

CHAPTER 12

MANAGING CONTRADICTORY FUNCTIONS AND RELATED POLICY ISSUES

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Introduction

In Chapter 1, and following Castells (1993, 2009), Cloete and Maassen summarised the four core functions of universities as producing values and social legitimisation; selecting the dominant elites; training the labour force; and producing scientific knowledge and supporting its application in society.

In the African context, during colonial domination, which was characterised by an economic model of extraction and exploitation, higher education was not regarded as ‘value-adding’. In the postcolonial era, the newly independent African nations regarded universities as important for elite-formation and for training the labour force at the professional level. Development aid, as can be illustrated by the World Bank’s ‘policy advice’ with respect to higher education, did not in any way incorporate producing new knowledge as a function of the African university. And, when they did start regarding universities as important for development, the main focus for development aid was on direct assistance with (community) development. Higher education in Africa thus developed a path dependency that privileged the ‘ideological, elite-formation’ and ‘training the labour force’ functions in Castells’ (1993) typology of university roles. The ‘production of scientific knowledge with application in society’ function was not developed. Furthermore, during this time, many of the previously colonised countries, as they moved into the information age associated with knowledge-driven economies, started paying much more attention to the economic and science/innovation functions of their universities.

The recognition of the importance of knowledge and higher education for sustainable development is now global, even though there are contextual and regional differences in the way the relationship between the two evolves. Nonetheless, there are two things that are universal about this relationship. Firstly, the university remains the best and, in many respects

central, producer of self-renewing knowledge-producing capacity. The best index for this is the production of research-based PhDs, associated with research and innovation. Secondly, the university is much better at indirect long-term knowledge capacity-building than direct short-term knowledge application and technology development, a task that many of the new knowledge institutions of the knowledge economy (parastatals, non-governmental organisations and firms) are far more efficient at undertaking (Mazzucato 2013: 52–53).

This confronts Africa with the need to ‘catch up’ in the form of strategically investing in universities with the aim of producing new knowledge for teaching and for development. Towards the end of the millennium, development aid agencies, including the World Bank, recognised that there is a need to strengthen the knowledge-producing function of the African university system. Two main strategies emerged in this regard: aid to individual academics and students, and the establishment of centres of excellence. Strikingly, both strategies have failed. Aid to individual academics and students contributed to a massive brain drain, or to the phenomenon of academics returning to their national universities where they were not research-productive and seldom happy (Chapter 5). At the same time, the establishment of centres of excellence, located in universities that are not research-intensive, has, with a few exceptions, not produced the expected strengthening of the needed research capacity.

The central argument from the evidence presented in this book is that Africa needs a group of research-intensive or research-led universities. These can be described as academic institutions committed to the production and dissemination of knowledge in a range of disciplines and fields, and equipped with the appropriate laboratories, libraries and other infrastructure that permit teaching and research at the highest possible academic level. Worldwide, such universities play complex roles in their national knowledge systems, including delivering on the core mission of research production; the training of students to engage in research; and producing researchers and academics for other universities and research units (public and private) in the system. A review of the mission statements and the performance of the eight flagship universities¹ in the HERANA study (see Chapter 3) shows that only the University of Cape Town (UCT) satisfied two of the flagship goals – namely, high-output research and scholarship, and delivering knowledge products that would enhance national and regional development – and that Makerere University appears to be moving in that direction.

A number of policy issues were identified that would need to be addressed if the group of HERANA universities, and other similar institutions in Africa, are to become more research-intensive institutions. These issues relate to system-level governance, the academic structure of research-intensive universities, funding and development aid, and research-informed reforms. Before discussing these policy issues, and in the HERANA tradition, we illustrate the problems institutions may face in managing the contradictory functions by looking more closely at three of the flagship universities.

1 The universities of Botswana, Cape Town, Dar es Salaam, Eduardo Mondlane, Ghana, Mauritius, Makerere and Nairobi.

Managing contradictory functions: The universities of Mauritius, Nairobi and Makerere

The three ‘illustrative’ universities chosen are Mauritius, Nairobi and Makerere. The University of Mauritius is selected because it is located in the only country in the African HERANA group that has a pact and explicit knowledge economy policies. The University of Nairobi and Makerere University are also included because they are both large, well-known African universities that have intentions and policies to become research-led institutions, but that are grappling with trading off enrolment expansion with a focus on the doctorate and research, albeit with somewhat different outcomes.

The University of Mauritius

In Mauritius there was a very explicit role for higher education in development, as articulated in national policy documents such as the Draft Education and Human Resources Strategy and, importantly, the policies formulated in the document *Developing Mauritius into a Knowledge Hub and Centre of Learning* (MESR 2006). As a result of the coordinated efforts of the Ministry of Education, Culture and Human Resources and the Ministry of Finance and Economic Empowerment, the country had made significant progress in translating the policy documents into implementation of the first steps to move the country towards becoming a fully fledged knowledge economy. Mauritius is currently rated the most competitive economy in Africa by the World Economic Forum.²

One aspect of a knowledge economy education system that Mauritius has implemented is massification; it is the only country in Africa with a participation rate of more than 25%. This expansion was largely due to an ‘explosion’ of private providers, mainly from East Asia but also from Europe (and the United Kingdom in particular). However, massification in Mauritius has not been accompanied by differentiation: having about 60 private higher education institutions in a country with around 1.3 million people means a large number of very small institutions doing similar things.

In terms of the four main functions of a higher education system referred to earlier, it could be argued that the University of Mauritius has done well in terms of the function of producing values and social legitimation. Unlike universities in other African countries, there has been very little in the way of staff or student conflicts, or disruptions for extended periods of time, at the institution.³ In terms of the function of elite formation, the university has certainly been the flagship for the nation – although figures provided by the Mauritius Tertiary Education Commission indicate that significant numbers (17% in 2013) of the children of the

2 Paradise Gained: How Tiny Mauritius Became Africa’s Most Competitive Economy. *International Business Times*, 4 September 2013.

3 It could even be argued that this is part of the Mauritius ‘miracle’ of building a strong state.

elite leave Mauritius to study abroad.⁴ This is a problem in many developing countries: in the absence of a high-prestige university, the elite send their high-performing youth abroad. The University of Mauritius is also performing very well in the ‘training the university-level labour force’ function: not only is the university efficient in terms of undergraduate throughput, the HERANA study on higher education and economic development reported that the costs per graduate in Mauritius are the lowest in the HERANA group (Cloete et al. 2011).

However, the assessment of the University of Mauritius as a flagship university in Chapter 3 shows that the institution met only three of the 13 flagship targets, relating to its proportion of students in science, engineering and technology (SET), and to its throughput rates of masters and doctoral graduates. Furthermore, the institution exhibited a number of weaknesses in relation to knowledge production, for instance:

- Over the five-year period 2007–2011, total enrolments had grown by 26% (from 7 807 to 9 864), while enrolments at the masters level had increased slowly (12% in 2011 compared to 2007) and growth at doctoral levels had been stagnant (0% over the period).
- The proportion of head count undergraduate students had remained around 90% for the period. Doctoral graduate totals increased between 2007 and 2011, but had reached only 15 in 2011. The ratio of masters-to-doctoral enrolments increased from 15:1 to 19:1, meaning that the throughput from masters to doctorates declined, and this ratio is much higher than the target of 5:1.
- The total number of tenured academic staff increased by 43%, and the total number of academics with PhD degrees grew from 90 to 121 (33% increase), between 2007 and 2011.
- Even more problematic is that research publication output remained low relative to the number of academic staff employed, even though the HERANA project data indicates that the number of academic publications did increase from 36 in 2007 to 63 in 2011 (75%, from a very low base). The updated data from Chapter 4 shows that in terms of Web of Science publication outputs, Mauritius increased from 23 in 2001 to 74 in 2013, an increase of 222%, but that over the same period Makerere had increased by 539% and Eduardo Mondlane by 307%. The outputs per academic staff member in terms of research publications and doctoral graduates at the University of Mauritius were therefore low in comparison to the other HERANA institutions.

