Africa Needs Research Universities
Knowledge Production in
Eight African Flagship Universities

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The functions of higher education

- The importance of knowledge and higher education for sustainable development is **global**, even though there are **contextual and regional** differences.

- It is the **knowledge re-generative capacity** of universities that underlies sustainable development.

- **Four functions of universities:**

  1. **Ideological apparatus:** producers of values social legitimation

  2. **Selection of the dominant elites:** iron cage for the elite

  3. **Professional training:** self-programmable labour

  4. **Production of scientific knowledge:** engine of development

(Source: Manuel Castells. 1993. The University System: Engine of Development in the New World Economy, 1993)

Africa needs research universities

1. Traditionally, universities in Africa focussed on ideology, elite selection and training, and performed poorly on **knowledge production.**

2. Africa needs to shift to **increased participation** (from low base of under 10%) and **increased knowledge** production– massification and differentiation.

3. Research universities in low- and middle-income countries have crucial roles to play in developing differentiated and effective academic systems.

4. Understanding the characteristics of the research university and building the infrastructures and the intellectual environment needed for successful research universities is a top priority (Altbach, 2013).

Africa's research performance

1. **Publications in Africa increased** from 11 776 in 2002 to 19 650 in 2008 – **66.9%** growth (world average = **34.5%**).

2. **Africa's share globally increased** from 1.6% to **2.0%**, Latin America from 3.8% to **4.9%** and Asia from 24.2% to **30.7%**.

3. From 2000–2008 Asia's share of researchers rose from 35.2% to 38.2%, Latin America from 3.0% to 3.8% and **Africa's global share of researcher share fell** from **2.2%** to **2.1%**.

4. **African Union publication output grew** by **43%** compared to the world average of 18% (Source: Scopus).

5. If the African Union were a country, it would be just behind India, China and Brazil, but ahead of Russia in publication output in the BRICS.

Capacity constraints & challenges facing Africa

Zaleza (2014) highlights four key issues:

1. Link STI to industry and National Development Plans with stable funding and implementation.

2. Massive expansion and support for HE required.

3. Incentivise the business sector for industry-university collaborations.

4. Promote scientific literacy to popularise STI in society.

Capacity constraints & challenges facing Africa

1. The underlying assumption of Zeleza's synthesis is,
   More for Everybody, because in Africa no government or
   university sector wants to openly promote differentiation.

2. Research universities are a small percentage of the HE system:

   1. US   5%   (220 from 4000)
   2. China   3%   (100 from 3000)
   3. UK   25%   (25 from 100)

3. Many smaller developing countries only have one research
   intensive university and many none (Altbach 2013).

Higher Education Research and Advocacy Network in Africa

- Network of 50 participating academics and senior administrators (mainly planners) in 12 countries

- Project is currently in its 7th year. Carnegie, Ford, Norad.

- Participating African countries and "flagship" universities
  - Botswana – University of Botswana
  - Ghana – University of Ghana
  - Kenya – University of Nairobi
  - Mauritius – University of Mauritius
  - Mozambique – Eduardo Mondlane University
  - South Africa – University of Cape Town
  - Tanzania – University of Dar es Salaam
  - Uganda – Makerere University

- Started in 2008 many participating institutions had fragmented information systems – both for student and staff data
- Took almost 3 years to collect a comparable data set from 2000 to 2007
- Collecting the data also became capacity development in planning departments, and also involving in some cases the registrars and research directors
- By 2012, and with a simplified and common data manual, it took us less than 3 months to compile the 207 to 2011 data
- We are now, with a improved and published data manual collecting the 2011to 2013/14 data, which will be available by June 2015
- The aim of this project is not to rank institutions, and to compare Harvard or Beijing with Makerere, but develop a set of Academic Core data for institutional reform, with a focus on knowledge production – OECD doctorate and publications

Proportion of undergraduate enrolments too high (2011)
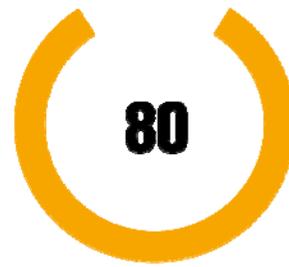
68 Cape Town

