



Policy Tensions in Relation to the Pursuit of Equality: Promoting Scientific Mobility and Balanced Growth

Policy Report

Liz Oliver

Additional to ResIST Formal Deliverables

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Policy Report

Introducing Work Package 2

The aim of WP2 was to investigate the availability and effective utilization of human resources in science and technology between key ‘donor’ regions and a host region. In order to understand this process better it was decided to concentrate on case studies that would study different country contexts and different sectors. The WP2 partner countries include Turkey and South Africa (identified as sending countries) and Germany and the United Kingdom (identified as receiving countries).

What is the problem?

The production, utilisation and commercialisation of scientific knowledge are underpinned by the availability, and effective use, of human resources. But human capital in science and technology is not equally distributed within and across countries and regions of the world. With the increasing globalisation of science and technology, longstanding concerns about the (unbalanced) flows of human capital moving from less developed countries (regions) to developed countries (regions) have become even more pronounced. The received wisdom on ‘brain drain’ and ‘scientific migration’ is increasingly being challenged with recent studies looking more systemically at notions of ‘brain circulation’, ‘diaspora networks’ and the like. Nevertheless, there are still important questions to be asked about the impact of researcher mobility on the sustainability of science and technology labour markets, in both ‘sending’ and ‘receiving’ countries. This study addresses these issues by considering the implications of mobility on:

- the production of scientific knowledge;
- the reproduction of knowledge in relation to the training of the next generation of researchers;
- the sharing of knowledge through transfer across borders.

Background Research Reveals a Number of Key Policy Issues and Trends

Work package 2 builds upon a body of literature that promotes new ways of understanding the impact of highly skilled migration and blurs clear distinctions between the “winners” and “losers” of migration flows. The focus of much Highly Skilled Migration (write out in full) literature is on brain circulation and network approaches to understanding migration. Caution is expressed against applying these concepts wholesale to the experiences of developing countries which continue to experience a loss of skilled personnel whilst the value of contribution to capacity building through Diaspora networks has yet to prove itself. The importance of gaining a more accurate and nuanced understanding of the processes behind highly skilled migration is stressed.

The close relationship between research policies and migration initiatives

The background research highlighted a high level of diversity in the nature of R&D investment and the sectors in which R&D is conducted, between States. Here the global distribution of R&D personnel is heavily skewed. Tertiary education has become increasingly international and migration policies form a key aspect of broader R&D policy and planning.

The competition between developed countries for highly skilled personnel and the role of immigration policies and incentive schemes

Generally speaking, economically developed countries increasingly tend to use immigration policies to attract and retain highly skilled migrants, particularly those with skills and expertise in designated shortage areas. Competition also exists between developed countries to retain and attract back highly skilled nationals.

Within the EU, flows of science researchers are imbalanced. EU policy approaches to promoting migration and immigration in the European Research Area place an emphasis on individualism and mobility between centres of excellence. However, EU policy documents also highlight the importance of promoting balanced growth and sustainability. Here a number of 'policy tensions' emerge for example between initiatives designed to promote ethical recruitment and individual equity or non-discrimination principles.

Policy responses by developing countries to the loss of highly skilled personnel

Data on migration of the highly skilled highlights the movement of personnel from developing countries to developed countries and sheds light on the limited extent of return. Case studies of newly industrialising economies generally show a picture of the loss of highly skilled personnel coupled with emerging evidence of networking and profile raising amongst the Diaspora (for example Indian IT professionals in the US) and the development of return incentives and packages (for example South Korea and Malaysia) .

Focusing on Africa, the high levels of emigration of health and science personnel has been highlighted as a critical concern both in terms of service delivery and capacity to train the next generation of scientists and academics. Moreover the cost of training professionals is borne by the sending country and represents a loss. Case studies from a number of African countries demonstrate the levels of loss of professionals.

Background research also revealed the increasing reliance by some developing countries on flows of overseas professionals to provide key services in health and higher education. In some cases (for example Botswana), international staff form a key component of the workforce and countries are beginning to adapt their immigration policies to encourage highly skilled immigration.

The importance of international policy forums in addressing migration issues relating to scientific personnel.

