Towards 2018:

South Africa's 10-Year National Innovation Plan

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Innovation in Brazil, India and South Africa:
A New Drive for Economic Growth and Development

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Policy & Institutional landscape

1. White Paper on S&T (1996)
2. R&D Strategy (2002) - outlines new public technology missions:
    i. Biotechnology;
    ii. ICT;
    iii. Advanced Manufacturing; and
    iv. Resource Based Industries
3. Creation of the DST 2004

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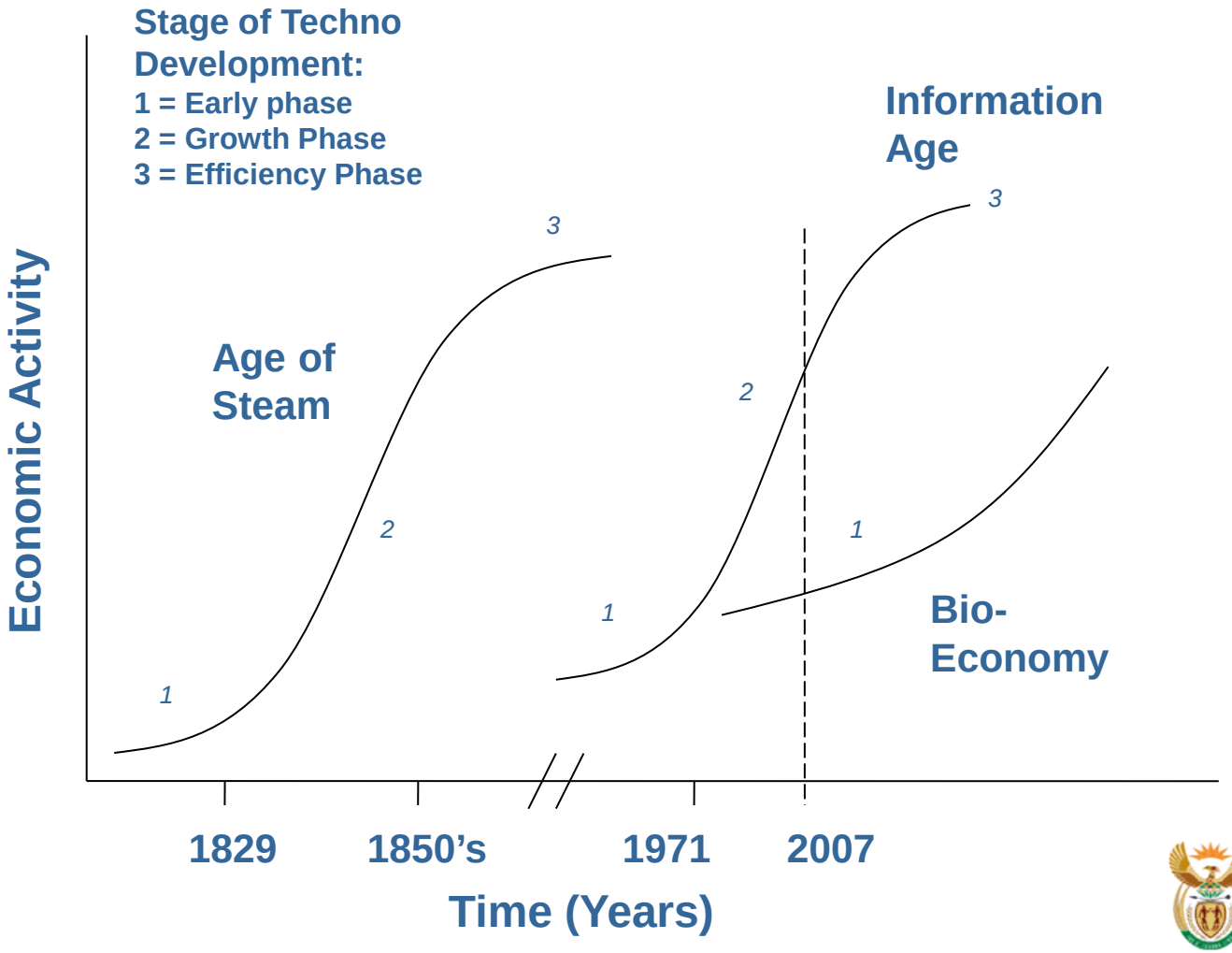
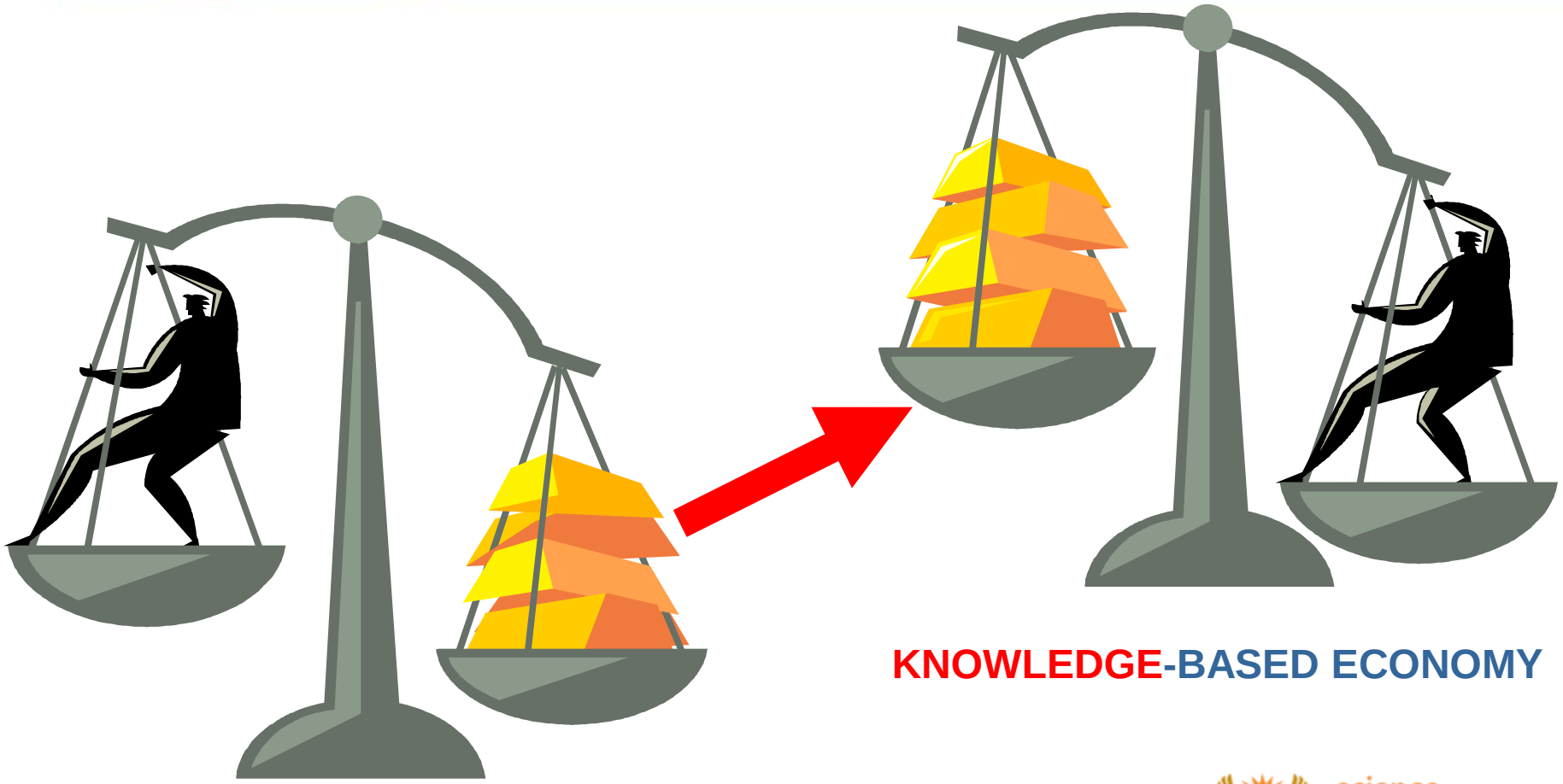
Policy & Institutional landscape

1. OECD Review of SA's NSI (2007)
2. DST 10 Year Plan Process
3. Linked to the NIPF and other government related initiatives

