooperation. In order to stimulate this, last year we set up the famous – or should I say infamous? – International Cooperation Academy, the IS Academy. We are increasing our cooperation, so – going one step further – why don't we swap our jobs temporarily?

No standard formulas
Our involvement in development cooperation over the past 50 years has taught us many things. Above all, it has become clear that standard formulas and standard recipes are not effective. If we are going to do justice to reality, we have to make sure that research is an integral part of policy formulation and innovation. If they are properly integrated, research and knowledge can be a tool to be used in achieving the MDGs. If, for example, we were to focus on research in the health area much more than we do now, we could contribute to solving the world's health problems. The triangle of cooperation between policy makers, practitioners and researchers will not only improve the quality of knowledge, but also make it more applicable. And by making it more applicable, we will be able to solve many of the problems we face, such as poverty, health problems and education problems.

Our new research policy of September last has been integrated in three ways. It has been integrated in our bilateral programmes, because there is a need for knowledge in an area in which the embassies, the authorities, the ministries, civil society and the private sector work together. This will form the basis for meaningful research. Integration also takes place in the theme-based or regional programmes set up by various ministerial departments (the sectoral approach). Cooperation in this respect can vary from public-private partnerships to commissioning grants or entering long-term cooperative agreements. We have started to enter into these agreements and to set up these partnerships. And, last but not least, we have integrated our new policy in the Central Research and Innovation Programme, which is intended to strengthen international cooperation in research and the use of knowledge. These three ways of integrating our new policy – bilateral programmes, regional and sectoral programmes, and the central research programme – are of course aimed at poverty reduction and sustainable development. Ultimately, my ministry wishes to increase the dialogue and interaction between policy, practice and science, both in the Netherlands and in our partner countries.

Not only knowledge but also science, technology, research and innovation play an important role in the programme of today's seminar. These five concepts form an interesting set, providing the potential for the invocation of an infinite set of meanings, images, assumptions and stories. The same goes for the accompanying concepts like 'interactive' and 'demand led'. It is a real challenge to question one's own images and to profit from others' visions and views.

Types of knowledge
Some of today's speakers have a specific background in science or in technology. The expertise of others lies more in the social or the economic sciences. Some of those present today have a background in policy-making or in politics. It is a challenge to be specific about these different backgrounds and perspectives, as each of them may lead to different experiences. There are many stories, many facts and many truths – and that is what today's seminar is all about. Actually, the title of this seminar should be pluralized: we should speak about the different types of knowledge we need to foster innovation and development.

In my view, this seminar will be a success if each and every one of us takes home a new type of knowledge, in the form of one or two lessons, and is accountable to his or her neighbour for how he or she has dealt with it in practice – which is what RAWOO intends to achieve as well. Two of the Ministry of Foreign Affair's staff at this seminar – Ms Carolien Wiedenhof and Mr Rob Visser – will have to deliver their homework this afternoon, when they put forward their comments at the end of the day. They are expected to draw lessons for the ministry's policy after having listened to your deliberations today. In line with the Calvinist tradition of the Netherlands, we will have to draw lessons from this seminar in order to make it a successful one – which, of course, does not have to keep us from enjoying our exchange of thoughts.

I wish you all a very fruitful seminar.

Knowledge for policy-making, policy-making for knowledge

Joop Sistermans
Chair of the Advisory Council for
Science and Technology Policy of the
Netherlands

Advice concerning the administrative organization of the Dutch ministerial departments

The Advisory Council for Science and Technology Policy – the AWT – is an independent council, appointed by the Dutch government. If I were to give a name to this council today, I would add the word 'innovation'. We want to provide the government and parliament with countervailing advice. We are independent; we do not belong to any political party.

Last year, AWT advised on the knowledge policy. Although the cabinet should have responded within three months, it has not yet done so. The AWT wanted to advise on evidence-based policy. Political considerations and practical knowledge of citizens and civil servants are also important in policy-making, but as a council we stressed the importance of validation. One needs to get the facts and the statistics right. The main question was how to optimize the use of knowledge by civil servants in the various departments. We found that many roads lead to Rome.

Alternatives

Make a stronger connection between policy goals and strategies on the one hand, and knowledge production, research programmes and public research institutes on the other hand. For instance, if the problem is water management, ensure that there is a strong research programme in the country. What you need is a science department that is strong in building constructions in a wet delta, not one that is strong in the field of tunnel construction.

Departments should be active in spreading knowledge – insights, benchmarks, lessons learned in their own organization, etc. – by organizing lunch lectures, courses for civil servants, visits to congresses, etc. VROM – the Netherlands Ministry of Housing, Spatial Planning and the Environment – has a strong tradition in using this approach.

The third alternative – namely to appoint a chief scientist – is used in the United Kingdom. A chief scientist in a department can help to keep that department in touch with the real world of scientists. He or she should act as a bridge between universities, public research institutes and the Ministry

Appoint some civil servants who have a PhD when you want to commission research. You need those people in your departments to understand the dynamics of research, the uncertainties and the statistics. The Netherlands Ministry of Finance is a good example: it has exchange programmes with the OECD and the World Bank. This ministry distributes knowledge by moving people from place to place.

The final alternative is to enhance information management – and in the Netherlands, such management needs a lot of enhancement. There must be better supportive systems to share knowledge and to keep civil servants from drowning in the information overload, as we shall also see later.

The need for a knowledge policy

We need well-informed departments, ministers and politicians, so that they can make correct, feasible, efficient and effective decisions. We also want excellent risk management, and the handling of crises based on efficient risk assessments. We want our government to be well prepared for the future, and to have an excellent understanding of trends and of foresight scenario studies. We want it to be trustworthy and transparent. This is why we need a knowledge policy.

Be prepared!

Let me mention four ways in which things can go wrong.

One: the policy might not aim at the right problems, or it might not be feasible. For example, our education reform policies. We have had too much of that in the Netherlands. Feasibility problems can be seen in the reforms of the social security system and the health care insurance system.

Two: crisis management is needed in the realm of agriculture and food production. We learned a lot from the swine fever and foot & mouth crises of the late 1990s, and therefore should be more prepared for bird flu right now. A policy should not be made at the moment a crisis is upon us, but should be established beforehand.

Three: foresight is needed as regards new technologies – such as biotechnology and nanotechnology – and as regards such topics as pension reform. We should not have been surprised by stock market fluctuations and their disastrous consequences for our pensions, but even our Ministry of Finance was.

And four: transparency. If you are not transparent in the way you use knowledge in the policy-making process, you risk losing the public's trust in the government. We experience such problems with large infrastructural investments and their environmental and economic assessments; for instance, with the Betuwelijn, a railroad that will run from Rotterdam harbour to Germany. For political reasons, our Department of Transport, Public Works and Water Management was not very transparent when it came to the numerous research and advisory reports it commissioned.

Bottlenecks in our policy processes

Civil servants frequently ask themselves how they can detect an early warning signal while they are almost drowning in a overload of information. One of the solutions used by the Ministry of Justice is to commission reports from scientists – not when a problem crops up or when an issue arises, but on general subjects. In this way, the ministry ensures that it has the right connection to the knowledge society.

Most departments handle one issue only, even though many of the issues we are facing are multidisciplinary. Thus, compartmentalization as such is a problem for our whole society. We need interdisciplinary solutions. But the structure of our government prevents the integration of perspectives. There is only one person in our government system who can give it a try, and that's the prime minister. He has to take action in that respect.

The third bottleneck mentioned by civil servants is that the human resource management strategy of our government is focused on process management and not on the expertise in the field. People are even asked to move from department to department every few years – and this prevents the government from accumulating knowledge and expertise. It has to reward specialists more.

Knowledge policy principles
The AWT mentioned some important principles in its advice, for example: be open to different perspectives and different views, and if possible, try to find and use different sources of objective knowledge and evidence-based policies. Use only validated motives, from proven quality. The validation of knowledge is an important issue. Politics is already too driven by everyday mini-crises. Make the process of commissioning research and advice transparent. Be strict on rules for contracting out and accountability. Make sure that knowledge producers are independent.
Let researchers do their work. Don't bring them in and then tell them what their advice ought to be. Don't try to influence the results. Don't expect absolute certainty. Researchers have the habit of never agreeing with each other and of never having the definitive answer. Try to live with that reality, and don't go to advisers looking for cheap and easy solutions.

5 Knowledge policy principles

Different perspectives

Validated knowledge

Transparancy of process

Independence of sources

Do not expext absolute truth - but stay away from thin ice

Requirements
What the government needs to do to bring about a good knowledge policy is to stimulate independent public research institutes that can say what you don't want to hear. Secondly: you need a rich knowledge base of well-funded universities and other research institutes. Not only for the broadness of perspectives, but also to guarantee the supply of advice in the long term. Governments are not only customers for the products

of the research institutes: they also have the responsibility to guarantee knowledge as an asset.

Reactions

We have not yet received a formal answer from the Dutch cabinet. In the meantime, however, we have been approached by all the departments, many of which have accepted our advice and are now trying to establish a policy for knowledge and to develop the knowledge that they need.

Summary by the Chair

I should like to elaborate on three elements in your presentation, Mr Sistermans. The first is that if one wants to develop knowledge for policy, one needs countervailing knowledge. The real question is: how can one organize countervailing views? It is one thing for a government ministry to organize a particular policy, but to simultaneously organize the countervailing views is a real trick.

The second point is that you argued in favour of many alternatives. You did not say: 'Just do this and the result will be Valhalla.' Instead, you said that there are at least five alternatives that are possible in the ministries in the Netherlands. These vary from a connection between policy goals to knowledge policies, all the way to incorporating science in the different departments.

Third, you gave us a number of warnings. You showed where policies were made and where it went wrong. And you showed that the decisions that were based on those policies are very costly. For example, the Betuwe train connection in the Netherlands is a matter not of millions but of billions of euros. Now, if we look at the amount of money provided for knowledge advice, it was somewhere in the order of 800,000 euros, yet you also showed that the mistakes are also running into billions.

You warned us not to make too many policy changes, whether induced by parliament or by public opinion. Don't do it if you don't have a good knowledge base. The education area is a good example of where we in the Netherlands have probably made major mistakes. These are very costly, because a whole generation of people might be ill trained as a consequence. You showed us the dangers of inadequate transparency. Public trust decreased both in the government and in the knowledge on which it was based, and therefore worked against some of the knowledge providers.

African strategic options for science and technology development

Professor Yaye Kène Gassama Dia
Minister of Senegal, Chair of the
African Ministerial Council on Science
and Technology

First, let me complement you on this excellent initiative and tell you that it's a great pleasure to be with you today, and to have this opportunity to start a dialogue aimed at building a strategy, a consensus on decision-making in the field of science and technology. It is very important for all of us.

The challenge for Africa
At the beginning of this new century, Africa must start the technological breakthrough while evolving from a system that depends solely on natural resources to one that is based on science and technology. It is very important for me to make this point in this debate.

This means building highly intensive scientific knowledge and increasing the continent's capacity to cope with scientific innovation. Africa will be able to stimulate its economy through supplying sufficient quantities of state-of-the art products, while strengthening its presence in the international markets and towards partners from industrialized countries. One of the objectives emerging from this system based on science and technology is to integrate scientific and new technological tools into the definition of the sectorial policies in agriculture, health and sustainable management of environmental resources. Increasing and stimulating agricultural productivity will undoubtedly be a major way to sustain economic growth in Africa.

Although the technological innovation approach is interesting in offering new alternatives to the populations who greatly need it, there are in the meantime many challenges for African countries. For example, having qualified human resources and organizing the technical expertise at the national, regional and international level. So far the international community has paid little attention to the need to strengthen capacities in science and technology, and especially to recognizing such as the key driving force behind socio-economic development. In addition, less interest is given to science and technology at almost all levels in African educational systems. The young no longer want training in the fundamental sciences – that is, physics, chemistry, biology and mathematics – and many girls feel unsuited to a scientific career. This situation is exacerbated by the brain drain to developed countries, where science and technology are more valued.

Another challenge is to balance activities related to technology transfer with those related to strengthening and developing capacities at the endogenous level. This connection between research and the use of the research products does not exist in many institutes, while we keep training researchers in increasingly sophisticated techniques while they do not generate products that are greatly needed by the populations. There is no office of technology transfer. Thus, the gap has grown between the scientists who are supposed to generate these products and the consumers and users of these products.

A further challenge is to develop a system of intellectual property rights that recognizes the invention of the researcher, the right of the farmer to preserve and exchange his seeds, and the access to and the equitable share of the benefits drawn from the use of genetic resources. The African countries whose capacities in international negotiations are limited have not yet learned to develop and adopt a committed and proactive

attitude with respect to these fundamental questions related to the protection and survival of their economies.

On the political level, one must note that despite progress and sound developments in various fields of knowledge, the new technologies are not fully integrated in the national policies and are not exerting a determining influence on the macroeconomic policies. Thus, at regional and national levels, African countries and their leaders have begun to accord priority to science and technology as important factors in efforts to attain the MDGs and transform Africa's economies.

The financial resources allocated to R&D are insufficient (less than 0.1%) to truly spur the development of such essential sectors as agriculture, health, environment and energy. But African countries recognize that without sound investments in science and technology, the continent will remain on the periphery of the global knowledge economy. This recognition is manifested in the kinds of new institutional arrangements and programmes that we are establishing.

On the societal level both the use and the impact of very powerful scientific tools – such as genetic engineering and its application in our daily life – have greatly increased. Furthermore, the lapse of time between a scientific discovery and its application has been considerably reduced. Consequently, society has little time to understand, accept and adopt the changes that occur in the world today. For example, the use of genetically modified organisms has lead to passionate debates.

Consolidated plan for collective action
So, it suits African countries to develop bold and more inciting policies to stem the brain drain and to increase both the quality and the quantity of human resources and to sensitize the public about the high stakes of science and technologies. The Millennium Development Goals clearly take into account the role of science and technology in the socio-economic transformation. Indeed, the Johannesburg Plan of Implementation adopted at the World Summit on Sustainable Development recommends a mobilization for science and technology in order to solve the problems of energy, food insecurity, environmental pollution and diseases.

The consolidated action plan for Africa of NEPAD and the African Union underlines the common objectives of the MDGs and commitments to the collective action that is needed in order
to develop and use science and technology for the socio-economic transformation of Africa and its integration in the world economy. The November 2003 African Ministerial Conference on Science and Technology, organized by the NEPAD Secretariat with the support of UNESCO, adopted an outline of a plan of action containing twelve flagship programmes and specific policy issues. It also established the African Ministerial Council on Science and Technology (AMCOST) and its Steering Committee for Science and Technology as the overall governance structure for setting continental priorities and policies pertaining to the development and application of science and technology for Africa's socio-economic transformation. The conference stressed the urgency of strengthening the continent's capacity to harness, apply and develop science and

technology in order to eradicate poverty, fight diseases, stem environmental degradation and improve economic competitiveness.

The initiatives will be developed and implemented according to the following seven principles.

Adding new value: emphasis will be placed on those activities and processes that will add new and significant value to existing national, subregional and regional programmes. So, we are not creating something new, but are going to upgrade and improve what already exists.

Building on prior progress / achievements: the plan as a whole and its projects will aim at maximizing collective learning from previous efforts and promoting synergy among existing subregional and regional science and technology initiatives.

Sharing progress, outputs and impacts: the plan and its implementation are not aimed at meeting the interests or needs of a particular country or group of countries, but at meeting the interests and needs of all participating AU Member States.

Collective ownership and broad-based participation: the programmes will be further developed and implemented through participatory processes and activities with all stakeholders, that is, governments, industry, youth, civil society and international partners.

High-level political ownership and support: the programmes will be owned and supported at the highest levels of governance in African countries and the international community.

Maintaining flexibility to change the programmes as regional needs and conditions change: the programmes and their implementation mechanisms will evolve in a flexible and anticipatory manner. They are not cast in stone but will be adjusted to respond to changing needs and conditions to maximize learning by Africa and its institutions.

Collective action with differentiated capabilities: clear recognition that while the continent has shared goals and needs, its countries have different levels and ranges of capabilities – financial, human, scientific and technological. Genuine regional and continental cooperation will be required to mobilize, share and utilize existing national capabilities for common scientific and technological development. The emphasis should be on building partnerships that utilize the diverse range of existing subregional and regional institutions and expertise while collectively leveraging international support.

The plan is supported by the G8 countries, along with UNESCO and many other partners. I hope that the Netherlands will be one of the strongest partners in this initiative. These partners have committed themselves to financially and materially support the African initiative because the initiative is a strong signal of the collective will of the African countries to improve their level of economic development through science and technology.

The AMCOST meeting we organized in Dakar last September was attended by 44 ministers from all over Africa as well as by experts in many areas. During the conference, all the participants affirmed their commitment to supporting this initiative. This is very encouraging, because it is our duty to push this process and make it happen. The social and economic development can be realized by this initiative.

Cornerstones
This plan has the following five major cornerstones.

Strengthening capacities – particularly the human resources and techniques, which constitute the most solid basis of every development enterprise – and setting up a network of centres of excellence all around Africa. The strengthening of capacities will be done through creating, improving and mobilizing human competences, physical infrastructures, financial resources and the policies necessary to produce scientific knowledge and to use the appropriate technologies to solve problems that are specific to Africa. The countries that will host these centres of excellence will be selected on the basis of comparative advantage related to the centres' respective specialities.

