Chapter 5
Conclusions and some implications

Three years of HERANA research into the role of universities in economic development in Africa, including surveys of three successful innovation-driven OECD countries and eight African nations and universities, produced an analytical framework to explore the role of universities in (economic) development and how this role might be operationalised. It also produced the most comprehensive, systematic and comparative data on a group of sub-Saharan African universities ever compiled.

The research led to key findings in three broad areas, the needs: for a ‘pact’ that sees governments, universities, funders and other stakeholders agree on a central role for higher education in economic development and the knowledge economy; for strengthening the ‘academic core’ of universities that is essential to producing knowledge, reproducing the academy and providing the high-level skills that drive development; and for improving policy (and implementation) coordination at national and institutional levels in ways that help to connect universities more effectively to development.

**KEY FINDINGS**

- There is a lack of clarity and agreement (pact) about a development model and the role of higher education in development, at both national and institutional levels. There is, however, an increasing awareness, particularly at government level, of the importance of universities in the global context of the knowledge economy.

- Research production at the eight African universities is not strong enough to enable them to build on their traditional undergraduate teaching roles and make a sustainable, comprehensive contribution to development via new knowledge production. A number of universities have manageable student–staff ratios and adequately qualified staff, but inadequate funds for staff to engage in research. In addition, the incentive regimes do not support knowledge production.

- In none of the countries in the sample is there a coordinated effort between government, external stakeholders and the university to systematically strengthen the contribution that the university can make to development. While at each of the universities there are exemplary development projects that connect strongly to external stakeholders and strengthen the academic core, the challenge is how to increase the number of these projects.
5.1 Pact needed on ‘engine for development’ role for universities

The development model of the three OECD systems studied in this project represents what the WEF competitiveness report classifies as ‘innovation-driven’ – in other words, these countries have agreed that knowledge and education are key productive factors in development. From the sample of eight African countries, three (Mauritius, South Africa and Botswana) are in the ‘efficiency’ phase, meaning that improved efficiency and higher education and training are increasingly playing an important role in economic development. The other countries are in the process of moving from ‘factor’ (natural resources and low skills base) towards efficiency and, by implication, an increasing importance for education and training.

This study revealed that the three efficiency-driven systems already have substantially higher participation rates in higher education but that, with the exception of Mauritius, none of the countries has a consistent development model, nor is there agreement that knowledge is a key productive factor. In the rest of the sample there are emerging knowledge policies, but they are located mainly in one government department, with weak coordination and implementation.

In most of the countries in the sample, as a kind of compensation for the absence of a development model, grand, national visions are constructed. These visions, some looking forward as far as 2030, have no implementation plans or systematic monitoring mechanisms. To some extent they could be seen as attempts at constructing a common vision – and by implication confirming that there is no pact.

Mauritius is the only country where, at both the national and institutional levels, there is a belief that knowledge is a key driver of development, and where the government and the institution have similar notions about the role of the university. However, in terms of the academic core, coordination and implementation it does not seem as if the pact has been properly operationalised as yet.

The lack of the pact in our sample countries is also evidenced by the lack of consensus between national and university stakeholders around the role of higher education and universities. Amongst national stakeholders, the dominant expectation is that universities make a direct contribution to development. This instrumental notion emphasises contribution in the form of expertise exchange and capacity building, rather than the production of new scientific knowledge. It is a constant refrain from government stakeholders that universities are not contributing enough to development; however, this is usually in reference to addressing broad social problems rather than to economic development in particular.

On the whole, national stakeholders and some government policies and plans reflect the language of the knowledge economy and the role of the university as the ‘engine of development’ – more so than university stakeholders and plans do. However, it is likely that this is still a more instrumental notion of knowledge since it is used in the sense of direct application to development issues rather than the more indirect role of knowledge and universities in R&D and innovation.
It is surprising that amongst university leadership, support for the role of the university in the knowledge economy is rather weak. Instead, the two dominant notions reflect the traditional tension between the university as a self-governing institution that indirectly contributes to development, versus a more direct instrumental role. There is an emerging awareness of the importance of an ‘engine of development’ approach in the sample but, with the exception of Mauritius, it is far from being the dominant view.

In the period following independence in many African countries, a clear pact developed between government and universities that universities would provide the human capital (civil service and professions) for the new states. That pact is long gone. Instead, there are a range of policy visions and notions, often contradictory, within government and within universities about how to respond to changing development demands that are increasingly driven by knowledge. What has not changed is that there is, with the exception of Mauritius, not a generally agreed upon development model, with the result that neither the government nor institutions agree on the role of higher education in development.