Economic Transformation



Towards a Knowledge Economy



RESOURCE-BASED ECONOMY

KNOWLEDGE-BASED ECONOMY

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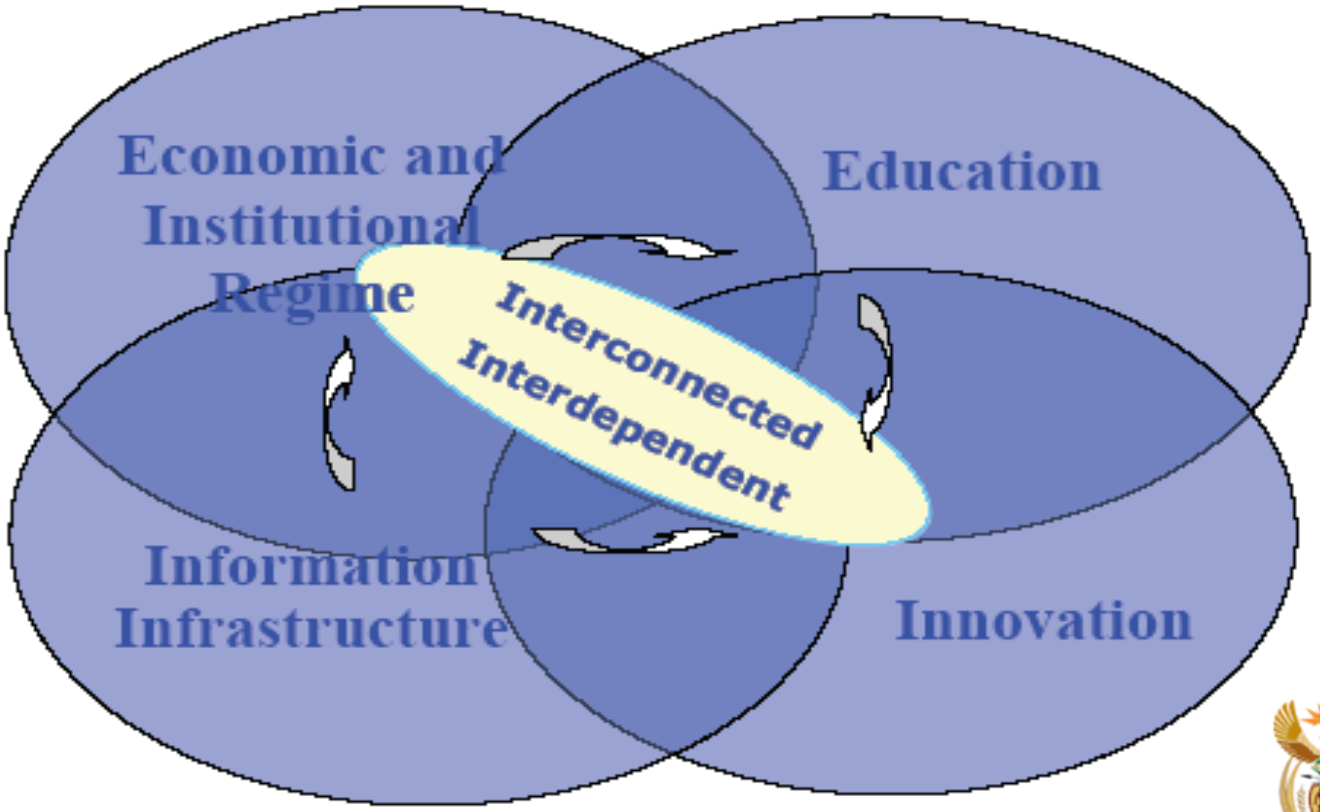
The Knowledge Economy