80 Nairobi

88 Ghana

90 Mauritius

91 Botswana

93 Makerere

94 Eduardo Mondlane

96 Dar es Salaam

Source: Bunting et al. (2014) *An Empirical Overview of Eight African Universities*
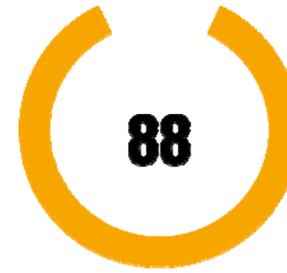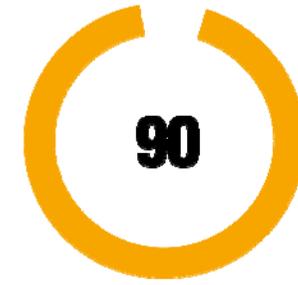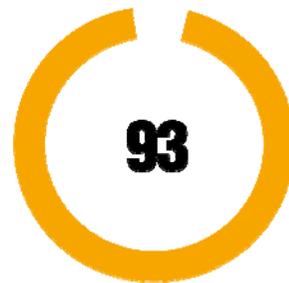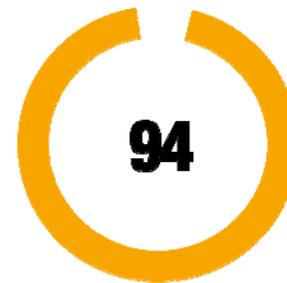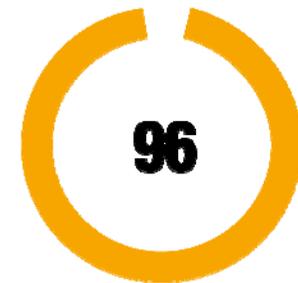
Problematic ratios of masters to doctorate enrolments (2011)
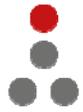
3:1 Makerere

3:1 Cape Town

4:1 Dar es Salaam

14:1 Ghana

20:1 Mauritius
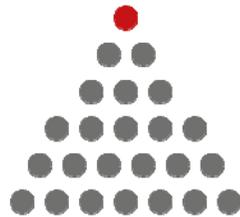
23:1 Botswana

46:1 Nairobi

56:1 Eduardo Mondlane

Source: Bunting et al. (2014) *An Empirical Overview of Eight African Universities*
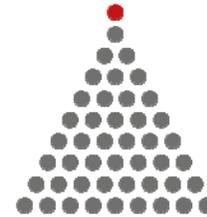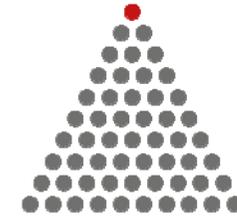
Low percentage of academic staff with PhDs (2011)

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17%
Eduardo Mondlane

42%
Mauritius

43%
Makerere

45%
Dar es Salaam

45%
Nairobi

50%
Ghana

63%
Cape Town

65%
Botswana

Source: Bunting et al. (2014) *An Empirical Overview of Eight African Universities*

Too few doctoral graduates (2001, 2007, 2011)