Creating an enabling environment for the production of scientific and technological knowledge and technologies related to the specific needs of Africa. The programmes will be organized in clusters based on their relationship and potential to establish interrelated networks of implementing institutions. The aim is to develop research programmes in technologically advanced sectors, such as biodiversity conservation and traditional knowledge, the chemistry of natural products, biotechnology and its safe application in medicine, pharmaceuticals, agricultural and post-harvest technologies, water and problems of drought, bio-data processing, information and communication technologies, space science and technologies, and – in the future – nanotechnology.

Promoting technological innovation by creating scientific and technological parks to add value to industrial products. This is a matter of developing strong synergies between universities and research institutes, government and the private sector; and of developing a partnership with international organizations to create wealth, using the results from research and technological innovation. That can be done only if African countries develop efficient, flexible and appropriate intellectual property policies aimed at protecting scientific discoveries and adding value to these by patent filing and licensing. The scientific and technological parks will be used as service centres to increase the performance of industrial companies, as well as to create new jobs.

Promoting good governance mechanisms by decision-making based on reliable scientific and technical indicators that will enable the formulation, adjustment and implementation of coherent strategies. The African plan proposes the creation of an African Observatory of Science and Technology Indicators (AOSTI). The emphasis will be on the development of tools for a prospective and estimated analysis allowing the rationalization of the decision-making processes, using mathematical and statistical tools or geographical information systems to foresee problems in such strategic sectors as agriculture (productivity, grasshoppers), health (occurrence of malaria, cholera), road traffic, etc.; in short, all phenomena whose consequences can be managed by anticipation.

Building public and political constituencies for science and technology. Often the general public does not have ownership of or a direct influence on scientific and technological developments. There are also weak links between scientific enterprises and policy development. The result is the absence of a strong science culture and constituencies that demand and promote scientific and technological development. Its specific goals are to increase awareness of the contributions that science and technology can make to Africa's economic recovery and sustainable development, and to increase public participation in science and technology policy-making.

This consolidated action plan, which was worked out by a bottom-up approach by African experts, is consistent with the orientations traced by the African governments as regards their needs. It requires firm commitments on the part of African governments and participating institutions to devote a part of their existing resources to support the implementation and to provide financial resources and technical capacities.

Organization
In order to ensure the successful implementation of the programmes, the first Ministerial Conference took the following decisions on the governance structure:

- The African Ministerial Council on Science and Technology is responsible for the establishment of policies and priorities and for more coherent and coordinated approaches to strategies for science and technology cooperation.

- The Steering Committee for Science and Technology consists of two representatives of each of the five geographic regions of Africa. The Steering Committee oversees the development and reviews progress of implementation of the Consolidated Plan for Collective Action.

- The AU Commission is responsible for providing overall political and policy leadership for the implementation of the plan.

- NEPAD Office of Science and Technology provides overall technical and intellectual leadership for the implementation of the Plan.

- A technical and financial mechanism for implementation. The intra- and inter-programmatic linkages make it necessary to establish multidisciplinary approaches for implementation. At least four groups of institutional actors will be involved: policy-making departments, R&D centres, industry, and funding agencies.

The overall objective is to mobilize and ensure the efficient utilization of scarce human and physical resources. The establishment of the African Science and Innovation Facility (ASIF) has been proposed especially for this purpose. ASIF would provide the pan-African mechanism necessary to sustain the networks of excellence, encourage creative individuals and institutions to generate and apply science and technology, and promote technology-based entrepreneurship. To ensure that the proposed facility is well endowed and functional, it is crucial that adequate financial resources be mobilized. AMCOST will explore various options for developing clear funding mechanisms and policies. It may consider a framework that has the following interrelated elements.

- A substantial increase in national R&D budgets, with each African country taking concrete actions to allocate at least 1% of its GDP to this aim. The African peer review mechanism would be used to assess progress towards meeting this target. Each country would be required to contribute at least 5% of its R&D budget to a funding facility. This could be used for regional and continental programmes.

- The establishment of a distinct African funding scheme. This would be financed through annually assessed contributions from African countries, by the NEPAD business group and by consortia of bilateral and multilateral agencies convened by AMCOST. Specific criteria and guidelines for establishing the consortia would be worked out by the Africa-UK-Canada Partnerships Working Group. The European Commission would work with AMCOST through AU and NEPAD and dedicate a portion of the EU-ACP funding to Africa.

- The African funding scheme or facility would be created as a partnership with the African Development Bank, the African Capacity Building Foundation and the World Bank, as well as with other donors. Flexibility should be created so that donors can also fund specific projects and programmes of the networks. Countries that are hosting special networks would be required to make specified contributions.

- The Science and Technology Steering Committee would also design and adopt a system for allocating resources of ASIF in order to maximize its impact and ensure its transparency and accountability. This would be embodied in the proposed facility. The facility could be created through a memorandum of understanding or a charter to which countries would subscribe.

Conclusion

Based on the strong recommendations put forward at the African Ministerial Conference on Sciences and Technologies, it is now urgent and essential that these decisions be taken to the highest decision-making level of each AU Member State. It is also crucial that these recommendations be appropriated by the decision makers and be regarded as a central element of any policy aimed at the socio-economic development of our African countries.

The plea will be directed in particular towards taking into account the priorities laid down in the Consolidated Action Plan, for example: reinforcing human resources, infrastructures and equipment; developing synergies in the actions; identifying priorities for centres of excellence; providing access to scientific knowledge and technological innovations; developing intellectual property rights policies; sensitizing political decision makers on the importance of science and technology in the process of decision-making and good governance. These activities, which are aimed at the socio-economic development of Africa, ultimately will require platforms of knowledge facilitating the decision-making, mechanisms of coordination at the African scale, as well as increased investments in the development of research.

Developing an endogenous scientific capacity is fundamental if we want to contribute to the world effort to accumulate knowledge – the baseline of sustainable development.

African countries must build upon the advantages provided by modern sciences and technologies to ensure the sustainable development of all strategic sectors. It is only at the expense of our own investment in scientific research and in the technological innovation that we will be able to decide, based on full knowledge of the facts, what cultures and what technologies are advisable to introduce, adopt and develop in order to reduce all the gaps (digital, agricultural, technological) and to ensure the sustainable conditions for an emerging spring for Africa.

Indicative Budget 2006-2010

Estimated budget 2006 – 2010

Programme area / activity	US$ ('000)
1.1 Conservation & sustainable use of biodiversity	2,500
1.2 Safe development and application of biotechnology	45,000
1.3 Securing and using Africa's indigenous knowledge base	650
2.1 Building a sustainable energy base	15,000
2.2 Securing and sustaining water supplies	45,000
2.3 Combating drought and desertification	8,000
3.1 Building Africa's capacity for material science	4,500
3.2 Building engineering capacity for manufacturing	2,500
3.3 Strengthening the African Laser Centre (ALC)	20,000
3.4 Technologies to reduce post-harvest food loss	2,500
4.1 Information and communication technology	2,000
4.2 Establishing the African Institute of Space Science	500

Improving policy conditions and building innovation mechanisms

5.1 African Science, Technology and Innovations Indicators Initiative (ASTII)	5,000
5.2 Improving regional cooperation in science and technology	450
5.3 Building public understanding of science and technology	800
5.4 Building a common Africa strategy for biotechnology	350
5.5 Building science and technology policy capacity	850
5.6 Promoting the creation of technology parks	300

Institutional arrangements, overall governance and Resource mobilization

1. Secretarial/administrative services	1,000
2. Steering committee	250
3. Ministerial conferences and interministerial forum	600
4. Resource mobilization	150
Total	**157,900**

Summary by the Chair

Madame Minister, thank you very much for the candid review of where you and your African fellow ministers stand. Allow me to draw a few conclusions from what you said.

The first point you made shows that many of the things that RAWOO has been arguing for are reflected in the current activities of AMCOST, the Council of Ministers that you are leading. I saw a number of elements, for example with regard to capacity development, recurring in your presentation. It is interesting to see how there is a link between what is happening in Africa and the way RAWOO picked up on that in its advice.

The second point you emphasized in your presentation is that you look for added value: you upgrade but you are not creating. You start from a knowledge base that is there and you articulate that knowledge base through networks. You build on the prior achievements and you stimulate the collective learning. That is your starting point for your approach in Africa, which has a number of practical consequences. Let me mention just one. There have been white elephant plans for creating new types of institutes, which you are in fact arguing against. Another point you mentioned is that you wish to have a sense of collective or continental ownership. How are you going to do that? You have to involve governments, industry, civil society and other international partners. But how will you deal with them when IPRs [intellectual property rights] are concerned? It will not be easy; to deal with the collective ownership on the one hand and the private partners on the other hand.

Allow me to make a last point. You are arguing in favour of centres of excellence at the subregional level. It is the selection of those centres of excellence that you will base your work on. Therefore, if capacities are to be structured, it will be done through those centres of excellence. Possibly those centres of excellence could also help in building a constituency for science and technology, because it is striking to see how small that constituency is. I've seen from my own research that there is precious little attention among African policy makers for science and technology in the PRSPs. On the one hand we all argue in favour of it, but if you look at the practical plans and papers it is not reflected to the extent that is necessary.

In conclusion, I should like to repeat your plea for decision-making at the highest level of the state. One of the recommendations in the AWT report stated something quite comparable: in each ministry, science and technology needs to be coordinated at the top level.

Panel Discussion

Panel members
Kathleen Ferrier, Christian Democrat MP (the Netherlands)
Hoda Rashad, Professor at the American University in Cairo, director of the Social
Research Centre and member of RAWOO
Cecilia López Montaño, Senator in Colombia and member of RAWOO

Kathleen Ferrier

First of all I should like to thank RAWOO for organizing this meeting. I find it extremely important, because what has come out clearly this morning is that the issues we are talking about today are vital for development. What I've heard this morning has made it clear that when we discuss science in relation to development, we're in fact discussing an alarming situation. First of all, when we look at the importance of education in development, everybody agrees that education is vital. But the problem is that when you talk about education related to development, it is always about basic education. And to have development it is vital that every developing country has an independently thinking intelligentsia. Thus, our focus in development cooperation should be much more on science and on higher education.

I already knew that the situation is alarming, but what I heard this morning from Mr Sistermans has increased my worries. He told us that the available knowledge in a country like the Netherlands is not being used properly. That is very alarming. So I have to draw the conclusion that we are just messing around. We do not use the knowledge that we have, and the knowledge that I expect to be present at the top level of the ministries is not always there. To me, as a member of the Dutch parliament, this is a very important statement. In the meantime, I am very aware that possessing knowledge is not everything: if we really want to achieve development, the most important thing is to make use of knowledge. To do so, however, we need political will. We can have all the knowledge in the proper places but if there no will to use it for development, nothing will happen. And so, basically, in talking about science, technology and development, we also have to work on a change of culture in our departments and in our thinking. There is a lot of work to do. I'm happy that I had a chance to hear the words of Minister Dia, because she said some things that are vital.

First of all, there is the importance of the brain drain. We are all aware of it, but I feel that it is one of those issues we don't know exactly what to do about even though we all talk about it. I'm very curious to learn about the outcome. I have a concrete question for Minister Dia. She said that new technologies are vital for development in Africa, and I should like to hear from her what she really expects from them. In what sense can these new technologies make a difference? Minister Dia mentioned also good governance – which of course is also vital – and the PRSPs, in which higher education and science are not an important factor. I'm very interested to hear, based on your experience, how this can change. Because I'm convinced that it should change.

What I have learnt this morning is that we should establish what science and technology we have, and then start to find ways to use it.

Hoda Rashad

I should like to start by thanking the speakers. Each lecture presented a different view. One was concerned about the policy in the Netherlands, while another focused on African aspirations. Even the links to the MDGs are different, particularly if you compare the two presentations related to the RAWOO report *Mobilizing Knowledge to Achieve the MDGs*. So I want to draw on these presentations by referring to the MDGs and by mentioning the messages I got from the presentations about the fulfilment of the MDGs.

The first message is that empowerment is not a simple mechanism for achieving the MDGs. The second message is that it is very important to have an equity framework to be able to fulfil the aspirations of the MDGs. The third and final message is that learning and partnership comprise the central feature that will allow knowledge to contribute to the MDGs.

Empowerment

When you consider the presentations, you see similarities, despite their differences. First they appreciate knowledge. But when they start talking about knowledge, they talk about the level of policies and strategies. They don't talk about an activity or a project here or there. Both Mr Sistermans and Minister Dia talked about concrete challenges, and their approach to these challenges is very long term. They talked about capacity building and about other instruments that need large investments. They are looking for sustained impact. I strongly feel that this is the approach that must be adopted when we discuss the MDGs. The Goals should not be seen as quick fixes for humanitarian needs; instead, they should be seen as a commitment to achieving a sustained impact. This makes a big difference. When I listened to Minister Dia speaking about science and technology in Africa and how important science and technology and innovation are for achieving the MDGs, I realized that it is a language that I don't hear frequently when people talk about the MDGs. This is not the language we use – even in the PRSPs – when we talk about poverty reduction. So what I read in the advisory report prepared by Mr Sistermans, and what I heard from Minister Dia, is a promise to achieve progress beyond the MDGs. It fulfils aspirations; it does not give a hand-to-mouth kind of aid. This is my first message. I don't want to give the impression that the MDGs can be achieved only in the long term, nor that they can be achieved only through science and technology.

Let me give an example related to poverty reduction. Nowadays, we talk about empowering families –at least, in my country we do. Not giving an individual a hundred dollars, because that doesn't really help. It may feed a mouth, but it doesn't help them to break the circle. It's much better to get the whole family and try to empower it. It's the same spirit as in the science of technology. We're not just talking about science and technology, because science and technology are embedded in society. People who are going to think about science and technology are the ones that will start using them. As much as I'm asking for a long-term approach, I'm also asking for knowledge education in general. Science and technology must be part of this education, not the sole components.

Equity

My second message is the importance of equity as a framework. We heard Mr Sistermans talk about the idea of the alternatives and the diversities of doing things. Which is so true! There are different ways of reaching the same conclusions, and you have to pick the one that is best for you. But there has to be a value system, a system based on equity, that excludes unfair disparities.

When it comes to science and technology, for example, I can promote the development of science and technology in society, but that wouldn't help the poor. I could also promote things that would help a certain social class, but that wouldn't address the real needs that exist in society. Choosing the topic you work on, choosing the problem reflects your value system. You could choose something to develop yourself. So the value itself is extremely important. For example, the education gap between men and women in my country: females have surpassed their male counterparts. In many countries women are much better educated than men. What has this done to promote gender equality or improve the situation? Not much, because the culture and a value system are also very important. It is the same with national religion. In the national religion, for example, we are all the same. Sometimes we say this is in Islam, sometimes we say this is a development discourse.

The slogan used to be: 'Don't give the poor a fish, but teach them how to fish.' But this has changed. Because the truth is that the poor know how to fish, but they cannot get to the sea. And if we are going to discuss shifts and paradigms, the paradigm would not be to resolve the problem but to look to the poor themselves. So it is a culture thing that is involved here. And this is part of the knowledge.

Engagement

All the speakers talked about knowledge, about the importance of it. All of them talked about a learning process, all of them talked about partnerships and all of them talked about capacity building. And this is extremely important. In order to arrive at a knowledge society, we have to invest in creating an appropriate environment. We have to create room for partnership. And this applies at the level of the national dynamics, because we now agree that academia is extremely important. However, it is just as important for academia to open itself up to society and to integrate and link up with it. So when we talk about capacity building we are not talking about the ordinary approach that we used. What you do is you nurture your knowledge system, you nurture the building of bridges between different stakeholders. And this requires initiative and time. And it is not easy. I read in the RAWOO report that we need a new approach to capacity building, one that is based on the constant dynamic of the knowledge and innovation system. Knowledge networks play a central role by linking producers and knowledge users and partners in the South and the North. So one part of the learning process is within the country and the other part is the partnership between North and South. And I feel we have the simplistic view that it is enough to say 'Let's work together'. But it is more like a marriage: the collaboration between individuals is like collaboration between people from different countries. You need to learn, to build trust and confidence. You need to court each other, to go out together ... in fact, to get 'engaged'! This is something to which we tend not to pay enough attention.

The same applies to the international experience in the learning process. I note, for example, that in the policy of the Dutch Ministry of Foreign Affairs there is a focus on partner countries. And that's fine. What is important is that there is international experience. There are success models that are beyond what the country will be working with. And part of the learning process has to be open. You know, we are so tired of most of the problems. But in a way we know what should be done. The theoretical model is there. What we really lack is a move towards implementation. There are examples that we have to discover, there are examples in certain NGOs. There are examples in countries that have achieved good results, even though there were severe worries about the social cohesion in those countries. So it is extremely important not to narrow our horizons. 'Targeting' does not mean closing the door: it means investing somewhere but keeping your eyes open and trying to learn lessons from what you do.

So, in conclusion, we need a coherent vision to allow the MDGs to materialize and fulfil their aspirations. We need to empower the actors, to adopt equity as a central value and to build partnerships and bridges.