In summary, the assessment of the University of Mauritius shows that despite Mauritius being the only country in the HERANA project that had a pact of policies and strategies to be a leader in the knowledge economy, without a policy of differentiation in the higher education system the university has not been able to make a trade-off between being a largely undergraduate teaching institution and a research-led flagship university. In other words, the contradictory

⁴ Tertiary Education Commission data provided by Praveen Mohadeb (6 January 2015).

functions of training for the labour market and producing (and applying) scientific knowledge have not been managed in a way that allows the university to assume a role as a producer of new knowledge in the knowledge hub.

The University of Nairobi

In Kenya, the Kenya Education Sector Support Programme, together with the Ministry of Higher Education, Science and Technology's plan for 2008–2012 and the Medium Term Plan 2009–2030, are the key policy documents that set out the government's vision on the role of higher education and the commitment to the knowledge economy. The development planning document, Vision 2030, is intended to stimulate the implementation of this ambitious policy vision.

The University of Nairobi has started a debate about becoming a research university and has taken some steps towards this goal, such as establishing an office for a deputy vice-chancellor for research; appointing a director of research; increasing research funding; introducing recognition and incentives for outstanding researchers; and strengthening support for postgraduate research. The university has also developed a number of strategic goals with associated performance objectives, which include projections pertaining to masters and PhD programmes, journal publications, papers at conferences, and research grant portfolios (Waweru & Otieno 2014).

Regarding the role of producing values and social legitimisation, the University of Nairobi is an example of an institution with a history of conflict and contestation, with extensive periods of closure owing to student and/or staff strikes. The report on the student survey conducted at the university as part of HERANA Phase 1 characterised the institution as a 'political hothouse' (Luescher-Mamashela 2011). Furthermore, it reported that compared to the general Kenyan population, students at the University of Nairobi had more radical views on politics including, for example, very liberal views of what democracy is (as a political system of political and civil rights); high levels of preference for democracy and a rejection of authoritarian rule (especially high was the rejection of presidential authoritarianism); and, strikingly, the highest levels of criticalness towards the political system of any student surveys ever conducted by HERANA. What also emerged is that the ethnicisation of politics under the Kibaki government, and the subsequent 2007/2008 post-election violence, had 'infected' student politics. As in other African flagship universities, the role of national political parties is highly problematic in student politics – not only because student leaders become part of party-based patronage systems, whereby their affiliation and loyalty to the party is ultimately rewarded with jobs in government or the party upon graduation, but also because these party systems tend to follow ethnic cleavages, thus 'institutionalising' inter-ethnic competition for the spoils of politics.

In terms of the elite-formation function, the University of Nairobi was, for a long time, the institution of choice for the children of the elite. But this position has been eroded by the introduction of private students and the establishment of private universities such as the

United States International University and, in the public sphere, Moi University, Kenyatta University and the Jomo Kenyatta University of Agriculture and Technology.

While the University of Nairobi has fulfilled the role of training large numbers of professionals, there have also been issues raised by a number of human resource commissions about the adequacy and relevance of the training. For instance, the Director of the Federation of Kenya Employers reported that his Federation was questioning the quality of education offered in Kenyan universities (Ramah 2013). In particular, he charged that many university administrators were compromising the quality of education by accepting students without improving campuses' capacities to absorb them, and that they were mainly considering financial gains when expanding their education programmes. The Director added that the Federation would like to see universities specialise in particular fields – in contrast to the current situation where all the universities are offering degrees in every field so that they can cash in on as many students as possible (*ibid.*).

The assessment of the University of Nairobi as a flagship university in Chapter 3 shows that the university met only two of the 13 flagship targets: a favourable ratio of full-time equivalent (FTE) students-to-academic-staff in SET programmes, and its throughput rate of doctoral graduates. The assessment also highlights the areas in which the university appears to be facing serious challenges, which include the following:

- While Nairobi had substantial increases in masters students – 6 145 in 2007 to 11 807 in 2011 (an increase of 92%) and doctoral students from 62 in 2007 to 255 in 2011 (an increase of 311%) – the percentage of doctoral enrolments to total enrolments is 0.3% as opposed to 4.0% at UCT. Despite this increase, 255 doctoral students in a university of over 40 000 students remains low.
- Similarly, while the doctoral graduate totals increased from 32 in 2007 to 61 in 2011 (91%), 61 graduates for such a large institution is low by international standards. More problematic for Nairobi is that the ratio of masters-to-doctoral enrolments was 48:1 in 2009 and 46:1 in 2011 (the target ratio is 5:1). The implication of this is that a disproportionately large number of masters degrees are 'terminal', meaning that students do not progress to the doctoral level.
- In contrast to this growth, the total number of permanent academic staff remained flat, from 1 292 in 2007 to 1 382 in 2011 (7%), as did the total of academic staff with PhD degrees, which increased only slightly from 581 in 2007 to 636 in 2011 (9%). This means that basically the same staff complement had to deal with an increase of 47% in masters and doctoral students.
- Research publication totals also remained low relative to the numbers of academic staff employed but, as shown by the HERANA data, the number of academic publications did increase from 105 in 2007 to 198 in 2011 (89%). The 2013 update in Chapter 4 shows that Nairobi's academic publication output on the Web of Science increased from 131 in 2001 to 248 in 2013 (73%). This is the lowest increase for all the HERANA

institutions; by contrast, Makerere increased by 539%, Eduardo Mondlane by 307% and Ghana by 229%. Overall, the University of Nairobi's scores below the flagship targets and the flagship averages were the institution's throughput of total graduates, its throughput of masters graduates, its outputs of research publications per academic, and its outputs of doctoral graduates per academic.

In Chapter 7, Wangenge-Ouma et al. report that the research incentive regime at the University of Nairobi was regarded as weak by the academics surveyed, and that it was failing to encourage the maximisation of the university's research goals. While there were multiple principals who were rewarding research activities, academics were also confronted with other principals who were reinforcing non-research behaviour. Such principals included development aid agencies and government departments that offered significant rewards for consultancies. In addition, the university itself was incentivising teaching on the full-fee-paying stream by providing additional payments, over and above regular salaries, to academics who taught on these programmes. The general perception of academics was that the incentives were inadequate, discontinuous and not systematically applied across the institution.

In terms of policies and the setting of performance goals, the University of Nairobi was clearly showing a serious intention to strengthen knowledge production. However, in terms of its undergraduate teaching and income-generation mission, the university's enrolments grew from 36 788 in 2009 to 61 466 in 2011 and 80 209 in 2013 (Waweru & Otieno 2014). This 118% increase in overall enrolments and 47% in masters and doctoral enrolments was quite in contradiction to the increase of 6.9% in permanent staff and the 9.4% increase in staff with PhDs.

In summary, Nairobi is an interesting example of a university that is trying to resolve the tensions of enrolment expansion (earning more income) and developing a stronger research postgraduate function, but without a supporting government policy framework. However, from the research and doctoral output figures it is clear that the staff complement cannot cope with the contradictory pressures.

Makerere University

Makerere University's current strategic plan (2008/2009–2018/2019) ties itself closely to the institution's role in national development. The formulation of the plan was guided by the question: How can Makerere University reposition itself to meet emerging development challenges in Uganda? The plan took into account a range of socio-economic, political and environmental concerns, including an overview of shifts in the Ugandan economy with specific reference to the move towards a knowledge economy and the role that Makerere can play in this regard. The plan aligns itself with a number of national policies including the National Strategic Plan for Higher Education and the Uganda Poverty Eradication Action Plan.