International forums such as the EU and the AU play an increased role in designating policy in the area of R&D mobility. Here the promotion of centres of excellence as a way of mobilising existing, albeit dispersed, resources is a source of policies designed to increase the mobility of researchers within regions.

Generating New Insights

The study sought to generate new insights through conducting fieldwork in four countries. The objectives of the research were as follows:

- To study human capital flows between EU Member States and 'Third Countries';
- To consider the impact this kind of scientific mobility has on the individuals and regions concerned both in terms of individual equity and regional equality;
- To identify the appropriate policy and resource environments capable of supporting sustainable and reciprocal human mobility;
- To encourage a closer alignment between policy in the fields of science and technology, and migration.

In order to promote in depth understanding of the migration motivations of scientific migrants themselves interviews were conducted with mobile scientists. Each of the four research teams involved in the study interviewed around 25 scientists generating a bank of 96 'case studies' of highly skilled migrants in total. The focus of the case studies was designated as follows:

- South African researchers in the health sciences in the UK;
- South African researchers in the health sciences who have returned to South Africa;
- Turkish researchers in the physical sciences and engineering in Germany; and
- Turkish researchers in the physical sciences and engineering who have returned to Turkey.

The Findings

The data was analysed thematically and four papers based on pertinent issues were produced. These papers are available on request.

Thematic Paper 1:

Giving Something Back: Exploring Making a Contribution at a Distance: Policy and Practice

Liz Oliver

The key policy issue addressed within this paper is that of tailoring migration policies and schemes developed within the European Research Area to the context of

developing countries. The paper explores the theme of 'giving something back' with the aim of contributing to the evolution of policies that are designed to harness the contributions of 'the Diaspora' to the benefit of the sending countries. The key to understanding knowledge flows between countries that send or receive science professionals is to understand how scientists engage with the sending country within the context of international networks of scientific actors and resources. The professional contributions that scientists make to the sending country whilst they are based abroad are individually motivated and directed. For formal Diaspora schemes to be effective we should first understand what is happening 'on the ground' and then think about how to harness these activities. Analysis of qualitative interviews with Turkish and South African scientists is used to understand the “what, why and how” of contributing professionally to the sending country at a distance.

The Situation

- Developments and debates in the area of migration and development – place emphasis on the role that developing countries should play in seeking to gain from migration.
- In this context Diaspora networks, both amorphous and formally constituted have become seen as a key source of both intellectual and financial resources.
- Little is known however about how the individual activities of researchers working overseas support scientific development in the sending countries and therefore the best way of supporting such activities is unclear.
- It is commonly understood that receiving countries have a role to play in mitigating the adverse effects of brain-drain, however, such policy development is taking place within the context of global competition for skilled human resources and the emphasis continues to be placed on encouraging migration. EU policy for example seeks to promote a 'symbiotic' relationship with sending countries whilst encouraging researchers to move to work within the European Research Area.
- Whilst sending countries have begun to develop policies to engage the Diaspora – could receiving countries do more to support these initiatives and how should 'knowledge remittances' be supported by receiving countries?

What can we do?

Migration, Internationalization and Development are commonly addressed through different policy fields and in different ways by sending and receiving countries. Efforts are underway to 'join up' these fields – this should be encouraged.

How Do Individual Scientists 'Give Something Back' to the Sending Country?

- This study supports the message that effective return and professional reintegration where possible is the key to knowledge transfer and exchange.
- However, the activities of those who contribute professionally to the sending country prior to or in lieu of return are currently overlooked and could be better supported.

- As discussed in Thematic paper 4, ‘giving something back’ is dependent on the existence of at least a basic infrastructure for conducting research in the sending country. South Africa and Turkey have such infrastructures in place. It is important to note that the capacity for this form of activity is severely limited in many developing countries which have suffered from a trend towards de-institutionalisation.

What can we do?

Policy makers in receiving countries should not be complacent about the impact that highly skilled migration has on developing countries. Every effort to support effective knowledge transfer and exchange should be made. Supporting networking and circulatory migration patterns should supplement and not replace attempts to support genuine and effective return.