Botswana: 4 3 10

Cape Town: 86 142 163

Dar es Salaam: 11 20 24

Eduardo Mondlane: 0 0 2

Ghana: 9 11 36

Makerere: 11 23 56

Mauritius: 7 10 15

Nairobi: 26 32 61
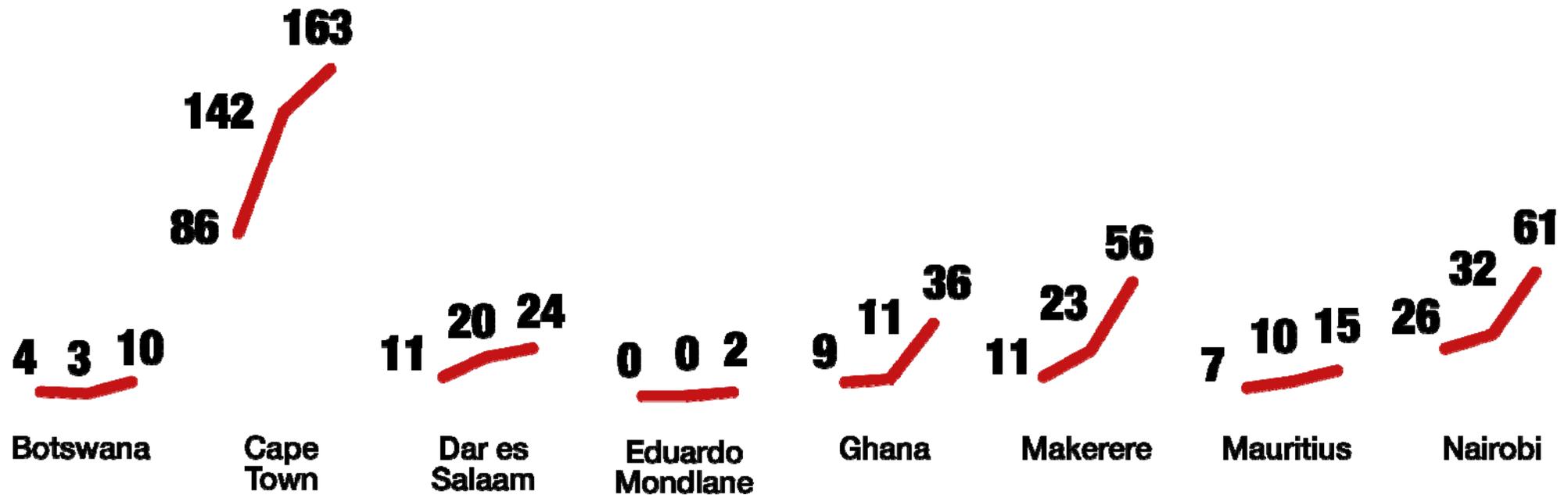
Publication output too low (1996–2013)

1 944 — Cape Town (678)
460 — Makerere (42)
253 — Ghana (52)
248 / 164 — Nairobi
127 / 58 — Botswana
100 / 55 — Dar es Salaam
74 / 13 — Mauritius
61 / 7 — Eduardo Mondlane

Source: Cloete et al. (2015) *Knowledge Production and Contradictory Functions in African Universities*
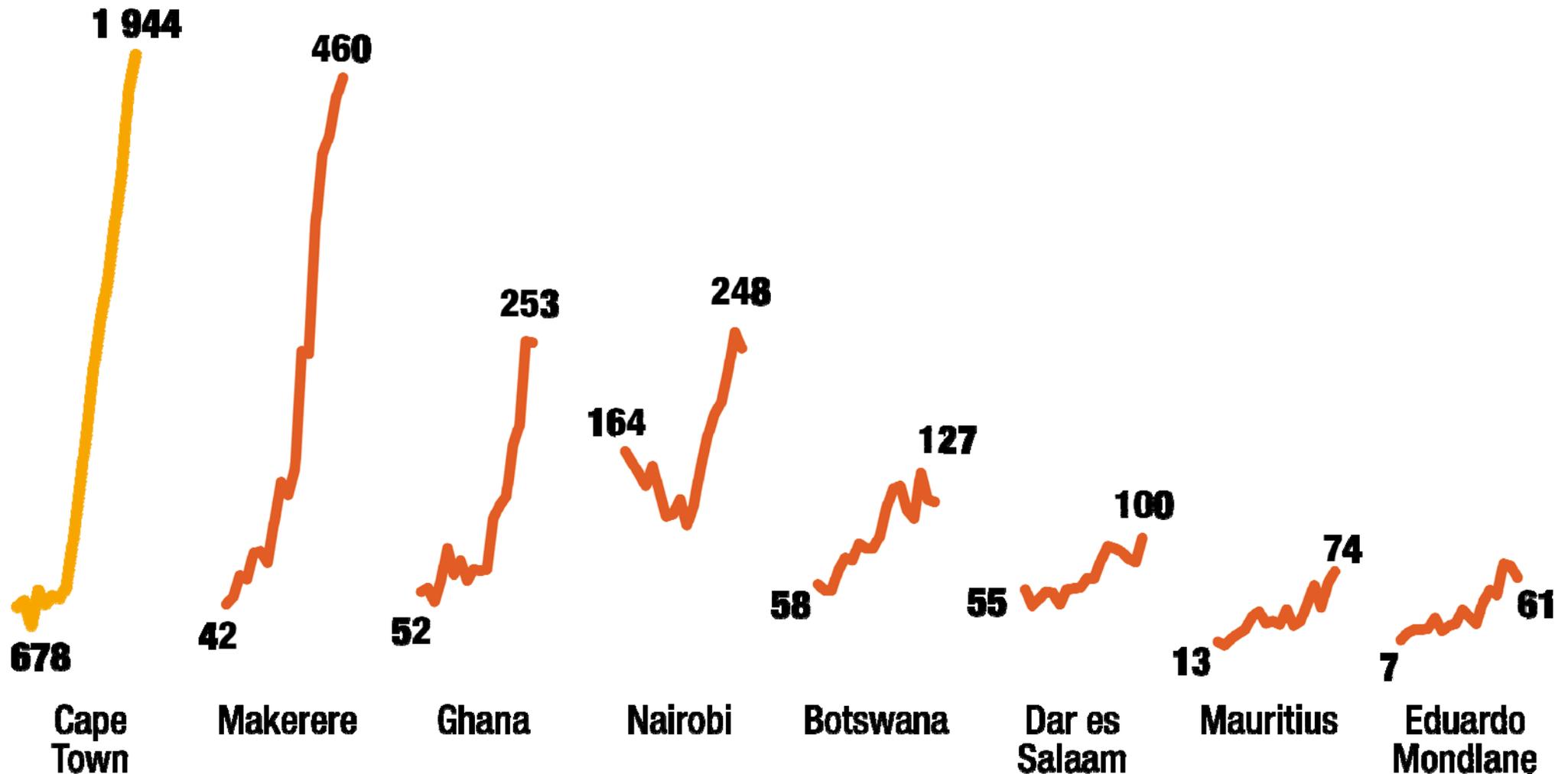
Mixed performance in % increase in publication output (1996–2013)