In fulfilling the role of providing values and social cohesion, Makerere was certainly part

of what Castells (1993: 74) regarded as the instability of the conflicting and competing elites. According to Mugume and Katusiimeh (forthcoming), elite competition has continued into the current period where the reintroduction of multiparty politics (bounded by the dominance of the National Resistance Movement as ruling party) has translated into student guild politics at Makerere University in terms of high levels of inter-party competition and related patronage of student leaders. As in other African countries, these parties tend to be ethnic-based. Thus, inter-ethnic competition for political spoils is part of students' socialisation experience. Conversely, the incidence of student protests and closures at the university has been reduced with the admission of large numbers of private (fee-paying) students, whose interests dominate Makerere guild politics and who fear being expelled and losing their student fees already paid (*ibid.*). However, the student surveys conducted at Makerere University as part of HERANA Phase 2 (see Chapter 11) show that the university is beginning to offer a 'training ground' in democratic citizenship in terms of developing key competences such as critical thinking, leadership skills, and diversity and social skills. This happens less through student politics and more through the creation of an institutional culture that is perceived as open, with pedagogies of active and collaborative learning, and active skills training.

According to Mamdani (2007), while Makerere certainly started out with the function of providing training for a privileged elite on full scholarships, the elite status of the institution was seriously undermined after the World Bank structural adjustment period and the subsequent privatisation and commercialisation of the university. Nevertheless, with regard to training the new professional class, Makerere has been the uncontested flagship university of Uganda.

Regarding knowledge production, as will be seen in the section on the pact later in this chapter, Makerere and the universities of Botswana and Mauritius were the only HERANA institutions where the institution's role in economic development was explicitly articulated in their respective strategic plans. In addition, Makerere and the University of Ghana were the only universities where the staff seemed more aware than the national government of the importance of the role of the university in the knowledge economy (Cloete et al. 2011).

Makerere's strategic plan has three pillars: becoming a research-led university; transitioning from a teacher-centred to a learner-centred institution; and making a paradigm shift from outreach to knowledge transfer (Nakayiwa-Mayega 2014). In order to move towards a research-led institution, Makerere instituted a number of strategies and structures, including the establishment of a directorate of research and graduate training; strengthening institutional planning with a new director (who, in addition to considerable experience, has a PhD in higher education studies); developing a framework for research management that emphasises a new management style and internationalisation; and developing a research monitoring framework that includes publications, research income, number of doctoral students, and research incentives (promotion and monetary). Finally, the plan exhibits the conscious promotion of a 'flagship' discourse (which has been self-reinforcing) for national

and international partnerships, coupled with creating a number of centres of excellence through partnerships (*ibid.*).

The assessment of Makerere University in Chapter 3 shows that the institution met four of the 13 flagship targets. These relate to its favourable ratio of FTE students-to-academic staff in SET programmes, as well as the throughput rate of total graduates, SET graduates and masters graduates. The assessment also showed that over the period 2007–2011, Makerere had faced eight specific challenges, including the following:

- Makerere's proportions of masters-plus-doctoral students and of doctoral students were below the flagship targets and, in the case of masters-plus-doctoral enrolments, below the average for the eight flagship universities.
- Its performance fell below the flagship target and the average for the eight flagship universities in terms of the provision of senior academics and of academics with PhD degrees.
- Other weaknesses that resulted in scores below the flagship target and the flagship averages were its student-to-staff ratio in programmes other than SET, its throughput of doctoral graduates, and its outputs per academic of research publications and of doctoral graduates.
- Of particular concern for Makerere's ambition to become a research university is that it has remained a predominantly undergraduate university: in 2009, 91% of the student body was at the undergraduate level and this proportion had only dropped to 90% by 2011 (compared, for instance, to 68% at UCT). Nevertheless, masters enrolments grew from 763 in 2007 to 1 705 in 2011 (123%) and doctoral enrolments from 32 to 563 (1 659%) over the same period. Even more impressive is the 3:1 ratio of masters-to-doctoral enrolments (the same as UCT). From this we can conclude that the institution is managing growth at both the undergraduate and postgraduate levels, much more so than the University of Nairobi.
- The total number of permanent academics remained flat, from 1 179 in 2007 to 1 209 in 2011 (3%), as did the total of academics with PhD degrees, which increased only slightly from 365 in 2007 to 375 in 2011 (3%).
- Research publication totals have remained low relative to the number of academic staff employed but, according to the HERANA data, the number of publications did increase from 233 in 2007 to 382 in 2011 (64%). The updated Web of Science review in Chapter 4 shows that Makerere's publication output went from 84 in 2001 to 460 in 2013, an increase of 539%, which is substantially the highest of all eight HERANA institutions. Of particular relevance is the post-2008 period (of the new research strategy) during which publications increased by 90.8% (241 to 460) over the five-year period. This is an average annual growth of 13.8% (in contrast to UCT's average annual growth of 7.7%).

In Chapter 6, Musiige and Maassen report that Makerere can do more to stimulate the development of a stronger research culture. They suggest that the human resource policy should go beyond stimulating academic staff members with PhD degrees to engage primarily in teaching. At present, tenured academic staff have little accountability regarding research. Furthermore, Makerere could stimulate the strengthening of an institutional research culture by introducing adequate incentives and rewards for academics who engage in research. Another major issue is that the nature of the research funding practice contributes to making research an individualised activity. There is hardly any collective (i.e. institutional) component in research funding at Makerere, implying a loose coupling between the institutional research ambitions and strategies, and the individual academic staff members' (lack of) engagement in research activities.

The positive changes at Makerere highlighted above came about despite the national research system, which is characterised by Nakayiwa-Mayega (2014) as having a limited national policy framework, fragmented support, and the absence of a comprehensive national funding system for research (higher education research is part of the Ministry of Education and Sports, and the national budget for research and development (R&D) is less than 0.3% of Uganda's gross domestic product).

While Makerere's overall research outputs are still low in international terms, the improvements in doctoral enrolments and graduation, and in research productivity, do represent remarkable increases from the low starting base. These improvements also show that institutions with determined strategies and structural changes (such as capping undergraduate growth and increasing doctoral enrolments while curbing masters-level growth) can bring about change, even in adverse conditions. However, there are national (e.g. the lack of a coherent research policy framework) and institutional (e.g. the incentives for teaching privately sponsored students) factors that mitigate against strengthening an institutional research culture.

In conclusion, four key points can be extracted from the discussion of the problems faced by the three 'illustrative' universities in managing contradictory functions. Firstly, these institutions have had mixed success in fulfilling the functions of 'values and social legitimation' and 'elite-formation'. Secondly, in terms of awareness and policies, and some structural changes, all three are committed to strengthening the knowledge production function. Thirdly, what Mauritius shows is that even where a pact and policies are in place, if there is not a deliberate commitment to differentiation at both the national and institutional levels, the functions of undergraduate training will continue to dominate. Finally, despite strong institutional commitments to strengthening research at both Nairobi and Makerere, without national support that can curtail the strong pressure for fundraising through expanding undergraduate enrolments, the institutions will not be able to manage the contradictory functions of undergraduate training and knowledge production.

Policy issues

Based on more than six years of theoretical and empirical work, a number of key policy issues have been identified which African governments, universities, other higher education actors and development aid agencies will need to address if the intention to develop a group of research-intensive universities in Africa, which can produce new knowledge with global and local impact, is to be realised. This set of policy issues relates to system-level governance; the academic structure of research-intensive universities; institutional and governance capacity; development aid funding; and the need for research-informed reforms.

System-level governance: Pact and differentiation

Our starting point is the importance of the university *system* (and not just individual institutions) and, within this, system-level governance with regard to the development of research-intensive universities in Africa. At the system level (see Chapter 9), higher education governance refers to institutional arrangements (frameworks, structures, resources etc.) involved in the direction, planning, management and coordination of institutions and the sector as a whole, and involves a range of stakeholders involved in policy-making and implementation. A core component of governance is the efforts undertaken to move the sector and institutions in the direction indicated by particular higher education (and national development) goals. For this to be successful, a range of governance functions and mechanisms have to be in place, such as the development and maintenance of a pact; policy development and strategic planning for the sector (and hence institutions); the monitoring and evaluation of implementation; the development and use of regulatory frameworks and policy instruments, and setting targets for the sector; and the coordination of knowledge policies and activities.

