

# Knowledge on the Move

Emerging Agendas for  
Development-oriented Research

Editors

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Chapter 14

Knowledge, growth and distribution  
**Strengthening the capacity  
of innovation systems**

**Bert Koenders**



international  
development  
publications

Knowledge, growth and distribution

# Strengthening the capacity of innovation systems

**Bert Koenders**, Minister for Development Cooperation, The Hague, the Netherlands

## Summary

*Bert Koenders, the current Minister for Development Cooperation, believes that knowledge is key for development policy in two ways. First, knowledge for development concerns the capacity and agency of knowledge in developing countries; and second, knowledge for development cooperation relates to the role of knowledge in the design and implementation of development interventions. Knowledge is about changing reality, which implies engaging in complex processes. In this chapter, Minister Koenders calls for an innovation systems approach that combines scientific excellence and societal relevance in one coherent framework. He recognizes that there is no magic formula to 'make innovation systems work for the poor', and that we have to learn our way forward, moving step by step towards improved infrastructures, networks and policies for knowledge and innovation.*

## 1 Introduction

From my point of view, the conference ‘Knowledge on the Move’ was more than just another event where researchers, practitioners and policy makers met and exchanged views. It was also more than just another reflection on experiences and lessons learned in research for development. In the context of Dutch development cooperation, the conference coincided with a moment of introspection, and possibly marked a turning point after more than a decade of intensive public investments in research for development, which started with similar conferences in 1989 and 1992.

A flagship initiative launched during that period was the DGIS research programme, which has been acknowledged for its bottom-up, integrated and multidisciplinary approach to research programming, and for its adherence to the principles of empowerment and local ownership. We have come a long way since, and have witnessed a lot of change. Indeed, in a rapidly changing world, knowledge is constantly on the move. If there is nevertheless a connecting thread running through that period, it is that overall the role of knowledge for development has increased. Concurrently, the power and the potential of knowledge to bring about change for the sake of poverty alleviation and equality have equally increased. But another connecting thread has been the persistent lack of investment in research capacities, especially in Africa. This is therefore a good time to look back, take stock and look forward.

Although only time will tell, ‘Knowledge on the Move’ could well mark a fresh start in DGIS research for development policy. This could be the beginning of a new era, which hopefully will also bring some new zeal. First, I will outline the current priorities of Dutch development policy and the role of knowledge in that respect. From there, I will focus on knowledge and innovation systems, and the issues they raise.

## 2 Knowledge for development policy

Globalization is a complex and heavily debated phenomenon. Opinions differ widely, but there is also consensus on a number of features. One is that, next to global equalization (as witnessed by the increased importance of one-world issues and described by concepts like ‘MacWorld’ and even ‘MacEcosystem’), divisions in the world – not only economic, but also political, cultural and religious – are becoming sharper. This feature of globalization poses difficult choices for everyone, but especially for development policy, which has to deal with the three major challenges of our time:

- the engines of economic growth and at the same time the distribution of wealth in a more unequal world;
- climate change and the distribution of ecological footprints; and
- conflict and the unequal distribution of security.

Based on this assessment, I have chosen four priority themes on which policy is to be stepped up. Knowledge plays an essential role in all four of them.

The first priority is economic growth and equity. The opening up of global markets has allowed many countries and hundreds of millions of people, particularly in Asia, to break free from poverty. Yet, wealth and income differences are increasing worldwide. Most economies and production processes require a high level of knowledge and refined techniques in order to remain competitive. I will return to this issue later.

For my second priority – climate, sustainability and energy – knowledge is equally important. Developing countries are forced to adapt to climate change. The question is how. During the climate change summit in Bali in December 2007, the UK, the World Bank and the Netherlands launched a major study of the economics of adaptation to climate change. Over the next two years, we will be looking at the economic basis for adaptation in six countries, in order to obtain information about adaptation strategies and their cost. Such data will allow us to make common policy decisions on adaptation.

The value of studies like these has already been proven in the field of sexual and reproductive health and rights – my third priority. I recently came across a successful example of a fruitful combination of research and policy in this field. The Medical Committee Netherlands–Vietnam, in collaboration with the University of Amsterdam, has produced evidence that it is feasible to offer integrated HIV treatment and reproductive health services even in resource-poor settings. The approach adopted by the study team has provided a vehicle of empowerment for the participating researchers, clinical staff, NGOs and volunteers, as well as for the mothers and their families.

