

Achieving the
Millennium Goals
in sub-Saharan Africa:

**the role of international capacity
building programmes for higher
education and research**

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Inhoudsopgave

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Policy brief

Building on our own experience and on a wide range of literature, this paper explores how capacity building programmes can be improved so that higher education and research (HE&R) in sub-Saharan Africa can play its role in attaining the Millennium Development Goals (MDGs). The focus is on the type of programmes Nuffic has been implementing for decades, involving Northern higher education institutes in the support of their Southern colleagues: fellowship- and scholarship programmes, institutional development programmes and research cooperation programmes.

To set the stage, the paper explains the relation between HE&R and the MDGs. It proves that HE&R are vital in attaining the MDGs. Higher education delivers the skilled manpower needed for economic growth and poverty reduction, it improves the quality in the education system and it creates the absorption capacity for (increased) aid. Special attention is paid to the debate whether government investments give better economic returns in basic education or in higher levels of education. Research contributed, among others, to an substantial increase in life expectancy and to increased crop yields.

In a next chapter the present constraints and challenges of the HE&R system in sub-Saharan Africa are explored and put in a historical context. Then the roles of capacity building programmes is explained and, based on a range of evaluation reports, their effectiveness and sustainability assessed. Finally conclusions and recommendations are formulated.

The first conclusion is, that to enable HE&R to play its vital role, more funds are needed to increase enrolment rates, to increase staff salaries and to invest in facilities. These funds should originate from the additional MDG-related aid budgets. Therefore more attention is needed for HE&R in poverty reduction strategy papers (PRSPs). Donors should support the sub-sector to make its case in the formulation process of PRSPs. Country specific studies need to be carried out on the relation between HE&R and the MDGs to identify the best areas of intervention.

A second conclusion it that capacity building programmes are effective and efficient in staff training, upgrading curricula, joint research and institutional

development. They also present an opportunity for Southern institutes to connect to the worldwide community of educators and scientists. Even more so when joint activities lead to long-term partnerships between Northern and Southern institutes. Yet, the impact and sustainability of programmes can be enhanced when:

- Strategic plans of institutes are the point of departure for any intervention. If a Southern partner does not have such a plan it should be assisted in developing one.
- Programmes are designed in such a way that projects not only address immediate problems in Southern institutes but also contribute to a lasting connection of the institute to the international community of educators and scientist, while asymmetric relations or supply driven activities are avoided.
- South-South cooperation and Networking is enhanced, as well as opportunities to provide training in the region.
- Donors stimulate the interest of Northern institutes and scientists in development cooperation, particularly of those who are traditionally not involved.
- Scholarship and fellowship programmes are integrated in institutional development programmes and/or research cooperation programmes.
- Institutional development programmes integrate assistance to governments in creating an enabling environment in the education (sub-)sector in their programme goals.

A third conclusion is that fragmented donor support undermines the possibilities for recipients to develop long term strategies. This concerns national priorities as well as strategic plans of individual institutes. To improve the ownership by recipients, it is recommended that:

- Donors coordinate their support at national, sector, sub-sector and institutional level so that national level sub-sector programmes and capacity building programmes at institutes reinforce each other.
- Donors improve their coordination at international level. More exchange of information and experiences is needed, as well as mutual adjustments of priorities and tasks. Likeminded donors have to agree on a division of labour; e.g. based on sectors and/or countries.

Part of the capacity building efforts is undermined by the brain drain. With the increasing needs of industrialised countries to attract skilled manpower this problem is likely to increase. To reduce the (impact of) the brain drain it is recommended that:

- Southern countries improve the working environment of highly skilled citizens.
- Brain circulation is encouraged. Skilled migrants must be seen as a linking pin between knowledge communities in their home country and in the countries where they work.
- Home countries of skilled Africans working in rich countries, should be compensated for the financial loss incurred and these funds have to be re-invested in higher education.

A last conclusion is that many Northern countries lack a coherent policy towards HE&R in the South. Ministries of development cooperation create new capacities in the South while ministries of education encourage Northern HE-institutes to attract students from the same countries and ministries of economic affairs lobby for the creation of an international market for HE. Such diverging objectives do not only lead to paradoxes and contradictions in the South, they also prevent the creation of possible synergies in the North. An overarching view is needed on the role (promoting) HE&R in development cooperation. Based on such a view potential synergies can be identified and pursued with mutual benefits for all stakeholders. Incentives need to be given where that is required to break new grounds.

The findings and recommendations of the paper are not new. They are based on evaluation reports on decennia of experiences. The MDGs do not fundamentally challenge the underlying concepts of capacity building programmes, but they do provide a renewed feeling of urgency among donors, programme administrators and academia to increase the effectiveness and sustainability of their efforts. Better coordination among programmes and donors should be the first step forwards. If this paper can contribute to that, it has served its purpose.

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1. Introduction

The present focus of international aid is to contribute to attaining the Millennium Development Goals (MDGs). In the education sector this has led to a substantial increase in aid for primary education and more recently to secondary education as well. As a result primary enrolment rates have increased, but in most of the least developed countries this was accompanied by a deterioration of the quality of education¹⁾. Poor quality primary education translates to lower quality at higher levels of education later. Simultaneously the assumption that more primary education will (automatically) lead to economic growth and poverty reduction is contested²⁾. So increasingly this raises the question of whether the current strong preference of donors to invest in primary education is justified. Without doubting the need for (more) investments in primary and secondary education, this paper will argue for a more balanced approach to investments in education. In practice this means that more funds will be needed for higher education³⁾ and research.

No doubt more funds are needed, and this paper will address how such funds could be used most effectively. It is based on a broad literature survey and the experience which Nuffic has gained in administering capacity building programmes for higher education and research in the South for more than 50 years. These programmes have made use of the expertise of higher education and research institutes in the North. Three types of programmes can be distinguished: fellowship- and scholarship programmes, institutional development programmes and research cooperation programmes.

The paper first of all explores the role of higher education and research in attaining the MDGs. Next the challenges of the higher education and research are summarised. Thirdly, the role of capacity building programmes is analysed. Lastly conclusions are drawn and recommendations formulated as to how these programmes can be designed in such a way that they enable higher education

1) UNESCO (2005)

2) King and Palmer (2006)

3) Higher education refers to post-secondary education and training (vocational-, professional and academic).

institutes in the South to contribute most effectively to the attainment of the MDGs..

To ensure that the analysis is firmly rooted in a concrete (historical) context, it focuses on one region. Sub-Saharan Africa was selected as most donors, but also the Nuffic programmes allocate half or more of their funds to this region which has an ailing higher education and research sector and which is seriously lagging behind in attaining the MDGs. The main lines of thought are, however, also applicable to other developing regions.

2. The MDGs, higher education and research

In September 2000, world leaders agreed on a new development initiative at the United Nations Millennium Summit. Jointly they set an ambitious agenda for reducing poverty and improving lives, phrased in eight Millennium Development Goals (MDGs). For each goal one or more targets have been set. Most targets are set for 2015, using 1990 as a benchmark. The goals are:

1. Eradicate extreme poverty and hunger
2. Achieve universal primary education (UPE)
3. Promote gender equality and empower women
4. Reduce child mortality
5. Improve maternal health
6. Combat HIV/AIDS, malaria and other diseases
7. Ensure environmental sustainability
8. Develop a global partnership for development

To attain the MDGs, developing countries have to mobilize and organize internal and external resources in a well-orchestrated manner. National policies and strategies need to be put in place to plan, implement, coordinate and monitor various programmes. The resources which need to be mobilized are funds, productive human resources, knowledge and technology. Higher education and research have a vital role to play in generating and providing the latter three resources.

The contribution of higher education and research in mobilizing these resources, and hence in attaining the MDGs, is visible in four clusters of roles, each linked to one or more MDG:

stimulating economic growth and reducing poverty and hunger (related to MDG 1)

improving the education system (related to MDGs 2 and 3)
supplier of the necessary skilled manpower (related to MDGs 4-7)
creating the absorption capacity to make effective use of the increasing aid flows that are needed if the MDGs are to be attained (related to MDG 8).