A key problematic in terms of the development of research-intensive universities in Africa is how the higher education system is structured to deal with the formation of a pact to implement a policy of differentiation because, without a differentiation policy, there cannot be research-intensive universities (Birnbaum 1983). We unpack the issues relating to the pact and differentiation below.

Pact

One of the first steps in the HERANA project was to gain a better understanding of the relationship between higher education and development in an international context. To this end, case studies of two countries (Finland and South Korea) and one state in the United States (North Carolina) were undertaken, all of which are part of the OECD but on different continents (see Pillay 2010). One of the main reasons for choosing these states for closer study was that in all cases there was evidence of a strong and close relationship between education, and within this higher education, and economic development. Furthermore, all three states had undergone a major rethink of their economic policies and had put in place strategies and

policies to link higher education to economic development. As such, in each of these states there was a strong, agreed-upon framework for economic development that was aimed at stimulating an advanced, competitive knowledge economy, with an important role for higher education in this regard. Despite major contextual differences, the three states exhibited the following conditions for harnessing higher education for economic development (Cloete et al. 2011: 12):

- Their higher education systems had been built on a foundation of equitable and quality schooling and an emphasis on achieving high-quality higher education;
- They had achieved very high participation rates in higher education (all three over 80%);
- The higher education systems were differentiated in terms of public/private providers as well as different types of institutions (e.g. specialised universities, colleges and polytechnics, in addition to more traditional research-intensive universities);
- Governments and/or national committees coordinated links between economic and (higher) education planning;
- There were effective partnerships and networks between the state authorities, higher education institutions and the private sector to link education and training, and research and innovation; and
- There was strong state involvement in a number of other respects including, for example, adequate state funding for higher education; using funding to steer the higher education sector to respond to labour market requirements; and incentivising research and innovation in the higher education sector.

Based on the three international case studies, as well as case studies of the role of universities in economic development in the eight African HERANA countries, Cloete et al. (ibid.) concluded that one of the key conditions for stimulating effective university contributions to development is the existence of *a broad pact between government, universities and relevant socio-economic actors about the nature of the role of universities in development*. A pact has been defined by Gornitzka et al. (2007: 184) as:

A fairly long-term cultural commitment to and from the university, as an institution with its own foundational rules of appropriate practices, causal and normative beliefs, and resources. A pact is different from a contract based on continuous strategic calculation of expected value by public authorities, organised external groups, university employees, and students – all regularly monitoring and assessing the university on the basis of its usefulness for their self-interest, and acting accordingly.

In order to explore the extent to which a pact was evident in the eight African higher education systems, the HERANA Phase 1 project (see Cloete et al. 2011) collected and analysed an

array of both documentary and interview data during 2010. At the national level, documents included policies, plans and/or strategies for development, higher education, and science and technology, and interviews were conducted with a range of national stakeholders, including representatives of the ministries responsible for higher education, finance/economic affairs, and science and technology, as well as the higher education councils/commissions. At the institutional level, data consisted of key documents such as strategic plans and research policies, and interviews with university leaders, including the vice-chancellor and/or deputy vice-chancellors, heads of research and institutional planning, and senior academics.

The research concluded that none of the eight African countries had a clearly articulated development model or strategy. Some countries (e.g. Uganda, Botswana and Mozambique) had national development plans; others (e.g. Ghana and Mozambique) had poverty reduction strategies; and a number of countries had national visions – usually focused on some point in the distant future.⁵ However, these did not constitute development strategies that were broadly accepted and implemented across different ministries. One exception was Mauritius, which had what came closest to a fully-fledged development model, with its generally agreed-upon national vision and associated array of policies for a knowledge hub, but as yet without the requisite coordination, implementation and monitoring powers. The other countries were characterised by frequently changing national priority announcements, often around the budget speech, and a plethora of non-complementary policies in different centres of power.

In the absence of clear development strategies, the researchers looked at a range of policies and medium- and long-term budget plans from different government departments, in order to ascertain whether these featured the notion of the knowledge economy and a role for higher education in development. Similarly, universities' strategic plans and research policies were consulted to see whether the concept of the knowledge economy and a role for the university in development were articulated. At the national level, Kenya and Mauritius, followed by Mozambique and Tanzania, exhibited the strongest awareness of the concept of the knowledge economy and a role for higher education in development. However, with the exception of Mauritius, this awareness was not reflected across policies, but was predominantly found in the science and technology policy or in the long-term national vision. Most problematic, again with the exception of Mauritius, was that the concept of the knowledge economy and a role for higher education in development were mostly absent from the policies of ministries responsible for higher education. At the institutional level, the knowledge economy was explicitly articulated in the policies or plans of the universities of Botswana, Mauritius and Makerere. None of the universities had specific policies regarding the institution's role in economic development, although this role was embedded in the strategic plan and/or research policy of the universities of Botswana, Nairobi, Mauritius and Makerere.

Without a pact on the role of higher education and universities in the knowledge economy,

5 Examples included the Tanzania Development Vision 2025, Botswana Vision 2016, Ghana Vision 2020, Mozambique's Agenda 2025, Kenya Vision 2030, and the South African National Development Plan 2030.

a foundation is lacking for the development and implementation of a clear and effective policy and strategy for differentiation, which is a condition for the development of a group of research-intensive universities in the system.

Differentiation

To start with, in terms of the different roles of universities, Castells (1993: 73) observed that 'because universities are social systems and historically produced institutions', they undertake all of the four functions discussed earlier simultaneously within the same structure, although with different emphases at different historical moments. Castells (ibid.) concludes that the 'critical element in the structure and dynamics of university systems is to combine and make compatible seemingly contradictory functions'. The challenge, then, is to develop institutions that will be strong and dynamic enough to withstand the tensions inherent in these contradictory functions, while at the same time being able to respond to what they see as their specific 'mission' or task in a particular moment in the history of the system. Furthermore, the fulfilment of different functions cannot be resolved within individual universities alone; ideally, they need to be distributed throughout a system, with particular institutional types undertaking different combinations of functions.

It is in determining these combinations that a prevailing debate and contestations arise in relation to differentiation. In the African context, the issue of diversity and differentiation was discussed at an international seminar that was part of the Centre for Higher Education Transformation's (CHET) 10th anniversary in 2007.⁶ Providing an international perspective, which formed the basis of a book on differentiation in higher education (Van Vught 2009), Frans van Vught (2007: 5–6) argued that differentiation has the following positive effects for higher education systems:

- It improves access for students with different educational backgrounds and achievements;
- It enables social mobility by offering different modes of entry into higher education, multiple forms of transfer, and upward as well as 'honourable downward' mobility;
- It can meet the needs of the labour market by creating a growing variety of specialisations that are needed for economic and social development;
- It serves the needs of interest groups by allowing many to develop their own identity and political legitimisation; and
- It permits the crucial combination of elite and mass higher education: mass systems are more diversified than elite systems as they absorb a heterogeneous clientele and try to respond to a range of demands from the labour market.

⁶ For further information on CHET seminars and research outputs on differentiation, see <http://www.chet.org.za/research-areas/differentiation>.

Van Vught (*ibid.*: 6) concluded that despite these obvious advantages, in recent decades tertiary systems around the world had been becoming less diverse and differentiated. He attributed this to a combination of uniform (one-size-fits-all) government policies that tend to drive towards homogenisation, and the ability of powerful academic communities to defend their norms and aspirations (*ibid.*: 6, 14).