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Legend:
- Makerere University
- University of Ghana
- University of Cape Town
- University of Dar es Salaam
- Eduardo Mondlane University
- University of Mauritius
- University of Nairobi
- University of Botswana
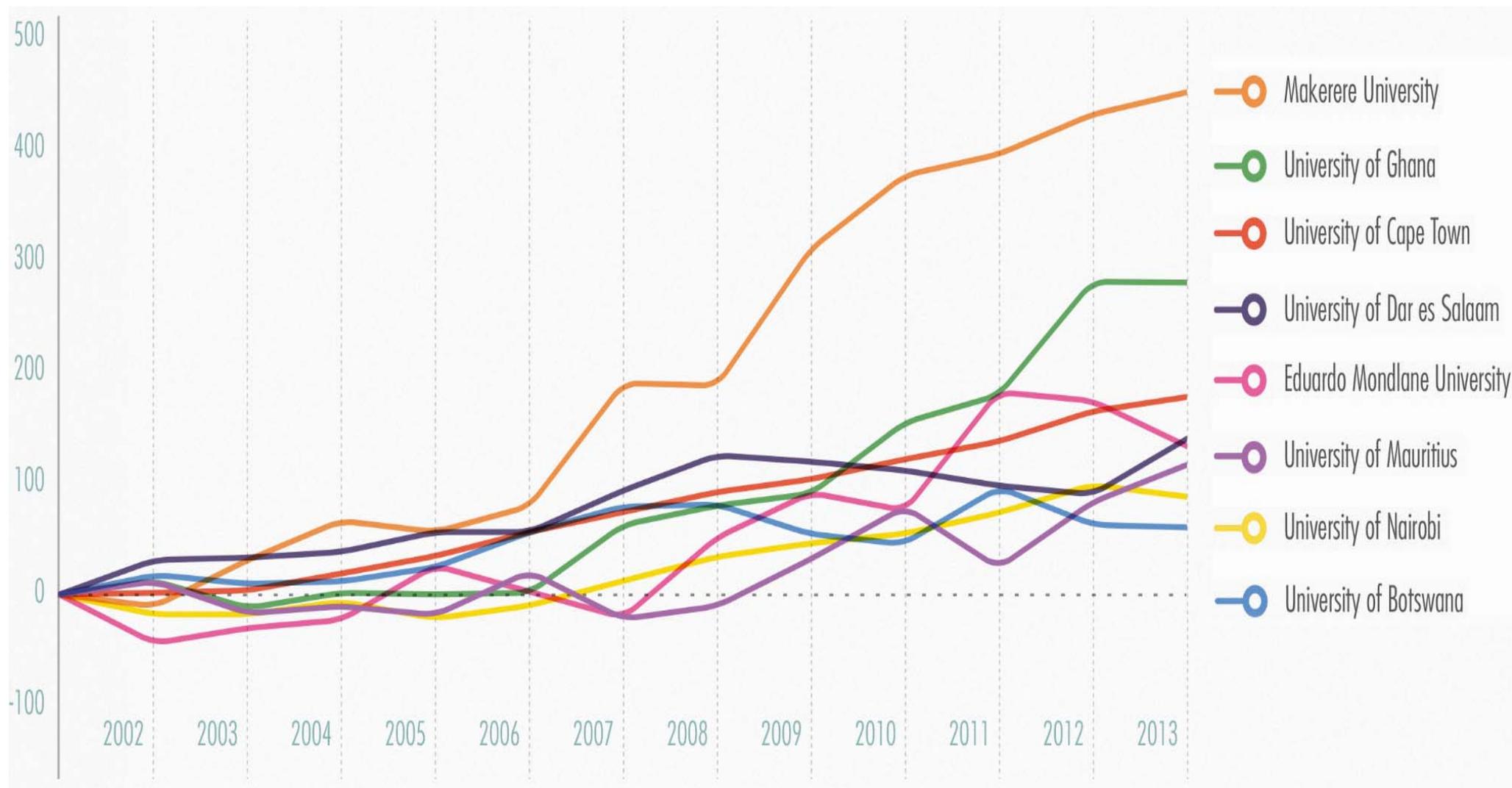
Ratios of high–level knowledge outputs to academic staff with doctorates