Cecilia López Montaño

I have four comments I should like to make. The first is that for me the MDGs have changed the focus on development. It moved the focus from macroeconomic stability to social objectives. One thing that worries me is that you can see this more clearly in the developing world than in the developed world. It is very important to recognize that difference, because the relationship between the two worlds comprises not only development cooperation but also strength and commercial relationships. And then you see that there is a gap. We want to move to social objectives, and the developed world is still thinking about macroeconomic stability in our countries. It is a very interesting thing that the MDGs did, despite all the valid criticism. The way they trigger gender equity, however, is very bad. In terms of Latin America it is not true that only with education you are going to help gender equity. The fact that we have more educated women does not mean anything. They go to the labour market and then they are unemployed, underpaid and under-everything. Women are the missing subjects. How come you are not talking about decent jobs? The UN and the ILO have been talking about this issue, but it is not part of the MDGs even though it is a crucial element. I think that equity is the big issue that is forgotten in the MDGs. That is my first point. But the MDGs have changed the focus. It is wonderful that the developed world will realize that the focus is now on social objectives and not on macroeconomic stability.

Intellectual property rights

The second point I want to make is that globalization has changed the framework for knowledge. I discussed this at the RAWOO meeting yesterday. Because trade agreements are such a key element in globalization – and intellectual property rights are an important part of trade agreements – it changes completely the framework for knowledge in our countries. Because all of us who are dealing with lateral agreements with the United States think that intellectual property rights should not be included in them. Such rights have a serious impact on the possibilities of developing knowledge in our countries. I think this is something developed countries should worry about, and help us to understand what will happen if all these multinationals have a part of it for many

years. What will happen to the security of a country or to its biodiversity? We have the diversity, but we're going to lose it, because they are going to work with our plants and animals. I think this is a very crucial issue.

The third point I want to make is that there is a lack of knowledge to deal with the MDGs, especially those concerning poverty and health. We now know that the reduction of poverty is a very complex issue. One of the main new issues is that poverty is not a problem of social policy alone. This is something we have been working on very much in Latin America. It is the macroeconomic policy that defines whether there are any possibilities to reduce poverty. What we have seen in Latin America during the last decade is amazing. We have spent thousands and thousands of millions of dollars on implementing social policy and yet still have a terrible social situation, because macroeconomic policy has been unable to create decent jobs. This is a key lesson, and I don't see the developed world worrying about macroeconomic policy and how this policy is linked to poverty.

The other element that worries me is when you see the success stories about poverty reduction in China and in Chile, it seems that you have to pay a price, because there is so much more inequity. This is terrible! At a certain point, inequity will even become a barrier to poverty reduction, that is, when there arises so much social pressure and stress that the government has to allocate resources to bring about social stability that originally were meant for poverty reduction. I think we have to learn a lot about these links.

The fourth point I want to make is about an issue that Minister Dia brought up. I am pleased to hear that in Africa many things are happening that are going on in Latin America as well, with the exception of Brazil. Because we are doing more or less the same thing. In Latin America we have to move from making products from the primary sector, to some development of technology. Institutions like RAWOO allow us to make these connections, and to listen to each other and learn. That is something that only an institution like this can do, by bringing together people from the North and the South and from different continents. And this is very important for development cooperation.

Knowledge innovation

How independent is the developing world when it comes to knowledge innovation? I think it is very dependant, because the research agenda in developing countries is driven by the international research community, linked to the local scientific elite. This is a crucial issue. It worries me very much because I have had a long relationship with the Dutch development cooperation: I've been in the government for 25 years, and when I was vice minister of agriculture in the 1980s, before becoming ambassador to the Netherlands, the Dutch development cooperation was a real success in Latin America. You were the closest guides to the needs of the developing countries in Latin America. And it is no longer like that. I think it has a lot to do with the fact that the Dutch no longer have a part in the international debate about development. How come I don't see the Dutch debating with the World bank and the IMF about what's going on in the rest of the world? It was already bad, but it has been getting worse in recent years. So it is very important that institutions like RAWOO help to link the Dutch to the international debate.

We have to build a new paradigm, away from the Washington consensus. We don't need trade, we need opportunities. And that's true more than ever. Because trade relationships are terrible now. Donors can play a crucial role in giving support to research for a new development paradigm. We don't need one economic model – that was a crucial mistake – we need a paradigm, which means as many economic models as countries we have in the world. But we need to move away from the Washington consensus. Because there are a lot of things going on in developing countries that should be taken into account in the global debate about development.

The mayor of Sao Paolo – who is going to be president of Brazil – said something very important. He said that 'Democracy is not at a globalized level'. People who lead the global institutions are chosen in a non-democratic way. Democracy is defined at a national level. This is an eye-opener for nations that were shoved into a corner of the globalized world. Listening to the speakers this morning, I think that developing knowledge and technology is something that might be solved at a national level only.

Khamis Mwinyimbegu, *member of the audience*

I am a Tanzanian who lives in the Netherlands. I should like to react to the presentation made by the Minister of Senegal, specifically to the part about the programme on Science and Education in Africa.

The minister remarked that the participation of students in science subjects is declining. First and foremost, minister, you agree with me that the educational system in Africa needs to be changed. Most of the time when I go home, I'm really disappointed that the education system is the same as the one I was in during colonial times. Nowadays, the education system in Africa – and especially that related to science and technology – is geared towards addressing the needs of the North. And that is why there is a brain drain. I mean, if you are educating someone according to the ancient system, which actually addresses the needs of the North, surely these people will be attracted by job opportunities in the North. And when they come here they are easily employed and will fit in the system, whereas for most of the doctors of medicine or other scientists in our country sometimes it is a problem to find a job when they finish their university education.

So, this is a problem that needs to be addressed. But most fundamentally, our science in Africa does not actually address the need to develop indigenous knowledge in the South. Let's be honest: what are we studying in our schools in Africa, in Egypt, in Tanzania, in Senegal? The science subjects that are being taught in the North and that do not have any connection with the needs of the people in our country. If you want to be able to cope with the current demands, the education system needs to address this reality.

Camilo Villa, *member of the audience*

I am from Colombia, and I am in the Netherlands as a PhD student, here at the ISS, finishing my thesis, and I work part time with HIVOS as a leader of the Knowledge Sharing Programme. By the way, HIVOS is working on partnerships, and in a sense I am an outcome of this effort to link academia and practice in developing issues.

I have one concern that I did not see in the presentations. I agree absolutely that we have to strengthen the institutional capacity of developing countries. But more and more the problems are not just national. Look at transnational corporations, look at climate change, air pollution or any other big issues: these are all transnational issues. But we seem to stick to national policies, and to national solutions to knowledge problems. What you see now is that students of developing countries move to different countries and we link to other people and we develop projects. But we always keep in touch with our home country. And we bring knowledge, transfer ideas and support the initiatives from there. So it is important to have the national perspective but also the knowledge needed to deal with transnational processes, how to plug in to the international communities with a sense of dignity. I think we should start from an equal position, and not hook up to the North but turn it into a horizontal relationship.

Akke van der Zijpp, *member of the audience*

I should like to address the issue of making the best use of science and knowledge. My question is addressed to Mr Sistermans.

Mr Sistermans, in your report you appeal for good, reliable and qualified science. I should like to ask whether you discussed tested science, in terms of how it can be validated and be incorporated into the programme, with the perspective of the user and supplier of science in mind. So, how do you link basic issues in terms of poverty or lack of labour with science?

And I should like to ask you another question: you gave quite a lot of information on the type of science inputs in your report – but what do you expect from the policy maker? This is important, because DGIS – through the new knowledge policy and the IS Academy – is trying to bridge the gap between scientists and policy makers. I think we need a clear view of what we can expect of this policy, in terms of value systems and how that process has been formed in relation to the science.

Johan Bouma, *member of the audience*

I agree with what Ms López Montaño said about the need for new paradigms to development. I want to relate to you something that happened last week. We had a visit from Pedro Sanchez, from Colombia University, who works very closely with Jeffrey Sachs. They're studying the Millennium Goals and doing it in their own way. One thing that came up during their visit was the element of funding, because if you want to develop new paradigms, you need money. They now have more than 100 million dollars from charities, and the clock is ticking – it is going very fast. An enormous amount of money is available for this type of work, as exemplified by the Millennium Goals. However, this means that the science community has a tremendous responsibility to make sure that the money is used in a way that is symptomatic of evidence-based science.

Another major challenge we see as a science community is that the science integrity is maintained whatever is being done. I'm not suggesting that it is not like that right now, but we must remember this challenge for the future. We have to get our act together and I think that is more than we have been doing so far.

The Chair

I should like to ask Minister Dia to address the first question, which concerns the need for change in science and technology, for education in general in Africa and particular for science and technology education. The gentleman made quite a claim, that is, that not much has changed since colonial times.

Minister Yaye Kène Gassama Dia

In response to the question whether the science and technology system is adequate, my answer is 'no'. It is not adequate for what is required to meet current needs, but efforts are being made. In Senegal we still have an essentially French-based system, but changes are underway. The real question is how to respond to the social and economic needs of the populations. That is the question that should be asked in those universities. An important development is the fact that there are new technologies with which students can link up with information that is available in the North. And ICT has changed the situation.

With regard to your particular question on the brain drain, do African universities prepare students for Northern rather than Southern needs? If we create well-equipped centres of excellence and provide an enabling environment for scientists who have been trained in the North – because most African scientists are trained in the North – we are likely to keep the 'brains'. But if they are disgruntled, they will return to the North, to the places where they got their degrees. Obviously, there is also the salary question, but that is not the main question. The main question is whether there is an adequate environment for scientists and technologists to work in. I think there is, in centres of excellence like the centre for bio-sciences in Senegal or the laser centre in the Republic of South Africa. These centres of excellence have therefore been upgraded.

The last question is whether rural knowledge is taken adequately into account. The orientation is also towards the rural population and to the disparities and the inequities between them. But the political choice of each nation is also very important, and every state is free to make particular choices, for example, with regard to genetically modified organisms. Each state has its own specific problems.

The Chair

I will go immediately to the second question from Mr Camilo Villa, which I should like to ask Ms Cecilia López Montaño to respond to. The question as you will recall was: to what extent are transnational problems not being solved simply by a national logic, and don't we need a broader logic than that?

Cecilia López Montaño

I think I didn't make myself clear, because that's exactly the point I was trying to make, namely that globalization has changed the framework for knowledge. I used the problems with intellectual property rights as an example. In essence, when you talk about such rights, you are talking about multinationals – most of which are in the developed countries – and how they are constraining the possibilities of referent knowledge at the national level. What I'm trying to say is that globalization should be analysed in terms of constraints or possibilities. It is possible that we have not yet discovered the new possibilities in terms of knowledge innovation or implementation.

This needs to be analysed. I don't have the answers, but I do know that this is a crucial issue.

The Chair

The third question was asked by Akke van der Zijpp: how can you best make use of science, including the rather vague category of 'tested' knowledge? It is the user who influences all, and if we see the user also as a policy maker, then the question is: what values are guiding the policy makers or users of particular types of knowledge?

Joop Sistermans

In our advice we did not give all the other possibilities, but of course it could be a completely different additional approach. We stated that in the second paragraph, so I think the best thing to do is to read that part of our AWT advice. However, the most important issues are, for example, the balance between short and long term and the balance between knowledge as an equity – as a capacity – and knowledge as a product. We are discussing how to use knowledge, how to do something with it. But our policy choices should not be influenced so much by short-term issues, and we should be able to deal with the long-term issues, such as the MDGs. But if you make the calculation, each year we spend on science and technology about 10 billion euros too little. We see a paradox here: our knowledge society in science and technology is excellent, but if you want to keep it excellent you need to do something about it. If our strategy in the Netherlands in the future is to base our efforts on knowledge, then the consequence has to be accepted. And the consequence is that you have to spend more; you have to change your system, you have to invest more. And to achieve this long-term goal, we need to spend a few billion euros more each year.

Secondly, there should always be a balance between the economic and the social goals. But it is not right to say that the economy comes before the social part, or vice versa. It's an integrated approach. We cannot say that we want to achieve all these economic goals at the same time. In the Netherlands, we contemplate the real issues that we have to deal with: integration, mobility, health, education and security. So our knowledge institutes have been working on this important issues but not to the extent that they should.

To achieve solutions to these problems, knowledge is just a tool, as is innovation, but it is not the ultimate answer. Knowledge and all kinds of views travel around the world at the speed of light. So in the end, everyone will know the same. So, what makes the difference? The difference is the creativity to utilize the knowledge. The one who can translate his needs best into productivity and reality is the one who wins. And as he wins, the whole world should win, because these are global issues.

The Chair

The last question is for Hoda Rashad: there is a lot of money available for this type of research. How can we use this money to also achieve greater equity? You can try to achieve the MDGs technocratically, but the real goals must be achieved on a basis of equity.

Hoda Rashad

I'm not really able to answer that question in full, but my message is that science cannot be disengaged. We cannot think of science as a field that is not a part of the community. And the community – including the people, policy makers and the different stakeholders – needs to make a choice for this paradigm of equity. It is a conscious choice, not something that comes about haphazardly. To facilitate that choice, you need to invest in many fronts. One of them is to obtain information about the absence of equity in a society. You also need to invest in implementing sustainable measures.

I should also like to say something about globalization. I remember a book by Thomas Friedman, titled The World is Flat. In it he says that globalization has always been about multinationalism and crossing borders. What we need to remember is that globalization is also about individuals. For example, in India people doing outsourced jobs are part of the global economy, because they have the skills, the capability and they speak the language, but at the same time they are citizens of India, they are Indian individuals and they are engaged in their own society and context. This requires a completely different type of orientation and that will not be easy.

Cecilia López Montaño

I should like to make a last statement. Despite all the available resources, we in the South need independence, and we need respect for the knowledge we have. If we don't get that, we don't need the money.

Part two: Approaches

Interactive demand-driven research partnerships

Professor John Gyapong
Director of the Health Research Unit of
the Ministry of Health, Ghana

I'm delighted to participate in this discussion, and I want to express my gratitude to RAWOO for giving me the opportunity to share our experiences in Ghana. What I'm going to talk about is the Health Research Programme (HRP), which was funded within the framework of a Dutch partnership for health research and development. We conceived it in the field of what we think is a new paradigm of research founded on concepts of ownership, partnership and sustaining national capacity in health research. This was developed over a very long period of time. We have learned a few lessons and we had a pretty long pre-implementation phase, and now we are running the implementation of the project itself. This is the fifth year of implementation. I want to share with you some of the issues that have come up and how we want to move forward.

The goals of the HRP are to:

- generate information through relevant research
- strengthen decision-making
- set health priorities
- help to allocate scarce resources more efficiently
- inform health intervention planning and implementation.

The overall goal is to create a good health service and improve the health of our people.

I'm sure you are all familiar with the 10/90 disequilibrium: 90% of resources going into 10% of research on disease burden. And in developing countries, like Ghana, there is a similar 10/90 disequilibrium: we spend most of our resources on just a very few issues. We think that with better generation of information, Ghana would spend its limited resources in a much better way.

Capacity

One of the biggest challenges the HRP is trying to address is the fact that Ghana's research agenda is set outside the country. This is because the government does not make enough money available for research. Many of our health research institutions have enough money to pay salaries, but they do almost no research. Scientists therefore have to look outside the country and to compete for other resources to do research even if it is not a priority for Ghana. Thus, the research that is done might not necessarily coincide with the agenda of the country.

There is also the problem of inadequate capacities. I shall give you an example from my own experience. I went to medical school in Ghana's second city, Kumasi. Of the 32 people who were in my class, my guess is that there are only two of us living and practising in Ghana now. Of the rest, fifteen are in the USA, about ten in the UK and three or so in South Africa; the rest are in other parts of the world. The same can be said of most health professionals who are required to do health-related research.

Another issue is poor access to the literature. The digital divide has been discussed in several forums and continues to be a problem in most parts of Ghana. Even though there is Internet access, it is very expensive for most institutions to do a good literature research. Even if you find the money to pay for Internet access, when you log on and try to access the journals you want to read, they ask for a credit card – and not many

Ghanaians have a credit card. Also, the little information that is generated is disseminated inappropriately. For example, you get a project report published in three copies: the investigator keeps one, one is sent to the donor agency and the third goes to the institution's library. Another scientist in another institution ends up doing the same study not knowing that the study has been done five times already, so we keep reinventing the wheel and thus make inefficient use of our limited resources.

Partnership and participation
So there was this opportunity for us to develop a collaboration with the Netherlands. It took a long time to develop the systems for this collaboration and thus there was a long pre-implementation phase. We needed to learn to deal with the Dutch – to put it politely; and I guess they had to learn to deal with Ghanaians. All in all, it has been a very interesting process. We are still trying to define the true meaning of 'collaboration' and of 'partnership'. Probably, if you ask the key actors in this collaboration what 'partnership' is, you will get different answers. Thus, inasmuch as some progress has been made and a lot of good things have happened, we are still learning.

We now have a yearly process of setting a research agenda through a consultative process. Every year in the last week of January, all the stakeholders meet to review our research agenda. Some come to these meetings and say nothing, but you have to continue to invite them so that they feel part of the process. Over the years we have brought many more stakeholders into the process, such as academics, policy makers, service providers and NGOs. Our goal is to jointly set a research agenda that is based on the health sector's policy, although that has been criticized by various people who say that we focus too much on health system issues. However, since the funding was not enough and we needed to focus on research that will improve health delivery, we chose a demand-driven approach that is related to the Ghana medium-term health strategy and that contributes to evidence-based decision-making. Of prime importance is the Ghanaian ownership of the programmes and the strengthening and sustaining of Ghana's research capacity.