At the same CHET seminar, Njuguna Ng'ethe from the University of Nairobi reported on one of the first (and only) systematic studies focusing on differentiation in Africa (see Ng'ethe et al. 2008). This World Bank-sponsored investigation covered higher education systems in 12 African countries and, for comparative purposes, Korea, Singapore, Chile, the United Kingdom and France. Significantly, Ng'ethe observed that the expansion of higher education in Africa had not been accompanied by differentiation; instead, there was evidence of institutional isomorphism whereby newly-established institutions tended to replicate the dominant 'mother' university (MacGregor 2008). In other words, the impulse was for universities to become more and more alike, rather than to develop diverse missions.

Ng'ethe highlighted four aspects that contribute to the trend towards institutional homogenisation in Africa (*ibid.*).⁷ Firstly, in most African countries, higher education funding is based on total student enrolments. Thus, even if an institution starts out with the intention of specialising in a particular area, in a context of low regulation, institutions are free to add other academic programmes, which are often money-spinners (meaning cheaper but popular). This can have the effect of undermining the potential for differentiation. Secondly, the uniform approach to institutional governance, in which institutions are established in the same way and under similar laws, does not allow for differentiation in governance mechanisms. If this is added to the undifferentiated government funding mechanism, then there is a great homogenising pressure. Thirdly, a phenomenon in African higher education is that of off-shore (private) providers. While these institutions do introduce some level of differentiation by offering degrees from other countries, they also offer popular courses in money-making areas (e.g. business administration or information and communication technology). In this regard, Ng'ethe concluded that 'overseas universities are not driving a high level of differentiation' (*ibid.*). Finally, even when it appears that there are different types of institutions as reflected in different nomenclature (e.g. 'universities of technology'), more often than not, the curricula are not very different across these apparently different institutional types. The same can be said of academic programmes where different course titles belie otherwise very similar content.

An important question in this is whether differentiated systems are more likely to be created by a strong, regulating government, or by autonomous institutions operating in market-like settings. As the studies referred to earlier show, the situation in Africa is not different from elsewhere; that is, autonomous higher education institutions do not attempt to develop a profile which is different from all other higher education institutions. Instead of

7 Ng'ethe's focus on the issue of differentiation in the African context was mainly on size and shape (programme/curriculum) differences, with little attention to differentiation in terms of knowledge production (doctoral education and research output) which is the core focus of the HERANA project.

looking for a fitting niche, each institution is driven by income- and status-maximisation. As a consequence, higher education institutions are naturally inclined to mimic other successful institutions, thereby effectively limiting system-level differentiation. These change dynamics can only be moved in a differentiation-enhancing direction through effective governmental policies and regulations. Unfortunately, as the HERANA data show, the current situation in Africa deviates from this emerging understanding of the factors that stimulate system differentiation in higher education. Firstly, governmental policies aimed at increasing the capacity of the higher education system by establishing new universities have, in general, used one basic university model in this, implying that the new universities have become ‘clones’ of the existing university/universities. Secondly, public and private institutions that had the level of institutional autonomy that would allow them to develop unique profiles have, in general, combined mimicking and budget-maximising behaviour (e.g. in the form of recruiting large numbers of private fee-paying students).

Furthermore, from the earlier discussion it is clear that a pact and appropriate policies are a necessary, but not sufficient, condition for differentiation that produces a research-intensive institution. There are no easy World Bank-type prescriptions for countries on how to achieve differentiation, particularly not in Africa where it has not been done before. What may be instructive in this regard is a brief summary of the debates and developments relating to transformation and differentiation that have been taking place in South Africa.

In South Africa, the National Commission on Higher Education (1996) declined to address the issue of differentiation because it was so divisive. In 2000, the newly established Council on Higher Education put forward a bold proposal for a four-‘institutional type’ system, ranging from institutions that would do only undergraduate teaching to universities that would focus more on postgraduate teaching and research. The then Minister of Education and the majority of institutions rejected this proposal; instead, a proposal to restructure the ‘apartheid’ landscape with institutional mergers was put forward and implemented by government (see Chapter 3).

In 2006, CHET initiated a series of differentiation debates linked to research on performance indicators for the South African system.⁸ The title of the most recent seminar (November 2014), ‘Edging Closer to Differentiation in Higher Education’,⁹ tells the story 14 years after the Council on Higher Education made its proposal. The dilemma of differentiation was well summarised by Thomas auf de Heyde in the discussion at the seminar. He reported that on aggregate over the past five years, of the 12 000 lecturers and senior lecturers currently in the university system – the band in which ‘emerging researchers’ would typically be found – only about 600–650 (just over 5% of the cohort) received research funding from the National Research Foundation annually. This shocking figure shows the ‘brake’ on research productivity for the new talent coming into the system. Muller (2014) argues that the answer to why more new-entry academics are not applying for grants can be found in the deep fissures that divide

⁸ See CHET website: <http://www.chet.org.za/events>.

⁹ See Muller (2014) for an overview of this seminar.

academia in South Africa. On the one hand, those who prioritise development argue that more resources should be allocated to the institutions with a demonstrated track record of producing active researchers, which will give the system a sustained and sustainable push. The counter-argument, from those who privilege transformation, is that all available resources should be directed to the institutions that do not (yet) have the capacity to develop active researchers – meaning all universities must become research universities.

Within the context of this standoff, South Africa is very close to having a pact on the need for a diverse and differentiated system. As was pointed out in Chapter 5, the National Development Plan and the Department of Science and Technology have policy positions supporting strong research universities. The 2013/2014 White Paper of the Department of Higher Education and Training states that policy and funding will ensure that where quality of teaching and/or research in the system is high, this level will be maintained and improved (see Bunting 2014a). During 2014, a wide agreement emerged about the need for differentiation: the National Development Plan in the Presidency states it unambiguously; the Department of Science and Technology is implementing it with competitive funding; and the Department of Higher Education and Training supports it through funding for research publications as well as substantial funding for enrolling and graduating doctoral students.

However, the Department of Higher Education and Training seems to be paralysed in putting a comprehensive implementation policy on the table. During HERANA Phase 1, the research group came to the conclusion that the widely held common-sense notion that Africa has many good policies but not the capacity to implement them, is not entirely true. For a start, there are many poorly conceived policies that have simply been cut-and-pasted from similar policies in ‘successful’ countries. Secondly, the capacity is not as weak as is often assumed: in a number of the ministries in the eight HERANA countries, we encountered very well qualified and experienced bureaucrats. Three main problems that paralyse implementation are: inappropriate policy-mimicking; frequent policy changes by successive ministers (every new minister wants a new policy); and, as is the case in South Africa, disagreements between the minister and bureaucrats, disagreements amongst bureaucrats and, not to forget, disagreements between university leadership.

Two clear lessons can be learnt from the South African case. Firstly, it is important to have an ongoing debate that includes government departments (beyond just the education department), university leadership and research organisations. Secondly, it is very important to provide research-based information about the performance of the system: if the policy discussion is not informed by evidence it will simply oscillate between different ideological positions.

System governance: The role of government agencies

As highlighted earlier, in his lecture on the *Role of Universities in Development, the Economy and Society*, Manuel Castells emphasised the importance of a university system and observed that ‘the quality, effectiveness and relevance of the university system will be directly related to

the ability of people, society and institutions to develop' (Castells 2009). The case studies of the three African flagship universities discussed earlier in this chapter illustrate that neither a university, nor a government, can alone bring about a differentiated system that includes research-intensive institutions.

In Chapter 9, Bailey concludes from the study of higher education councils that there was evidence of a shift from a state control approach to a state supervision model of higher education governance in all eight countries. This is a very significant and positive development in sub-Saharan Africa. A state supervisory system is characterised by 'multi-level multi-actor' governance, which includes the redistribution of decision-making powers, responsibilities and accountability among external and internal stakeholders. The governance architecture in such systems consists of a parent ministry (and its relevant department or unit) with overall responsibility for policy-making, strategic planning and ensuring compliance; semi-autonomous agencies responsible for, amongst others, policy implementation, distributing and monitoring public funds, external quality assurance and regulation (including setting norms and standards), monitoring and analysing, and providing expert advice; and informal national-level forums, comprising different levels of institutional leadership, which can make proposals to the parent ministry regarding the development of the sector.