- Professional activities conducted at a distance ranged from informal knowledge exchange and sharing ideas to training doctoral candidates, delivering professional training, conferences and seminars through to joint collaborative projects.
- A combination of professional and friendship relationships bolstered by concrete activities was central to the success of many of the examples of cross national collaboration.
- A further key to success was maintaining research interests in fields that were relevant to the sending countries. This supported the continued relevance and further development of existing social networks.

International networking grants already exist (for example FP 7 International Staff Exchange Scheme or the UK Royal Society Networking Scheme). Consideration should be given to developing a specific 'Diaspora Grant' based on the principle of providing 'seed corn' funding to support migrant scientists based in the EU to develop or maintain professional networks within the sending country.

- National identities and ongoing connections with the sending country are the sources of affinity and feelings of belonging that do not cease when researchers move to work in another country.
- The motivation to contribute to the scientific development of the sending country often reflects the context of the initial move and importantly the intention to return. Those respondents who did not intend to return were more likely to actively seek opportunities to contribute at a distance whilst those who intend to return anticipate that they will share their knowledge when they go back. For those seeking to engage the scientific Diaspora the latter group may be an important group to target, for many migrants an intention to return is not realised; helping individuals to maintain connections with the host country could prevent years from being 'lost' in anticipation of return.

Policy makers should support migrant scientists to maintain contact with colleagues in the sending country even where stays are relatively short-term and migrants (or the mobility grant itself) anticipate return.

- Motivations and intentions to contribute also reflect the career stage of the individual. Many early career researchers interviewed within this study felt too junior to contribute, feeling that they didn't have much to offer to the sending country.

- Some respondents expressed a feeling that 'giving something back' entails making an outstanding or major contribution. It would be useful to investigate the value of smaller scale and 'more every day' contributions and to communicate that back to scientists working abroad.

Receiving and sending countries should investigate the value of relatively small scale individual activities and support early career researchers to undertake them.

Smaller scale Diaspora Networking grants could be used to promote the value of engaging with activities such as presenting research, writing papers and planning grant applications. These could be targeted at early career researchers.

Some forms of contribution at a distance such as training doctoral candidates and staff exchanges whilst serving to strengthen the links between key teams also contributed to the emigration of human resources.

Could capacity building activities and funding be targeted at teams with long term and established links in the sending country. The Royal Society/National Research Foundation Joint Collaborative Programme could be a useful model here.

Thematic Paper 2:

'Where have all the health scientists gone? A South African question'

Simone Esau and Liezel de Waal

Attentive to the importance of context in understanding migration decision-making this paper focuses on the movement of South African medical professionals to and from the UK. The key policy issue addressed is the appropriate response of 'sending' or 'donor' countries to the migration of medical professionals in the context of deepening health care crises. Noting a schism in the literature between those who argue that migration could be beneficial to the donor countries and those who emphasize the harmful impact of imbalanced flows, the authors suggest that professional migration is an inevitable outcome of globalisation. Drawing on interview data they identify key “push,” “pull” and “enabling factors” and propose solutions sensitive to the South African context.

The regional context is key to understanding the impact of migration on health provision in South Africa. This country is fairly unique in terms of being both a sending and a receiving country. It is important to understand the migration decisions of individuals within the wider social political and economic context. This requires an attention both to biography and to broader national and regional trends and conditions.

What can we do?

Multi-method approaches combining policy analysis, statistical methods and biographical approaches deliver the kind of research findings that best underpin evidence-based research.

There is a schism in the literature between those who suggest that in some ways migration could be beneficial to sending countries and those who emphasise the negative consequences for sending countries.

The migration of health and medical professionals is a crucial issue for South Africa and for sub-Saharan Africa more generally. This is not only linked to the volume of professional emigration but also to regional health related challenges.

The success of migration management policies should be measured in terms of health outcomes rather than focusing on the number of professionals leaving.

Context specific factors shaping the migration motivations of South African medical and health professionals include the nature of media and political responses to migration, the nature of training and qualification and key employment policies such as affirmative action.

The South African Government has responded to the issue of professional migration by developing measures such as the “UK-South Africa Memorandum of Understanding on the Reciprocal Exchange of Health Concepts and Personnel” (2003). However, there is scope to develop more integrated or holistic responses that reflect the complexity of the specific context.