Stimulating economic growth and reducing poverty and hunger

Human capital in the form of knowledge and skills is a basic input in any production process and investments in education and training are crucial for socio-economic development. This in turn is a critical prerequisite for sustained poverty reduction. The question whether public investments yield better returns in primary, secondary or tertiary levels of education has been hotly debated over the last twenty years. In Annex I one finds a summary of this debate. The emerging consensus is that in a growing economy investments in higher education provide very good economic returns; often better than investments in lower levels of education. Indeed, as Africa has been experiencing reasonable growth since 1995, a recent study found that a one-year increase in average schooling raises GDP by 0.24% per year, while a one-year increase in tertiary education leads to an increase of 0.63% per year⁴⁾. In a stagnant, rural economy lower levels of education offer better returns as it is instrumental in fostering progress towards reducing extreme poverty and hunger by building up poor people's productive potential, and improving child health via the beneficial effects of maternal education⁵⁾.

Investments in education stimulate economic growth, and economic growth stimulates parents and students to invest in education. This is not only logical, it reflects the historical experience in sub-Saharan Africa as well. After independence, it had good economic growth and enrolment rates in primary schools doubled from 41% in 1960 to 80% in 1980. Due to the economic crisis of the 1980s, this slipped back to 74% and only a few years ago the 80% level was reached again⁶⁾.

4) Bloom et al. (2005)

5) See Appleton, et al. (1996) on the relation between education and health and Wedgwood (2005) on the urban versus rural setting

6) Roberts (2005) shows that in Ghana the marginal costs for new enrolments is 2-3 times higher than the average costs. It is indeed unlikely that UPE will be achieved in sub-Saharan Africa in 2015 (Clemens, 2004).

Education is a crucial tool in the fight against HIV/AIDS, a major threat to any poverty reduction initiative. Initially HIV/AIDS spread quicker among educated people. Recent surveys, however, show that the prevalence decreases as the level of education increases. Teachers can give the right example; e.g. in South Africa HIV prevalence of younger teacher was much less than in the general population⁷⁾.

Research and studies feed the necessary innovations and improvements in production processes as well as in education systems, service industries and government. Agricultural research for example has contributed significantly to the annual increase of yields per hectare of 0.7% between 1970 and 2000. Research in health has contributed significantly to the increased life expectancy on the continent. Studies and research are also essential to come to knowledge-based policies and programmes and to design adequate institutional arrangements for pro-poor growth.

Improving the quality and balance in the education system

All levels of education are interdependent. More and better higher education leads to improvements in (the quality of) the total education system. In sub-Saharan Africa the recent focus on increasing enrolment rates in primary education has led to a deterioration of the quality of primary education⁸⁾ and this will have its drawbacks in the future on the other levels as well. A lack of qualified teachers is a prime reason for the poor quality. Even with the present low ratio of teachers per student, higher education institutes in sub-Saharan Africa have to deliver 1.5 million teachers to attain Universal Primary Education in 2015⁹⁾. Special attention is needed to attract more female students into teacher training. The target of reaching gender equality in enrolment in primary schools in 2005 has not been attained and more female teachers are important to promote schooling of girls.

7) Benell (2005)

8) *The Education for All Global Monitoring report (UNESCO,2005) concludes: 'average achievement levels have decreased in recent years in sub-Saharan Africa'. Poor quality is reflected in a 31% drop-out rate in primary schools.*

9) Nilsson, P. (2003)

Access to higher education is a strong incentive for parents and students to invest in lower levels of education. Transition rates are essential and this will increasingly be the case as also in sub-Saharan Africa ever higher levels of education are needed, especially in urban areas, to obtain interesting and well-paid jobs; this applies both in the private sector and in the government sector. Even with poor economic growth this process of inflation of diploma's and degrees will continue.

Lastly, the composition of the educated workforce is as important as the total amount of money invested in education¹⁰⁾. More investments in higher education will not lead to economic growth if there are not sufficient people with secondary and vocational education, and vice-versa. As economic growth fluctuates, the optimal mix of investments in different levels of education is very dynamic. When the mix is not balanced, public pressure for changes can mount quickly¹¹⁾.

Deliver the skilled manpower

Productivity has to increase to make sub-Saharan Africa competitive in regional and global markets. The private sector will need more qualified manpower to do this. At the same time, the anticipated public and private investment in poverty reduction programmes will lead to an increased demand for technical manpower as well. Next to the one and a half million teachers mentioned above, higher education has a crucial role to play in delivering the manpower needed to attain MDGs 4-7. For sub-Saharan Africa, one and a half million health workers are needed to improve the health situation as planned, and one million engineers to design, build and maintain the necessary infrastructure¹²⁾.

The absorption capacity

The last MDG is the Global Partnership for Development. The international community pledges to work on an open, predictable, non-discriminatory

10) Ramcharan (2004)

11) Appleton et al. (1999) show that in Kenya, within a time span of 20 years, the demand for different levels of education changed dramatically and this promptly led to political pressure for changes in the education system.

12) See UN-Millennium Project (2005) on health and Mohamoud (2005) on engineers

international trading and financial system. Rich countries promised to provide the least developed countries better access to their markets, possibilities for debt cancellations and more generous ODA funds. If the MDGs are to be attained, annually 25 billion USD of additional aid is needed in sub-Saharan Africa. This means that present aid levels will be doubled and that aid will constitute more than half of public expenditures in seventeen countries. Graduates constitute the core of the absorption capacity needed to make effective use of aid. Without additional human resources to design and implement development programmes, more aid might become counterproductive¹³⁾.

The contribution of graduates to good governance is equally important. Higher tertiary enrolment rates are correlated with indicators like absence of corruption, rule of law, absence of ethnic tensions, bureaucratic quality, low risk of repudiation contracts by governments and low risk of appropriation¹⁴⁾.

As part of the Global Partnership, the international community pledged to increase Foreign Direct Investments (FDI) in developing countries as these are believed to have a bigger impact on economic growth than local investments. Yet, this impact is only obtained when the receiving country has sufficient human capital to use the complex technologies coming with FDI¹⁵⁾. The majority of sub-Saharan countries have, by far, not reached the necessary level of educational achievement. Both the business community and political leaders call for more scientists and engineers as they are essential if the region is to become less dependent on the export of raw materials.

The international discourse on education

The above shows the fundamental importance of higher education and research for attaining the MDGs and for sustainable development in general. The international discourse on education and development however, has not always seen it this way. When the MDGs were formulated in the second half of the 1990's the dominant policy narrative was the '*Education for All*' declaration

13) See Rajan and Subramanian (2005) and Heller (2005)

14) Bloom et al. (2005)

15) Ndulu, (2004) gives a threshold level of 0.52 years of post-primary schooling for the 25+ male population

as formulated in Jomtien. It calls for more investments in primary education, believing that for most developing countries this would be the most urgent and sensible intervention to combat poverty. This has led to a neglect of the other layers of the education system with often dramatic effects, especially for the higher education system.

In the last years, however, the vital role of higher education and research in attaining the MDGs is increasingly recognised. In 2000, a Task Force of the World Bank and UNESCO published *Higher Education in Developing Countries. Peril and Promise*. It concludes that economic returns to investments in higher education are much higher than previously reported. In 2002 the World Bank published *Construction Knowledge Societies: new challenges for tertiary education*. It presents knowledge as the key production factor in a global economy. Developing countries that do not invest in higher education and research will be (further) marginalised. In 2005 these calls have been taken over by the report of the UN Millennium Project and the Commission for Africa. Both stress the need to invest more in post-secondary education and specifically in science and technology. Indeed, at the UN summit of September 2005 to review the progress on the MDGs, the resolution on education not only called for UPE but also to 'strive for expanded secondary and higher education' and it includes a special paragraph on Science and Technology.

However, all this has not yet led to an active response by the donor community, nor has it led to many changes in the field. A recent review of 31 poverty reduction strategy papers shows that only three considered higher education as a way to reduce poverty. Only two planned to increase funding of HE, while six explicitly planned to decrease funding. On the positive side, 23 see increasing vocational and educational training as an area for improvement, and 14 see tertiary education as a vehicle to bolster teacher training¹⁶.

