



ieri

*Institute for Economic
Research on Innovation*

TSHWANE UNIVERSITY OF TECHNOLOGY

South Africa: Reforming Higher Education and Transforming the National System of Innovation

Rasigan Maharajh

The university contribution to innovation and development: case studies in selected countries

Rio de Janeiro, 5-6 January 2011



Outline of Presentation

1. Introduction
2. History
3. Post-apartheid Reform
4. Sector and System Characteristics
5. Innovation System Performance
6. Conclusion: Enduring Challenges For Higher Education & the Innovation System



Introduction

- ❑ Apartheid = “a crime against humanity” ≈ Colonialism of a Special Type or Racial Capitalism?
- ❑ Political Economy determines Role of the State
- ❑ Innovation System & Higher Education framed (sic) accordingly!
- ❑ NOTE: *In situ reserve stock of natural minerals and metals valued at approximately US\$ 2.5 trillion in 2010*



History

- ❑ National Question or Class Struggle
 - ❑ *Liberation of Black People in General and African People in Particular*
 - ❑ *De-racialised Capitalism will deliver material advancement through unfettered market mechanisms*
 - ❑ *Two-stage Revolution: National Democracy before Socialism*
- ❑ *1829 – University of Cape Town – Response to escalating costs*
- ❑ *1996 – National System of Innovation – Response to escalating costs?*

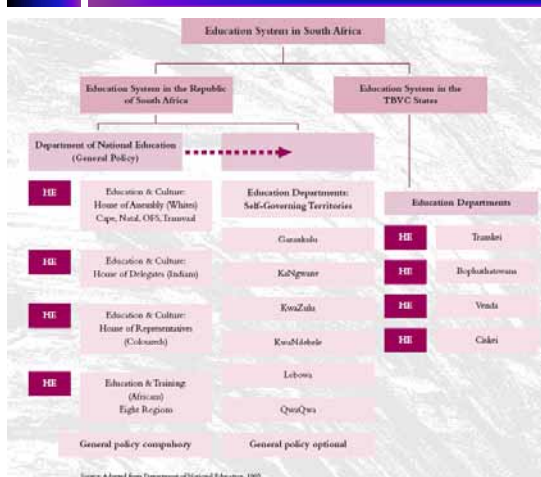


Systemic Transition

- *Counterfactual positioning – an alternative to existing framework – paradigmatic rupture*
- Apartheid Science Policy
 - Higher Education Institutions & the Science Councils
 - Science Advisory Council
 - Reported through the Department of National Education (Whites Only)
 - Two main policy-lines:
 - Funding of HEI's on a formula basis; &
 - "Framework Autonomy" of the Science Councils
 - en route to be privatised after first corporatisation
 - Base funding was limited
 - Increases in contract research
- "The old paradigm of scientific discovery ('Mode 1') – characterized by the hegemony of theoretical or, at any rate, experimental science; by an internally-driven taxonomy of disciplines; and by the autonomy of scientists and their host institutions, the universities – was being superseded by a new paradigm of knowledge production ('Mode 2'), which was socially distributed, application-oriented, trans-disciplinary, and subject to multiple accountabilities"