Analysis of the biographical interviews identified the diversity and complex nature of migration decision-making. The following ‘pull factors’ are identified:

- Scholarship, training and other professional opportunities such as gaining international experience;
- Access to both human and non-human resources such as technologies, networks and contacts;
- Opportunities to travel;
- Financial factors such as opportunities to re-pay student debt and higher salaries;

The authors caution against attempts to restrict the migration of health care professionals. This approach raises a number of complex ethical questions and evidence suggests it may simply not work

Destination countries have a role to play in promoting return and contributing to capacity building within the donor countries. More formal and institutionalised exchange and knowledge transfer schemes between specific hospitals and universities could help to structure these processes. In the light of paper 1 these schemes should develop out of existing individual practices.

‘Push’ factors included:

- Limited access to resources (especially for clinical research) and the nature of research environments, including a lack of critical mass;
- Limited access to international working environments/isolation – lack of ‘broadened horizons’ and ‘new ways of doing things’;
- Relatively poor working conditions, including pay, working hours, infrastructures and organisational approaches, ‘the system’;
- Lack of job opportunities;
- Crime;
- Political factors: the downturn in the economy and perceptions of falling standards in the public education and health sectors.

A number of important causal ‘push’ factors within the donor country should be addressed (focusing attention on preventing or restricting migration could overshadow these).

A holistic approach encompassing a range of factors and not simply focusing on pay differentials is required.

'Enabling' factors facilitating the migration decision included:

- Ease of registration with professional bodies;
- Professional contacts;
- Academic field – location of critical mass;
- Language;
- Colonial ties and dual citizenship.

Post-migration perceptions and experiences are likely to shape future moves. Some respondents from higher income groups pointed to the lower quality of life experienced in the UK compared to South Africa. This was linked to space, the quality of accommodation and access to domestic workers. On the other hand, the UK working environment was experienced as being more attractive in terms of research funding, equipment, critical mass and access to international networks as well as a stronger research culture. In some cases pay didn't feature as a push or pull factor but started to become important once respondents had moved.

Views on future migration and intentions to move again varied. Respondents based in the UK were more likely to consider future moves; locations discussed included Australia and New Zealand. Those who had returned to South Africa had mixed feelings about staying or moving elsewhere. Factors such as pay and career development opportunities were important here.

Thematic Paper 3:

'Excellence, Migration and Equality Policy: Managing Unintended Consequences'

Louise Ackers

*There is a tension between the agenda of excellence and that of equity...
these issues have not been resolved (Kahn et al., 2004)*

The empirical work with South African scientists exposed a range of concerns about the relationship between equality and mobility which are not so much connected with mobility rights as the employment rights of scientists in South Africa (and the role they play in encouraging exit and discouraging return). Much of the research on highly skilled migration refers to the importance of national context to an understanding of migration decision-making. Although these national employment policies were not explicitly designed to shape mobility, they do so in practice – as an unintended consequence (externality effect). We are referring here to the post-apartheid employment context and the complex effects of 'affirmative' action measures.

What can we do?

Migration research and any policy recommendations deriving from it needs to pay careful attention to national context. Although policy lessons can be learnt, outcomes and policies are not necessarily transferable in any direct or simplistic sense.

The findings are grounded in the narratives of our respondents; capturing this level of complexity and nuance required a biographical approach.

Qualitative and biographical approaches form an essential component of research in the field of migration.

The interviews convey an image of South African scientific employment as both remarkably complex and in the midst of transition. The long term effects of apartheid coupled with recent policy changes impact on migration behaviour shaping who leaves, who stays and who returns with important implications for sustainable capacity-building.

Although formal policies have changed, entrenched attitudes and persistent socio-economic inequalities continue to have a marked indirect impact on migration. The intersection of race with financial status influences residential location and shapes access to education and exposure to crime.

Respondents identified concerns about the specific consequences of post-Apartheid employment policy on migration behaviour referring to the 'tactics' that employers used to 'circumvent' post-Apartheid employment equality policies. This included policies such as the use of Afrikaans as the teaching medium (which was perceived by some as a form of indirect discrimination). Others referred to the avoidance of the full impact of reform by increasing reliance upon external sources of funding. In a small number of cases respondents spoke of more direct forms of pressure designed to restrict policy implementation including forms of bullying or harassment designed to restrict the participation of black people in formal applications processes.