A strong indicator of the move towards a state supervisory approach to governance is the emergence of specialised, semi-autonomous government agencies in what is often referred to as the process of 'agencification'. Here, the main motives for the establishment of such agencies include demands on governments for greater efficiency, responsiveness, transparency and accountability; decreased political interference in governance matters; and enhanced technical expertise and the specialisation of functions. In this book, we report on two extensive studies of such types of bodies in the eight HERANA countries and in 17 sub-Saharan countries, namely, higher education councils/commissions and national research/science granting councils, respectively.

The study on higher education councils (Chapter 9) concluded that factors that were inhibiting the ability of the national councils/commissions to carry out their governance roles more effectively related to a lack of capacity and appropriate expertise; the lack of comprehensive and up-to-date data; the absence of the necessary leverage or sanctions to compel institutions to meet their targets; and the absence of a pact and system-level coordination to guide the work of the councils/commissions within the overall system. Key policy issues identified were the need for a more detailed national plan for the tertiary/higher education system in each country; a review of governance roles and coordination at the system level; capacity-building and identification of expertise; the location (government or agency), development and maintenance of higher education management information systems; and greater clarity regarding autonomy and political independence – that is, a better understanding and acceptance of the need for agencies to have an adequate degree of operational autonomy (Braun 2008a).

The study of science (research) granting councils (Chapter 8) concludes, amongst others, that the relatively low investment in R&D in many sub-Saharan Africa countries, which has

a direct impact on the science funding models, points to different ‘inscriptions’ of science in different countries and different values afforded to science. On the one hand, some governments clearly recognise the value and importance of science and hence invest in science funding and in the establishment of a national funding agency. On the other hand, many governments have not – at least until very recently – judged science to be of sufficient value and importance to invest in the establishment of a relatively autonomous agency to disburse state funds for R&D. But, the fact that there has been a surge of interest in the recent past in reformulating existing science policies and in the establishment of a separate ministry of science may be indicative of a change even amongst the latter categories of countries. Both Chapters 6 and 7 (dealing with incentives) corroborate the findings in Chapter 8 that there is an urgent need for greater investment in science and the restructuring and strengthening of the research systems in the countries studied.

Academic structures within the university

The key academic structures of a university are its study programme and qualification mix (PQM), the student enrolments and graduates related to the PQM, and its academic staff complement. The elements of these structures are defined and explained in Bunting (2014b).

Student enrolment planning is essential to the maintenance of the academic structure of any university. A student enrolment plan must monitor the flows of students entering and exiting a university, and must, in addition, deal with:

- Time frames for the introduction of new academic programmes into, and the deletion of existing academic programmes from, the PQM of the university; and
- The student enrolment and graduation targets that a university is expected to meet – either by its internal governing structures, or by an external authority such as a government ministry or higher education council or commission.

The report *An Empirical Overview of Eight Flagship Universities in Africa: 2001–2011* (Bunting et al. 2014: 31) raises questions about whether there is evidence that all the flagship universities had even limited student enrolment plans in place during the period 2001–2011. Were the changes that occurred in enrolments over the period the result of the implementation of an enrolment plan of the kind summarised above, or were they unplanned institutional responses to student demand pressures? The analyses in the report express doubts about the existence of enrolment plans at most of the flagship universities, for reasons of this kind:

- Total student enrolments at the eight flagship universities doubled between 2001 and 2011. There were, however, unexplained differences between the average annual growth rates of individual universities. For example, the average annual growth rates in total enrolments between 2001 and 2011 were: 13% for Ghana, 12% for Eduardo

- Mondlane and 10% for Nairobi. More moderate average annual growth rates recorded over this period were: 4% for Cape Town, 3% for Botswana and 2% for Makerere.
- The average annual growth rate between 2001 and 2011 in the total academic staff of the eight flagship universities was 4%, which was approximately half of the 7% average annual growth rate in head count student enrolments between 2001 and 2011.
 - Data show that large proportions of the enrolment growth occurred in business and management programmes, and lower proportions in SET programmes. The data show further that academic staff resources were not redistributed during this period of differential growth. The pattern seen at several of the flagship universities was that of highly favourable FTE student-to-academic staff ratios remaining in place in SET programmes, with ratios in business and management programmes becoming or remaining unacceptably high. This can be seen in the 2011 FTE student-to-academic staff ratios at Nairobi (science and technology 15:1, business and management 150:1) and Ghana (science and technology 10:1, business and management 51:1).

Because of the demands of high-level knowledge production, a university's student enrolment plan should pay specific and detailed attention to the aspects that deal with masters and doctoral programmes and students. It should indicate what is to be done with under-subscribed masters and doctoral programmes, and what the minimum and maximum enrolments in a programme should be. The enrolment plan should also set targets for the proportions of its student enrolments to be enrolled in masters and doctoral programmes. In Chapter 3, Bunting et al. argue that for any African university in the HERANA context that is aspiring to be research-intensive, these target proportions of total head count enrolment should be set as at least 15% for masters students and at least 5% for doctoral students. The 15/5% proportions of masters and doctoral enrolments also sets an important efficiency indicator for an aspiring research-intensive university. Its ratio of masters-to-doctoral enrolments should be no more than 3:1. If the ratio is higher than this, it may indicate that the university is using masters programmes for purposes of professional skills training, rather than for the training of future high-level researchers. The data available show that the ratios of the flagship universities covered a wide range, as can be seen in the examples from 2011 in Table 12.1.

Table 12.1 HERANA data on masters and doctoral enrolments (2011)

University	Masters enrolments as % of total enrolments	Doctoral enrolments as % of total enrolments	Ratio of masters-to-doctoral enrolments
Target	15%	5%	3
Cape Town	16%	5%	3
Makerere	5%	2%	3
Ghana	11%	1%	13
Nairobi	19%	0.5%	47

Compiled by Ian Bunting

A separate academic staffing plan that deals with the staffing resources required for the successful implementation of the enrolment plan is an essential component of the academic structure of a university. A university's academic staffing plan must have close links to the student enrolment plan, particularly in the case of universities that take the production of high-level knowledge to be central to their institutional missions. Bunting et al. (2014) have demonstrated that there is a close link between doctoral and other research outputs and the qualifications and academic rankings of staff. The conclusion reached in the report is that universities that wish, as part of their research-intensive aspirations, to enrol increasingly large numbers of doctoral students, must ensure that they have in place adequate numbers of qualified and senior staff who are able both to supervise doctoral students and to lead research groups. The staff rank and qualification targets set out in Chapter 3 take account of this need for qualified supervisors and senior research leaders, by requiring of an aspiring research-intensive university that at least 50% of the full-time academic staff of a university should hold a doctoral degree, and that at least 60% should be in the senior ranks of full professor, associate professor and senior lecturer. Lecturers, junior lecturers and assistant lecturers are considered to be junior staff members for this purpose.

The HERANA data available indicate that most of the eight flagship universities do not have academic staffing plans in place and, in particular, have not attempted to relate academic staff qualifications and ranks to their high-level knowledge plans. Table 12.2 gives examples, for 2011, of the proportions of academic staff with doctorates and proportions of senior academics.

Table 12.2 HERANA data on full-time academic staff (2011)

University	% of full-time academics with doctorates	% of full-time staff in ranks of professor + associate professor + senior lecturer
<i>Target</i>	50%	60%
Cape Town	63%	69%
Botswana	65%	44%
Ghana	50%	42%
Nairobi	46%	45%
Mauritius	45%	42%
Dar es Salaam	31%	45%
Makerere	31%	29%
Eduardo Mondlane	18%	17%

Compiled by Ian Bunting

Capacity development

In Chapter 5, Cloete et al. asserted that lack of funding and lack of capacity are overused and over-simplified explanations for the challenges and failures in African higher education.