16 Bloom et al, (2005)

3. Challenges of higher education and research in sub-Saharan Africa

3.1 Historical context

Independence: 1960 - 1980

Shortly after independence the situation looked bright for the higher education and research institutes in sub-Saharan Africa¹⁷⁾. Economic growth was good and (national) universities were seen as essential for the national development objectives of nation building and manpower planning. Their role and position were clear: they were autonomous, had to do the bulk of the research and they had to educate the future leaders of the nation. The number of students in higher education was minimal: in 1960 there were 30,000 students; in 1975 some 180,000. Gradually, however, they came to be seen as an expensive colonial heritage delivering too theoretical graduates. The concept of the Development University was introduced: universities had to contribute directly to the short-term development goals of the nation. Undergraduates had to do community work and separate institutions were created to address practical, multidisciplinary issues (e.g. integrated rural development or public health).

Crisis: 1980 - 1995

At the end of the 1970s sub-Saharan Africa was hit by a serious economic crisis: terms of trade declined sharply and many countries suffered from corrupted political elites. Structural Adjustment Plans forced governments to curtail expenditures on social services, like health and education. The higher education sector was hit very hard as enrolments increased while budgets were reduced. In 1995 1.75 million students were enrolled, nearly ten times as many as in 1975, while the share of higher education in the education budgets fell from 19.2% in 1980 to 16.7% in 1995.

17) While painting this picture UNCTAD (2001) is quoted on economic growth, Glewwe and Kremer (2005) on enrolments rates and UNESCO (2000) on government expenditures on education.

Donors reduced their support as well; e.g. the percentage for higher education in the education portfolio of the World Bank dropped from 17% in 1985-89 to 7% in 1995-1999¹⁸⁾. As a result the budgets per student declined sharply¹⁹⁾. As students and staff revolted, they were increasingly seen as a political threat to the status quo. Starving higher education institutes from funds enabled political elites to subdue them to their own political ends, thereby compromising ethical, scientific and educational standards. All this made it virtually impossible for the institutes to live up to the earlier expectations and they were increasingly seen as a luxury Africa could not afford. In this period donors started to channel their support to research via international institutes (created in the 1970s) that were often poorly connected to national systems.

Renewed growth: 1995 onwards

In the second half of the 1990's economic growth picked up again. Donors started to use the Sector Wide Approach in education. In return for budget support, donors demanded that governments increase their budget for UPE and they did so. At the same time the numbers of secondary schools leavers continued grew rapidly and tracer studies show that graduates have much better chances on the labour market than secondary school leavers²⁰⁾. Political pressure to increase enrolment rates at higher education institutes grew quickly. In several countries enrolments in higher education tripled or quadrupled in the last fifteen years²¹⁾. As the demand exceeded the capacity, new private (for-profit and non-profit) higher education institutes were created and reforms of the existing ones became inevitable. World Bank financed reforms at major universities stimulating them to develop strategic institutional development plans. Aided by the democratisation process that swept across the continent, this lead to better managed and more efficient higher education institutes²²⁾. Critics point out that in this process quantity prevailed over quality. The idea that a university is a place of critical reflection

18) Bollag (2004)

19) *The budget per agricultural student in sub-Saharan Africa fell from USD 6,300 to 1,500 between 1980 and 1988 and real faculty salaries fell by 30 percent (Beintema et al., 1998)*

20) *Ninety percent of the graduates in four East African countries had training related wage employment, versus only 50% of the secondary school leavers (Al-Sammarai and Benell, 2003)*

21) Holtland (2005)

22) Ng'ethe (2004); Holtland (2005)

has been replaced by the idea that universities have to supply what markets are demanding²³⁾. All in all, chronic lack of funds is still the major problem for most higher education and research institutes in sub-Saharan Africa. It is the source of many challenges. But there are also other problems. What follows is an overview of the major constraints which higher education and research in sub-Saharan Africa is confronted with today²⁴⁾.

3.2 Challenges in the higher education system

Massification

In the last forty years, tertiary enrolment rates have increased from (much) less than 1% to 5% in sub-Saharan Africa. But while in the 1960s higher education received 0.48% of GDP, four decades later it is 0.64%. So the budget per student has dropped dramatically and under-funding is a serious problem today. The results are overcrowded and poorly maintained facilities, lack of teaching materials, poor equipment, low salaries and staff morale. Despite the under-funding, the costs are enormous in local terms.

Privatisation and cost sharing

Although governments spend an ever larger chunk of their budget on education, the demand for education grows ever faster and attracting more private funding has become inevitable²⁵⁾. Especially the number of higher education institutes created by religious groups is growing quickly. Most private institutes offer only a few courses, with a focus on softer and commercial (e.g. business administration) subjects. This complements the existing system, but it makes it more difficult for broad-based higher education institutes to generate income from popular courses and invest it in more expensive ones, e.g. medicine, science and technology.

Quality assurance

The quality of higher education is under pressure because of the enrolment

23) Sawyerr (2002)

24) Primarily based on the overview in Boeren and Holtland (2005). Supplementary information is taken from UNESCO (2000), World Bank (2002) and Bollag (2004).

25) Sawyerr (2005) reports that in four countries private institutes enrolled 15% of the tertiary students.

pressure combined with scarce resources, the mushrooming of private institutes and the increase of transnational education opportunities. The latter consist of education offered by international universities through distance learning, via twinning arrangements with local institutes or so-called “off-shore” campuses established in the countries. Higher education is increasingly seen as a commodity and Northern countries use the GATS negotiations to try to create a free global market for higher education. The challenge for Southern countries is not to be flooded by second-rate, standard courses that do not fit the cultural setting nor the socio-economic needs of the recipient country. Creating quality assurance and enhancement mechanisms is a high priority for many Southern countries.

Access

Accessibility of higher education by disadvantaged groups is a major concern. Equal access for all is not only the best guarantee that education will have the maximum impact in economic terms, it is also important to ensure that social inequalities are not (further) enhanced. Generally speaking, access becomes more skewed as the level of education rises. The direct costs for higher education are a major obstacle for equal access. Subsidies or loan schemes for poorer families can be used to overcome this, but in many countries loan recovery from such schemes proves to be difficult. The second major constraint is the poor quality of lower levels of education in the areas where the poor live. Gender inequality is enhanced by both unequal access to lower levels of education, as well as by discrimination on the labour market for graduates.

Relevance and the connection to the world of work

All too often curricula are insufficiently geared to local circumstances. More interaction between higher education institutes and the private sector seems the best way forward. Relevance and quality of research and teaching will improve if academics are in direct contact with economic realities. Two concepts have been developed for this. In ‘Public Private Partnerships’, institutes cooperate with private partners on a common theme: e.g. they develop training courses together or do research together. The ‘Entrepreneurial University’ trains and supports staff, students and graduates to become entrepreneurial; e.g. by starting their own business. Another way is to involve industries in the payment and governance of higher education institutes and in developing curricula. Training funds based on a payroll levy in industries

present an attractive way to ensure resources for (vocational or professional) training and to ensure that trainees learn relevant skills²⁶⁾.

Staff mobility and brain drain

African higher education institutes have a hard time retaining their staff, mainly because they cannot offer them adequate salaries and suitable working environments. Many become consultants, join private companies or NGOs, or they migrate. Although economic reasons are important, brain drain is mostly driven by a lack of an open intellectual climate and a lack of appreciation for academics²⁷⁾. The resulting flight of intellectual capital from the region is alarming. Close to 20 percent of all skilled workers have emigrated from sub-Saharan countries, excluding South Africa. In Ghana and Mozambique the emigration rate is nearly 50%; in Kenya and Uganda well over one third²⁸⁾. The present estimates are that annually 23,000 of the best trained professionals and scientists are leaving Africa, while there are less than a million on the continent. The number of highly skilled Africans among the diaspora is generally estimated at between three and four hundred thousand.

Some industrialised countries encourage the brain drain as they actively seek to attract well-qualified staff²⁹⁾. With increasing worldwide demand for knowledge workers, this problem will increase. Brain drain has a positive economic side as well: eight billion USD per year is sent back to sub-Saharan Africa, equal to one-third of official development aid. This stimulates the local economy and could lead to more demand for (better) education. Some argue that the positive aspects outweigh the negative ones. Most comprehensive studies, however, conclude that brain drain primarily represents a loss of capacities³⁰⁾ and there is an extensive debate on how recruiting countries can compensate developing countries for this loss. Possible ways of doing this are a special levy on the salaries of skilled migrants or a penalty for the employer or for the recruiting country³¹⁾.