It could thus be argued that there needs to be considerably more emphasis on ‘forging’ agreement between governments, funders and university leaders that knowledge and higher education are key productive forces. So while capacity-building is important, consensus-building is equally important – capacity-building without agreement on ‘capacity for what’ may be part of the ‘bottomless pit’ syndrome in Africa.

A potentially positive development in terms of forging greater agreement across different constituencies is that in all the countries, tertiary or higher education councils have been established, partially to compensate for weak ministries but also to do ‘independent’ certification and quality assessments. Currently they are partially ‘symptoms’ of problems in the system, but all are undergoing ‘role re-definings’ and could become key players in promoting discussions about the role of higher education in development and in monitoring progress.

5.2 Strengthening the academic core – incentives are key

The university is a specialised institution whose core business is knowledge – its production, reproduction and dissemination. In addition, the university can only participate in the global knowledge economy and make a sustainable contribution to development if its ‘academic core’ is strong. The core knowledge production output variables of the sample African universities are not strong enough for them to make a sustainable contribution to development, and the academic core indicators do not show significant signs of strengthening knowledge production outputs (doctorates and publications).

As was the case with the European university tradition before the second world war, and until fairly recently the Latin American model (Swartzman 2010), the universities in our sample are still predominantly organised as undergraduate teaching institutions, despite some rather grandiose mission statements and claims to be knowledge producers. But just as was the case in Europe, Latin America and Asia, the challenges facing African
universities are to expand their role beyond teaching to research and to become significant contributors to what Douglass et al. (2009: 1) call 'globalisation’s muse': 'Universities and higher education systems, for both real and romanticised reasons have become globalisation’s muse: in essence a widely recognised route to full participation in the knowledge society.'

The convergence in weakness of research output is in contrast to much greater variance in input strengths. The strongest input indicators are in manageable student-staff ratios and the relatively high level of staff with PhDs, which could partially account for solid undergraduate success rates. However, these success rates have to be seen within the context of the combination of a flagship university in a national system of low participation rates, meaning a very elite group of students.

The two areas of greatest concern on the input side are the low levels of postgraduate students, particularly at the doctorate level, and the lack of research funds. A striking feature of postgraduate enrolment is the dramatic increase in masters enrolments and graduations. There are two sides to this. On the one hand, course work masters degrees certainly contribute to increasing the pool of highly-skilled workers beyond the bachelor degree, which is a feature of many knowledge economies. On the other hand, these mainly course work masters programmes do not seem to prepare students for doctoral studies, particularly the research and dissertation components. Very poor throughput rates – in some cases, more than 50 masters students for every PhD enrolment – attest to this. But there could also be other contributing factors, such as the fact that there are many more scholarships for masters programmes, particularly from foreign donors, while scholarships for doctoral studies are much scarcer.

Not enrolling and graduating PhDs has a number of serious consequences. Firstly, the flagship university has to reproduce its own academic staff, as well as academics for other higher education institutions in the system. It also has to respond to the increasing demand in the knowledge economy for people with doctorates in institutions other than the university, such as research institutes, and for high-level person power in top positions in a range of industrial and financial institutions.

New knowledge production and connecting university research to application and innovation is most frequently led by academic staff with doctorates and research programmes. The vast majority of the development activities identified by university leadership for the study were led by academics with PhDs. Growing the cadre of doctorates is an essential task for a flagship university – not only to reproduce itself, but also to produce knowledge that can connect the institution to both the global knowledge economy and the local community.

'ISI-referenced publications' represents a narrow notion of research which does not reflect research that feeds into application or consultancy, and could thus be seen as only the tip of the ‘research iceberg’. However, this is the tip that makes a flagship university part of the global knowledge community, and publishing part of an international disciplinary or inter-disciplinary community. Three crucial components of what might be called an output-
oriented research culture that produces the ‘tip’ are: staff with appropriate research training (having a PhD is an essential but not sufficient requirement), research funding, and a conducive incentive environment.

The first problem with the incentive structure at the university level starts with the problem of very little earmarked research funding coming from government, which puts pressure on universities to find incentive money from their already-stretched budgets. While almost every university has a research fund, the funds have to be shared with related activities such as conference attendance, equipment and information resources. In addition, it seems that most of these internal ‘open competitive’ funding sources are mainly incentives for young academics and doctoral students, with many senior academics saying that the amounts available are not worth applying for. A related problem, in some cases, is that while some money is available for equipment, it is nearly impossible to get equipment maintenance funds.