This brings me to my fourth and last priority – human security and development. Fragile states are lagging far behind in achieving the Millennium Development Goals. These states often relapse after a period of relative progress. It is therefore important that we give fragile states substantial aid to support sensible reconstruction. Such ventures will be risky, however, requiring detailed knowledge of local situations. To this end, the Centre for Conflict Studies at Maastricht University, The Hague Centre for Strategic Studies, Rabobank, the Red Cross, and many others have agreed to establish a research network for peace, security and development. The goal is to improve and integrate the analyses of situations in fragile states.

I conclude from these examples that knowledge is key for development policy in two ways. First, *knowledge for development* concerns the capacity and agency of knowledge *in developing countries*. I will elaborate on this later. Second, *knowledge for development cooperation* concerns the role of knowledge in the design and implementation of development interventions. This refers to the function of knowledge *within the development sector* itself. I will leave the latter issue aside here and confine myself to the observation that, in the case of the Netherlands, in order to remain relevant and effective, the development community – including the Ministry of Foreign Affairs! – will have to invest a lot more in its knowledge infrastructure, and in its capacity to analyze and reflect on development challenges in today's complex world. To this end, as a first step, I have appointed an ambassador to work on knowledge and innovation. He will take up his duties as part of the DGIS management team to make sure that knowledge is not something that is easily pushed aside.

### 3 Knowledge policy for development

How can we move knowledge in directions that are relevant for development? I observe two trends related to the internationalization of knowledge. The creation of knowledge is no longer localized, and no longer the privilege of the traditional knowledge institutions. Knowledge for development may in principle come from anywhere and from any source. Still, its application requires location and situation-specific interpretation, adaptation and contextualization. This increases the potential relevance of the global body of knowledge, provided there is local capacity to absorb, adapt and make use of it.

At the same time, the internationalization of research generally strengthens the attractive pull of centres of excellence in the North. Even if it does not actually cause the brain drain, it draws scholars worldwide towards international research agendas that are not necessarily geared to local development priorities. This process weakens the capacity in the South to absorb, adapt and make use of knowledge for development.

Deriving from this analysis, the Netherlands knowledge policy for development is based on the following three propositions:

- access to knowledge is more relevant than possession of knowledge;
- knowledge-in-use is more relevant than knowledge-in-stock; and
- open knowledge systems are more relevant than centres of excellence.

#### **Access to knowledge**

Knowledge is increasingly recognized as the basic ingredient of social and economic development. But it is not knowledge as such that matters most. The main point is how knowledge is acquired, and who benefits from it. To my mind, the acquisition of knowledge, the access to skills and the ownership of intellectual property rights are the key issues that lie before us.

In recent years many discussions in the World Trade Organization (WTO) and the Organization for Economic Cooperation and Development (OECD) have focused on how to make sure that developing countries gain access to world markets, including the international system of intellectual property rights. China, Brazil and India are rapidly gaining ground in the global economy. In Africa, awareness of the strategic importance of research and innovation is growing, yet investments are lagging behind. Moreover, studies show that a too-rigid market-based approach to development, and more specifically to intellectual property rights, may be keeping Africa and other least developed countries from climbing the ladder of development (Chang, 2002). China, Vietnam and other emerging economies to some extent shielded their markets, their infant industries and especially their knowledge base as they were on their way up.

Most of today's rich countries have actively used government subsidies and public enterprises to promote new industries. The US has the greatest share of publicly financed research in the world. While practising free trade, the Netherlands and Switzerland refused to recognise patents until the early 20th century. In the 19th century, most countries, including the UK, France and the US, explicitly allowed patenting

of imported inventions. The US refused to protect foreigners' copyrights until 1891. Germany mass-produced counterfeit 'Made in England' goods in the 19th century.

Let me be clear: this is not a plea for protectionism. It is, however, a strong case for the first proposition that access to knowledge trumps the possession of knowledge. The bottom line is that intellectual property rights should stimulate local creativity and innovation in developing countries. This can be done in many ways, not exclusively or necessarily through the existing, formal intellectual property system, which is primarily tailored to the needs of the industrialized countries. At the global level, knowledge that is relevant for development needs to be accessible and affordable, not locked up behind copyrights or patents. After all, the justification for exclusive intellectual property rights and their international harmonization lies in the public interests they serve, which in my view include poverty reduction and sustainable development.

At the multilateral level, as in the WTO and the World Intellectual Property Organization (WIPO), the Netherlands favours agreements that give the least developed countries latitude to build their own innovation systems. This should also apply to bilateral and regional trade agreements, like the European Economic Partnership Agreements, which still tend to push for intellectual property standards higher than the minimum requirements agreed multilaterally in the WTO.

I would also urge Dutch universities and research institutes to adopt institutional policies on intellectual property that take account not only of valorization of knowledge and incentives for researchers, but also the importance of access to knowledge and freedom to operate for development purposes.