Most important is the question whether the needs of marginalized people are part of the agenda-setting process. Because of the yearly meeting we have a dynamic way of reinforcing the agenda with new issues that come up. For example, we planned the first agenda with a focus on health financing through the implementation of an exemption policy for poor people who cannot afford the cash-and-carry system. Then there was a change of government and they wanted us to focus on health insurance. So at the next agenda setting meeting, we had to change the health financing agenda and articulate issues how to implement health insurance schemes.

Pillars of the programme
The current agenda is guided by four main pillars, namely:

• improving access to health service
• improving the quality of health care
• making more efficient use of resources
• mobilizing resources to implement our programmes.

For example, to improve the quality of care we have to improve the skills of the providers so that they can meet the needs of clients. So we tried to focus on client communication, physical examination and diagnostics, and staff attitude towards patients, because some of the practices were sometimes unacceptable. We have also looked at a comprehensive quality assurance system, the development of microbial resistance to antibiotics and the complimentary role of traditional medicine on an appropriate quality control system.

Subsequently, we recommended some preliminary activities, such as acquiring material on relevant research that had already been carried out in Ghana. This enabled us to propose research into specific issues, such as the attitude of staff, health insurance and logistics management.

Communication is also a very important activity. For example, if you travel in Ghana by public transport, I can assure you that somebody will get up and pray for you and then try to sell you some herbal preparations. These kinds of preparations can allegedly cure everything, but the question is: what does and what doesn't work? In order to communicate these issues, we need local research on beliefs and perceptions relating to health, illness and prevention. We also need to communicate our different programmes and their aims in order to enhance community involvement in policy formulation and implementation at district level.

As regards health financing, I have already mentioned the exemption policy and our basic research to facilitate the implementation of a health insurance scheme. We do research into prepayment schemes and try to determine alternative forms of prepayment that are acceptable to the community. We also try to develop strategies for ensuring sustainable financial arrangements that will protect the poor and the vulnerable.

After two or three years of implementation, we found out that our issues were still too cross-cutting and too broad. So we decided to address these issues in the context of specific diseases. For instance, in the case of health communication, you can ask such questions as: why is it that although over 95% of Ghanaians know about HIV/AIDS, over 98% of Ghanaians don't think that they could be at risk of getting the disease? We also try to focus on poverty reduction, and on inequities and inequalities in health.

Challenges
The programme had a slow uptake but this has gradually improved over the years. In the first year (2001) we had 17 letters of intent, of which 5 were funded. And there has been a gradual increase in the number of projects. Last year we had 97, of which 31 have been funded. In the period 2001-2005, we funded a total of 79 research projects. Most of them concerned the quality of care, communication or health financing. We advertised in newspapers to ensure public knowledge of the process of getting people to apply for these grants.

Output

Year	LOI	Full Proposals	Funded	Completed
2001	17	8	5	5
2002	58	38	14	13
2003	76	35	15	14
2004	70	39	14	2
2005	97	59	31	0

Health Research Unit, Ghana Health Service

Another challenge is the relatively small grants (a maximum of 20,000 euros) that the HRP offers. This has been one of our major problems in the collaboration with the Netherlands. We had wanted collaboration with the Dutch in the conceptualization and implementation phase, but if you have a Dutch participating scientist to help you with this, he or she will fly to Accra and – presto! – almost half the budget is gone. And the Dutch institutions were also asking us to pay for the scientist's absence, which seems to be quite normal in the Netherlands. So this has been one of the criticisms on our side.

A third challenge is the quality of our research capacity, because of the brain drain. We have had to build a lot of local capacity to ensure that the requisite skills for doing research exist. In some instances, there was divided attention between service delivery and conduct of research. As a result, in one year our projects were unduly delayed.

Capacity for Research

WHO estimates of health personnel

per 100,000 population / average per year (1994-1998)
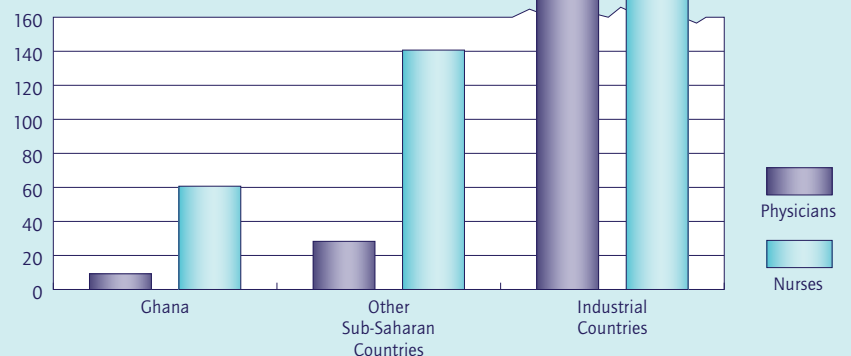
Another challenge has been NGO participation. Many of the NGOs representing the communities were not research organizations but service providers. So the input we expected from NGOs did not really materialize. This has been addressed through a special initiative that the HRP developed to improve the research skills of NGOs and to facilitate their articulation of community problems even if the NGOs were unable to do the research themselves.

Output
Notwithstanding these challenges, I think that we are making a lot of progress. We witness this each year during the annual research dissemination forum, when all the researchers and policy makers come together. The issue of the agenda not being comprehensive (with too much focus on health systems research) is also being addressed. As a result of this initiative, which has been going on for the last eight or so years, the Ghana Health Service has decided to put aside 5% of its recurring budgets for R&D. For us, this was a big and important step, because it makes available about 2 million euros for R&D. This, in our view, gives a clear indication that this HRP initiative could be sustained in any country if the relevant government is willing to commit to health research.

Summary by the Chair

Originally there were three objectives in your programme: to reduce the imbalances in North/South collaborative research through genuine cooperation between Ghana and the Netherlands; to strengthen national capacity for health research and local ownership; and to promote health research that would meet the needs of public policy makers and end-users.

Some comments: first of all on the imbalance between the North/South collaborative research. It is one thing to call something a partnership while it is quite something else to have it organized in such a way that it is a true partnership, with adequate funding from the start. If you want a partnership, it's costly and time-consuming, and you'd better be prepared for it. This is an exciting case to bring us back to reality, because before you know it we will start other partnership programmes like this and we will run into the same problems that we had for the last 15 years.

Secondly: the need to strengthen the national capacity for health research and to enhance local ownership. It does look like a number of these proposals have indeed increased some capacity, but we have to discuss it a little more to see what the capacity development has been in the Ghana case. And as far as local ownership is concerned, the agenda setting procedure does look like it was not a Dutch-set agenda; it looks like an ever more Ghanaian agenda.

You have tried to involve different stakeholders, but that was not easy. Donors always say that civil society must get involved. But NGO capacity for participation in these types of projects is limited, and sometimes costly, because NGO salaries are higher than the

salaries of the civil servants. It is one thing to say that civil society should be involved, and another thing to realize it; donors need to be aware of that.

Thirdly, promoting health research that meets the needs of public policy makers and beneficiaries in Ghanaian society, which makes it more demand-driven. Has that happened? As far as the policy makers are concerned, it is the first case that I have heard of where as part of the programme the national government has decided to make a standard outlay of 5%. It is not abnormal to allocate 5% to a knowledge intensive industry like health, yet in most countries it is only a fraction of 5% – if it exists at all. So the project does seem to have helped; after all, there is a 5% allocation. Because that is what Minister Dia was talking about, that's the priority of ministers who actually wish to engage in this type of research. Finally, as far as the agenda setting was concerned, it appears to have been more demand-driven. Whether it was really pro-poor, however, we don't know yet.

Demand-led research: How to reach the poverty groups?

Dr Shamsul Bari
Chairman of Research Initiatives
Bangladesh and member of RAWOO

Research Initiatives Bangladesh (RIB) is a research support agency that was set up to promote a knowledge-based approach to development and poverty alleviation efforts in Bangladesh. Among other activities, we run a programme for research support on poverty alleviation under the Dutch government's Multi-annual, Multidisciplinary Research Programme (MMRP). An agreement in this regard was signed between RIB and the Dutch Ministry of Foreign Affairs for a five-year period, namely from April 2002 to March 2007.

The MMRP concept was articulated in a policy paper issued by the Dutch government in 1992. The paper outlined the government's views on how research can contribute to the objectives of development cooperation with regard to sustainable development, the fight against poverty, the management of the environment and the promotion of gender equity in the South. It observed that the priorities for research are mainly established in the North and recognized that there is a need to change this situation so that the countries in the South are able to dispose of their own research capacity and are in a position to analyse their problems independently, and on that basis to frame their own agenda for research, carry out research projects and apply the results thereof in policy and practice.

It was this new concept of transferring ownership of the research agenda from the funding agencies/governments in the North to the countries in the South that attracted RIB to MMRP. Equally important was the concept of North-South cooperation, which hitherto had been missing from the policies and practices of donor governments and agencies in the North.

As an MMRP, our organization began its activities with the broad objective of contributing to the identification, prioritization and implementation of a poverty-related research agenda for Bangladesh by Bangladeshis, through participatory interaction between researchers, end-users and other relevant parties. We were convinced that research was essential for a greater understanding of the structures and processes that create and sustain poverty and inequality, and that act as obstacles to the promotion of justice and human rights. In addition, we wished to ensure that the research findings would provide a basis for advocacy and public debate on policy and law reform in the country, and that the data/analyses generated by research would be a source for public campaigns.

Knowledge production
A word about our view on the concept and mechanism of knowledge production may be useful. RIB began its work with the awareness that the concept of knowledge itself had undergone a fundamental reappraisal in contemporary discourse. A starting point of the new concept is that the bearers of knowledge can be many and varied: they are no longer limited to academia, university circles and institutions of higher learning. In fact, there is growing recognition that the common people – irrespective of their social standing or educational background – are the principal bearers of the knowledge that is important for their own well-being. We therefore took the view that sustainable development requires that people's knowledge be released, harnessed and made use of in all interventions that are aimed at their advancement.

In the last four years, we have provided financial and technical support to over one hundred research projects. They can be classified under ten broad categories, namely: 1) basic research; 2) research on issues relevant to advocacy, media and policy; 3) educational innovation; 4) health awareness and infrastructure; 5) technology-based research; 6) agro-based research; 7) research on small-scale professionals and marginalized communities; 8) research on traditional crafts and cultures involving producers and their community; 9) people's research using the participatory action research (PAR) approach; and 10) research aimed at the capacity building of young researchers.

While the list covers a wide range of subjects related to poverty, a closer look reveals a number of common trends. Two such trends stand out more prominently than the others: most of the projects deal with subjects related to the most disadvantaged, marginalized and vulnerable communities/sections of society, and there is an emphasis on the participation of the relevant population in the research process. These two trends may be said to have emerged as the niche areas or the hallmark of our activities in Bangladesh.

Focusing on the 'ultra poor' in Bangladesh
We have been aware right from the beginning that the bottom 15% of the total population of over 140 million in Bangladesh would require our particular attention. This is because the situation of this huge number of people – who are popularly known as the 'ultra poor' – has hardly improved, despite the significant achievements brought about by the government's poverty reduction efforts during the same period. In fact, many claim that in relative terms their situation may have worsened. It is indeed curious that, in the context of the claims made by the government and the growing recognition by the international community of the steps taken by Bangladesh towards meeting some of the key Millennium Development Goals (MDGs), including that on poverty reduction, the poorest section of the population remains largely unaffected by the progress that has been made. Even the large NGO community in Bangladesh, which has made significant contributions to development and poverty reduction efforts in the country, has not been able to do much to change this situation.

However, by focusing on the situation of the ultra poor, we did not wish to overlook the situation of others who live below the internationally defined poverty line, since almost 50% of the population is considered to be 'poor'. In addition, we have sought to enlarge the scope of poverty research by elaborating, in our concept paper, upon our conviction that poverty alleviation efforts must go beyond meeting the basic physical needs of people, as has been the traditional practice, and include all other human needs, including security, dignity, social respect and culture.

Initial responses
In the beginning, our experience with proposals from prospective researchers for research support was not very satisfactory. Perhaps the main reason was that it was the first time in Bangladesh that any agency had invited research proposals from the population at large, irrespective of the applicant's background, academic or otherwise. As a result, although a large number of proposals came from people from all walks of life, most of them had very little understanding of what research means and many could not even

differentiate between research and development work. It thus became clear that to advance our objectives, we would have to undertake serious efforts to develop the capacity of prospective researchers.

There were of course proposals that came from the academic/professional research community. However, most of these appeared to be revised versions of proposals meant for submission to donor agencies, such as the World Bank. Not only were the budgets highly inflated, in keeping with the rates of such agencies, but also they seldom met RIB's criteria, either topic-wise or in terms of commitment and methodology.

Proposals also came from other qualified researchers who did not belong to the consultant category. But the main problem with such researchers is that, as professionals engaged in various jobs, they have little time or sometimes even the inclination to undertake participatory research with people who live beyond the fringe of civilized society. In short, the time and commitment required from them to undertake participatory research with people was lacking.

It would be incorrect, however, to give the impression that there were no exceptions. There was indeed some, but not much, exceptional research undertaken by highly qualified researchers in the country with RIB's support. These are mentioned in the list of research/researchers. Some of this research will be cited as examples in this paper.

The need for new researchers
In view of this experience, we had to rethink our strategy. We realized that instead of seeking to attract qualified researchers who have the necessary commitment to participatory research, it might be more useful to invest in developing the capacity of an alternative corps of researchers. We realized that without such an effort, any meaningful research relating to the situation/needs of the ultra poor in the country might not be feasible.

It is important to remember that the social research that is normally undertaken in the context of Bangladesh's development planning is largely of the quantitative kind. In fact, very little qualitative research is ever undertaken to understand the realities of the ultra poor in a systematic manner and to undertake measures to deal with them specifically. The official measures that are taken to improve the situation of specific groups are often based on bureaucratic fiat. Even when they are well meant, they turn out to be mostly ineffective because they are not based on the perceptions and views of the people concerned. According to many, this perhaps explains why over the years not much has changed for the country's poorest sections.

As part of our effort to attract and/or create new researchers, we applied a number of approaches. One group that we decided to focus on is the large number of development NGOs that are engaged at the grass-roots level all over the country. It may be mentioned here that Bangladesh has the largest number of NGOs per capita in the world and that these NGOs play an important role in the development sector. Soon, a research partnership network (RPN) was set up for collaboration between a large number of grass-roots NGOs and RIB. This network has helped us to spread our activities throughout the country and to find many of our researchers.

Selected personnel from the NGOs were then provided with the necessary training in participatory research. Because of their close links with the on-the-ground reality, these young men and women quickly understood the importance of working with the poverty groups rather than simply for them. And since many of them have a college or university education, they had little difficulty in understanding and absorbing the training objectives. However, among them there were also those who had only a basic education, but who proved themselves, through their dedication and commitment, to be worthy of the task. Those in this latter group are sometimes called 'barefoot researchers'.

After training, many of these NGO workers undertook RIB-supported research projects in their respective areas, while keeping their NGO jobs. And because they normally live in the area in which they undertake research work, it has been easier for them to remain in close touch with the people and thus to earn their respect and trust. This latter aspect has been found to be extremely important for qualitative research.

Another group that took a keen interest in our work, as news about our activities spread throughout the country, is the student community. In response to growing demands, we had to organize orientation workshops in the main public universities throughout the country. We then made arrangements for selected students to undertake sensitization training on research. Here, too, the result has been quite positive. After graduating, many such students undertook research work, sometimes as a capacity building exercise, with RIB's support. Thus, slowly but surely, a new community of researchers has begun to emerge in Bangladesh, with at least some basic orientation towards undertaking research on and with the people. Irrespective of whether they will emerge as established researchers in the future, recognized by the scientific community, their value in organizing the people and initiating a process of enquiry into their own situations has already been demonstrated.

Focus on participatory research

Our efforts to build capacity and to promote participatory research have worked hand in hand: they are two sides of the same coin. With regard to the promotion of participatory research, we made it very clear from the beginning that to qualify for research support, a research project must envisage the participation of the people concerned in the research itself. More specifically, our preference would be for the people to be involved not only in selecting or validating the research objectives, but also in the research process itself, in so far as such is possible.

It goes without saying that the level of possible participation of the relevant population in a research process depends on the scope and objective of the research. In some situations, researchers have to remain firmly in the driver's seat but must try to involve the people in the process of research to the extent necessary. However, participatory research of the type that we promote does not seek to use people simply for purposes of obtaining their views or to have them do exercises designed on the outside, or to validate the research findings after the research has been completed. It should be much more than that. The people must feel that they have a genuine stake in the research process. This type of research – with a principal researcher in the driver's seat but the people concerned participating in it as genuine partners – is referred to as 'participatory research' per se, in accordance with the existing nomenclature in the country. Over 80%

of our research support has gone to this category. It should be mentioned here that we have also supported a number of research projects in which the conventional PAR method was used.

We have also tried to promote another category of participatory research that is referred to in the burgeoning literature on the subject as participatory action research (PAR). Under this methodology, all members of a community are involved in the research process as full subjects, from identifying the research objectives to being directly involved in the search for answers to questions they have themselves identified to be relevant to their situation, with the help of animators/facilitators. The researcher plays the animator/facilitator role, on an equal basis with the people, rather than as an expert. In other words, there is no established hierarchy in the process. Some PAR projects may also involve elements of action to test the efficacy/validity of the ideas identified by the people. PAR has also been known by other names, such as 'action research'; in Bangladesh, the ordinary people call it Gonogobeshona ('peoples' research'). Some 12% of our research support has gone to this category of participatory research.