Policy change does not have a simple and direct effect on employment conditions and opportunities. Evidence suggested a clear policy lag in the South African context reflecting informal means of avoiding or circumventing policy. As a result, forms of prejudice and discrimination targeted at the black and coloured population continue to shape migration behaviour encouraging this group of researchers to leave the country.

Contextualising experiences is important not only in terms of current national context; respondents' experiences have a temporal dimension reflecting historical policy and socio-cultural contexts. Respondents' accounts need to be located within specific time frame. Many respondents referred to the impact that the new policy environment (in the 1990s) had had on their employment opportunities in South Africa and their migration decision-making at that time

Biographical approaches need to ensure that migrants' experiences are located within the time period they are referring to and have experience of. This is a critical element of contextualisation with important implications for policy exchange processes.

The over-whelming majority of both black and white respondents expressed strong support for the need for policy change. They also raised a number of key concerns around the 'externalities' connected with the new policy environment (and the introduction of affirmative action). Two broad groups of issues emerged. The first concerned the effects of affirmative action on the mobility of the people it was designed to promote – namely black and coloured men and women – and the second, its effects on the mobility of the previously advantaged group (white men).

One element of policy backlash concerned the effects that tokenistic appointments had on the perceived quality of 'previously disadvantaged' groups. The profound effects of Apartheid on the 'gap' between educational opportunity of black and white people in the scientific recruitment pool and the dramatic shift in policy post-Apartheid has increased the potential for appointments to be influenced by colour.

Respondents suggested that the consequent employment of less experienced people in senior positions is likely to cause problems in terms of immediate performance and can compound preconceived and prejudicial views around competence.

Affirmative action may lead to forms of tokenism and distort the relationship between credentials (merit) and recruitment or progression. This influences migration behaviour.

The second concern was that affirmative action effectively discriminated against white men, reducing their career opportunities and encouraging them to migrate. They believed that the current policy climate was not conducive to effective return and professional re-integration. This shaped their own migration behaviour and had a damaging effect on scientific capacity in South Africa.

The specific approach to the introduction of affirmative action in South African employment policy (and its effects on merit-driven and transparent recruitment) is reported to be an important determinant of both outward moves and returns.

South African policy extends affirmative action to women (irrespective of colour). Employment policy, in common with migration policy, tends to assume that people are individuals. In practice, both career and migration decision takes place in a relational context with individual responses framed by considerations about partners and children. Many scientists have partners who are also scientists. Affirmative action policy impacts on these dual science situations creating complex incentives and challenges.

South African women in the UK felt that their employment opportunity had been enhanced by employment equity policies increasing the opportunities for return and professional reintegration (especially if they were not white). On the other hand, where they had partners who were white and male this often tipped the balance in favour of developing their careers outside of South Africa.

Affirmative action has generated unintended outcomes when considered in the specific (but common) context of dual science couples. Household decision-making in these contexts will often imply that women are also deterred from returning to South Africa. The policy also restricts the ability of other foreign nationals (if they are white) to locate themselves in South Africa. This reduces opportunities for internationalisation (and the relative attractiveness of South Africa as a working environment).

Conclusions

Affirmative action policies in South Africa have added further complexity to an already highly distorted employment context. These processes, in turn, impact on migration behaviour shaping who leaves, who stays and who returns. To the extent that migration into and out of South Africa is motivated by racial considerations, this distorts any linear relationship between excellence (merit) and mobility.

Thematic Paper 4:

Scientific mobility and institution building in science in developing countries

Johann Mouton, Nelius Boshoff and Roland Waast

Thematic paper 4 looks at the relationship between migration and the sustainability of universities in developing countries. It focuses on scientific mobility between developing countries in the South (specifically sub-Saharan Africa) and the North and the consequences of sustained brain drain on the quality and sustainability of

universities in these developing countries. The paper develops further a thesis on the “de-institutionalisation of science” in developing countries as it pertains to scientific migration.