26) Nkanza (2005)

27) Mohamoud (2005); Chinsebu (2005)

28) Özden and Schiff (2005)

29) See for example Hall (2004)

30) See Nunn (2004) and Özden and Schiff (2005)

31) See Kapur and McHale (2005)

Management and organisation of the higher education institutes

The management and organisation of many higher education and research institutes needs to be improved in order to make them more effective and efficient. In the second half of the 1990s, many of the most renowned universities embarked on a strategic planning exercise to reform their institutes. Most improvements focused on increasing the income: charging fees for food and accommodation, increasing tuition fees, outsourcing canteens and institutionalising existing consultancy practices³²⁾. Many other institutes still have to embark on such processes. While the institutes improve their management and organisation, they need to be given more autonomy by the government. In return, the institutes need to demonstrate greater levels of accountability and transparency in resource management.

3.3 Challenges in the research system

With regard to research capacity in sub-Saharan Africa, only South Africa is scientifically proficient and Benin scientifically developing³³⁾. All others are scientifically lagging behind. African scientists produce only 0.8% of the world's scientific publications and Africa's share in patents is close to zero. Research capacities at most universities are small and fragmented. Scientists at universities conduct only a minor share of all research and usually spend less than 20% of their time on research³⁴⁾. University graduates are hardly exposed to up-to-date research and are insufficiently trained in research methodologies. At research institutes the main problem is that salaries constitute close to seventy percent of the regular budget, which leaves very little funding for research³⁵⁾.

Research management is often poor and coordination is lacking. Most countries do not have proper research policies or lack the capacity to implement them. As the mandates of institutes remain vague, each institute develops its own priorities. Fragmentation is enhanced by the fact that nearly all depend on donor support; different donor priorities often lead to confusion

32) *Bollag (2004)*

33) *Wagner et al. (2001)*

34) *Beintema et al. (1998)*

35) *IAC (2004)*

and overlaps. At the international level, coordination is very poor as well; many countries continue to work with isolated R&D systems, often with limited expertise and financial resources³⁶⁾. In 2005 the African Union in conjunction with NEPAD³⁷⁾ launched '*Africa's Science and Technology Consolidated Plan of Action*' which aims to stimulate greater collaboration via action plans in four science and technology clusters.

36) NEPAD (2003)

37) *New Partnership for Africa's Development. The NEPAD strategic framework document arises from a mandate given to the five initiating Heads of State (Algeria, Egypt, Nigeria, Senegal, South Africa) by the Organisation of African Unity (OAU) to develop an integrated socio-economic development framework for Africa. In July the 37th Summit of the OAU adopted the document.*

4. *The role of capacity building programmes*

Higher education and research in developing countries have been supported through various external means for more than 40 years. The modalities of support vary greatly. One type of aid is sub-sector support programmes where the government is in the driving seat and donors bring in funds and expertise. The aim is to help governments to cope better with the effects of massification, to promote equal access and improve and upgrade facilities. Often the World Bank is the lead donor. Within sub-sector support programmes, specific donors can focus their support on particular themes, such as improving university management, scholarship schemes or a particular region in the country. As mentioned in the introduction, this paper focuses on capacity building programmes in which Northern higher education institutes are involved in capacity building in the South. Three types of programmes can be distinguished: fellowship and scholarship programmes, institutional development programmes and research cooperation programmes. Each of these will be analysed, before the overarching themes in the development of such programmes are presented.

4.1 Scholarships and fellowship programmes

These programmes aim to develop capacity by inviting individuals from developing countries for education and training in the donor country, although training in the region where the candidate resides is becoming more common. Tracer studies show that candidates are usually very satisfied with the opportunity given to them. Exposure to a foreign society and education and training system is seen as a major added value. For many candidates the study abroad opens their minds and changes their attitudes. And as only the best candidates are admitted, completion rates are (very) high; success rates of 90-95% are not unusual.

Evaluations show that it is important that the content of the course be closely linked to the learning needs of the student and to the circumstances where he or she will return after completing the course. Fellows should be able to apply the acquired knowledge and skills when they return home. This means that the workplace should have equipment to work with, the boss should be interested in what the employee has learned, and the candidate should not immediately

be promoted to a position where the new skills are less relevant. The impact of individual training is enhanced when it is embedded in a manpower development plan of the employing organization, when the content of the course matches the learning needs of the fellows, and when more than one candidate of the same organization attends the course or programme (critical mass principle). Scholarships have been and still are a major source of capacity building for sub-Saharan Africa; 90% of all African PhDs have been obtained outside the continent. At the same time many PhD holders do not return to their home country after completing their study³⁸. In this way the programmes run a risk of contributing to the brain drain.

Donors are continuously adapting fellowship and scholarship programmes with the aim of enhancing their developmental impact and reducing the risk of brain drain. Some try to achieve this through a better integration of fellowship programmes in broader frameworks of development cooperation; e.g. by giving fellowships only to candidates who are already linked to bilateral or sectoral development programmes. Others try to achieve higher relevance by providing fellowships for training in the region where the candidate resides. This has the additional advantage that training capacity in the South is further strengthened. A third adaptation is creating more synergy between fellowship programmes and other capacity building programmes, e.g. by linking fellowship opportunities to projects which focus on institutional development. A fourth is to sign multi-year training agreements that offer organizations the opportunity to train their staff members according to a staff development plan based on the needs of the organization. In this approach, which is implemented in the Dutch NFP, fellowships are used as an instrument in longer-term institutional development processes³⁹.

4.2 Institutional development programmes

Institutional development programmes support Southern higher education institutes in strengthening their academic and organizational performance. In these programmes, Southern higher education institutes usually collaborate with, or are being assisted by, an institute in the North. Apart from staff

38) *From the USA 57% returned (Zezeza in Ndulu,2004); from France 50% (Rover et al. in: Meyer and Brown, 1999)*

39) *Boeren (2005a)*

training and curriculum development, the project can work on building research capacity, improving the management and organization systems, enhancing the physical infrastructure and broadening the financial base of the institute.

Evaluations show that most programmes are successful as their projects achieve or even surpass the expected results. Staff are trained, curricula are renewed and the management of institutes is improved. At the same time, the overall impact at programme level (i.e. the contribution to development through support to higher education) is not easy to demonstrate with hard figures. Sustainability can be problematic as well. To ensure that extra salaries and operational costs of equipment and facilities inherited from projects can be paid in the future requires a systematic and strategic approach to (financial) planning, which is often not in place at Southern institutes. Reviews show that interventions have better results and better chances for sustainability when they are closely linked to the strategic plans of the institute being supported.

It is evident that institutional development of higher education and research institutes requires a long-term approach and, hence, a long-term commitment in terms of funding and support. More experienced and developed institutes are the best qualified to help weaker institutes to develop their capacities. In the context of institutional development projects, long-term partnerships between Northern and Southern institutes can develop. Institutes in the South and the North value such institutional collaboration. Southern partners get access to know-how, knowledge and skills, to training, research and publication opportunities, and to the global academic community. Northern partners gain access to research grounds for students and staff, can attract good PhD candidates and profits from research publications. In some programmes, partnerships are an explicit aim, in others they are not.

In a partnership both sides gain, although they do not gain the same. Partnerships can lead to mutual benefits but there is also a risk. Different interests might lead to diverging views on what is important. This risk is enhanced by the fact that in many programmes the Northern institute is more powerful as it has better access to funds and knowledge. The challenge is to find the right balance between all interests and a respectful mode of

cooperation (a symmetric relationship)⁴⁰⁾. This may lead to long-term partnerships which can survive beyond the project duration.

A symmetric relationship is not achieved when scientific and academic interests of the Northern higher education institutes play a role in the projects which go beyond what is helpful for the Southern institute. This can be remedied by transferring the ownership of projects to Southern higher education institutes and making them responsible for the identification and formulation of project proposals. The Dutch NPT programme, created in 2002, is an example of a programme fully funded from ODA funds where projects are based on the demands of Southern higher education institutes.

The advantage for Southern higher education institutes is that they are in the driving seat. No formal evaluation has been done yet, but there are indications that Southern partners appreciate the Southern ownership principle of the programme⁴¹⁾. Nevertheless they appreciate the institutional collaboration with Northern institutes, provided that they set the agenda.