Institutional Transformation

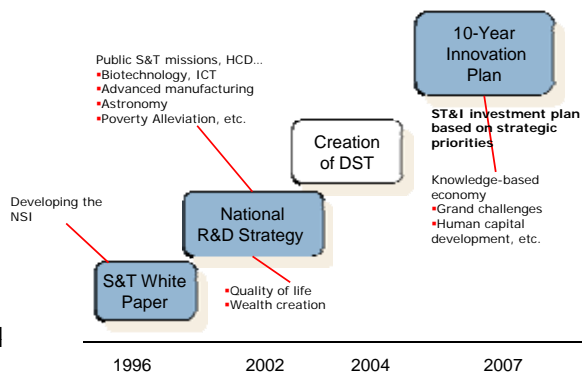


Traditional Universities	Comprehensive Universities	Universities of Technology	National Institutes
<i>Theoretically-oriented university degrees, postgraduate & research capacity</i>	<i>Combined academic and vocationally oriented education</i>	<i>Vocationally-oriented qualifications, postgraduate & research capacity</i>	<i>Incubators & Coordinating Mechanism</i>
1)University of Cape Town 2)University of Fort Hare 3)University of the Free State 4)University of KwaZulu-Natal 5)University of Limpopo 6)North-West University 7)University of Pretoria 8)Rhodes University 9)University of Stellenbosch 10)University of the Western Cape 11)University of the Witwatersrand	1)University of Johannesburg 2)Nelson Mandela Metropolitan University 3)University of South Africa 4)University of Venda for Science and Technology 5)Walter Sisulu University for Technology and Science 6)University of Zululand	1)Cape Peninsula University of Technology 2)Central University of Technology 3)Durban University of Technology 4)Mangosuthu Technikon 5)Tshwane University of Technology 6)Vaal University of Technology	1)Mpumalanga Institute for Higher Education 2)Northern Cape Institute for Higher Education

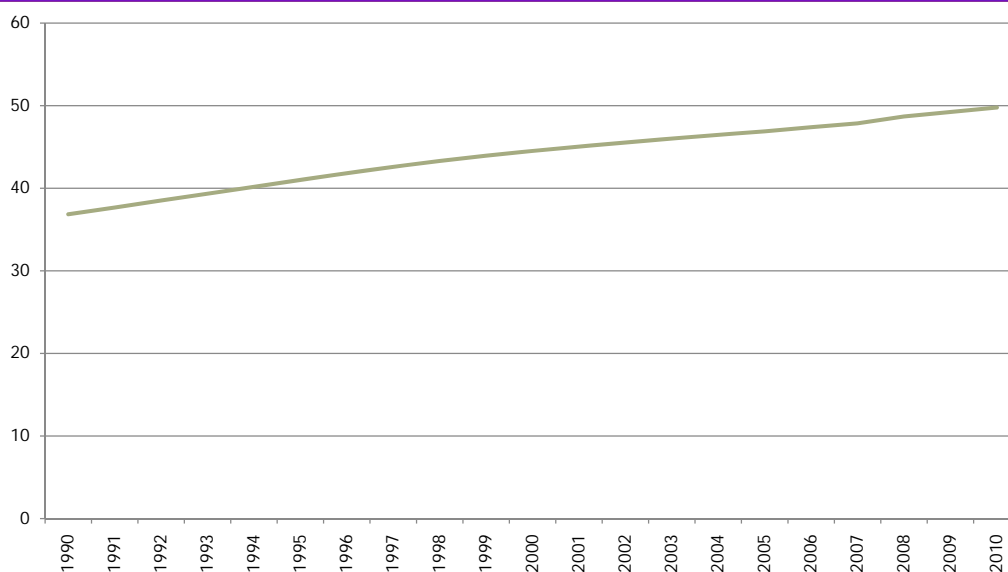


Post-apartheid Reform

- White Paper on Science & Technology
 - National Research and Technology Foresight
 - National Science and Technology Audit
 - Science, Engineering and Technology Institutional (SETI) Reviews
- White Paper 3 Higher Education
 - HE must be planned, governed and funded as a single national coordinated system
 - Higher Education Act of 1997
 - Size & Shape Report
 - 2001 National Plan for Higher Education