One of the prevailing arguments about scientific migration and “brain circulation” is that the movement of scientists and academics between institutions and countries is a positive feature of the modern global world. The argument is that individuals accrue benefits in terms of new experiences, competencies and networks gained and also that there are also obvious benefits to the returning country. This paper argues that this “brain circulation” thesis is premised on (incorrect) assumptions about equal and symmetrical flows of highly skilled personnel (HSP) between countries. Moreover, the circulation and mobility of scientists across different countries and institutions occurs where there are reasonably strong and well-resourced institutions.

Scientists returning to a country where there is a science system that is well-funded and governed and where research institutions are properly managed and adequately resourced are in fact able to “give something back” (cf. Thematic Paper 1). The South African science system is in most respects a modern and self-sustaining research system with many strong and internationally acclaimed universities. But this is not the case for many countries in the rest of Africa.

The effects of scientific mobility on weak and dysfunctional institutions are quite different and the worst effects of “brain drain” are apparent in these systems. The institutions of science in many sub-Saharan countries have been systematically eroded and broken down over the past three decades through various international economic policies as well as the devastating effects of domestic policies and events. The cumulative effect of these policies over time has had various impacts:

- A decline (at least in relative terms) in scientific output,
- Changes in modes of scientific work,
- The devaluing and degrading of the profession of science,
- The brain drain.

The relationship between the state of the institutions of science and the brain drain is a reciprocal one – the continuing decline of human capital in science and technology through the brain drain has become itself a major cause of the de-institutionalisation of science. The continuing drain of high level human resources in many developing countries continue to weaken the institutions of science which in turn cause more scientists to turn away from “normal” scientific practices and increasingly to seek employment elsewhere – a true “vicious circle”

What can we do?

Focus on scientific institutions: The most general policy implication here speaks to the relationship between brain drain from the South and the state of scientific institutions in these countries. The continuing brain drain from this region will not be reversed simply by looking at interventions that target individual scientists (such as home coming initiatives or diaspora networks or exchange programmes). This paper points to the key role of the institution and how the brain drain continues to erode institutional capacity and institutional research culture. Any attempt to reverse the brain drain will fail if it does not also consider interventions and initiatives that restore and eventually make these institutions sustainable research institutions.

Numerous studies have been conducted over the past 10-15 years that convincingly demonstrate that research at former well-resourced and supported institutions in many African countries have deteriorated; that research infrastructure and the general state of laboratories at many institutions has suffered from a lack of maintenance and timely replacement of old equipment. In addition the generally poor quality of library resources has not improved significantly with many university libraries not even using automated management systems; the demand for sufficient research funding for ongoing research and scholarship continues as does the need for proper research management and support at most of these institutions.

Continuing investment in the essential Information and Communication Technologies. Research centres and programs are in a sense the “superstructure” of science. But this is dependent on an extensive ICT infrastructure (fibre optic networks, information systems development, sufficient bandwidth, automated library management systems). Much effort and funding has over the past 5-10 years been invested in this area. However, it is clear that many challenges remain. Experience has shown that many universities have outdated administrative systems with archaic procurement policies that make the simple acquisition of computer equipment extremely difficult. Moreover, the absence of a local support system (in the form of local vendors and maintenance companies) means that broken equipment often do not get repaired or replaced.

The de-institutionalisation thesis – Many of the scientific institutions in Africa are fragile and susceptible to the vagaries of political and military events. They are severely under-resourced and suffer because of a lack of clarity and articulation of science governance issues (demonstrated by constant shifts in ministerial responsibility for science). One could even refer to some of these science systems and the associated institutions as operating in a “subsistence” mode where they struggle to even reproduce themselves. A “subsistence mode” in this context would refer to a system that basically produces knowledge for its own use only and does not export knowledge. In fact it does not make a significant contribution in the global game of knowledge production. It is even debatable whether one can talk of a science “system” in many of these countries as they do not exhibit typical “systemic” characteristics.

Four factors that have in the past and still continue to shape and affect the (de)institutionalization of science in these countries:

1. The continuing legacy of colonial science in many countries;
2. The destabilizing influence of political events and civil wars;
3. The role of international agencies in shaping African sciences;
4. The gradual erosion of human capital through the brain drain.