Another risk of North-South partnerships is that it can draw resources away from the much needed South-South cooperation. Some donors responded to this by supporting networks in which one or more Northern partners are linked to one or more Southern partners. Some support Southern institutes or networks without involving Northern institutes. For example the Dutch government established the SII programme⁴²⁾ that provides multi-annual funds to Southern higher education institutes (or networks of them) with a regional outreach. The evaluation showed that the quality of the activities was good and that participation of stakeholders in the projects enhanced the relevance. The efficiency was not optimal; some networks had large overhead costs and the allocation of fellowships could be done more efficiently in the Netherlands⁴³⁾.

The impact of institutional development programmes (and of research cooperation programmes), critically depends on the environment in which

40) See Bautista et al. (2001); Beelaerts et al. (2003); Boeren (2005); de Gast (ed., 1995), and RAWOO (2001).

41) Sips (2006)

42) SII is a Dutch acronym that can be translated as Cooperation between International Institutes

43) De Nooijer (2004)

Southern institutes are operating. It is difficult to develop demand driven courses if there is no data on labour markets, or to avoid overlaps in research efforts when there is no national research policy. For this matter, the Dutch NPT programme and the Sida/SAREC research cooperation programme do not only build the capacity of higher education institutes, but they also support sectoral agencies which play a role in enabling higher education institutes and research institutes to perform adequately. Support can be given to a national quality assurance body, a policy unit in a ministry of higher education or an organisation doing labour market research.

4.3 Research cooperation programmes

Donors use two modalities to support research in the South: research capacity building programmes and support to research which is linked to development interventions. The main modus operandi is research collaboration between Northern and Southern universities, and the projects are similarly structured to institutional development programmes. Evaluations show that the projects have a greater chance of being effective when the focus is very clear, when partners decide on the programme together and when they themselves select their counterparts. Success also depends on a critical mass in the research teams on both sides and on good personal relations between committed leaders on both sides. Other factors that enhance the chances for success are that the Southern partner has a Strategic Development Plan and that programme implementers have in-depth country knowledge and familiarity with the institutes⁴⁴.

Linking research more directly to development intervention is most systematically pursued by Danida. Its sector support programmes have budgets to pay for research by Danish and Southern partners⁴⁵. However, collaboration with a Northern partner is not a prerequisite or goal in the Dutch Multi-annual, Multidisciplinary Research Programmes (MMRPs). The projects are managed autonomously by a Southern partner, and provide long-term support for demand-driven, location-specific, multidisciplinary research for sustainable development. The approach is appropriate for research on regional

44) See Priestley (2000), ITAD/ODI (2000) and Ilsøe (2005)

45) Ilsøe (2005)

or local needs and for university-based, problem-oriented capacity building programmes in social sciences and in multidisciplinary and applied scientific fields. It is less suitable for academic, discipline-based capacity building programmes in sciences⁴⁶⁾.

4.4 Evolution of international cooperation and research

It should be realized that many capacity building programmes started off with dual purposes, i.e. strengthening human and institutional capacities in the South, as well as involving Northern higher education institutes and research institutes in development cooperation. It was important that Northern institutes not only shared their expertise with their partners in the South, but also that they developed and maintained expertise on development issues through research and collaboration. To underline this dual purpose, education and research funds from Northern ministries of education and research were combined with ODA funds. In the first decades it was agreed that the higher education institutes in the North would be the 'owners' of the programme, being responsible for their management and project implementation. In the last decade the trend has been to loosen the grip of Northern institutes on these programmes by taking away from them the management of the programme and emphasizing the needs and problems of the South as the leading principle in project identification and partner selection. In the Dutch programmes, the loss of control by Dutch institutes has been 'compensated' by considerably increasing the ODA part of programme funding. In fact, Dutch institutes became contract partners in the collaboration programmes with the institutes in the South. The management of the programme was also transferred to an independent intermediary organization.

A disadvantage of a fully demand driven approach is that Northern researchers might become less interested; a trend observed in the Netherlands, Denmark and Canada⁴⁷⁾. They are under severe pressure to publish and can not afford to invest much time in supporting Southern colleagues if this is not compensated with additional research opportunities. As a result some important academic needs of the South in the field of engineering and basic science are not met,

46) *Bautusta et al. (2001)*

47) *Boeren and Holtland (2005)*

as relevant Northern researchers have no academic interest. Different views exist on how to curb this problem. One is to recognise the importance of long-term partnerships between Northern and Southern institutes with beneficial effects for both sides. Donors themselves need in-country expertise on development issues in order to design knowledge-based policies and strategies. ODA-funded institutional development programmes should not only look at the needs of the Southern partner, but should also accommodate the interests of the Northern partner. This view is mostly held by traditional development researchers who need access to research grounds in developing countries. A second option is to pay higher fees (from ODA budgets) for specific expertise and/or to attract experts from outside Northern higher education institutes: consultancy firms and industries. This could be appropriate in (basic) science and technology. A third option is that ministries of education in donor countries and/or individual Northern institutes recognise development cooperation as part of the mandate of the sub-sector and see joint activities and sharing of experiences as a priority. Presently, Norway and the UK seem most advanced in this⁴⁸⁾.

4.5 The need for better coordination

Support programmes could be much more effective and sustainable if they were better coordinated. Most donor agencies working on higher education and research see better coordination among themselves as a priority⁴⁹⁾. The Paris Declaration (March 2005) provides the framework for better coordination among donors and with Southern stakeholders. It focuses on Southern ownership, alignment with national structures, joint funding and harmonisation of activities.

There are several dimensions to the coordination of international cooperation programmes and projects. The first concerns the coordination of capacity building programmes within donor portfolios. The sizes of the different fellowship and institutional cooperation schemes are relatively small and the limited resources are scattered. A better integration of these programmes is expected to lead to efficiency gains in operational terms and to improvements in impact and sustainability.

48) See several contributions in Boeren and Holtland (2005), particularly Powell and Nilsen

49) See Farley (2005), DfID (2004) and Boeren and Holtland (2005)

The second dimension is coordination at project level. Donor programmes have specific objectives which limit the selection of countries, institutions or themes that can be supported. Consequently, Southern institutes include all possible themes in their priorities in order not to exclude any potential donor. This undermines the very notion of *strategic* planning. Many institutes are donor-dependent and have no other choice than to operate tactically⁵⁰⁾. The lack of a real *strategic* plan can lead to projects that are helpful in solving current problems but that lead to institutional obligations later on that can not be sustained. Especially salaries, running costs and maintenance of new infrastructure and equipment can become an extra burden on the institutes' budget. This might be an exaggeration for strong institutes; but for most other, weaker, institutes it reflects reality.

Coordination at the national level of recipient countries is the third dimension. The key question is this: should available resources be concentrated in a few institutions or spread more thinly and evenly over all eligible institutes? Concentration often means the creation of centres of excellence (COEs) in areas with otherwise modestly equipped and resourced institutions. Care should be taken that these centres of excellence do not become 'white elephants', using large budgets while operating in isolation. NEPAD stresses that COEs need to be based in existing institutions and should focus on sharing facilities and experiences⁵¹⁾. To come to an optimal impact with limited funds, concentration seems advisable, although not always politically feasible.

Another issue at recipient country level is coordination between capacity building programmes and sub-sector programmes. Training individuals, even when embedded in the development plan of the employing organisation, will not lead to increased productivity if there is no enabling institutional context. Training farmers to increase productivity while they have no market for their produce is of little help. The same goes for educating scholars in public administration while recruitment of civil servants is not merit-based⁵²⁾. Although we should not get bogged down in the many interdependencies in

50) Sawyerr (2002)

51) NEPAD (2005)

52) King and Palmer (2006)

capacity development, it is clear that the impact of capacity building programmes could be enhanced if they are coordinated with sub-sector programmes that can address institutional development issues and work on creating an enabling environment by improving governance and transparency.

The call for more coordination leads to one of the paradoxes in development cooperation: to make an intervention more demand-driven, donors need an intimate understanding of its context. Since usually the institutional setting is very weak, simply relying on the available institutions to identify and formulate projects can easily lead to misguided projects that actually reinforce existing weaknesses. Donors need to refrain from imposing their priorities on local stakeholders, but this does not mean that they should have to pick up the bill for any intervention proposed by a recipient. Among the many lessons learned in the Sector Wide Programmes, the notion that donors need to have a better understanding of local realities is prominent⁵³⁾.