However, this does not mean that there is no need for capacity development at both national and institutional levels.

At the national governance level, visits to the higher education divisions within the ministries responsible for higher education in the eight HERANA countries were often a disconcerting experience; in most of the offices there were at least some well-educated bureaucrats with PhD degrees and some university teaching experience, surrounded by metre-high piles of administrative folders. By contrast, (at least some of) the national higher education commissions/councils seemed better resourced with more professional and business-like offices. The research group also observed that bureaucrats seldom interact with bureaucrats in similar positions in other countries, and that they are generally excluded from the capacity-building higher education conference circuit. With regard to strengthening higher education divisions in education ministries, there is also a debate about whether higher education should have a dedicated ministry of its own, rather than being embedded within a broader education ministry, or whether higher education should be combined with other key knowledge areas (such as science and technology) in a so-called 'super-ministry'. While there are pros and cons related to each of these options and certainly no 'ideal model',¹⁰ this is a policy issue that should be kept on the table.

The creation of government agencies opens up the space for developing and concentrating specialised higher education capacity and expertise at the national governance level. The higher education councils/commissions in the HERANA study (see Chapter 9) had developed, or were in the process of developing, specialised expertise – both internally within their organisations and externally within institutions and the sector at large – around key higher education functions (e.g. quality assurance, planning, research, policy advice and stakeholder engagement). Arguably, this was bringing capacity into the system that was not available in the parent ministries or their departments. However, the most commonly cited obstacle to function implementation in all eight councils/commissions was the lack of capacity. On the one hand, this manifested as shortages of staff within the organisation in general because vacancies had not been filled. On the other hand, the capacity issue was described in terms of expertise – both within the councils/commissions and within the broader sector – in specialised areas such as quality assurance, research and data analysis.

Comprehensive and up-to-date data on higher education institutions and sectors is a key resource in the effective implementation of a range of governance functions including, for example, decision-making with regard to the accreditation of institutions or the allocation of funds; policy advice to government; and strategic planning for both institutions and the sector. While four of the eight HERANA countries had a tertiary or higher education management information system in place, only in Mauritius and South Africa could these be considered comprehensive. In South Africa, the information system was housed in the national Department of Higher Education and Training, while in Mauritius it was located

10 For an overview of experiences with the super-ministry approach in Europe, see Braun (2008a, 2008b) and Koch (2008).

in the Tertiary Education Commission. The location of the information system is a key issue that governments must decide on.

Capacity issues also emerged in the study on science granting councils in sub-Saharan Africa (Chapter 8). In this regard, Mouton et al. pointed to the need to create opportunities for the councils to share information and learning on a regular basis, and for the capacity-building for the programme officers and staff of these councils to be addressed in a systematic way. The authors also highlighted the possibility of accredited training courses and workshops for continuous professional development in areas such as peer review and evaluation procedures; grant-making procedures; management of international science and technology agreements; policy analysis and research and innovation priority-setting for science, technology and innovation; and the basics of R&D management and bibliometrics.

Regarding capacity at the institutional level, the HERANA project focused on institutional capacity to collect, analyse and develop indicators for strategic planning and strengthening the academic core. In Chapter 2, and in Bunting (2014b), there are more detailed descriptions of the limited institutional data capacity encountered during the first 2009 data collection exercise in the HERANA Phase 1 project. In brief, some universities could not extract the required data because they did not have appropriate or functional electronic student and staff databases, or because there were gaps in the electronic databases or inaccurate classifications and incomplete graduate sets. Furthermore, some institutions did not have a central management information office in which complete data sets were stored. Another major problem was the inability to translate data into indicators, and the absence of comparable performance data with peer institutions. At the launch of HERANA Phase 3 in November 2014, we reported that the capacity of the participating universities had improved dramatically and, as was illustrated in Chapters 2 and 3, there are now comparable performance data for eight flagship universities. Two key units that need to be strengthened in research-intensive universities are institutional data/planning offices and research management/support offices.

To strengthen the academic core, the earlier section on academic structures illustrated the importance of well-qualified and senior staff. Indeed, a study on the entire South African academic staff showed a correlation of over 0.80 between having a PhD and accredited publications on the Web of Science (Pietersen & Sheppard 2012). Increasing the proportion of staff with PhDs, which in most universities in the HERANA sample is below 50%, is thus critical in the move towards research-intensive institutions. Increasing the proportion of academic staff with PhD degrees requires greater attention to and planning at the masters and doctorate levels, as well as human resource strategies that can incentivise staff to pursue doctoral degrees and to retain staff once they are qualified. It should be noted that staff data has been even more problematic than student data, and that at some of the HERANA institutions there is still uncertainty about the actual number of full-time/part-time staff and the exact number of permanent staff with PhDs. Thus, another administrative division that needs to be strengthened in research-intensive institutions is human resource development.

Funding and development aid for research universities or knowledge production

The institutional realities of the senior academic staff at African universities, when it comes to their research tasks, are challenging. It can be argued that the salaries,¹¹ poor incentive structures, inadequate infrastructure, and the lack of a professional research management system at institutional and national levels are, to a large extent, the result of a lack of consistent and adequate funding earmarked for research. However, this is not the result of a lack of research funding per se. Rather, the nature and source of research income are of relevance here.

A large part of the research income of the HERANA universities comes from donor agencies, which implies that the institutional leadership has limited-to-no direct influence on how this money is invested in the institution's research activities. This further implies that, in practice, the research income situation at the HERANA universities (with the exception of UCT) is one of the main factors contributing to the weak coupling between institutional research strategies and the research activities of individual academics. Nonetheless, the universities themselves can do more to stimulate the development of a stronger institutional research culture, and to incentivise the involvement of their tenured academic staff with doctoral degrees to become involved in academic research activities. As highlighted in Chapter 7, existing research incentive regimes are characterised by many players driving different goals, an over-reliance on donor funding, the de-institutionalisation of science, and inadequate participation of the state. Thus, each institution could introduce incentives schemes and promotion procedures aimed at rewarding academic staff who are active researchers. Such schemes and procedures should be based on research productivity data, such as number and quality of academic publications, number and nature of externally funded research projects, involvement in supervision of doctoral and master students, and so on. From a national policy perspective, there is a need for stronger participation by the state in resourcing basic research infrastructure, and in designing competitive national research funding schemes to steer research in line with national imperatives and support its institutionalisation in higher education institutions.

The data produced by the HERANA project offer an important insight into the specific nature of research income at the eight flagship universities (see Cloete et al. 2011). For example, there is an important gap between the total amount of research income at the universities and their research productivity: as reported in Chapter 6, Makerere University has more or less the same level of research income as UCT, while the research productivity at Makerere is at a much lower level than at UCT. One important reason for this is the difference in the sources of research funding for the institutions. The proportion of the research income coming from foreign (either national or supranational) donor agencies of the non-South African universities in the HERANA project is in general over 75%, which represents a proportion that is many times higher than the figures for UCT. The latter institution's research income situation is more in line with that at the world's top research universities; that is, a considerable part of the

11 It is often claimed that African academics are underpaid but, as Chapter 7 has shown, this is not entirely the case.

research income of UCT is the result of its academic staff being successful in the competition for external research council funding.

As discussed in Chapter 6, the investments of donor agencies in research projects at African universities have a number of characteristics that contribute to the low research productivity of these universities (see also Maassen 2012):

- Donor research funding is not distributed through an open competition, relying on peer review to select the best projects academically.
- Donor agencies in general do not require the academics who are funded by them to produce academic publications.
- Most donor-funded research projects resemble a consultancy activity more than an academic research project.
- There is hardly any coordination between donor agencies when it comes to the investments in research projects in sub-Saharan African universities. Overall the individual donor agency's programmes and ideologies seem to be a more important factor in the determination of which research project should receive donor funding, than national and/or institutional research policies and strategies in the receiving countries and institutions.
- Donor agencies prefer in general to have direct contact with the academics who receive donor research funding. A consequence of this is the 'projectisation' nature of donor research funding, in the sense that donor agencies invest in projects, not in institutions, despite all the recent donor programme emphasis on 'capacity building'. As a consequence it is extremely difficult for African universities to realise their institutional research strategies, when up to 80% of the institutional research income comes from donors who prefer to invest on the basis of their own programmes and ideologies in individual projects.