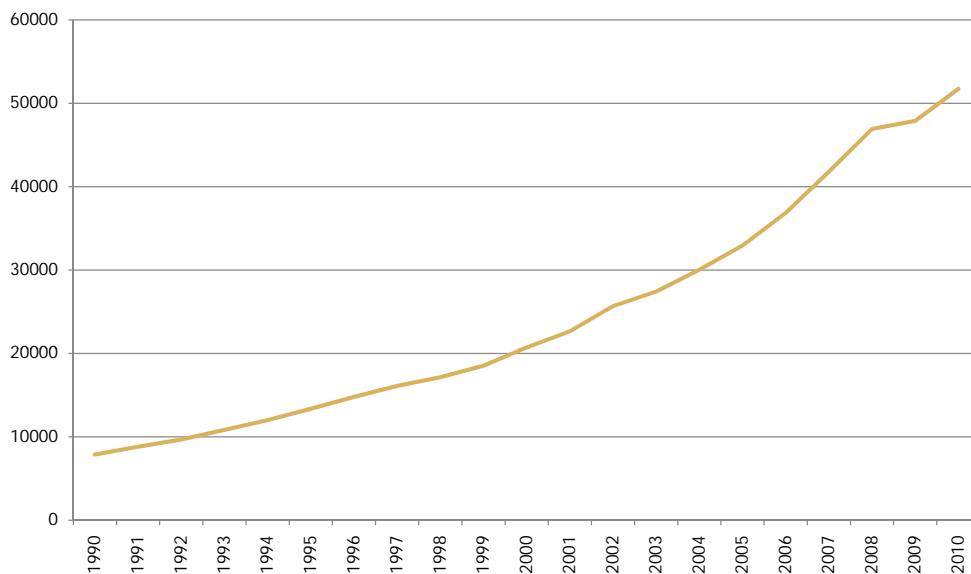


Population (Millions)