A fourth dimension of coordination refers to the international use (or lack thereof) of knowledge generated by research. Policymakers tend to use research findings in a selective way and many development policies are insufficiently research based⁵⁴⁾. For example, in the Annex to this paper we can read that the World Bank acknowledges that the studies it used for over a decade to justify its push for more investments in primary education actually “provide insufficient guidance to countries and donors alike as to the optimal use of resources”. Furthermore, in the North development researchers and policymakers have been drifting apart in the past decade⁵⁵⁾. The Dutch Ministry for Development Cooperation recently responded to this by creating an International Cooperation Academy to facilitate the exchange of ideas and experiences between policymakers and researchers⁵⁶⁾.

53) See Dyer (2005) for a detailed account of the processes at work

54) King, Palmer and Hayman (2005)

55) ITAD/ODI (2000)

56) DGIS (2005)

5. Conclusions and recommendations

In sub-Saharan Africa there are major gaps in the human resources, knowledge and technology needed to achieve the MDGs and to absorb additional ODA funds assigned to achieve the MDGs. Higher education and research have a vital role to play in closing these gaps. Yet the strong focus on primary education in the last fifteen years has led to a lopsided educational sector, with a detrimental impact on the higher education sub-sector.

To enable higher education and research to play its vital role, it is recommended that:

- more attention be given to higher education and research in the poverty reduction strategy papers (PRSPs), the documents where long-term national development priorities are aligned with the MDGs. Donors should support the sub-sector to make its cause in the formulation process of PRSPs. To this end, country-specific studies have to be done on the relation between higher education and research and the MDGs;
- more funds be allocated to higher education (and research) to increase enrolment rates, to increase staff salaries and to invest in facilities. These funds should originate from the additional MDG-related aid budgets.

Capacity building projects as described in this paper are effective and efficient for staff training, upgrading curricula, joint research and institutional development. They also present an excellent opportunity for Southern institutes to connect to the worldwide community of educators and scientists. Even more so when joint activities lead to long-term partnerships between Northern and Southern institutes. Yet the impact and sustainability of programmes can be enhanced in a number of ways.

To increase the impact and sustainability of the programmes, it is recommended that:

- the strategic plans of institutes should be taken as the starting point for any intervention. If a Southern partner does not have such a plan it should be assisted in developing one;
- programmes should be designed in such a way that projects not only address immediate problems in Southern institutes, but also contributes to a lasting connection of the institute to the international community of educators and scientist, while asymmetric relations or supply-driven activities are prevented;

- South-South cooperation and networking should be enhanced, as well as opportunities to provide training in the region. Donors should also involve (more) of the skilled Africans who migrated to donor countries when designing and implementing the programmes;
- donors should stimulate the interest of Northern institutes and scientists in development cooperation, particularly those who have traditionally not been involved. This paper gives some suggestions;
- scholarship and fellowship programmes should be integrated in institutional development programmes and/or research cooperation programmes;
- institutional development programmes should integrate assistance to governments to create an enabling environment in the education (sub-)sector in their programme goals.

Fragmented donor support undermines the possibilities for recipients to develop long-term strategies. This relates to national priorities as well as to the strategic plans of individual institutes.

To improve the sense of ownership of capacity building programmes among recipient governments, it is recommended that:

- donors should coordinate their support at the national, sector, sub-sector and institutional levels so that sub-sector programmes and capacity building programmes reinforce each other. Consortia of like-minded donors have to be created. The lesson learned in Sector Wide Programmes on education have to be taken into account;
- donors should improve their coordination at the international level. More exchange of information and experiences is needed, as well as mutual adjustments of priorities and tasks. Like-minded donors will have to agree on a division of labour (e.g. based on sectors and/or countries) so that each can focus on a limited number of sectors/countries and invest in the networks, knowledge and expertise needed to make their programmes more demand-driven.

Part of the capacity building effort is undermined by the brain drain. With the increasing needs of industrialised countries to attract skilled manpower, this problem is likely to increase.

To reduce the brain drain and its impact, it is recommended that:

- Southern countries should improve the working environment of their highly skilled citizens. The aforementioned improvement in capacity building programmes will also contribute to this. Centres of Excellence can play a role as well;
- brain circulation is encouraged by donors and both sending and receiving countries. Skilled migrants must be seen as a linking pin between knowledge communities in their home country and in the countries where they work;
- home countries of skilled Africans working in rich countries should be compensated for the financial loss incurred, and these funds should be re-invested in higher education.

A last conclusion is that many Northern countries lack a coherent policy towards higher education and research in the South. Different ministries pursue different objectives: ministries of development cooperation create new capacities in the South, ministries of education encourage institutes to attract international students, and ministries of economic affairs lobby for the creation of an international market for higher education. Such different views not only lead to paradoxes and contradictions in the South, they also stand in the way of gaining synergy benefits in the North.

The recommendation is that the different stakeholders in each donor country develop an overarching view on the role of each of them in (promoting) higher education and research in development cooperation. Based on such a view, potential synergies can be identified and ways to capture these synergy be developed.

Literature

Al-Samarrai, S. and P. Bennell, 2003. *Where has all the education gone? Employment outcomes among secondary school and university leavers*. Institute of Development Studies. University of Sussex.

Appleton, S., Hoddinott, J. and J. MacKinnon, 1996. *Education and health in Sub-Saharan Africa*. Journal of International Development. Volume 8. Issue 3 (p. 307-339).

Appleton, S., A. Bigsten and D.K. Manda, 1999. *Educational expansion and economic decline: returns to education in Kenya*. The Centre for the Study of African Economies. Working Paper Series. Paper 90. Downloaded from: www.bepress.com/cgi/viewcontent.cgi?article=1091&context=csae

Barro, R.J., 1997. *Determinants of Economic Growth: A Cross-Country Empirical Study* (Cambridge. The MIT Press).

Bautista, M.C.R.B., L. Velho and D. Kaplan, 2001, *Comparative study of the impacts of donor-initiated programmes on research capacity in the South*. DGIS/DCO/OC. The Hague. The Netherlands.

Beelaerts, P. A. Ferf, M. Lammerink, C. van Waegenigh, 2004. *SAIL projects programme evaluation. Final report*. SAIL.

Beintema, N.M., P.G. Pardey and J. Roseboom, 1998. *Educating agricultural researchers: a review of the role of African Universities*. IFPR/ISNAR. ISNAR Paper No. 98-6. The Hague, Netherlands. Downloaded from: www.ifpri.org/divs/eptd/dp/papers/eptdp36.pdf

Bennell, P., 1996. *Rates of return to education: Does the conventional pattern prevail in sub-Saharan Africa?* World Development. Volume 24, issue 1 (p. 183-199).

Bennell, P., 2005. *Teacher mortality in sub-saharan africa: An update*. Downloaded 31-11 2005 at: www.eldis.org/fulltext/aidsmortalityupdate1.pdf. Knowledge and Skills for Development, UK.

Bigsten, A., P. Collier, S. Dercon, M. Fafchamps, B. Gauthier, J. W. Gunning, A. Isaksson, A. Oduro, R. Oostendorp, C. Pattillo, M. Soderbom, F. Teal, and A. Zeufack, 1998. *Rates of Return on Physical and Human Capital in Africa's Manufacturing Sector*. Centre for the Study of African Economies. WPS/98-12. Oxford. Downloaded from: www.csae.ox.ac.uk/workingpapers/pdfs/9812text.pdf

Bloom, D., D. Canning and K. Chan, 2005. *Higher Education and Economic Development in Africa*. Harvard University. Downloaded from: www.worldbank.org/afr/teia/Higher_Education_Economic_Growth_in_Africa.pdf

Boeren, Ad., 2005. *A bird's eye view: Lessons from evaluations of international cooperation programmes in higher education, research and manpower development*. In: Boeren and Holtland (eds.), 2005. *A Changing Landscape. Making support to Higher Education and Research in developing countries more effective*.

Boeren, A. and G. Holtland (eds.), 2005. *A Changing Landscape. Making support to Higher Education and Research in developing countries more effective*. Proceedings and contributions to a conference, 22-25 may 2005. Nuffic, The Hague.