Despite the differences mentioned above, it must be admitted that it is not always easy to draw the line between them. Perhaps it is not even necessary. What is important is that some new knowledge has been generated through a research process in which the people who are the subject of research participated freely, whatever the mechanism.

Some examples of participatory research

A good example of participatory research per se is that undertaken by a certain professor at Dhaka University, together with some of her colleagues and students. It is entitled: 'Investigations of Optimum Diagnostic Method to Detect Lymphatic Filariasis.' Filariasis is a disease that afflicts mainly the poverty groups all over the world. This is also the case in Bangladesh. This is because the conditions under which these people live facilitate the spread of the disease. The disease is endemic particularly in the north of the country, which is also the most poverty-ridden.

Filariasis can be treated effectively if it is detected early enough. The problem lies in the fact that the only diagnostic method known in the country is to test the blood of suspected victims that has been drawn around midnight. And, as can be imagined, it is almost an impossible task for people to take individual measures to have their blood taken at such an odd hour. For the same reason, it is very difficult for the local authorities to screen the population of an endemic locality. Hence, most cases go undetected until the disease is fully manifested. The objective of the research under consideration was to develop a method for diurnal blood testing. To do this, it was essential to motivate the population of an area in a participatory manner and to obtain their full cooperation with the research process. The result is astounding. The entire population of a number of areas now knows about the way the disease spreads and how it can be detected early and thus treated. They are willing participants in the research process, since they realize that the research is in their own interest.

While the research is still ongoing, and showing positive results, the researcher, who was uncertain about the value of the participatory aspect, is now excited about the overwhelming participation of the people, without which, she says, the results already

obtained might not have been possible. In her view, even if her research does not yield the desired scientific result, the benefit of the social aspects of the research process for the people, in terms of their awareness of the disease, is quite significant.

Another example is the research project 'Land Laws, Rights and Dispute Resolution: The Perspectives of the Poor, Women and the Peripheral People in Bangladesh'. In supporting the project, we insisted on a participatory research methodology, one that fully involves the poverty groups in identifying the typical problems they face and how they think they could be helped to deal with them on their own. The findings of the research therefore differed significantly from earlier research on the same subject.

The recommendations arising from the research were shared with the relevant ministries of the government of Bangladesh, where they were well received and assured of consideration in likely future legal reform. Moreover, as a follow-up measure, a simple version of the land laws of Bangladesh, in language easily understandable by the people, is under preparation. According to the researcher and his team, and as is evident from the research report, without the participation of the people, the identification of the specific topics that required particular attention would not have been possible.

Another good example of participatory research is 'Palli Tathya: Development of a Sustainable Rural Livelihood Information Network'. 'Palli Tathya' means rural information. The objective of the research is to address the growing digital divide between rural and urban areas and to identify the information needs of the rural poor. Our insistence on a participatory approach resulted in the development of an award-winning programme that has been recognized at many international ICT seminars (see www.dnet-bangladesh.org).

Examples of participatory action research
As stated, participatory action research (PAR) has been practised primarily in relation to specific poverty groups, all of which belong to the ultra poor category mentioned earlier. They are also sometimes referred to as the 'missing poor', because they have been largely left out of or are missing from the country's mainstream development agenda. Many of them also belong to the category of 'socially excluded' communities. Taken together, they form a sizeable population.

Examples of RIB-supported research projects involving the missing poor groups include low-caste dalit or harijana (untouchable) communities, such as the Kaora (pig-rearers) community, the methor (sweeper) community and the rishi (leather workers) community. Other, professional groups who cannot be considered as socially excluded but who certainly belong to the ultra poor or missing poor category, are the jatra (people's theatre) groups, the nagorchi (musician) community, the paper-bag manufacturers' groups, the bookbinders, the stone workers (who collect stones from river beds), the salt farmers, etc. Another category – the bedes/mantas (river gypsies) – perhaps falls in between the categories. Some new projects that have recently been initiated relate to the situation of the santals (tribal group), mundas (tribal group) and bunos (another tribal group that earlier was involved in the clearing of forests), communities that are politically, economically and socially marginalized in Bangladesh on account of their

ethnicity. It must be mentioned, however, that in many of these projects the principles of PAR were not fully respected although the participation aspects were quite prominent.

Here, I will elaborate only one example from the above list since most PAR projects are similar. The project in question related to the harijana/methor community, the members of which formerly were night-soil removers and sweepers. They were brought in from different parts of India during British rule to meet the growing needs of the urban population. Their situation, like that of other low-caste communities in the country, can only be described as very precarious. While their former jobs have disappeared because of people's changed lifestyles and new technologies, their social status as untouchables – together with the social stigma they had earned because of the nature of the jobs they performed – has remained with them. They are thus faced with a situation of double jeopardy. Many of them are jobless and all of them are treated as social outcasts, compelled to live under an unofficial but nevertheless real apartheid regime.

The project was initiated by an NGO run by members of the majority Muslim community in a district town in south-west Bangladesh. The stated objective of the original proposal was to improve the economic situation of the people by training them for alternative professions – hardly a proposal for research. However, on our advice, it was turned into a PAR project with the harijans themselves becoming the 'people researchers', engaged in the search for knowledge for their own advancement. Some members of the NGO staff assisted them in the process. The latter had been sensitized to the PAR methodology at one of the PAR workshops that are held regularly in different parts of the country. They were meant to serve as external animators/facilitators.

Over a six-month period, the members of the community got together in regular sessions with the help of the external facilitators and some internal animators chosen from among themselves, particularly those with some education background who could take notes. At each session, they discussed different aspects of their poverty, including the basic causes; identified the various players who impact on their lives and discussed how to deal with them; debated ways and means by which they could improve their lot, for example, choose/move to alternative employment, undertake self-help measures, utilize their collective strength, acquire knowledge about their rights under the law and about the relevant laws of the land, etc.

While at the beginning many were sceptical about the outcome of this exercise, the end result has been quite astounding. A number of measures that the participants chose to follow up in action were later put into effect. Most importantly, as a result of the PAR sessions, some harijana youths took the initiative to promote the enrolment of the children in the local government schools to which earlier they would not be admitted because of their caste background. They were assisted in this by the local NGO, which fought with the school authorities on grounds of human rights. Some harijan youths are now integrated as full members of the NGO that initiated the PAR process. Others, who have leadership qualities, have formed their own association, which has become part of RIB's RPN. The results from other PAR exercises have produced similar findings.

Summary and general conclusions

RIB has tried to steer a new course for poverty research in Bangladesh. We chose to focus primarily on the situation of the ultra poor because we felt that they have been largely left out of the country's mainstream development efforts and are thus in need of special attention. We also made a conscious decision to promote qualitative research on the situation of poverty groups generally, with the people themselves participating in the search for knowledge.

This emphasis is based on our belief that the bearers of knowledge in society are many and varied, and include the ordinary people. We also believe that true development must envisage innovation and change, including change in the mind-set of people.

Our experience has shown that the promotion of true participatory research in a country like Bangladesh is not an easy task. This is primarily because those who are already equipped to take up the task – that is, the academic research community – lack the time, energy and commitment required for this purpose. However, it is a good indication that at least some researchers have come forward to undertake such research, and that others are beginning to do so. All of them have found the experience and the results very satisfactory. If the process continues, the situation is bound to change further.

One way that we have sought to deal with the paucity of qualified/professional researchers for our poverty research programme is to develop a new corps of researchers. A sizeable number of new researchers has emerged through this process. Whether the country's mainstream research community will recognize them as qualified researchers in the course of time remains to be seen. It is gratifying that, as their work becomes known, more and more people – including some from the qualified researcher category – are coming forward with research proposals that incorporate meaningful participatory methodology. This is a hopeful sign for the future.

With regard to PAR projects, the results obtained so far have lent credence to the claim of practitioners all over the world that PAR can empower people by unlocking their capacity to construct and use knowledge for their own advancement. Furthermore, it helps to develop their capacity for inquiry, both individually and collectively, thereby contributing to discovering their potential for self-help and their collective strength, and that it helps them to gain considerable insights into their own situations and thus to become their own agents for change.

PAR is also receiving growing attention from academia. Many scholars, teachers and students are seeking to learn about the process. Our workshops on PAR attract large numbers of participants from all over the country. A request has come from some members of the academic community at Dhaka University for the production of a reader on PAR, which is under consideration. Once this has been completed, efforts will be undertaken to include the subject in the University's curriculum.

Can PAR – or participatory research in general – replace conventional quantitative research? The answer is 'no'. There will always be a need for macroeconomic analyses of the economic, social and political factors that impinge on the lives of people and are important for development planning. But these alone are not enough. The qualitative

knowledge of the type generated by RIB-supported research projects can play a significant role to fill the gaps left in quantitative research. The process of generating such knowledge also helps people to understand their own role in development and change.

We hope that our research findings will support the claim that an important key to poverty alleviation is the enhancement of people's ability to understand their problems and strengths, their abilities, the world around them and what they themselves can do collectively for their own advancement. Only when the field is thus prepared can the seeds of development and change germinate properly and grow in a healthy fashion.

That such unconventional work has been possible in a country that is not known for being a knowledge society, and where funding for such efforts is almost non-existent, is due largely to the support it received as an MMRP programme. More specifically, it has been possible because of the rare opportunity we got to set our own research agenda and to implement it in the way we saw fit. Its research-support policy was thus guided only by the demand of the people. Without this freedom, such experimentation would not have been possible.

We believe that its contribution to the evolution of a knowledge system in Bangladesh has been significant, and that this is relevant to the country's poverty alleviation efforts. However, we are aware that we have only been able to start a process and that there is still a long way to go. Real success will come only from the acceptance or recognition by all concerned of the validity of this approach. This will take time.

All this – together with the attention from the academic and the scholarly community, as well as from the ordinary people – indicates some recognition of RIB and its mission in the country. Can one see in all this the beginning of an alternative paradigm for poverty research in Bangladesh? I hope one can.

Innovation: Lessons from the UK funded crop post-harvest research

Andrew Barnett, MSc
Director of the Policy Practice Limited,
United Kingdom

From 'Research' to 'Innovation'

The purpose of this talk is to report on a study of the Crop Post-Harvest Programme. The programme is funded by the UK's Department for International Development (DFID), which attempted to transform their research from a traditional research programme into one that focused on innovation. The main objective of my study was to learn the lessons from this large programme that contained 155 projects undertaken in developing countries over ten years.

A bit of history

The DFID has been through an evolutionary change in recent years, partly driven by policy 'White Papers' requiring a more poverty-oriented approach in all the activities that it funds. During this process, the DFID realized that much of their research was not read, let alone used. The research management model that they were using was that researchers would do research and the results would be taken up by DFID specialists in developing countries and at headquarters in London, and these specialists would then mainstream the research into their policies and actions. It was a top-down approach, but at that time it was the only way to integrate research into action. But in 2000, the DFID implemented a major change in policy that effectively told the researchers 'If you are going to do research, it must have an impact on poverty'. Many researchers did not agree with this approach and the resulting change in their responsibilities.

As part of this process of change I was commissioned to write a Research Policy Paper for the DFID. This introduced the word 'innovation' into the policy debate within the DFID for the first time, I believe. This was followed some years later by the DFID's own Research Strategy for 2005 – 2007, which was associated with a considerable increase in the budget for research. One of the largest elements of this new funding is a single 37 million pound contract to 'convert research into use', mainly in the agricultural sector.

The DFID also appointed a chief scientist for the first time. One of his tasks is to write a 'science innovation strategy'. I believe that RAWOO's own document on this topic would be a useful contribution to this process, as it demonstrates what can be done.

The Experiment

The managers of DFID's Crop Post-Harvest Programme (CPHP) saw the changes that the DFID wanted and decided to conduct a bold experiment. They decided to see what could be learned from the literature on innovation and then to apply what they had learned to the way they funded research in future. In effect they were the first programme within the DFID's research programme to adopt the so-called national systems of innovation to guide their approach. Many other programmes subsequently adopted such elements of this approach as 'participation' and 'partnerships', but none did so consciously or within such a clear intellectual framework.

The managers of the CPHP had already started the process of shifting the control over research to Southern institutions. For instance, the Food Research Institute in Ghana was said to be the first 'indigenous' institution to take management control of a DFID-funded agricultural research programme. But it was probably Andrew Hall, now based in

Maastricht, who persuaded the management team to learn from the innovation literature.

The CPHP implemented the new approach by insisting that in order to win a research grant, all researchers would have to form coalitions with other relevant people and organizations in the innovation system, particularly those people who were likely to be the users of the new knowledge that resulted from research. They were required to work together from the outset and to control jointly the research funds that were available. This shift substantially changed the nature of the research undertaken and the methods that were used. Considerable assistance was provided by the programme to train researchers to form and manage these coalitions and to develop funding proposals together.

The CPHP management also required the researchers to report on institutional change and to write institutional histories, because the output of each research project was not only scientific results but also institutional change – which they defined as 'the rules of the game' associated with undertaking research and producing innovation.
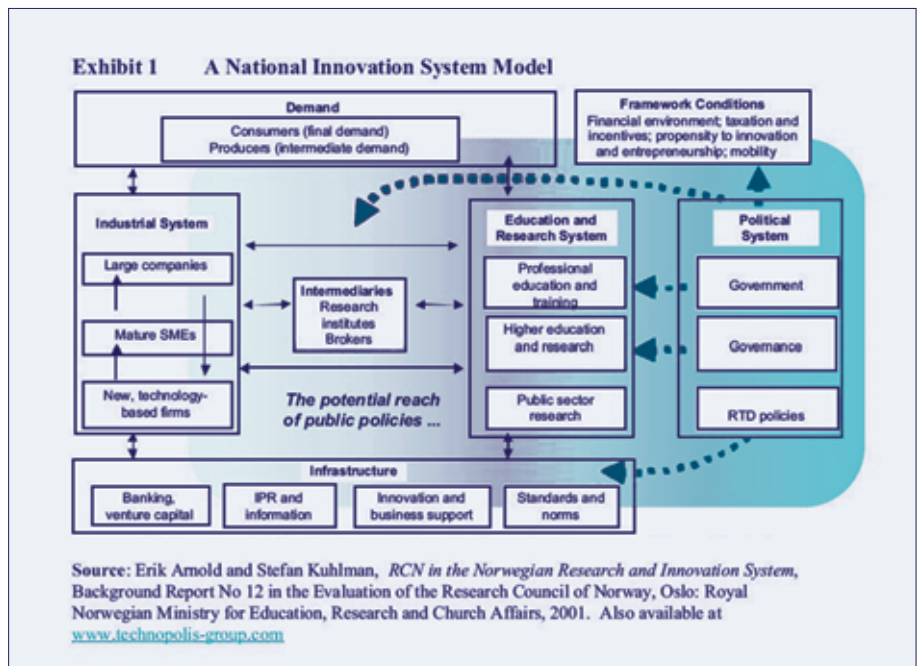
The innovation system
The concept of 'innovation system' dates back some twenty or thirty years and draws on the ongoing debate about why Britain appeared to have so many Nobel prizes but only modest increases in productivity. This was contrasted with what appeared to be the Japanese experience at the time: the country seemed to be innovating tremendously to increase productivity but winning relatively few Nobel prizes. Many of the answers to this question were to do with the research culture and the enabling environment. But the essential determinant of innovation appeared to be that the suppliers of new knowledge were intimately engaged with the users of that knowledge.

Innovation is defined in this context as the economic application of new knowledge, that is, the insertion of new knowledge into the production of both goods and services. It focuses attention on the whole system instead of just spending money on the research element of the process. Effective innovation, however, seems to require shifting political power from a narrow to a wider set of actors. 'Participation' has become a sort of fetish, but it is not usually the case that if everybody participates, a satisfactory and friendly outcome will result. Some people are just more powerful than others. These power relations have to be confronted if effective innovation is to take place.

The innovation system approach attaches great importance to the context of rules, framework conditions, institutions and infrastructure that are required to facilitate the process of putting knowledge into use. Furthermore, it requires a continuous two-way communication between researchers and the users of knowledge, because it is inherently impossible for the users of new knowledge to know what the suppliers of such knowledge have to offer. This appears to be the essential, statistically significant indicator of the difference between innovation processes that work and innovation processes that do not work. Particularly important in this process are the intermediary organizations that act as the interface between suppliers and users of knowledge. In most developing countries, NGOs may be the best translators of the needs of users because they work closely with people at the grass-roots level. Research suggests that

innovation requires the demand side to be strengthened and the supply side to be represented by the research system; it is not that one is better than the other, as both are needed.

Exhibit 1   A National Innovation System Model

Source: Erik Arnold and Stefan Kuhlman, *RCN in the Norwegian Research and Innovation System*, Background Report No 12 in the Evaluation of the Research Council of Norway, Oslo: Royal Norwegian Ministry for Education, Research and Church Affairs, 2001. Also available at www.technopolis-group.com

Impact on poverty

In my research I tried to find a quantitative relationship between the people who adopted this new approach to their research and the impact on poverty. I developed a series of indicators of the poverty impact, but these indicators proved impossible to apply in practice for two reasons. Firstly, because research is only one (often small) part of the process of reducing poverty. And secondly, because the precise causal relationships are complex. There are literally thousands of forces interacting between research inputs and poverty reduction outputs. It is just not possible (or honest) to ascribe these poverty reduction impacts to the amount of money that, say, DFID or DGIS puts into research. This is of course a huge problem for research donors, but I think it raises a much more sophisticated question about how to allocate resources under conditions of uncertainty. Nonetheless, the programme could show a very wide range of impacts on both policy and practice.