### **Use of knowledge**

Next to the supply of knowledge and its accessibility, one should, conversely, also approach the matter from the perspective of those who are most in need of knowledge. Here we get to the crux of the matter: the demand or user side. It is here that knowledge needs are articulated, in the context of local problems and opportunities. In this regard, I would like to pose my second proposition, that knowledge-in-use is more relevant than knowledge-in-stock.

I dare to claim that knowledge-in-stock (or on-the-shelf) is often there for a good reason, namely, because of the lack of effective demand. That should come as no surprise. Only where demand is well organized, well articulated and backed up by enough purchasing power and/or political clout, will it be possible to have knowledge provided *à la carte*. In reality, however, the poorest people in the least developed countries dispose of neither of these. As a result they have to cope with pieces of ready-made knowledge that others think fit for them, or that just happen to be 'on the shelf'. It is a tragic reality that those who are most in need of knowledge are least likely to have the power to get it.

Knowledge-in-use, or learning by doing, provides an alternative route and a more hopeful perspective. It regards the poor not just as users of knowledge, to be provided by others, but as full actors in knowledge chains and networks. The latter can be

regarded as learning laboratories, and social and economic transformation essentially as a learning process. Successful economies – successful in terms of creating growth and employment – are not those that have followed a particular ‘recipe’, nor even those that are best endowed with resources or most favoured by geography. Successful economies have the fact in common that they have harnessed and used knowledge – that is, information, experience, skills and attitudes – to identify and take advantage of opportunities. Oil palms may have originated in Africa under ideal climatic and soil conditions, but nowadays Malaysia is world leader in the palm oil industry. Chile has become a major exporter of salmon, despite having no natural stocks of this fish. Floriculture may become an African success story, provided it is better embedded in local economic and scientific environments.

Apparently, for the least developed countries, catching up is not a question of the supply or transfer of knowledge, or technology for that matter. It is a question of being able to master steep learning curves. Therefore learning should be our focus. Learning for growth and at the same time for distribution, making sure that growth is sustainable and not exclusive. This requires strengthening domestic learning capacities. More concretely, it requires making knowledge arenas more inclusive and strengthening domestic abilities to create, access, tap into, absorb, adapt, spread and use knowledge for development.

### **Knowledge systems**

How can we realize these ambitions? And what is the role of research institutions? In this respect my third proposition is that open knowledge systems are more relevant than centres of excellence.

The Netherlands Ministry of Foreign Affairs’ research policy from 1992 to 2005 rightly stressed issues such as demand orientation and ownership: who sets and who owns the research agenda? As early as 1989 and 1992, however, two conferences in Groningen highlighted complications of this approach. One was the lack of consensus within developing countries on what should be the priorities for research (the so-called ‘Ganuza dilemma’). The other was the fact that the transfer of decision-making power over research cooperation to developing countries often presupposes that scientific capacities exist. Yet the lack of such capacities is precisely the reason for research cooperation in the first place (the ‘development paradox’).

These issues are still relevant today, as a recent evaluation of the Dutch research policy over the period 1992–2005 points out (IOB, 2007). But since the Groningen conferences another important issue has emerged: the valorization of research, that is, how knowledge is turned into (social, economic or ecological) value. This notion obliges us to extend our perspective from demand orientation to use, and from ownership to partnership. It brings into the picture the broader development context, including actors from science as well as practice and policy and the interactions among them. Together, these constitute so-called *innovation systems*: networks of organizations, enterprises and individuals focused on introducing new products, processes and

arrangements, together with the institutions and policies that affect their behaviour and performance. Within these frameworks, learning for solutions takes place where shared problems or opportunities emerge, with research being only one of many sources of knowledge, but not an unimportant one. And the knowledge agenda is set by a continuous articulation of needs through negotiations among many stakeholders.

In short, an innovation systems approach combines scientific excellence and societal relevance in one coherent framework.

## 4 Strengthening the capacity of innovation systems

What we are dealing with is not knowledge as such, or scientific capacity, but the capacity of entire innovation systems. Our current research and innovation policy addresses this broader dimension. Our strategies concentrate on three interlinked dimensions:

- the knowledge base: building a critical mass of skilled individuals, including researchers;
- knowledge circulation: forging effective links between science, practice and policy; and
- knowledge policies: creating enabling environments.