Bollag, B., 2004. *Improving tertiary education in Sub Saharan Africa: Things that Work*. Report of a regional training conference. Accra. Sept. 22-25, 2003. World Bank. Downloaded from: www.worldbank.org/afr/teia/conf_0903/final.pdf

Boyle, S., A. Brock, J. Mace and M. Sibbons, 2002. *Reaching the poor. The 'costs' of sending children to school. A six county comparative study*. DFID Education Paper 47. Downloaded from: www.dfid.gov.uk/pubs/files/reachingthepoor-edpaper47.pdf

Chinsembu, K. *My ten years of teaching science in Africa*. Download from: <http://www.scienceinAfrica.co.za/2005/november/teaching.htm>

Clemens, M.A., 2004. *The long walk to school. International education goals in historical perspective*. Working Paper Number 37. Center for Global Development. Downloaded from: www.cgdev.org/content/publications/detail/2754

DFID, 2004. *DFID research funding framework 2005-7 final draft/11 May 2004*.
Downloadable from:
dfid-agriculture-consultation.nri.org/theme5/keypapers/dfid-research-funding.doc

DGIS, 2005. *Onderzoek in Ontwikkeling*. (Research in Development; Dutch).
Policy Paper. DGIS, The Hague.

Dyer, K. 2005. *The Cost of Poverty: Transaction Costs and the Struggle to Make Aid Work in the Education Sector in Tanzania*. UNDP Human Development Report Office.
Occasional paper 2005/9.

Farley, S. 2005. *Support to Science, Technology, and Knowledge for Development: A Snapshot of the Global Landscape*. Paper prepared for: The Africa–Canada–UK Exploration: Building Science and Technology Capacity with African Partners, 2005. London, UK. Available at:
www.scidev.net/pdffiles/africanscapacity/SFarley_London.pdf

Gast, W. J. de, (Ed.), 1995. *Linkages revisited. Higher Education and Development Cooperation*. Proceedings of the conference 'Linkages revisited', 16-17 March 1995. The Hague. Nuffic.

Glewwe, P. and M. Kremer, 2005. *Schools, Teachers and Education Outcomes in Developing Countries*. Center for International Development at Harvard University. Working paper No. 122. Downloaded from:
post.economics.harvard.edu/faculty/kremer/webpapers/EconEducation-Handbook.pdf

Hall, M; 2004. *The Importance of Internationalization for Higher Education*. Presentation at the African Student Leadership Meeting of the International Education Association of South Africa (IEASA). August 2004. Downloaded at:
www.chet.org.za/issues/Internationalization.doc

Heller, P.S., 2005, "*Pity the Finance Minister*": *issues in managing a substantial scaling up of aid flows*. IMF/WP 180. Available at:
www.cgdev.org/doc/event%20docs/Heller%20wp.pdf

Holtland, G; 2005. *International dimensions of higher education systems in developing countries. The perspectives of southern policy makers*. In: Boeren, A. and G. Holtland (eds.), 2005. *A Changing Landscape. Making support to Higher Education and Research in developing countries more effective*.

IAC, 2004. *Realising the promises and potential of African agriculture*. Inter Academy Council. Available at: www.interacademycouncil.net/report.asp?id=6959

Ilsoe, B., 2005. *Danish support to research capacity building and knowledge creation as an instrument in development aid*. In: Boeren and Holtland (eds.), 2005. *A Changing Landscape. Making support to Higher Education and Research in developing countries more effective*.

ITAD/ODI, 2000. *Evaluation of Danida's bilateral programme for enhancement of research capacity in developing countries (ENRECA)*. Danish Ministry of Foreign Affairs. Danida.

Kapur, D. and J. McHale, 2005. *Give Us Your Best and Brightest: The global hunt for talent and its impact on the developing world*. Center for Global Development.

King, K., 2005. *2005: the year of development that was to change the world? A review from the angle of education*. NORRAG NEWS. Number 36, December 2005. Downloaded from: www.norrag.org/pdf/NN36.pdf

King, K. and R. Palmer, 2006. *Capacities, skills and knowledge in the least developed countries: new challenges for development cooperation*. Post-Basic Education and Training Working Paper Series - N°8. Centre of African studies, University of Edinburgh. Downloaded from: www.cas.ed.ac.uk/research/King%20Palmer_Educ%20Env_PBET%20WP8.pdf

King, K., R. Palmer and R. Hayman, 2005. *Bridging research and policy on education, training and their enabling environments*. Journal of International Development 17(6):803-817. Downloaded from: www.cas.ed.ac.uk/research/DSA%20paper_final.doc

Meyer, J.B., and M. Brown, 1999. *Scientific diasporas: a new approach to brain drain*. Paper prepared for the World Conference on Science. UNESCO-ISCU. Budapest. Hungary. Downloaded from: www.unesco.org/most/meyer.htm

- Mohamoud, A.A., 2005. *Reversing the Brain Drain in Africa. Harnessing the Intellectual Capital of the Diaspora for Knowledge Development in Africa.* Feasibility Study for Nuffic. The Hague, Nuffic.
- Ndulu, B.J., 2004. *Human Capital Flight: Stratification, Globalization, and the Challenges to Tertiary Education in Africa.* Journal of Higher Education in Africa vol. 2 n°1. Downloaded from: www.worldbank.org/afr/teia/pdfs/human_cap.pdf
- NEPAD, 2003. *International cooperation in science and technology. An overview of African protocols and approaches.* Downloaded from: www.nepad.org/2005/files/documents/120.pdf
- NEPAD, 2005a. *Centers of Excellence in science and technology for Africa's sustainable development. Towards new forms of regional and sub-regional networks.* Downloaded from: www.nepad.org/2005/files/documents/126.pdf
- NEPAD, 2005b. *Africa's Science and technology. Consolidated plan of action.* NEPAD, August 2005. Downloaded from: www.nepadst.org/publications/docs/doc27_082005.pdf
- Ng'ethe, N., 2003. *Improvements in the climate for Innovations in Tertiary Education: University Innovations in Sub-Saharan Africa.* In: Bollag, 2003
- Nilsson, P., 2003. *Education for All: Teacher Demand and Supply in Africa.* Education International. Working Papers no 12. Available at: www.campaignforeducation.org/resources/Nov2003/EI_TeachersAfrica1103.pdf
- Nkanza, P. K., 2005. *Zambia: strategic institutional development of the Technical Education, Vocational and Entrepreneurship Training Authority.* In: Boeren and Holtland (eds.).
- Nooijer, P. de, 2005. *Evaluation of the Cooperation International Institutions (SII)-Programme.* Span consult. The Hague.
- Nunn, A. *The 'Brain Drain' Academic and Skilled Migration to the UK and its Impacts on Africa Report to the AUT and NATFHE.* Available at: <http://www.aut.org.uk/media/pdf/3/4/thebraindrain.pdf>

Özden, Ç. and M. Schiff (eds.), 2005. *International migration, remittances and the Brain Drain*. World Bank/ Palgrave Macmillan. Available at:
www-wds.worldbank.org/servlet/WDS_IBank_Servlet?pcont=details&id=000012009_20051021094619

Priestley, C., 2000. *Survey of other donor agencies' approaches to research capacity building*. Annex XIII of ITAD/ODI (2000). Downloaded from:
www.um.dk/Publikationer/Danida/English/Evaluations/BilateralProgramme2000Volume2Annexes/anx_13/index_13.asp

Pritchett, L., 1999. *Where has all the education gone?* World Bank Economic Review, vol. 15, no. 3, 367-391. Revised, December 1999.

Psacharopoulos, G. and H.A. Patrinos, 2002. *Returns to investments in education. A further update*. WB Policy Research Working Paper 2881. Downloaded at:
wdsbeta.worldbank.org/external/default/WDSContentServer/IW3P/IB/2002/09/27/000094946_02091705491654/Rendered/PDF/multi0page.pdf

Rajan, R.G and A. Subramanian, 2005. *What Undermines Aid's Impact on Growth?* IMF Working Paper 05/126. Downloaded from:
www.imf.org/external/pubs/ft/wp/2005/wp05126.pdf

Ramcharan, R., 2004. *Higher or Basic Education? The Composition of Human Capital and Economic Development*. IMF Staff Paper 51. Downloaded from:
www.imf.org/External/Pubs/FT/staffp/2004/02/pdf/ramchara.pdf

RAWOO, 2001. *North-South Research Partnerships: issues and challenges. Triveandum expert meeting. development research more pro-poor*. RAWOO. Publication No 22. The Hague.