The Conclusions

The CPHP therefore was very exciting as an experiment. It wasn't done perfectly, but we have learned a lot from this process. My report lists these many lessons about research management and the pitfalls to be avoided. The approach adopted by the CPHP certainly provides prima facie evidence that it is more likely to result in innovation than the previous approach. What is particularly interesting is that innovation occurred even

at the level of individual projects, even though the underlying literature is about changes at the national level. The approach was particularly well received in the developing countries, because it increased their control over the research. But this transfer of control was not just to the local researchers and other elites within the country, but also to a wide range of other people.

Summary by the Chair

Thank you very much, Andrew Barnett, that was very stimulating.

Let me start with the point you made about RAWOO, because it is interesting to hear that RAWOO's advice stands the test. Here in the Netherlands we have had quite a bit of criticism of this RAWOO document, so I was surprised to hear your positive evaluation. Personally, I too subscribe to your thesis. There are three issues in your presentation to which I should like to draw attention.

You integrated the two previous discussions from the donor perspective. You said: 'We have to move out of this vague partnership; we have to move out of that type of easy thinking, because it assumes a partnership that doesn't really exist.' And therefore we move from partnership to a coalition approach. Now, coalitions are based not just on people or on individuals, but also on shared interests. I think that is the key element in your analysis. But it struck me that this whole approach really is a kind of condensation of the philosophy of 'farmers first', but at a higher level. This is the first point: moving from partnership to coalition.

It is interesting to see that research – by for example Andy Hall, Norman Clark and others – pays off. If you want to invest in it as a donor, you get your money's worth. Therefore I'd say to the Dutch government: it will pay off if you involve the poor, if you involve their knowledge and if you make a coalition.

My last point is that sustainable results are not necessarily reflected in the statistics. I say that because in our parliament and in our government we reduce many things to simple indicators. The MDGs suffered from that kind of thinking as well, in other words, from reductionism. If you want science to be a public good – after all, it comes from public money, and it is a global project that you are contributing to – then don't reduce it to simple indicators. It is a trend among civil servants to reduce every budget or annual report to figures, to indicators: 'Did we achieve them or didn't we achieve them?' The officials are caught up in the web of these indicators and your argument has been a very good argument against it.

What you have shown is that the impact of this type of methodology goes farther. It is likely to lead the DFID to a new way of looking at research funding, research management and research evaluation. And that means that we will have to make new coalitions. We will probably not call them partnerships, but it will mean a large task for donors in the North – and that is the real question that RAWOO addressed in its advice.

Panel Discussion

Panel members
Thea Fierens, MP PvdA (the Netherlands)
Julia Gitobu, Professor at Kenyatte University and member of RAWOO
Akke van der Zijpp, Professor at Wageningen University and member of RAWOO
Ken Giller, member of the WOTRO Board of Directors

Thea Fierens

For the moment I have to be modest, because I missed a part of the programme while I was stuck in a traffic jam. And that's a pity, because I really think that RAWOO's work is extremely important. I'm going to try to make a few points on RAWOO's work and also on the work of science. This is because, unfortunately, science is no longer our first priority. And that applies not only to science but also to primary and secondary education in this country.

We have very good universities, but we don't invest enough in them. Nor do we invest enough in science and knowledge for development cooperation. It's my deepest belief that we have to reinvest in this issue. Because sometimes we no longer know how to deal with problems in this field. In the beginning, we thought that we could help the South with the knowledge of the North. But that's not true. We also have to use the power of the South and the South-South cooperation in science. Perhaps the North can facilitate that process. Cooperation between North and South is possible only if there is solidarity. A few points.

First, we have to make new commitments; we need a holistic, demand-driven approach. The South must take the lead through a coalition of MPs, scientists, NGOs and civil servants. That is important, because we in the North are too one-dimensional. Our demands are too output-oriented and are insufficiently focused on the process and on empowerment. But the world is very complex and combating poverty is the most difficult thing on earth. It has so many dimensions. In these coalitions we have to work together with the poor. They must have the lead, because they know their own problems best. And this approach with all stakeholders needs to be holistic; we shouldn't handle single issues like health or HIV or agriculture.

Second, our cooperation should no longer be from the North to the South – no more brain drain – but in the South and facilitating the South. It can be done; it's a small world, thanks to the Internet.

Third, we need lessons learned, and a good system with which to disseminate these lessons. We have many reports and evaluations, but they are not distributed or used properly. RAWOO could help with these problems.

Perhaps it would help if we were to change the allocation of our financial funds for development cooperation. Right now, one third of the budget goes to multilateral organizations, one third to bilateral aid and one third to NGOs. How about spending almost nothing on bilateral aid? As you know it is my belief that this is no longer very effective. The multilateral organizations and Europe could still get one third, just like the

NGOs. The rest could be allocated to science. In my opinion, this could make new commitments and partnerships work.

The Chair

Ms Fierens, that means roughly one and a half billion euros. That would make the work of scientists and civil servants in this field really challenging!

Enric Hessing, *member of the audience*

Ms Fierens, you mentioned stopping the brain drain from the South to the North. I tend to agree with you, but how do you think we can achieve that? Could it be done by spending more money on creating an enabling environment in developing countries, or do you see other options?

Thea Fierens

If we take science seriously and we seriously facilitate science in the South, and commit ourselves to partnerships between science and development cooperation, there will be new challenges for scientists in the South. There will be a reason for them to stay in their home countries and not to come to the North. They could stay where they belong and where the development issues really matter. If we take science seriously, if we really believe that knowledge makes the difference, we have to invest in it.

Enric Hessing

Are you going to explain this to the Minister for Development Cooperation?

Thea Fierens

Yes – and that's a promise. Within a few weeks, parliament will have a debate with the Minister about our trip to Bangladesh and Sri Lanka. In Bangladesh we visited a few promising projects that have a strong connection between science and development cooperation. I think that these projects are good because of this connection, and I will tell the Minister so.

Ken Giller

It would be great if we had such wonderful pots of money to give away, as Ms Fierens proposes! I must say that I enjoyed this afternoon's discussion enormously. The chairman has already summarized many of the highlights. What really strikes me is the focus on innovation systems in particular, recognizing the diversity between countries and situations, between regions in countries, between stakeholders in villages, and even between different households. I think the three speeches this afternoon have significant overlap: all three were about the change in these systems, and how we should actually do our work.

I just want to say a few things about developments within WOTRO. WOTRO is one small arm of the NWO – the Netherlands Science Organization – which itself is going through a transformation because the NWO has declared that in future science has to be much more linked to society, that we have to come down from our ivory towers. I know that the NWO is regarded by many as an elite scientific organization, a guardian of pure science in the Netherlands. But the challenge within the NWO is to link to issues that are important to society. For WOTRO, this change is not a hard one. Last year, WOTRO

decided that the new science policy for the next five years will be focused on the Millennium Development Goals. So for WOTRO, the link to things of importance to society speaks for itself.

The stimulus for WOTRO to do that is a partnership with the Ministry of Foreign Affairs, which has become stronger in recent years. And this is the deal: the science that is being financed through WOTRO will in future be geared towards the MDGs – but not solely towards the goals themselves, but towards scientific questions related to the goals, with a focus on poverty, health, the environment and global relationships. Within WOTRO there are special working groups looking at each of these issues and trying to distil research questions of key importance for investigation. Many of these issues link together several of the MDGs – because you cannot look at health without looking at poverty, and you cannot look at the environment without looking at issues of poverty. The global debate about aspects of the vulnerability of poor people links to poverty, environment, health and, of course, global relationships. The whole excitement in research these days comes from the idea of crossing the boundaries between different research communities and between different goals.

To summarize: the thinking about science within WOTRO is sort of multi-agent, multilevel, multi-scale and interdisciplinary. It's really trying to look at a fusion of disciplines rather than parallel analyses; to look at dynamic systems rather than the components, and at embedding innovation systems within local settings. So we're trying to understand how innovation systems can work within different contexts.

Capacity in Africa

I should like to make a couple of other comments, because within WOTRO we often speak about partnerships or coalitions. Obviously, partnerships need local capacity. My main goal in life is to build capacity in local universities, particularly in Africa. But in the last 20 years, I've seen massive differences in education between countries in East and Southern Africa. In Kenya, for instance, the number of PhDs has rapidly increased over the last 20 years. The new government recently declared a policy of free education for all, and that was a very positive move. But that's in sharp contrast to Malawi, where I was two weeks ago. There, the number of PhDs in agriculture and all other fields has been declining in recent years. That's partly because of the brain drain to the USA and South Africa, but it is also a consequence of the HIV/AIDS pandemic. I know that for sure, because three of the four Malawian students that I trained, died within three years after completing their PhD. So when we are talking about partnerships and centres of excellence and so on, we have to recognize these huge differences in capacity between countries. We should play a strong role in capacity building if we are going to work on these important goals, and nationals of African countries are to take charge of their own problems.

I think that in the Netherlands we have one university for every 1 million to 1.5 million people; in Africa, there is one university for every 15 million or so people. In this respect I should like to stress that it has to be two-way capacity building. Remember the capacity that has been built in Wageningen around the idea of innovation systems, and the strong links to the types of approaches that were developed in the tropics. Those ideas came originally from the tropics and have matured enormously since. And that

could be done because we were dealing with problems of cross-cultural research and this allowed us to realize rapidly how poor our own understanding was. This means that lessons learned in the tropics could then be applied back in Europe, so our own society has profited from the two-way interaction of capacity building through research in developing countries.

I think the major challenge for the future is how we look at innovation systems, how we embed them in science; that will be one of the main issues for WOTRO in the coming years. Another point of interest is the question of impact. I think that we as scientists can do quality science if we ask the right questions, which will also allow for scientific innovation.

Khamis Mwinyimbegu, *member of the audience*

I should like to ask you, Mr Giller, when you spoke of the capacity building in the South, to what extent is the presence of WOTRO being felt over there? What is the orientation of your partnership – is it only North/South, or is it also South/North and South/South?

Ken Giller

That's an interesting question. If we look at the way research within WOTRO is funded, in the past most of it has been donated for individual PhD training. Of course, that would be at a research level; we are not talking about building capacity at school level here. We tried to train people who were well embedded in national institutions, ministries or universities in the South. These people would go back to their countries and train other people in research. There have been somewhere in the order of 20 to 30 PhDs a year over the past years. In the new form, WOTRO will put the emphasis on getting more coordination between research projects, and on larger programmes that will involve a number of researchers from the South and the North and will lend themselves to cross-country collaboration and South/South collaboration.

The Chair

Thank you, Mr Giller.

I should now like to give the floor to Julia Gitobu. You've been with RAWOO for quite some time, Julia, and you helped to prepare the last report. What are your reflections on today's discussions?

Julia Gitobu

I should like to comment on this afternoon's presentations, because we don't have that many case studies. What I gathered from both Shamsul Bari and John Gyapong is that there is a community with gender sensitivity. However simple it seems at a community level, we need to have some success there, we need to have some impact. For example, in Shamsul Bari's presentation, when he talked about the poorest of the poor, he wanted to solve the problem of poverty, which is actually addressed by one of the MDGs. But unless you're going to change the attitude and the practices of the people who are going to benefit from your programme, you'll get nowhere. Which means that you must have your gender setting right to continue with programmes aimed at reducing poverty.

In John Gyapong's case health is a very sensitive issue, and unless you want the people to change their attitude and practices to create awareness, it doesn't quite work. So the process is much longer and will take more time. But we need to move a little bit further than the research and the results. We need to move further in using science and technology for innovation. I think the creation of knowledge is innovation.

So I learned this afternoon that partnerships and collaboration are very important. But we need to define who our partners are and at what level of the community they operate. Our partners can be at the lowest level as well as as high as the institutions that get involved in the research. Especially South/South collaboration needs strong partners in research and in the dissemination of the resulting knowledge. I really don't care what form partnerships take – whether you have a team in the North and a team in the South – as long as there is partnership. This is also emphasized in RAWOO: partnerships are required in order to encourage, empower and even help scientists grow, with the participation of the intended users of the research. Andrew Burnett even indicated that there should be more players and more people participating, but the more people involved, the more difficult the process. But there is no doubt whatsoever that the users of knowledge and research need to be involved. Otherwise we end up with research reports being put on the shelf, where they gather dust and nobody uses them. A lot of modern institutions in Africa that create knowledge don't know what to do with it, because the knowledge cannot be disseminated. This is where RAWOO and other institutions in the North can assist the institutions in the South.

Training people

The consultative process was also a very interesting aspect in the discussions today. The experts and the people of the community are the stakeholders. But it takes time, and I agreed with John Gyapong when he said that this does not always work because it is a very long process. I was involved in negotiating a proposal to support twenty women from twelve African countries to do their PhD on the role of women in relation to HIV/AIDS. But when you bring in experts, whether they are from the universities or research institutions or from the community, they still have to deal with the information that is required in order to move on with the project. But this is also a part of capacity building. Sometimes you think that the South only wants people to be trained to be researchers. But the fact is, when we support students, we are actually building capacity for the future. We still can ask what will happen after we've got so many university professors and students. Are we going to use these people to make a difference in the community?

Some of you were asking what to do about the brain drain. The brain drain will not go away as long as scientists are paid extremely well by institutions in the North, while they get peanuts in the South. It's a fact that one cannot live on a salary of a professor or a researcher in the South. It is good to train more and more people. One day, things will be better and they will return to their own countries.

The last thing I should like to mention is sustainability. The successful approaches need to be sustained. Do they get sustained by the dollar or do they get sustained by the people themselves? When community people are involved in making decisions and doing things that have an impact on the whole community, they can learn to sustain their effort using results of science, technology and the innovation system approach. In this

you cannot just look at the demand, you also need to look at the supply: as Andrew Burnett stated, the whole chain has got to be involved.

Jaap Bijl, *member of the audience*

I should like to ask Julia something. Julia: you spoke about North and South, but is it not important that we start thinking about getting such enormous countries as China and India involved in this sort of dialogue?

Julia Gitobu

I think the more the better, because their ideas will be very useful. But I thought you were going to ask me if we should be looking at South-South cooperation. Because there are some institutions that are doing extremely well. Perhaps a research institution in West Africa could collaborate with one in East Africa, but needs resources to do so. And I want to ask Minister Dia if there is any commitment by NEPAD or the AU to fund research in Africa? If so, we could invite anybody to come in and be our partner.

Minister Gassama Dia

The African initiative has a research funding mechanism for more research in Africa. And that comes from local and regional resources. There is an attempt to increase the level of 0.025 per cent to a higher percentage, which will be really national funding.

Akke van der Zijpp

I'm very pleased that the system approach – the utilization of systems in innovation – has become a focus in our discussion here today. But I also want to say that most of us at Wageningen University have an approach to science that is still mono-disciplinary: I don't want to give the impression that all science in the Netherlands is interdisciplinary and systems oriented. We are initiators anyway, we are trying to explain that there is power in this type of science and there is still a long way to go to get it better established.

This leads me to the question on education and curricula. One of the complaints is that the South does things differently from the classical system we have here. I should really like to see that at least there is also space for interdisciplinary and system science and education at many universities, because I think we need that. We need it to complement the mono-disciplinary approaches and only together can we get somewhere. So there is a mission that I think we need to pursue.

I should like to come back to an issue that Hoda Rashad brought up this morning, when talking about equity, values, quality and relevance issues. We emphasized this in our RAWOO advisory report, and I know that WOTRO is also working on the quality and relevance issue. But it is not easy. Most of us are imprinted through behaviour and genes. And the influence of our educational history of being trained in a very mono-disciplinary environment is very difficult to leave behind. We're encouraged by our colleagues, because they tell us that we are doing extremely well, and we're also imposing this to some extent on our colleagues from developing countries who are being trained in the Netherlands. And when you're trained at a young age, this is imprinting and you take the model back home. And then there is the big question: are you going to earn a living and an income for your family – or are you going to leave? This is part of

the brain-drain issue, but it is also part of our struggling with quality and relevance. We have to ask ourselves: what are we pursuing in science? These questions are important not only for developing countries, but also here.

Another question is: who decides what is relevant? Who decides what is important for me in my life? Your everyday reality influences your point of view. I think that scientists in the South have different experiences that make them phrase knowledge questions differently, and pursue scientific problems in another way. Of course, we can interact on how we do our problem analysis in the broader sense. But this is an area where all those who are interested in development – and I am not saying just North or South – have to rethink how to manage this.

Another aspect of North/South differences is that we have different ideas about what we consider public goods. And from my field of animal science, I can give you some examples. In the Netherlands, we were very late to inform the public that our very intensive farming systems were giving us a nutrient emission pollution problem. It took probably at least 15 years before our politicians and policy makers were convinced that the scientists were right in their assessment. But the situation now is that livestock is completely out of the question in terms of help, aid or science for developing countries. Because we don't want our pollution problem to be exported. Even with some 604 million farmers in Africa relying on livestock, we are not allowed to put money into that type of aid or agricultural science. While doing so we could improve the environment, financial incomes and nutrition. Or let's take the Chinese population. Nowadays, they eat 40 kilos of meat on average and they have grown several centimetres in height. At the same time, the Chinese farmers are poorer than ever. They are neglected, because 80 per cent of this development in animal production is from industrialized, large-scale, polluting companies.