The second problem with the incentives structure is that it seems a major distraction from PhD supervision and academic research for some staff is multiple private teaching opportunities, both within public institutions with ‘private’ students and in private higher education institutions located in close proximity to the flagship institution. So while the teaching load, according to student-staff ratios, might not be excessive, this ‘triple teaching’ as a form of income supplementation is another contributor to weakening the academic core.

A third potential problem is related to consultancies for government, foreign donors and industry. While most academics interviewed mentioned consultancies, it is very difficult to get anything near an accurate picture of consultancy activity. (In one of the Dar es Salaam annual reports a figure of about 800 consultancies was mentioned.) Nevertheless, what emerged from these discussions is that consultancies have major advantages over research grants. Firstly, it is a personal relationship with a donor that often also has other benefits such as travelling to the donor country and being invited to networks of other recipients. Secondly, consultancies provide both direct supplementation of income and have much greater flexibility about how the funds are spent (whereas research grants often have numerous stipulations about travel, hiring of researchers, buying of equipment, etc).

It is clear from this investigation that in order to ‘refocus’ universities, attention will have to be paid to incentive structures that promote knowledge production. Low knowledge production cannot be blamed solely on low capacity and resources. What needs to be incentivised is PhD supervision and research programmes that strengthen the academic core, make these flagship universities part of the global academic community, and connect them to local and regional development.

Part of developing the academic core will be to improve and strengthen the definition of key performance indicators, as well as the systematic, institution-wide capturing and processing (institutionalisation) of key performance indicator data. Such indicators will be key for national and institutional decision-makers to design evidence-based policies and incentives, rather than the current over-reliance on aspirational mission statements.
5.3 Coordination and connectedness to development

The university cannot unilaterally strengthen the academic core and connect it to development-related activities. It requires the coordination of government policies and other external stakeholders. At the national level, there were considerable coordination activities in most countries, ranging from forums and clusters to the reorganisation of national ministries. However, this seemed to be mostly weak or ‘symbolic’ coordination.

Evidence of this was not only in the lack of supporting policies across relevant departments, but also in the focus of such policies often being contingent on the interests of different and changing government ministers. This was reflected, amongst others ways, in the fact that policies to support research were often in departments of science and technology, but not in education. Another indicator was the reconfiguration of ministries of education, either separating higher education from basic education, linking and delinking higher education from science and technology, or even linking higher education to training.

In the absence of a pact, and with competing notions and a lack of consensus between universities, national authorities and external actors about the university’s identity and its role in development, coordination becomes virtually impossible. A consequence is that the energy and actions of university leaders and academics have to be invested in continuous, unpredictable negotiations, particularly about funding from government – instead of in strengthening the core academic activities of the institution. The result of this is often fragmented and inefficient organisations characterised by intra-organisational struggles for power, autonomy and funding.

The above can be illustrated by looking at research funding. In all eight countries there are national policies that promote research and innovation, but these are mostly located within science and technology departments, not in education (with the exception of Botswana and Mauritius). Funding from government through education departments is mainly for teaching and infrastructure, with between 1–3% available for research at most institutions. Academics often described their government’s contribution to research funds as ‘negligible’.13

In all the countries studied dissatisfaction was expressed with the national research councils: not only are the amounts of money limited, but funds are cumbersome to access through complicated application procedures, and grants are often for short periods, meaning repeated reapplication.

In the absence of a coordinated funding and incentive strategy from government, reliance on external funding increases which, in turn, can contribute to more fragmentation and ‘projectisation’. This weakens the academic core of universities because knowledge is not accumulated and fed into teaching and publishing, and the entire system is more vulnerable to donor agendas, interventions and political interference.

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13 According to Oyewole (2010), on average, sub-Saharan African countries spend less than 0.3% of their GDP on research – the lowest in the world. Furthermore, Africa has lost 11% of its share of global science since its peak in 1987, while sub-Saharan science has lost almost a third (31%).
Although donor aid in Africa has not reached the ambitious targets set at the 2005 G8 summit, reaching about 60% of the targets still amounts to a significant increase in development aid to Africa in general, and to higher education in particular. The issue is not only about more aid but, equally importantly, how to spend the aid more effectively.

This study shows that the coordination of agendas and projects with donors is a major problem, not to mention the considerable administrative effort required for accounting to multiple donors. Only two institutions (Dar es Salaam and Eduardo Mondlane) had established strong donor coordination structures. But, as was indicated in the case of Eduardo Mondlane, to strengthen the academic core requires coordination and a joint effort by donors and government; research and doctoral training cannot be 'outsourced' to donors while government funds undergraduate teaching.