The Four Pillars of the Knowledge Economy



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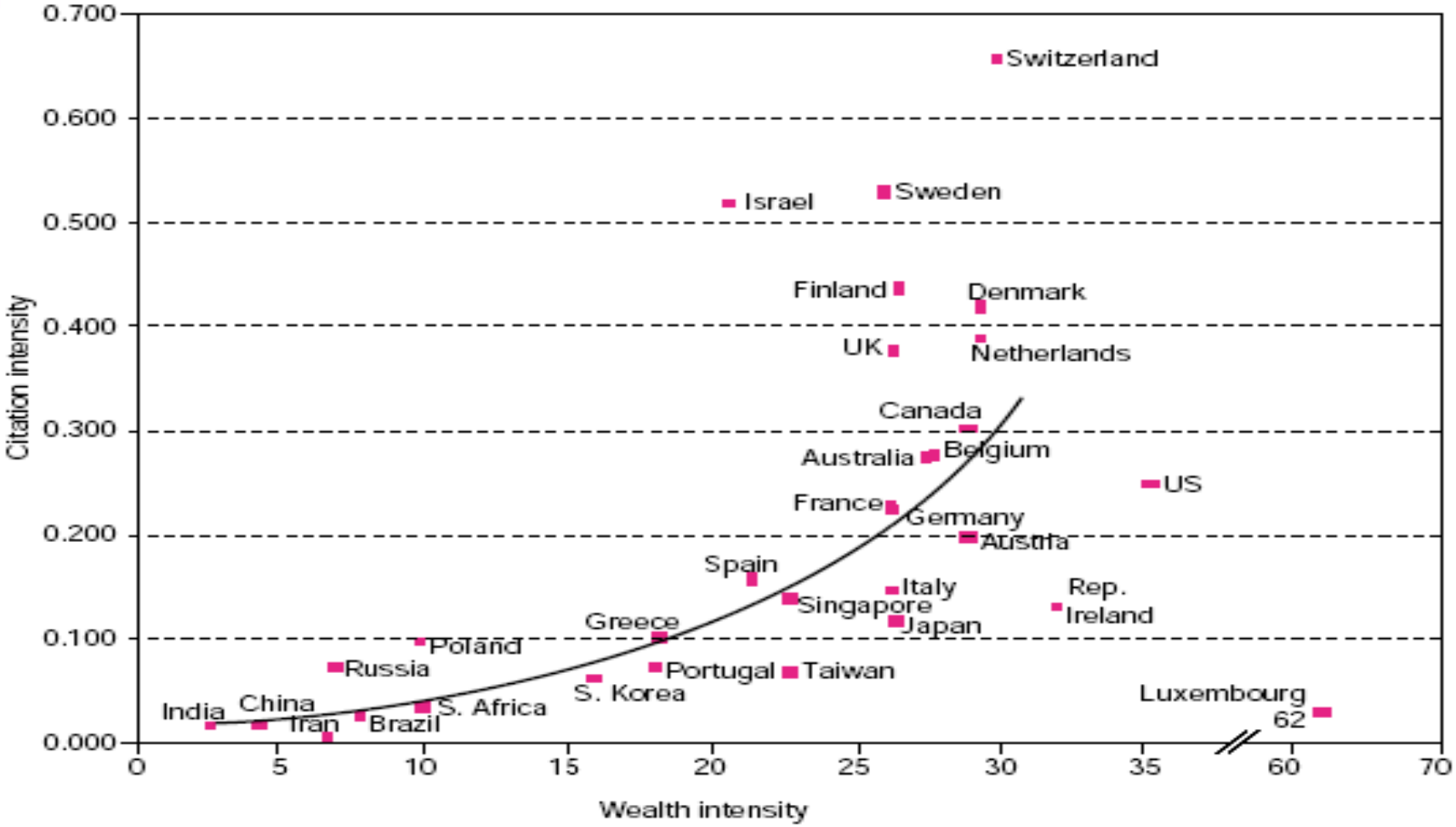
Economic & Scientific Wealth



Source: DA King, Nature 430 (2004) 311 (15 July 2004)

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Towards a Knowledge Economy

- Economic growth is driven by Innovation
- Knowledge is the basic form of capital for Innovation
  - Knowledge generation, accumulation and exploitation
  - Key driver for Innovation is “high-end” human capital: PhD
  - PhD as the key foundation for achieving the objectives of the National System of Innovation (NSI)

Principles of the 10 Year Innovation Plan

Principles informing 10 Year Innovation Plan:

- Articulates an innovation path to contribute fundamentally towards the transformation of the economy to a knowledge economy;

- Informed by 'triage' in decision-making i.t.o:
  - Focus on SA's areas of competence;
  - Global Objectives;
  - Societal transformation; and

- Based on premise that government's growth targets require a significant investment in innovation

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“Grand Challenges”

1. **Farmer to Pharma value chain to strengthen the bio-economy;**
2. **Space S&T;**
3. **Energy security;**
4. **Global-change science (climate change); and**
5. **Human and social sciences.**

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Knowledge Generation

Enablers

Technology development and innovation

Grand challenges

Farmer to pharma

Space science

Energy

Global change

Human & social science

Cross- cutting enablers

Human capital - South African research chairs initiative, professional development programme, etc.