I want to finish with a last example about bird flu. We in Wageningen did a small study with data from the Mekong Delta in 2002 and 2004, and we looked at the effects on the small mixed farming systems in the Delta. The farmers told us that bird flu had sometimes been a challenge, but that it had not affected their income. They would have fish, fruit or pigs, because of the mixed nature of their farming system. They might have lost some chicken or ducks, but they had alternatives. At the same time however, the GDP in Vietnam decreased by 0.5 per cent. The question is again whether the measures taken were justified, given the effect at the farming system level. What were the trade-offs: risk of human illness versus high national costs possibly also affecting human health services?

Sietse Wellema, *member of the audience*

I should like to share some experiences, which will lead to a question. I worked at the Institute for Food Innovations and if you talk about bias in this discussion, there is also a bias towards the public domain. I worked with technologists who do a lot of research on development, application research and other essential elements of innovation. It also links to the innovation paradox, which means that there is a lot of research that ends up not being used. Now we are looking for ways for small and medium enterprises to use innovative technologies. Since the RAWOO report is pleading for thinking in terms of innovation systems, and at the same time is addressing the MDGs, my question is: where

is the commercial domain? It faces technological challenges, because a lot of the technologies are only partially knowledge-based, and also institutional challenges, because if you talk about coalitions with retailers and agricultural companies the institutional dynamics are quite different from the ones we talked about his afternoon.

Akke van der Zijpp

The example of China was, of course, also about Thailand. They both increased poultry and pig production enormously. And that is because there is capital to invest and there is knowledge from the West to utilize. There could be other situations, but they need to be institutionalized and they need to invest in educating farmers to provide the products that are required for these emerging markets, and they need organization. I don't know enough about West Africa, but I think in crop production and horticulture there are very good examples of farmers' organizations that are capable of organizing themselves. We have them of course in Kenya in smallholder milk production, but there have been some problems with the cooperatives. So I think in terms of what can be done. Milk marketing in Thailand is also a very good example, in terms of the dairies' cooperative systems that can work. But it requires inputs that have to come from a public source. They don't come by themselves because the poor people need some source of communication establishing their problem presenting their problem, and being heard.

Lessons learned

Caroline Wiedenhof
Head of the Research Division at the
Ministry of Foreign Affairs

I should first like to clarify that the research policy paper was written from the perspective of the role that the Research Division sees for itself in fostering research for development. What I have heard today at the seminar has strongly reassured me in several ways. My division focuses on knowledge and innovation more than on research as such; research is seen within the broader context of knowledge and innovation. I'm convinced that this is a good approach, but feel that today I have hardly been challenged to defend it. The innovation discourse, however, is overwhelmingly dominated by science and technology. I should like to refer to Professor Hoda Rashad, who made it clear that the aspect of social innovation, empowering and equity should not be underestimated. I wonder whether these aspects can be incorporated in the new approach. At the moment, though, I do not see an answer to this question.

I should also like to underline the fact that the approach that has been chosen is intended to integrate research at the bilateral level, the multilateral level and the central level at the Ministry of Foreign Affairs. The approach, however, is very much bottom up. The thematic departments are asked to formulate knowledge and research strategies. The embassies are asked to rethink their programme, estimating the possibilities to integrate science and technology. This method is in a way quite silent, and that is exactly what we want to achieve: a silent revolution that promotes research and knowledge in the ministry.

In reference to the presentation by Mr Sistermans, I should like to mention the importance of the top-down approach. There must be the political will to give priority to knowledge. Combining the bottom-up approach and the top-down approach presents me with a dilemma. What I have heard today at the seminar has convinced me that attention must be paid to the political side – the top-down approach – while keeping in mind the bottom-up approach. One of the ways this could be realized is to reserve 30 per cent of the official development aid for science. I am convinced, however, that this would not be a good approach, because it could imply the end of the innovation system approach, which is meant to nurture existing knowledge structures. Therefore I do not believe in such a new input goal.

I shall therefore be leaving the room today with a question and a dilemma. However, it is said that dilemmas are not to be solved but to be worked on.

Closing remarks by the Chair

Relevance of science

Does knowledge really make a difference? To help us to answer this question, I shall repeat the anecdote recounted earlier today by Akke van der Zijpp, who is a member of RAWOO and a professor at Wageningen University. She recalled the day that a certain minister of agriculture visited Wageningen. Being a blunt man – like most Dutchmen are – the minister said: 'I've come to Wageningen because you invited me, but to tell you the truth, I've been asking myself what I'm doing here. The government is paying you millions and millions of guilders, and I'm wondering whether in return we've ever got one bit of advice that has facilitated the work I'm doing as minister of agriculture.'

Well, that was a nice challenge. One of the other professors was just as blunt as the minister and took up the challenge. In general, you don't interrupt when a minister is giving a presentation – but this man did. 'Mr Minister,' he said, '15 years ago we brought to the attention of your ministry the fact that nutrients were entering the soil and that this was likely to cause problems. Unfortunately, this early warning did not meet an early listening. The Netherlands had to increase its animal production figures and as it was managing to do so, a scientific warning was the last thing that ministry officials – or even the minister himself – were waiting for.'

Today, we still face this problem: a gap between early warning and early listening. In order to bridge this gap, we have to define what a 'relevant scientific fact' is not only in the eyes of scientists but also in the eyes of policy makers. In the example I gave, the problem still wasn't a 'relevant scientific fact', although it had been brought to the attention of the government several years earlier.

As I listened to today's speakers, I couldn't help thinking that we're living in a time when a radical change in the global order is taking place. Traditional concepts like 'international cooperation' are fading. Most of the traditional concepts that were part of our education, and which perhaps are still part of the education of students today, are becoming irrelevant by the day, especially in the area of knowledge flows. Financial flows and knowledge flows probably are the most globalized phenomena in the world, and both implicate inequity. Nowadays, there is a brain drain from the Netherlands to China: China is importing Dutch students to take care of its intellectual needs – even though China is still a recipient of Dutch development cooperation. At the same time, the Netherlands is paying Indian scientists to come and teach in our high schools, since we are short of mathematicians and science teachers. That is the changed reality of 'international cooperation' as far as knowledge exchange is concerned, as developed during the past three or four years. Our concepts do not cover these new types of phenomena. We had better be prepared, otherwise the above-mentioned minister of agriculture will be telling us that we haven't been telling him in time. We are indeed facing a very radical change.

The North American social scientist Caroline Wagner has shown how the knowledge system is integrating at the global level. Different centres are developing very quickly at the regional level in Brazil and – the most striking developing knowledge centre of all – Singapore. In the next five years, Singapore will probably become the dominant site for biotechnology. This may not be relevant to Africa, but at the moment we are certainly seeing a number of relevancies. I think that most of us did not realize that, through

growth, Bangladesh is reducing its poverty problem by 1% a year. Those are the concepts that we need at this moment.

Capacity development

A lot has been said today about the articulation of the knowledge potential and the capacity development in the South. The notion of capacity development, however, may be a term of yesteryear. What has been said at this seminar refers to a totally different notion and meaning. Like the development of the capacity of the poorest 15% in Bangladesh to be heard through people's research, there also is capacity development for knowledge management, as Mr Bari has made clear. This type of participatory research gives us – as far as methodologies are concerned – many things to think about. When we talk about capacity development for local knowledge, we are not just talking about what we used to call indigenous knowledge. We are talking about totally different things as well, like in the lymphatic filariasis case discussed by Mr Bari, where the 'missing poor' of Bangladesh had their say.

New types of knowledge

It seems that at least from a Dutch perspective, we are moving beyond the demand-led ideology. This is important, because for 15 years we have had a very strong demand-led ideology – and that was part of the problem. There seems to be a new type of thinking where demand meets supply, as Andrew Barnett has been indicating. We have to look at new types of knowledge. The Ghana case described by Professor John Gyapong showed us where this type of demand and supply can lead to. These very interesting developments took their time. In Bangladesh as well, these new developments took years before being realized. But once it is in place and working, we can actually strengthen systems of innovation, and we can increase the relevance of the agenda setting as well as the scientific results.

Many of the Dutch-funded multidisciplinary research programmes were good on process, but poor on product. We have now some indications that this relevance can be certified.

Rethinking methodologies

We are also moving beyond the notion of simple partnerships. We are entering into coalitions based on clearly defined interests. The key questions are questions of equity, which cannot be asked on the global or national level only. They have to be asked at different relevant levels. Only then will we be able to see whether we are achieving something and whether the knowledge that is exchanged is really effective in diminishing the plight of the poor, as Ms Cecilia López Montaño and Ms Hoda Rashad have indicated. This means that we have to rethink the methodologies for setting or valuing the targets. We also have to rethink what we wish to achieve with the Millennium Declaration of 2000. This declaration has a broader scope than the MDGs, which were derived from the Declaration. To put that up for discussion is a task for intellectuals or academics.

In the discussions about the MDGs over the past years, we particularly lacked a rethinking of the methodology for achieving them. We may very well achieve certain goals, like getting the required school attendance of girls in 2015. But what is the point of girls finishing school without sufficient relevant knowledge? Getting girls to go to

school, or giving girls an education, is not the problem. If general social relations do not change, we will be in exactly the same position we were in before the year 2000.

What does this have to do with RAWOO?
A number of speakers today indicated that RAWOO is significant and that the report on the MDGs was most interesting. RAWOO was created at a time when development cooperation mattered. RAWOO should become more significant, being the one and only remaining South-North advisory council for development-oriented research. RAWOO is capable of reflecting on the developments mentioned above, beyond the development notions of the 1990s. That is the real work of RAWOO, a platform where representatives of South and North can reflect on the radical changes that are occurring. Mind you, much of that does not happen in UNESCO, and only some of it happens in other UN institutions. Most of these institutions are, however, caught up in the rhetoric of the respective sector: they are issue oriented and therefore limited. And that is why the thinking and searching within RAWOO is – at least to me – so important.

Which brings us to the question how RAWOO can convey its messages to the Netherlands Ministry of Foreign Affairs. The ministry's chief scientist himself is suggesting that the ministry 'might not be so open to some of the thinking that comes from RAWOO'. And RAWOO should advocate its knowledge not only to the top of the Ministry of Foreign Affairs, but also to the top of other ministries or to heads of government. That is an ambitious task – but why not give it a try?

I propose, for example, to build a stronger link with the African ministers for science and technology. This is an exciting new development of the African Union – so why not try and find a way to link it to development agenda setting? Minister Dia has indicated to us the value of the work done by RAWOO. Why not finance a specific activity for the African ministers of science and technology? The Dutch are already financially involved in Africa. RAWOO could, for example, help strengthening constituencies for science and technology in Africa and in the North, and by doing so would play a significant role in the global public debate on knowledge flows.

But let us not fool ourselves. These institutions are weak in Europe as well. We may wish to be a knowledge society, but our government hasn't taken the steps needed to get there – as Mr Sistermans pointed out to us.

Annex 1. The Programme

Knowledge makes a difference: a seminar about science and the Millennium Goals

Programme: March 2006

09.00	Registration / Coffee	
09.30	**Professor Gerti Hesseling** Chair of RAWOO	Welcome
	Professor Louk de la Rive Box Chair of the seminar	Opening
	Jan Hoekema, MSc Director of Culture, Research and Education Netherlands Ministry of Foreign Affairs	Opening address
	Joop Sistermans Chair of the Advisory Council for Science and Technology (AWT)	Policy for knowledge in the Netherlands. The AWT vision.
10.30	Break	
	Professor Yaye Kène Gassama Dia Minister, Senegal, and Chair of the African Ministerial Council on Science and Technology (AMCOST)	Vision of AU/NEPAD on science and technology for development
11.30	**Panel discussion (in dialogue with the audience)** Ms Kathleen Ferrier, MP CDA, the Netherlands Ms Cecilia López Montaño, Senator, Colombia / RAWOO Professor Hoda Rashad, AUC, Egypt / RAWOO	Reaction to speakers
12.30	Lunch	
13.30	**Professor John Gyapong** Director of the Health Research Unit Ministry of Health, Ghana	Interactive demand-driven research partnerships
	Dr Shamsul Bari Chair of Research Initiatives Bangladesh	Demand-led research: How to reach the poverty groups?
	Andrew Barnett, MSc Director of The Policy Practice Limited, UK	Innovation: Lessons from the UK funded crop post- harvest research

15.00	Break	
15.30	**Panel discussion (in dialogue with the audience)** Ms Thea Fierens, MP PvdA, the Netherlands Professor Ken Giller, WOTRO Professor Julia Gitobu, Kenya, RAWOO Professor Akke van der Zijpp, RAWOO	Reaction to speakers
	Ministry of Foreign Affairs Dr Rob Visser, Chief Scientist Ms Caroline Wiedenhof, MA, Head, Research Division	Lessons learned
	Professor Louk de la Rive Box	Summary of the outcomes
17.00	Drinks / Music by 'Attaaya'	

Annex 2	*Information Sheet*

Mobilizing knowledge to reach the MDGs

The Minister for Development Cooperation has asked RAWOO for advice on Dutch knowledge infrastructure in the field of international development and poverty reduction*. RAWOO placed this request in the perspective of the Millennium Development Goals (MDGs).
Based on an analysis of the challenges and the issues facing the Dutch research sector, RAWOO has arrived at the following conclusions.

1. **Strengthening capacity in the South has been undervalued as a central challenge**
   - Current research policy leaves capacity building in the South in the lurch.
   - A new approach to capacity building is needed: one based on the concept of a dynamic knowledge and innovation system, in which knowledge networks play a central role by linking knowledge producers and knowledge users and partners in the North and South.
   - Research for development could be left wanting by the EU's new Seventh Framework Programme for Research. There is no systematic attention for capacity strengthening in the EU's Aid Programme.
   - Efforts to translate the needs of the poor into research priorities and to get them onto the research agendas have so far been largely unsuccessful.

2. **Dutch knowledge potential should be better utilized**
   - In a number of MDG-related areas, the Netherlands has valuable research potential: agriculture and food security, poverty-related diseases, health systems and reproductive health, natural resources, water and the environment, and issues in aid, trade and debt.
   - The potential of new technological developments is being insufficiently utilized in tackling development issues.
   - The use of existing knowledge falls short in both policy and in practice. A gulf has emerged between "knowing" and "doing".
   - The learning curve is slow: we are not good at drawing lessons from experiences with new approaches in the field of research and knowledge for development.
   - Scientists are being judged more on their academic performance than on the relevance of their work for development. A more balanced reward system is needed that takes account of academic excellence as well as relevance for development.

3. **We need a joined-up research policy**
   - There is no coherent policy for knowledge and innovation within the field of development cooperation. There is a lack of openness and transparency in the award of research funding. There is also a lack of expertise and capacity within the ranks of civil service staff and no systematic attention for drawing lessons from experiences.

* The advisory report on 'Mobilizing Knowledge to Achieve the Millennium Development Goals' was published in July 2005 and is available from RAWOO's website: www.rawoo.nl/main-3a.html.

- The knowledge and MDG agenda is not just a matter for the Directorate-General for International Cooperation, but also for other ministries and the private sector. Domestic knowledge and innovation policy and international knowledge policy in support of the MDGs must be regarded in a common context.
- There is insufficient funding. The opportunities for private sources of research funding are insufficiently exploited.

RAWOO has a number of recommendations and actions in response to the challenges set out above. These are primarily directed to the Minister for Development Cooperation, but in some cases also to other actors, or both.

A. **Develop a research strategy and have something to offer**
    1. Make government policy in the field of research for development more effective by developing a coherent strategy, by appointing a research coordinator, by improving the capacity to learn, by devoting more attention to external communication and research management, and by improving coordination.
    2. Link the national knowledge and innovation agenda with the development agenda, and set out a long-term commitment at government level to spend 5% of Dutch public funding for science, knowledge and innovation on MDG research. Start discussions with the appropriate ministries (education, agriculture, welfare, environment, economic affairs and general affairs).
    3. Encourage private funding of research by offering financial incentives or tax facilities. Investigate together with the Ministry of Finance how this proposal can be put into effect.
    4. Make the academic reward system more conducive to linking excellence and relevance. Research schools and research institutes should develop and test guidelines and criteria for measuring development relevance. In doing so, they can take advantage of the work done by COS, VSNU and KNAW on measuring the social impact of research.

B. **Give capacity building in the South a high priority**
    1. Support the development of country and/or sector-specific strategies for capacity building based on the concept of a dynamic knowledge and innovation system. Choose countries with a proven interest in developing their own knowledge and innovation policy – even if they are not partner countries – and join in with current initiatives in the South.
    2. Support pilot projects aimed at developing national advisory mechanisms for research and knowledge policy which include involvement from industry and social organizations as well as the scientific community.
    3. Take advantage of the momentum of the MDG +5 summit in September 2005 to move science, knowledge and innovation higher up the agenda, and do this in cooperation with partner countries and the international forum of research donors.
    4. Take the initiative to launch a programme aimed at strengthening science, knowledge and innovation in developing countries as part of European development cooperation efforts. In doing so, find allies in EU partner countries and member states that have an interest in capacity building.

C.   Mobilize Dutch potential in MDG-related areas

1.   Develop a new programme and budget line to establish and support international knowledge networks that deal with MDG-related themes. Develop open and transparent procedures for the submission, assessment and award of proposals.