Training and technical advice in research management and graduate studies. Very few African universities (outside of South Africa) have well-established research management offices. Although some effort has been made in recent years to strengthen the local expertise in this field, this is simply not enough. Our experience shows that many research managers at these universities are recently appointed, have very little knowledge of how to manage the institutional research profile and how to access funding and support to do so. In addition, research directors and managers of doctoral programs require much more training and support across a wide range of skills and competencies in such areas as the supervision of graduate students,

development research plans and strategies, codes of conduct on integrity in research and so on.

The paper sets out a discussion of the effects of sustained de-institutionalization on modes of knowledge production in these countries. Because of low domestic investment in R&D, most African universities and scientists rely heavily on international funding. In addition, because of poor institutional capacity, funding for research is not channelled through a properly articulated and monitored system of public funding (e.g. through a national funding agency), the individual scientist and academic at a university receives his or her funding directly from foreign funders (or through the mediation of a local representative). Those who are privileged to receive such funding use it to pursue their own research interests (not surprisingly) and also to advance their own careers. This allows them to travel overseas, attend international conferences and in general have the required resources to build their own individual research capital. This focus on building one's own curriculum vitae must be understood within the context of poor academic salaries and working conditions and a general lack of sufficient research and library resources. But this kind of scientific endeavour rarely converts into building institutional research capacity. It is not linked, for example, to training doctoral or even post-doctoral researchers. The fact that there are so few doctoral programs at many of these universities means that "reproducing" existing scientific work through doctoral students is not even possible.

Focused niche area support: Governments and international funders should be encouraged to shift their support from individual scientists to supporting research centres and institutes which either have already achieved some critical mass or have the potential to do so. Such centres should be sufficiently resourced to enable them to undertake both basic and fundamental research in critical areas of national interest and not to become completely dependent on commissioned contract research. In order to assure the sustainability of such centres, it is essential that one or more doctoral programs and post-doctoral fellowship schemes be linked to the activities of the centre. The establishment and support of more doctoral programs is therefore equally important.

One of the direct consequences of sustained de-institutionalization, is that many academics increasingly revert to consultancy work – often for international agencies and governments rather than for local agencies. In a recent study of public science in the SADC region, we collected data on the extent and nature of consultancy activities in these countries. A major finding of our research is that two thirds of all academics in the region regularly engage in consultancy. The conflict between consultancies and academic publications reportedly generates a professional culture in which: "the point is to try and chase the quick money, and not take advantage of the chance of academic growth" (Wright, 2008: 113).

Support and funding for local scientific publishing in African countries. The dissemination and uptake of scientific research is a process which requires its own dedicated scientific institutions: journals, publishing houses, electronic repositories and data archives. One practical proposal would be to support some of the already operational University Presses (of which there are a number). These publishing houses, which are linked to universities, perform multiple functions in that they often publish local academic journals, the best doctoral dissertations that are produced at the universities and of course also worthwhile monographs and other academic books.

Conclusions

This paper emphasizes the link between brain drain (the unequal movement of scientists between countries) and the state of scientific institutions. Where there is an asymmetrical flow of scientists from developing to developed countries (as is well-documented), it is difficult to make the case for any positive gains from scientific mobility. On the contrary, the outflow of highly skilled scientists and academics from the developing countries in sub-Saharan Africa has had two significant consequences:

1. It has severely eroded the remaining research and advanced teaching capacity at many universities (thereby adding to the de-institutionalisation trend),
2. It has meant that academics who remain in these (mostly dysfunctional and under-resourced) institutions have had very little recourse but to turn to other forms of generating income and hence turning to consultancy work.

The “knock-on” effects of the brain drain on the institutions and institutional research culture have not been adequately researched nor emphasized. The loss of significant (and often the best) scientific capacity does not mean that the remaining faculty can conduct “business” as usual. On the contrary, they are often burdened by additional teaching loads (again as a means of survival) and minimal support to undertake research. The poor state of laboratories, scientific equipment, library holdings and weak ICT infrastructure are all impediments to a healthy and robust research culture. The shift towards consultancy work is logical: it is financially rewarding, does not require institutional support and helps to build individual careers and curricula vitae that make future mobility more possible.

Want to Know More?

More details of Work Package 2 research and outputs can be found at:

www.resist-research.net/home.aspx