### **Knowledge base: infrastructure**

Innovation is primarily about people and their knowledge and skills: the knowledge base. Gaps in the knowledge base can block the process of putting knowledge into use. South Africa, for example, has productive, innovative firms in a wide range of product areas, like software, energy and petrochemicals. These firms are at the forefront of high-tech, knowledge-intensive industries. So the cutting-edge knowledge is there. But South African performance in high-tech exports and patent activity is weak. In this respect, South Africa is similar to Argentina, for instance, and stands in contrast with countries like Brazil. The main reason for the inability to valorize knowledge lies in the knowledge base. In South Africa state-of-the-art research is conducted, but the knowledge base lacks the capacity to translate the results into productive innovations. The economic benefits therefore remain limited.

Investment in access to higher education in developing countries is therefore – and I think correctly so – high on our agenda. The quality of higher education is equally important. It is a major challenge to deliver the type of graduates who are able to contribute to community development, innovation and growth. This requires a different, more appropriate mix of skills than is generally available.

### **Knowledge circulation: networks**

This brings me to the second dimension: knowledge circulation. Besides suffering from an inadequate knowledge base, innovation is often also hampered by barriers

to the flow of knowledge between socio-economic and cultural groups and institutions, between elites and marginalized and excluded sectors of society, between science and policy makers, and between scientists and entrepreneurs. The famous European knowledge paradox is an example of this last barrier: cutting-edge research is abundant, but too rarely leads to innovation. Especially in the least developed countries, where geographical distance is another major barrier, knowledge systems tend to be seriously failing in all of these respects. Knowledge may indeed exist, but too often it is scattered and isolated and is therefore hard to valorize.

The challenge is to establish or strengthen the most crucial linkages. In some cases it can be a matter of infrastructure. Information and communications technologies have improved the situation a lot, but still, if your telephone or internet connection doesn't work and the road is unusable, it is difficult to connect. It is also a matter of social capital, of balancing power relations, building trust and establishing new arrangements among disciplines, local users, ethnic groups, universities and links in the value chain. An additional challenge is 'brain circulation', or tapping the expertise of members of diasporas to upgrade skills in their countries of origin. I think this could be an interesting way to contribute to international knowledge networks.

To establish useful links, regional networks that exchange knowledge across borders and dig deep into local realities are essential. Global information and communication networks have a similar function. Most knowledge institutes in the Netherlands also play their part as members of international platforms and networks that promote more effective research for development. Although a bit more streamlining in this area might increase efficiency, I consider these initiatives important parts of a broader movement to open up scientific arenas and move towards a global research area. In that respect, the European Research Area should open up to issues and researchers from the South, especially Africa. That would be in Europe's interest as well!

#### **Knowledge policies: rules and regulations**

Besides an adequate knowledge base and functional knowledge linkages, innovation depends on political choices. Who owns the knowledge? Who has access to it and on what terms? What technological applications are allowed? And who benefits or suffers from them? Nonexistent or inadequate policies or favouritism may hinder public and private valorization of knowledge. Indigenous peoples in Africa, for example, possess a wealth of knowledge of local biodiversity, often with significant social and economic potential. But these communities can valorize little of their knowledge, because they are not empowered to claim and protect it properly. Consequently, they are unable to benefit from the application of their knowledge to foods and medicines, for instance. Another example is the lack of proper biosafety regulations in the least developed countries, which is seriously hampering the responsible application of modern biotechnologies.

Global advances in science, technology and innovation tend to move ahead of the necessary local checks and balances: public awareness and information, proper

assessment of implications, protection of local knowledge, preservation of a rich public knowledge domain, broad debates on ethical issues and ecological risks, and rules, regulations and arrangements for managing new techniques. We need to adapt our policies to a wide array of societal interests. Inclusive decision making on intellectual property, ethical and biosafety issues is essential, as is translating the resulting consensus into national norms and regulations.

In strengthening the capacity of innovation systems, it is crucial to extend the possibilities for alignment with relevant and legitimate agendas in the South. Such agendas are currently being developed in Africa, such as the African Union/Nepad plan of action for science and technology and the framework for improving agricultural productivity. Continual dialogue is required here, because agendas are dynamic (knowledge in Africa is also on the move!) and alignment is never a one-way street. As the IOB report rightly states, it takes two to tango. So, together with knowledge, the Paris agenda is also on the move!

## 5 In conclusion

Knowledge is not about ivory towers, but about changing reality. And changing reality implies engaging in complex processes. While recognizing the urgent need for knowledge for development, we simply do not have a magic formula to ‘make innovation systems work for the poor’. We have to learn our way forward; getting out of system failures and moving step by step towards improved infrastructures, networks and policies for knowledge and innovation. That is our assignment.

In this, understanding how knowledge and innovation systems work is a prerequisite. It implies that we, the development cooperation community, have to keep on improving our knowledge base, our knowledge circulation and our enabling environment for learning as well. But we must always keep in mind that the deepest wisdom about poverty, and how to escape from it, lies with the poor themselves.

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