Donors have played an important role in the funding of African higher education in the post-independence era. Many individual academic staff members have profited from donor funding, which allowed them to supplement their low university income. But even though the amounts of funding invested by donors in (research) projects has been considerable (Maassen et al. 2007), the question can be raised as to whether donor funds are invested in an effective way in African higher education: that is, in a way that, amongst others, stimulates the development of a number of research-intensive universities. For now, the answer to this question has to be in the negative. For this to change, the minimum requirement would be a willingness by donor agencies to coordinate their programmes and investments with one another. An additional element in the stimulation of an adequate research culture in African universities is the need to introduce a more effective and open way of distributing the donors' research funds. This implies more competitive, peer-review-based procedures for selecting research projects for funding. But in this, peer review should be academically-orientated and not, as is currently the case in a number of research-orientated donor programmes, ideology-based.

Finally, as was pointed out in an extensive study of bilateral country investments and foundation partnerships to support higher education in Africa, Maassen and Cloete (2010: 268) concluded that ‘none of the donor countries involved subscribes to the engine of development approach in their development cooperation policies with respect to higher education’. The donor countries, which themselves have higher education systems with strong research universities, will have to more actively support the development of research-intensive universities in Africa.

Research funding and expectations of engaging with external communities

As indicated above, university research in African universities is often made possible by funding from foreign donor agencies. While such funding is primarily geared towards building the research capacity of African higher education institutions and to building a relevant local knowledge base to drive innovation and social development, it would be short-sighted if such funding inadvertently weakened the institutions it purported to capacitate. Chapter 10 points to how an empirically informed understanding of university engagement activities could well be of benefit to donors as a means of assessing whether grantee-universities are successfully managing the tension between engaging with external communities and connecting to the academic core. Such assessments could prove influential in the formulation of future funding policies.

In South Africa, there are repeated calls from organisations such as the South African Higher Education Community Engagement Forum for government to provide direct funding for university engagement activities. Government’s position is outlined in the *2013 White Paper* as follows: ‘it is likely that future funding of such [engagement] initiatives in universities will be restricted to programmes linked directly to the academic programme of universities, and form part of the teaching and research function of these institutions’ (DHET 2013). And, universities would need to provide evidence that these conditions are being met.

If any government funds engagement activities per se, it runs the risk of funding non-productive engagement activities, that is, engagement activities such as consultancies or service-orientated work that are poorly articulated and do not strengthen the core functions of the university. Funding should be made contingent on engagement activities linking back to the core knowledge-producing functions of the university, and also demonstrating a strong degree of articulation. From this perspective, university-community engagement funding should not be a separate line item; it should rather be a dimension of normal research (or teaching) funding, conceivably as ‘top-up’ funding for engagement activities that are able to show a high level of connectivity to knowledge production.

Research-informed reforms

Derek Bok, in his latest book *Higher Education in America*, discusses two different ‘cultures’ of higher education reforms: the one is evidence-based; the other is an ‘art’ that requires experience and intuition (Bok 2013). In higher education reform in Africa, leadership

‘intuition’ is often code for a mixture of nostalgia and random ideas from the latest trip to the United States or Europe. Evidence-based policy and management is a discourse or set of methods based on empirical information that informs the policy process, rather than aiming directly to affect the eventual goals of the policy. Policy based on systematic evidence is considered not only to produce better outcomes, but also to provide more opportunity for democratic participation.

In the HERANA project, we prefer the concept ‘research-informed’ change for various reasons. While evidence or data are the building blocks, evidence does not provide policy information by itself: often it is possible to read different policy implications from the same data. Research implies that there is some information on causality that informs the evidence. Furthermore, the concept of ‘research’, which fits better with the language of universities, addresses the issue that Bok raises about being ‘top down’. Finally, research is more open-ended, and more open to verification/falsification – meaning experimental rather than instrumentally driven.

Through the HERANA project, it has become apparent that the management of information is an indicator of the degree of institutional coherence or fragmentation. While in some cases, fragmentation is the result of a shortage of trained staff or inappropriate technology, in others, a major problem appears to be the lack of institutionalisation of data and procedures. Because institutionalisation is the basis for evidence-based policy and management, it is very problematic when ‘once-off’ data sets are used to influence decision-making. Moreover, a limited capacity for analysing data and translating it into policy information has various consequences. For example, lack of indicator data often leads to a mismatch between aspiration and reality, where institutional leaders and websites declare their universities to be ‘research-led’ or even ‘world-class’ while, in some of these universities, on average academics publish one article every ten years, and the output is stagnant or declining. This is a central weakness in African higher education.

Consistency in the understanding of key concepts is another potential contributor to fragmentation. HERANA Phase 2 has already shown the value of institutionalising a shared understanding of key concepts related to the collection of performance data at eight African universities. In a South African study, Kruss et al. (2012) found that while all the universities in their sample had a formally approved policy framework on engagement in place, conceptual clarity and a unified vision of how engagement should be integrated into the university’s activities eluded the universities. This fuelled contestation, and hampered alignment and integration of engagement policies with other institutional policies pertaining to research, and teaching and learning. An empirical approach (as outlined in Chapter 10) has the potential to shift the debate on how to integrate a contested university function such as engagement from one that is dogged by immutable ideological positions to one that is research-informed. Such a shift in which institutional policy is empirically supported and the activities of academics are quantified in accordance with integrated policies may, in turn, systematise the engagement activities of academics. In so doing, this would reinforce

the institutionalisation of engagement in universities in a manner that strengthens the core functions of the university, particularly that of knowledge production.

In South Africa, with its higher education management information system (to which institutions have to respond in great detail in order to get government subsidy), there is often an ‘avalanche’ of data, which is not available in accessible format for institutional planning and performance comparison (Van Schalkwyk et al. 2013). At most of the HERANA universities, government mainly requires undergraduate enrolment and graduation data, and perhaps performance in comparison to the previous year. What is missing is national and international comparative performance information and a focus on data related to particular reform or institution-strengthening strategies. What is also missing in many African countries is an incentive to provide data to the central administration, and for the administration to report to government and the higher education councils. In South Africa this problem has been very well addressed: universities simply do not get their annual funding if they have not supplied the required data, and institutions and academics do not get their research incentive funds if they have not supplied research output data.

In November 2013, the participating HERANA universities were asked to write a short report on the usage of the data and indicators in their institutions and systems. The following are some of the important observations made in these reports:

- Data is used internally for monitoring and evaluating the institutional strategy;
- Research performance indicators are crucial for establishing the interface between research impact and appropriate research policy;
- Calibrating research performance by academic rank is currently a vital research management information activity;
- The indicators have been a crucial source of cross-national and cross-institutional comparative data, which enabled the university to mirror itself and develop a set of new goals for the future;
- Indicator reports have been used as a platform to get feedback from both internal and external stakeholders about university core activities;
- The university indicators have already in some countries started to inform national discussions on the performance of public universities;
- The university has used the data to initiate action to engage government more actively to determine and execute relevant research aimed at engendering economic development; and
- The comparative indicator data has been important for beginning to inculcate evidence-based decision-making within the institution.

The HERANA focus on institutionalising data collection and the development of comparative indicators has taken place at a time when the continent is witnessing an increased emphasis on university ranking systems at the global level, from which African universities have been

largely excluded. In this regard, the project has increased awareness of the importance of comparative performance indicators amongst a comparable set of African universities, and has promoted a debate about the need for research-intensive or new knowledge-producing universities in Africa.

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