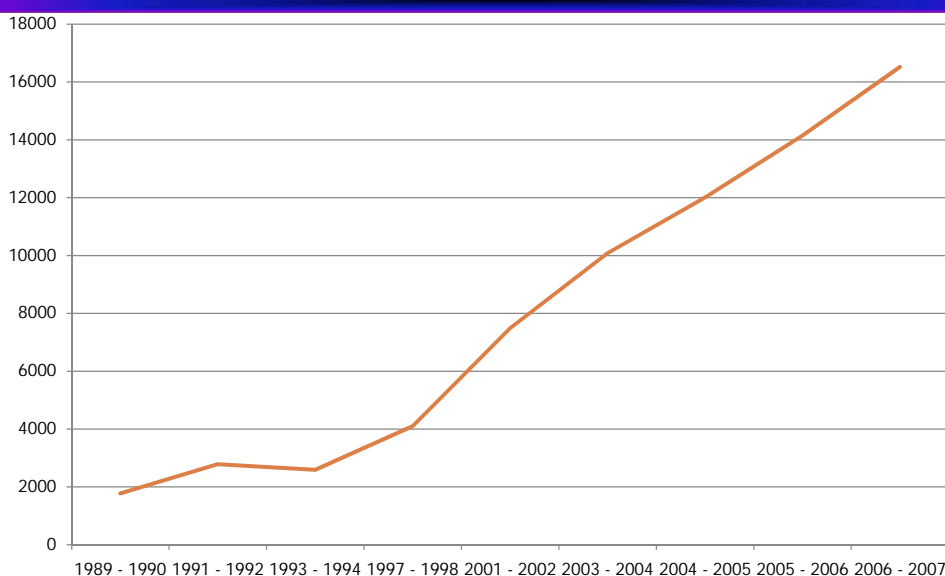




GDP/capita, current prices, Rands

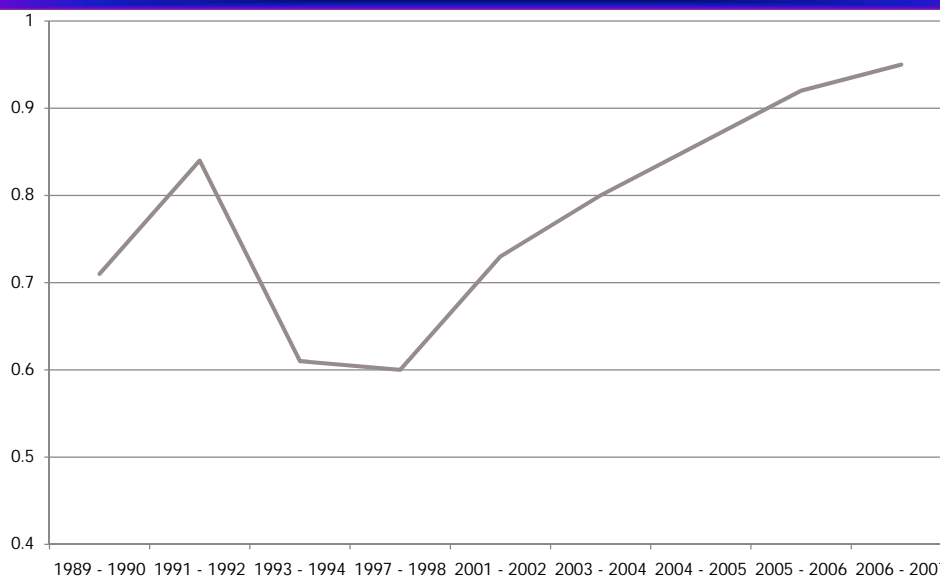


R&D Expenditure (R millions)





R&D as % of GDP (GERD)



Enrolments in Public Higher Education

<i>Table 3</i>	2005	2007
Major Field of Study	737,472	760,009
Science, Engineering & Technology	211,073	214,341
Business & Management	214,510	228,735
Education	107,505	106,330
All other Humanities and Social Sciences	204,391	310,603
Formal Qualifications	737,472	761,087
Occasional Students	19,271	25,696
Three-year undergraduate Degrees & Diplomas	440,680	254,789
Professional undergraduate Degrees	161,932	370,200
Postgraduate Degrees, below Master's level	61,622	59,179
Master's Degrees	44,533	41,172
Doctoral Degrees	9,434	10,051



Graduates in Public Higher Education

<i>Table 4</i>	2005	2007
Major Field of Study	120, 053	126, 887
Science, Engineering & Technology	33, 554	36, 637
Business & Management	28, 127	31, 104
Education	29, 090	28, 332
All Other Humanities and Social Sciences	29, 292	30, 814
Formal Qualifications	120, 063	127, 154
Three-year undergraduate degrees & diplomas	63, 702	43, 418
Professional undergraduate degrees	23, 950	52, 388
Postgraduate, below Master's level	23, 204	22, 190
Master's Degree	8, 018	7, 829
Doctoral degrees	1, 198	1, 329



Public Higher Education Human Resources

<i>Table 5</i>		2005	2007
Total Permanent Staff	Instruction & Research Staff	15, 315	15, 589
	Administrative Staff	21, 375	22, 224
	Service Staff	6, 646	5, 904
% Black Staff in Total	Instruction & Research Staff	37	39
	Administrative Staff	56	59
	Service Staff	97	97
% Female Staff in Total	Instruction & Research Staff	42	43
	Administrative Staff	60	61
	Service Staff	39	40



Conclusions

- ❑ Enduring Challenges
 - ❑ Market Dogma and Neo-liberalism
 - ❑ New Public Management
 - ❑ Cutting of direct public sector costs and disciplining staff to improve resource use
 - ❑ Borrowing and use of private sector management practices and techniques
 - ❑ Introduction of competition in the public sector
 - ❑ Disaggregation and decentralisation of government and the public sector
 - ❑ Controls shifted from inputs to outputs to stress results rather than procedure
 - ❑ National, Class and Gender contradictions
 - ❑ Global Geo-Political Regime Changes
 - ❑ Ascendant Tripartite Alliance as Ruling Bloc in Government post-2007
 - ❑ ANC + COSATU + SACP [Revolutionary Alliance]
 - ❑ ANC + Capital [Predatory Elite]



ieri

*Institute for Economic
Research on Innovation*

TSHWANE UNIVERSITY OF TECHNOLOGY

Thank you for your patience and attention. Muito Obrigado, ...r