ratio of research articles per permanent academic with a doctoral degree (y-axis)

strong outputs

- Cape Town (≈0.28, 2.40)
- Eduardo Mondlane
- Makerere
- Nairobi
- Mauritius
- Ghana
- Botswana
- Dar es Salaam

strong outputs

ratio of doctoral graduates
per permanent academic with a doctoral degree
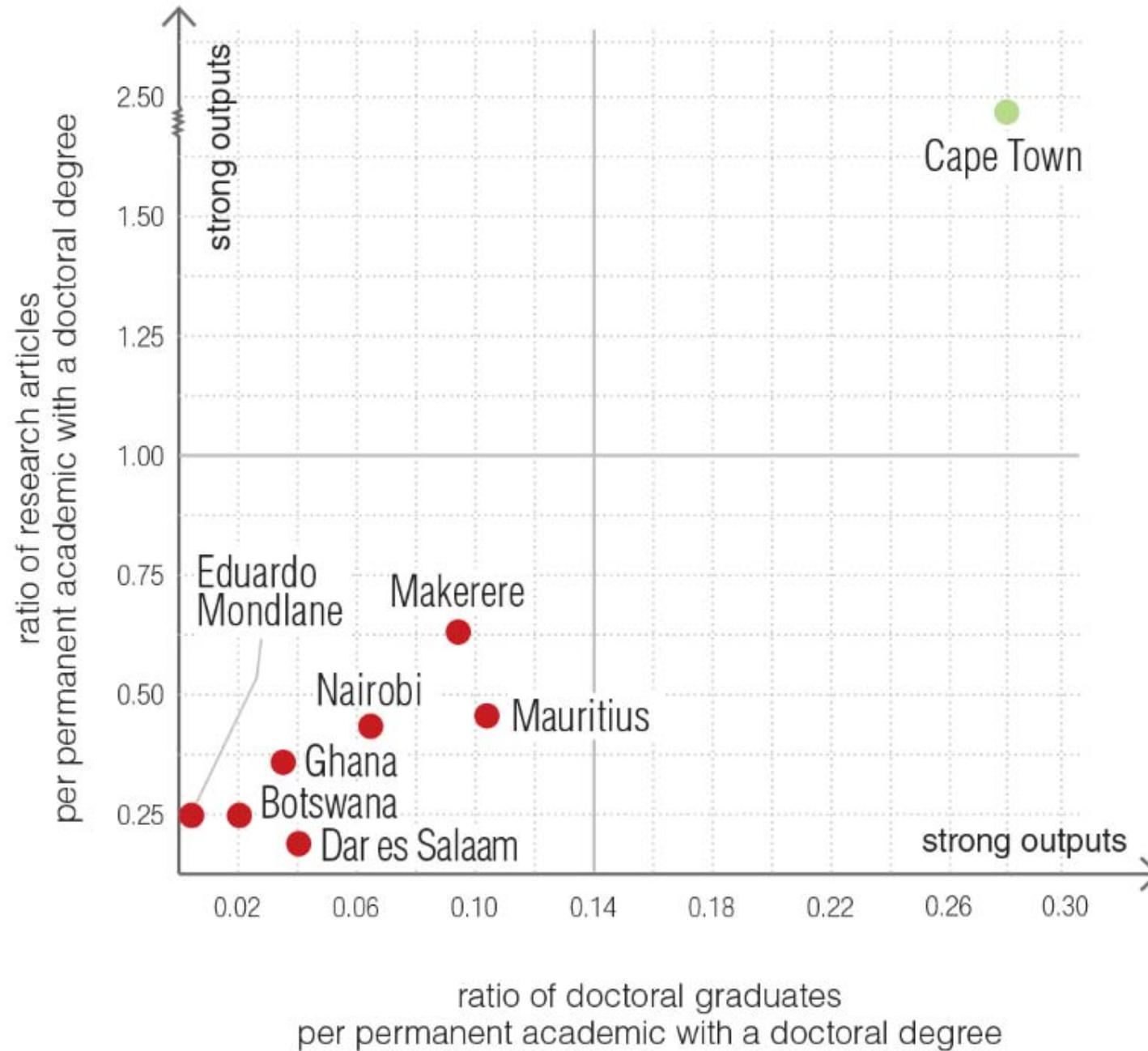
Incentive regimes