Roberts. J., 2005. «Pity the Finance Minister» *Comments on Peter Heller*. ODI, 16 June. Downloaded at:
[www.odi.org.uk/PPPG/cape/seminars/Response%20June%2016%20\(John%20-Roberts\).ppt](http://www.odi.org.uk/PPPG/cape/seminars/Response%20June%2016%20(John%20-Roberts).ppt)

Sawyerr, A., 2002. *Challenges facing African universities. Selected issues*. Association of African Universities. Downloaded from: www.aau.org/english/documents/asa-challenges.pdf

Sips, C., 2006. Kritiek op voorgekauwde projecten is niet terecht (Dutch). In: *Transfer*. Volume 13, January 2006. p.44-45. The Hague, Nuffic.

UNCTAD, 2001. *Economic development in Africa: performance, prospects and policy issues*. UNCTAD/GDS/AFRICA/1/TD/B/48/12. Available at: www.unctad.org/en/docs/pogdsafricad1.en.pdf

UNESCO, 2005. *Education for All. Global Monitoring Report 2006*. Paris, UNESCO. Available at: portal.unesco.org/education/en/ev.php-URL_ID=43283&URL_DO=DO_TOPIC&URL_SECTION=201.html

UN Millennium Project, 2005. *Investing in development. A practical plan to achieve the Millennium Development Goals*. London, Earthscan and UN-Millennium Project. Downloaded from: www.unmillenniumproject.org/reports/fullreport.htm

Wagner, C.S., I. Brahmakulam, B. Jackson, A. Wong and T. Yoda, 2001. *Science and Technology Collaboration: building capacity in developing countries?* Prepared for the World Bank. Santa Monica. RAND Foundation. Downloaded from: www.rand.org/pubs/monograph_reports/2005/MR1357.0.pdf

Wedgwood, R., 2005. *Post-Basic Education and Poverty in Tanzania*. Centre for African Studies, University of Edinburgh. Post Basic Education and Training Working Paper Series. No 1. Downloaded from: www.cas.ed.ac.uk/research/Wedgwood_Tanzania_PBET%20WP1.pdf

World Bank, 2000. *Higher Education in Developing Countries. Peril and Promises*. Task Force on Higher Education and Society, World Bank, Washington.

World Bank, 2002. *Construction Knowledge Societies: new challenges for tertiary education*.

World Bank, 2006. *Education sector strategy update. Achieving Education For All, Broadening our Perspective, Maximizing our Effectiveness*.

Annex I The economics of investments in education

Only a few decades ago, economists found that economic growth not only depends on the traditional production factors: land, labour and capital. Human capital was identified as a fourth production factor. It encompasses the knowledge and skills that are used as an input into the production process. Unlike the other factors it seems infinite, or even better: the more you use it, the more you get of it. Over time, human resources are increasingly seen as the most important production factor.

The last two decades have seen an extensive debate on the role of knowledge and skills in developing countries. What holds true in industrialised countries, might not (yet?) apply to poor areas. The debate focused in practice on the economic impact of public investment at different levels of education. Where does public investment lead to the best returns: in basic education or in higher education? Here the discussions are summarised, using both a micro-economic and a macro-economic perspective.

The micro-economic perspective

Micro-economists calculate the rate of return to education by quantifying the correlation between the income of a person and the number of years of education he/she enjoyed. The World Bank published a review of a number of studies that found returns from primary education in Africa to be in the range of 15-25%, and 10-15% for higher education. These were so-called social returns; both public expenditure and private costs are included. Private returns (in which public investments are not taken into account) were some 20% higher (Psacharopoulos and Patrinos, 2002).

UNESCO criticised the approach as severely underestimating the impact of higher education as they left out non-measurable aspects, such as the stimulation of civic and democratic values and the use of open debates and argumentative reasoning⁵⁷.

57) UNESCO (2000)

Bennel (1996) showed that the method used in the World Bank publication was biased towards primary education and that the general conclusions were flawed. A first bias was the assumption that the private costs for basic education were near to zero. Among others, Boyle et al. (2002) proved that this is not realistic. Another dubious assumption was to look only at the correlation between the education and the income of the same person. This ignores the possibility that better educated people generate more income for others as well (e.g. by employing them). Another critical element is the timing. Using the same data as the World Bank, Bennel (1996) showed that when one clusters the studies in a pre-1980 and a post-1980 group, the conclusions are different. Before 1980 primary education gave the best returns, after 1980 secondary education does.

The latter finding is confirmed by Appleton et al. (1996). In seventeen surveys in Africa from 1985 – 1993 the typical rates of return were 5-7%, 8-12% and 15-20% for primary, secondary and tertiary levels, respectively. In another study Appleton et al. (1999) compared the returns to investments in education in Kenya at different periods: 1978, 1986 and 1995. They showed that:

- returns to secondary education are generally declining over time: as more and more people get an education, they need more education to earn a higher income;
- private returns to primary education were very good in the earlier periods, but fell sharply later; this was however compensated by reduced costs;
- returns to higher education increased over time, although the authors warn that the number of people in the sample was relatively low.

The logic is that as more people enjoyed more education, employers increased their demands. While primary education might have been sufficient to get a low-level administrative job in the 1970s, these days at least secondary education will be needed. So even in a stagnant economy, the basic law of supply and demand will provide social pressure for young people to raise their level of education. Pritchett (1999) quotes several studies showing that returns to education are higher when technology changes rapidly (e.g. in an industrial environment or in a green revolution environment). Wedgwood (2005) found that while Tanzanian primary school leavers in rural areas earn 2.7 times more than people without education, in urban areas the difference is only 1.5 times. In urban environments, completion of secondary education is needed to obtain

substantially higher incomes: O-level graduates earn 3.8 times more than those with only a primary education. In rural areas this ratio is only 2.2.

So the decisive factor is when and where one measures the rates of return. The data available to date do not support any blanket policy recommendation as to which level of education provides the best return on public investment. The World Bank acknowledged this in its recent Education Sector Strategy Update 'As such these studies (rates of return studies based on years of schooling completed, GH) provide insufficient guidance to countries and donors alike as to the optimal use of resources.⁵⁸⁾

The macro-economic perspective

Macro-economists estimate the impact of education on economic growth via regression analysis of databases containing a large number of variables (macro-economic data, data on education, data on other variables that could explain economic growth). Barro (1997) found a close correlation between the number of years of male secondary and higher education and long-term economic growth. An increase in the average number of years of male secondary schooling by one year leads to an additional growth of 1.2% per year. The correlation was only found for men (indicating gender discrimination on the labour market), but not for primary education. Primary education of girls was found to have indirect positive effects; it was correlated with lower fertility rates, lower infant mortality and more political freedom. In a recent study, Bloom et al. (2005) found that in Africa a one-year increase in average schooling raises GDP by 0.24% per year, while a one-year increase in tertiary education leads to an increase of 0.63% per year.

The most important response came from Pritchett (1999) who found a negative correlation between education and economic growth. He offers three possible explanations for this:

- the quality of education has been too poor to deliver the expected results;
- in a stagnant economy additional supply of skilled labour can cause supply to exceed demand, resulting in a suppression of both the incomes of skilled labourers and economic growth;

58) World Bank, 2006. p.33

- the additional skills are used counter-productively. When education is used to get state jobs that eat into tax revenues without delivering any services, its economic impact will be zero or negative.

All three explanations played a role in sub-Saharan Africa as it went off track in 1980-1995 due to sharply declining terms of trade, corruption and poor governance. Bigsten et al. (1998) also point out that the environment in which human capital has to operate is crucial. Using both micro-economic and macro-economic data, they consistently found that private rates of return increased sharply with the level of education (3%, 10% and 35% at primary, secondary and tertiary level, respectively). But they also found that returns on physical resources were twice as high as on human resources in the five sub-Saharan countries studied. They concluded that although skilled manpower is scarce in the region, the high cost of capital also constitutes a huge constraint.

Conclusion

The micro-economic and macro-economic perspectives lead to the same final conclusion. The economic impact of investments on education depends on the environment. In a growing urban economy, investments in higher education seem to yield better returns than in lower levels of education. In a stagnant rural economy, investments in basic education yield better returns. These findings justify the call of ambitious NEPAD leaders for more support for higher education and research in sub-Saharan Africa. Failing to do so might suppress the economic growth that is badly needed to achieve the MDGs and particularly to sustain them when donor funding to support social services is phased out.