2.   Mobilize new players, particularly those from the field of technology, in order to utilize technological knowledge in the fields of genetics, biotechnology, ICT and nanotechnology to help solve poverty and development problems.

3.   Ensure that the new Seventh Framework programme continues to include a separate programme line for research cooperation with developing countries. Mobilize support from EU partner countries and member states to achieve this, and lobby the Dutch ministries with primary responsibility (economic affairs and the education ministry) to underline its importance.

4.   Examine in cooperation with the education minister how the registration of development-related research in the Netherlands Research Database (NOD) can be improved.

D.   Strengthen the use of existing knowledge in policy and practice and encourage innovative approaches

1.   Give support to mechanisms that systematize the results of research and translate them to implications for policy and practice.
      Find out whether the IS Academy can meet this need; consider whether the experiences gained in the UK with providing support to organizations that act as a bridge between research, policy and practice should be followed in the Netherlands.

2.   Encourage new ideas and methods to give the voice of the poor and the local communities a place in the agenda shaping and research programming processes.

3.   Improve the learning curve through a more systematic approach to the sharing of experiences and lessons, dos and don'ts, and successes and failures in the production and use of knowledge for development. Investigate the possibility of a serial publication or an annual event as a platform to share experiences of innovative approaches, and to encourage debate and thought on the issues.

July 2005

Annex 3

AMCOST Declaration

Resolutions of the second african ministerial conference on science and technology

Adopted on 30th September 2005
Dakar, Senegal

WE, the Ministers responsible for science and technology, meeting at the Second African Ministerial Conference on Science and Technology in the framework of the African Union (AU) and the New Partnership for Africa's Development (NEPAD) from 29-30 September 2005 in Dakar, Senegal;

Recalling the commitments and decisions we made at the first African Ministerial Conference on Science and Technology held in Johannesburg, South Africa 6-7 November 2003;

Taking into account the important roles that science, technology and innovation play in achieving Africa's common aspirations articulated in the New Partnership for Africa's Development (NEPAD) and the Constitutive Act of the African Union (AU);

Convinced that science, technology and innovation are critical to the realization of the Millennium Development Goals (MDGs) and the implementation of Chapter 8 of the Plan of Implementation adopted at the World Summit on Sustainable Development (WSSD);

Re-emphasizing the importance of adopting multidisciplinary approaches, including social sciences or humanities, in research and technology development;

Acknowledging that the ability of our countries to create, diffuse and utilize scientific and technical innovations is a major determinant of our capacity to get integrated into the global knowledge economy and trading system;

Taking into account recommendations of the Commission for Africa and the United Nations Millennium Project as well as the increasing international attention to the role of science, technology and innovation in sustainable development;

Recalling our commitment to develop and adopt a comprehensive common action plan for science, technology and innovation;

Guided by the deliberations and recommendations of the Science and Technology Steering Committee, regional workshops, experts' consultations and technical inputs from various multi-stakeholder groups since our first Conference;

We hereby:

1. **Adopt** Africa's Science and Technology Consolidated Plan of Action.

2. **Resolve** that the African Union (AU) shall provide overall policy and political leadership required to achieve the goals set in the Africa's Science and Technology Consolidated Plan of Action.

3. **Commit** ourselves to strengthen the African Ministerial Council on Science and Technology (AMCOST) as the overall governance body to provide political leadership and make recommendations on policies for the application of science, technology and innovation in Africa's development.

4. **Resolve** that the Steering Committee for Science and Technology shall be responsible for monitoring and reviewing the implementation of programmes and projects.

5. **Resolve** that the AU Commission and the NEPAD Office of Science and Technology shall be responsible for mobilizing financial and technical resources to implement programmes and projects contained in the Africa's Science and Technology Consolidated Plan of Action.

6. **Reaffirm** our countries' commitments to make voluntary and earmarked financial contributions to ensure that the programmes and their projects are effectively and efficiently implemented.

7. **Reaffirm** our countries' commitment to mobilize financial resources and increase expenditure on national Research and Development.

8. **Agree that** ways and means be explored, by AU and NEPAD, of establishing a special continental financial and technical facility to ensure sustainable funding for science, technology and innovation programmes

9. **Decide** that SC shall, in consultation with AU structures and with support of technical expertise, consider and make appropriate recommendations to the Bureau of AMCOST on modalities of establishing and governing the proposed African Science and Innovation Facility.

10. **Commit to establish** a forum for engaging and partnering with the international community, including fostering cooperation with other developing countries, to secure the necessary additional financial, technical and informational resources for the implementation of the Africa's Science and Technology Consolidated Plan of Action.

11. **Rededicate** our countries to review and where necessary revise national science, technology and innovation policies and related institutional arrangements;

12. **Reaffirm our commitment** to promote the integration of science, technology and innovation considerations into our national development plans, Poverty Reduction Strategy Papers or related frameworks for achieving the MDGs.

13. **Agree to establish** an inter-governmental committee comprising of relevant national authorities to develop, adopt and use common indicators to survey and prepare an African Science, Technology and Innovation report.

14. **Commit** our countries to strengthen bilateral and multilateral cooperation on science and technology, and develop best practices in this regard.

15. **Take note** of the establishment of the AU-NEPAD High-Level African Biotechnology Panel which is due to report on its work in 2006.

16. **Take note** of ongoing efforts to establish networks of centers of excellence to implement the programmes and projects.

17. **Decide** that the NEPAD Secretariat, in collaboration with the AU Commission and UNESCO, develop the Terms of Reference and establish the AU-NEPAD-UNESCO High-Level Working Group to prepare a comprehensive programme for establishing and funding centers of excellence in accordance with the Commission for Africa recommendations.

18. **Recalling** our decision to establish a network of departments of science and technology, and ensure that expertise and experiences in various national institutions is shared across the continent, we call upon the NEPAD Office of Science and Technology to finalize the development of the African e-library of science and technology policy instruments.

19. **We support** the proposed establishment of the 3rd Component of the International Centre for Genetic Engineering and Biotechnology in Africa.

20. **Agree** to establish an inter-ministerial dialogue with African Minister's Council on Water (AMCOW) and endeavour to establish partnerships with other ministerial councils or bodies

21. **Recommend** that the AU Summit in January 2007 be dedicated to science and technology for the Heads of State and Government.

22. **Resolve** that countries wishing to host the third ministerial conference shall submit bids to the Secretariat of NEPAD for consideration by the Bureau of AMCOST.

We EXPRESS our gratitude to Hon. Minister MOSIBUDI MANGENA and his predecessor Dr BALDWIN S NGUBANE of the Republic of South Africa for providing leadership to AMCOST and for chairing it effectively during its first two years.

We Congratulate Madam Hon. Minister DIA GASSAMA of the Republic of Senegal for her appointment to the Cabinet and election as the second chairperson of AMCOST.

We EXPRESS our sincere appreciation to H.E. PRESIDENT ABDOULAYE WADE, and the Government and People of Senegal for the warm hospitality and excellent organization of this conference.

Annex 4

RAWOO publications

General Recommendations 1
Health and Illness in Developing Countries. January 1984 (abridged English version).

General Recommendations 2
Energy for Survival. January 1984 (abridged English version).

General Recommendations 3
International Dimensions of Development Problems; research needs and priorities. October 1983.

General Recommendations 3a
Legal Aspects of International Dimensions of Development Problems; research needs and priorities. June-1984.

Seminar reports
International Dimensions of Development Problems. Edited by H.J. Mastebroek. 1984.

General Recommendations 4
Food Security in Developing Countries, research needs and conditions. January 1986.

Working Paper 1
Towards Autonomy for Women; research and action to support development process. June 1986.

Seminar report
Food Security in Developing Countries. Edited by A.P. Smits. October 1986.

Working paper 2
Industrialisation in Developing Countries, priorities and conditions for research. General Recommendations 5. February 1989. Sustainable Land Use in Developing Countries; perspectives on an integrated approach. November 1988.

Policy paper 3
Solar Energy Research. July 1990. Industrialisation in Developing Countries. Seminar report. Edited by A.P. Smits. September 1989.

Publication no. 1
Advies over de registratie van ontwikkelingsgericht onderzoek. January 1991. (in Dutch).

Publication no. 2
Criteria for assessing proposals for research in and for developing countries. August-1991.

Publication no. 3
Advies inzake de organisatie van het onderzoeksbeleid in het kader van ontwikkelings-samenwerking. Augustus 1991. (in Dutch).

Publication no. 4
Cultuur en ontwikkeling. RAWOO Lunchlezingen 1992. Maart 1993. (in Dutch).

Publication no. 5
Development and strengthening of research capacity in developing countries. Conference on Donor Support, The Hague, The Netherlands 2-3 September 1993. Edited by Marijke Veldhuis. June 1994.

Publication no. 6
Meerjarenperspectief op onderzoek voor ontwikkeling. Onderzoekbehoeften en Nederlandse onderzoekcapaciteit. November 1994. (in Dutch).

Publication no. 7
A medium-term perspective on research for development. Research needs and Dutch research capacity. June 1995.

Publication no. 8

Good Governance. Rawoo Lunchlezingen 1993. Redactie: Oda van Cranenburgh en Marijke Veldhuis. September 1995. (in Dutch).

Publication no. 9

Building up and strengthening research capacity in Southern countries. A study prepared for the RAWOO by Frits Wils. August 1995.

Publication no. 10

Supporting capacity building for research in the South. Recommendations for Dutch policy. December 1995.

Publication no. 11

Research capacity for sustainable development. Report of a field study in Ghana, Kenya and Kerala (India) conducted for RAWOO by Wesley Monroe Shrum, Jr. April 1996.

Publication no. 12

Agenda 21. RAWOO/RMNO lectures on sustainable development. Edited by Frans Duijnhouwer and Marijke Veldhuis. July 1996.

Publication no. 13

Towards a European Science and Technology policy for development. November 1996.

Publication no. 14

Internal conflicts, security and development. RAWOO lectures and seminar. Edited by Bas de Gaay Fortman and Marijke Veldhuis. May 1997.

Publication no. 15

Framework for a Ghanaian-Dutch Programme of Health Research for Development. March 1998.

Publication no. 16

Developing a Ghanaian-Dutch programme of health research for development. Results of a questionnaire to identify relevant expertise in the Netherlands and willingness to cooperate with Ghana. February 1998.

Publication no. 17

Framework for a Philippine-Dutch Programme of Biodiversity Research for Development. March 1998.

Publication no. 18

Information & Communication Technology and Development. RAWOO lectures and seminar. August 1998.

Building bridges in research for development

Review of 1997 and 1998. May 1999.

Publication no. 19

Mobilizing Knowledge for Post-Conflict Management and Development at the Local Level. May 2000.

Publication no. 20

Coping with Globalization. The Need for Research Concerning the Local Response to Globalization in Developing Countries, September 2000.

Publication no. 21

Utilization of Research for Development Cooperation. Linking Knowledge Production to Development Policy and Practice, May 2001.

Publication no. 22

North-South Research Partnerships: Issues and Challenges. Trivandrum Expert Meeting. September 2001.

Publication no. 23
> Balancing Ownership and Partnership in Development Research. Review of 1999 and 2000. October 2001.

Publication no. 24
> Making Social Science Matter in the Fight against HIV/AIDS. May 2002.

Publication no. 24/S
> Hacer que las ciencias sociales importen en la lucha contra el VIH/SIDA. September 2002. (in Spanish).

Publication no. 25
> Making Development Research Pro-Poor. Review of 2001 and 2002. October 2003.

Publication no. 26
> Poverty and Governance. RAWOO Lectures and 25th Anniversary Conference. November 2003.

Publication no. 27
> Mobilizing knowledge to achieve the millennium development goals
> Advisory report on the Dutch knowledge infrastructure in the field of international development. July 2005.

Publication no. 28
> The urban challenge: A question of knowledge. Rethinking the role of knowledge in poverty alleviation. September 2005.

Publication no. 29
> Millennium Development Goals: rethinking science and aid, RAWOO Lunch Lectures, September 2006.

Publication no. 30
> Knowledge makes a difference. Science and the Millennium Goals, 24 March 2006, September 2006.

Annex 5

List of Participants – RAWOO Seminar

Knowledge makes a difference – 24 March 2006

Han Aarts, Maastricht University
David Asempah
Erik de Baedts, Droge & Van Drimmelen
Shamsul Bari, Research Initiatives Bangladesh and RAWOO
Andrew Barnett, The Policy Practice Limited
Marloes Berkhout, RAWOO
Jos van Beurden, Press
Jaap Bijl, RAWOO
Leen Boer, Ministry of Foreign Affairs
Luc Boerboom, ITC
Ad Boeren, Nuffic
Johan Bouma, Wageningen University
Ria Brouwers, Institute of Social Studies
Maarten van Bunningen
Dorrit van Dalen, Press
Jan van Dam, Ministry of Education and Science
Jaap Dijkstra, RAWOO
Linda Docter, RMNO
Jan Donner, Royal Tropical Institute
Marloes Dresens, Cordaid
Kathleen Ferrier, CDA, MP
Thea Fierens, MP PvdA
Des Gasper, Institute of Social Studies
Bintou Catherine Gassama Barry, Assistant to Minister Gassama Dia
Ken Giller, Wageningen University
Julia Gitobu, RAWOO
John Gyapong, Ministry of Health, Accra
Rob van Haarlem, Wageningen University
Ron Havinga, Ministry of Foreign Affairs
Willem Heemskerk, KIT
Gerti Hesseling, RAWOO
Enric Hessing, RAWOO
Jan Hoekema, Ministry of Foreign Affairs
Evelien van Hoeve, RAWOO
Gerrit Holtland, Nuffic
Ad Hordijk, Matrix Consultants
Roy Huijsmans, Institute of Social Studies
Inge Hutter, Population Research Centre
Eduard Jansen, RAWOO
Geoffrey Kamau, Wageningen University
Niels Keijzer, ECDPM
Yaye Kène Gassama Dia, AU Council of Ministers for Science and Technology

Anne Kets, Rathenau Institute
Sjoerd Krake, Ministry of Foreign Affairs
Thom Kuyper, Wageningen University
Fred Langeweg, Netherlands Environmental Assessment
Cecilia López Moñtano, RAWOO
Ed Maan, RAWOO
Abdullah (Awil) Mohamoud, SAHAN
Geert Munnichs, Rathenau Institute
Khamis Mwinyimbegu
Andrea Nederlof, RAWOO
Louis Niessen, Erasmus University
Joseph Nyakana, Institute of Social Studies
Gitty Petit, African Studies Centre
Hoda Rashad, RAWOO
Louk de la Rive Box, Institute of Social Studies
Erik de Ruyter van Steveninck, UNESCO-IHE
Joop Sistermans, The Advisory Council for Science and Technology (AWT)
Richard Sliuzas, Urban and Regional Planing Management
Eiko Smit, Droge & Van Drimmelen
Ellen van Son-de Waard, TNO
Ruud Strijp, Netherlands Organization for Scientific Research
Pieter van Stuijvenberg Arcadis BMB / Euroconsult
Gerrie Tuitert, NWO
Laura Veenendaal, KNAW
Koos van der Velden, RAWOO
Sietze Vellema, Wageningen University
Camilo Villa, Institute of Social Studies
Leontine Visser, Wageningen University
Rob Visser, Ministry of Foreign Affairs
George Waardenburg
Jos Walenkamp, Nuffic
Sietse Wellema
Marieke van der Werf, KNCV Tuberculosis Foundation
Ange Wieberdink, Consultant
Caroline Wiedenhof, Ministry of Foreign Affairs
Barbara Williams
Akke van der Zijpp, RAWOO

Contents

Abbreviations

ACP	African, Caribbean and Pacific
ALC	African Laser Centre
AMCOST	African Ministerial Council on Science and Technology
AOSTI	African Observatory of Science and Technology Indicators
ASIF	African Science and Innovation Facility
ASTII	African Science, Technology and Innovation Indicators Initiative
AU	African Union
AWT	Advisory Council for Science and Technology Policy (the Netherlands)
CPHP	Crop Post-Harvest Programme (UK)
DFID	Department for International Development (UK)
DGIS	Netherlands Directorate General for International Cooperation
EU	European Union
GBP	British Pound
GDP	Gross Domestic Product
HIVOS	International Humanist Institute for Cooperation with Developing Countries (the Netherlands)
HRP	Health Research Programme (Ghana)
IPRs	Intellectual Property Rights
IS Academy	International Cooperation Academy (the Netherlands)
ISS	Institute of Social Studies (the Netherlands)
MDGs	Millennium Development Goals
MMRP	Multi-annual, Multidisciplinary Research Programme (the Netherlands)
MP	Member of Parliament
NEPAD	New Partnership for Africa's Development
NGOs	Non-governmental Organizations
NWO	Netherlands Organization for Scientific Research
OECD	Organization for Economic Cooperation and Development
PAR	Participatory Action Research
PRSPs	Poverty Reduction Strategy Papers
R&D	Research and Development
RAWOO	Netherlands Development Assistance Research Council
RIB	Research Initiatives Bangladesh
RPN	Research Partnership Network
SMDD	Sommet Mondial du Développement Durable (World summit on Sustainable Development)
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organization
VROM	Netherlands Ministry of Housing, Spatial Planning and the Environment
WOTRO	Netherlands Foundation for the Advancement of Tropical Research