1. Study on academics at Makerere, Nairobi and Eduardo Mondlane (Maassen, Langa, Ouma)

2. The key question is which of the four main university functions gets rewarded by whom?

3. Government and university leadership privilege undergraduate training (funding) – double/triple teaching

4. Many competing incentives for research and more so for doctoral training

5. For research, multiple patron-agent relationships, with different incentives and disincentives

6. UCT and Makerere both received around $100m in research funds in 2013 – for Makerere more than 80% from donors, which distorts research – publication culture.

Research output of South African universities

Chart data:

Year	Permanent academic staff	Perm academic staff with doctorates	Research Publications
2000	14 184	4 561	5 602
2004	15 423	4 485	6 660
2008	15 936	5 403	8 070
2012	17 452	6 744	12 367
2013	17 838	7 339	14 009

Permanent academic staff: 126%
Research Publications: 250%
Perm academic staff with doctorates: 161%
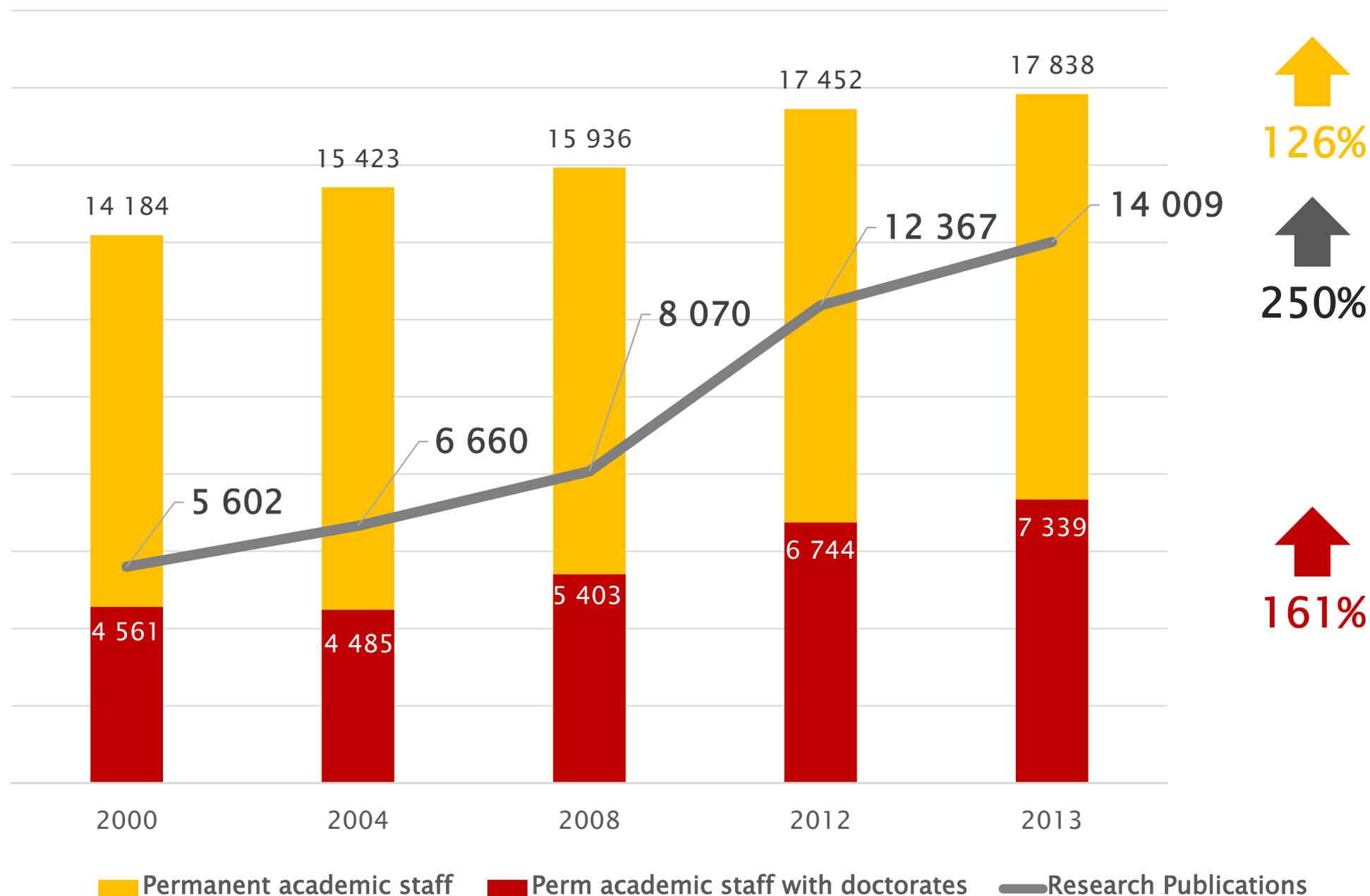
Permanent academic staff   **Perm academic staff with doctorates**   **Research Publications**