One way to start addressing the serious shortage and lack of coordination of national and continental research funds, is to consider an African version of the recently established European Research Council, a body that concentrates large amounts of funds to promote frontier research excellence.

Strengthening the academic core not only requires more research funds but also mechanisms that connect the university to development activities in ways that strengthen rather than weaken the academic core. Starting with industry linkages, while there was evidence of connecting to industry or the private sector in all eight universities, this was generally confined to the level of units or centres rather than institutional-level partnerships. Except for ad hoc consultancies at some universities, there was virtually no evidence of university engagement in R&D with, or for, industry.

To a large extent this is because the industrial sector in most of the African countries studied is largely under-developed, and because there is very limited private sector R&D – where global companies do have operations in the African countries, their R&D is usually undertaken elsewhere. This is a problem in most developing countries but it is particularly acute in Africa. However, some of the universities are beginning to address the lack of interaction between their institutions and industry or the private sector through the establishment of university-industry liaison structures.

Interaction with the private sector took mainly two forms. The first is in the area of education and training. Examples include the use of people from the private sector on advisory committees responsible for curricula design and revision, for work placements, and for specific, customised training programmes. The second form of interaction, at almost all the universities, is business development and support for SMEs. A challenge will be to increase the scale of these initiatives while still connecting them to research and postgraduate training, because these types of projects lend themselves to individual consultancies.

The survey of 44 projects/centres identified by university leaders as being strongly connected to development, ranged from long-term research programmes to postgraduate training and short-term support services to external groupings. At each of the universities
there are ‘exemplary’ development projects/centres that are strongly connected to national/local priorities, have more than one funding source and, in some cases, have a connection to an implementation agency. At the same time, they are strengthening the academic core through training postgraduate students, are part of international academic networks, and have published in peer-reviewed journals and books. A few projects are world class in terms of international recognition and cutting-edge research (particularly in the areas of the environment and health). The challenge is to vastly increase the number and the scale of these types of projects.

Finally, our approach to higher education and development can be illustrated by a version of the Burton Clark ‘coordination triangle’. Clark’s seminal book *The Higher Education System* (1983) addressed the issue of the organisation of higher education systems and argued that factors that integrate higher education systems (i.e. that keep them from falling apart) are the three forces of coordination: the state, the market and the academic oligarchy. These form the three nodes in his triangle.

In the context of this study, we have adapted Clark’s triangle (Figure 4) to depict the three main nodes as government, universities and external groupings. These in turn reflect the dynamics of our analytical framework which can be articulated as follows: in order for universities to make a sustainable contribution to development, there needs to be agreement amongst the major actors (a pact) about the role of development; there needs to be capacity in the academic core of universities; and there needs to be coordination and connectedness of the policies and activities of government, universities and external groupings.

These three aspects are interrelated. Without a pact, coordination becomes virtually impossible. Without national policies and implementation of these policies, it is very difficult for the university to develop a strong academic core (particularly in developing countries where the market is weak). But, strong academic capacity without being connected to development activities results in the insulation of the university (the ‘ivory tower’). Strong connectedness of universities to development, but with weak academic capacity, diminishes the contribution the university can make to development.

The above does not mean that there is one best practice model to achieve this. Our study of the three systems that have been successful in different ways in connecting higher education to development (Finland, South Korea and North Carolina) showed this.

For African countries to move from being providers of raw materials and receivers of foreign aid to the next stages of development that will make them part of the global knowledge economy, implies at least the following. Firstly, agreement (a pact) about the importance of knowledge in development and the special role of the university. Secondly, strengthening the academic core, particularly in terms of knowledge production. Thirdly, greater coordination amongst an increasing number of actors and agencies (multiple government departments, business and foreign donors) involved in higher education. And finally, ensuring that development activities strengthen rather than weaken academic capacity, particularly for flagship universities.
CHAPTER 5 CONCLUSIONS AND SOME IMPLICATIONS

FIGURE 4 The dynamics of the relationship between the pact, academic core and coordination

GOVERNMENT
Government departments: Education; Science and Technology; Treasury; Industrial Development; Research councils

Notions and policies

Coordination mechanisms

Pact, academic core, coordination--connectedness

EXTERNAL GROUPINGS
- Funders
- Business
- Community

UNIVERSITIES
- Leadership / planning
- Faculties
- Academics