1. Only UCT could be regarded as fulfilling the criteria for a research intensive university, with Makerere moving in that direction.

2. The flagship universities are not strong enough to participate in global networks.

3. Greater emphasis on institutional reforms being **research** (evidence) informed rather than by inspirational Goal and Vision statements.

4. To strengthen research intensiveness, HERANA is focusing on the knowledge-producing structure of the university and studying incentive regimes (direct and indirect).
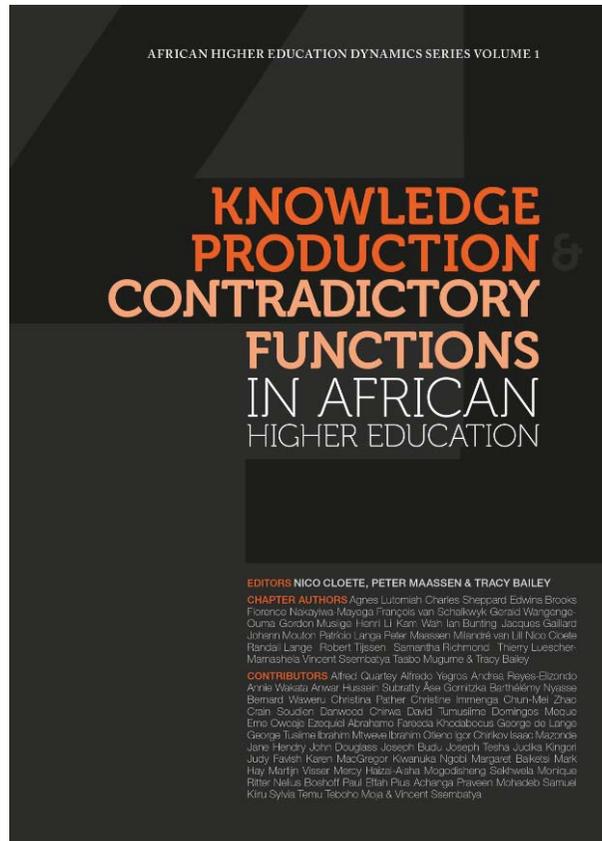
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Charles Sheppard &
François van Schalkwyk

Data from CHET, CREST
& African HE Open Data

www.chet.org.za/data/african-he-opendata