Knowledge infrastructure – Science councils, state-owned enterprises, global projects

Knowledge Generation

- **Early-stage research *(for example nanotechnology where the innovation is uncertain and projected well into the future);***

- **Science missions *(exploiting the 'living laboratories' of local resources and geographic advantage to generate meaningful scientific research outputs/knowledge products);***

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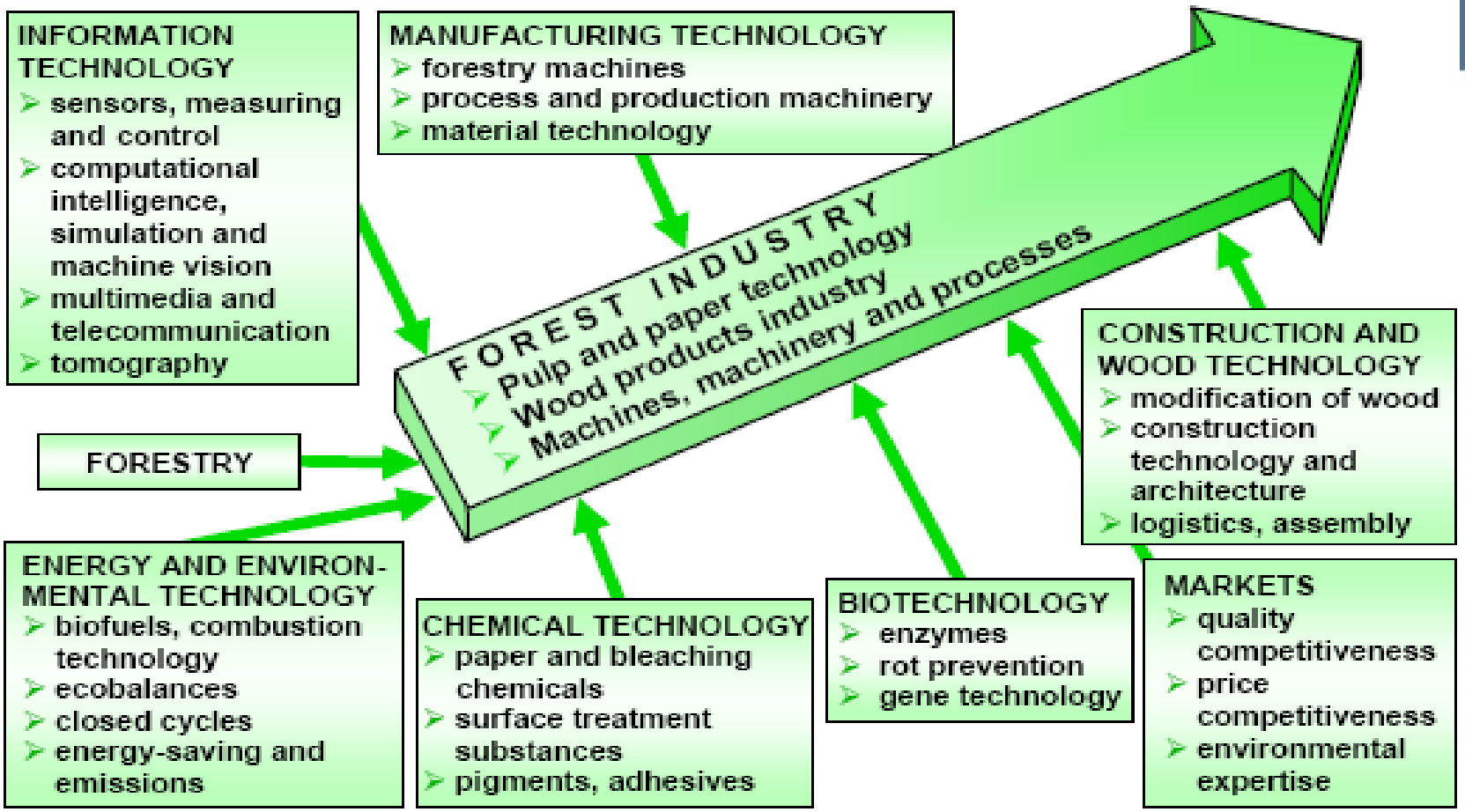
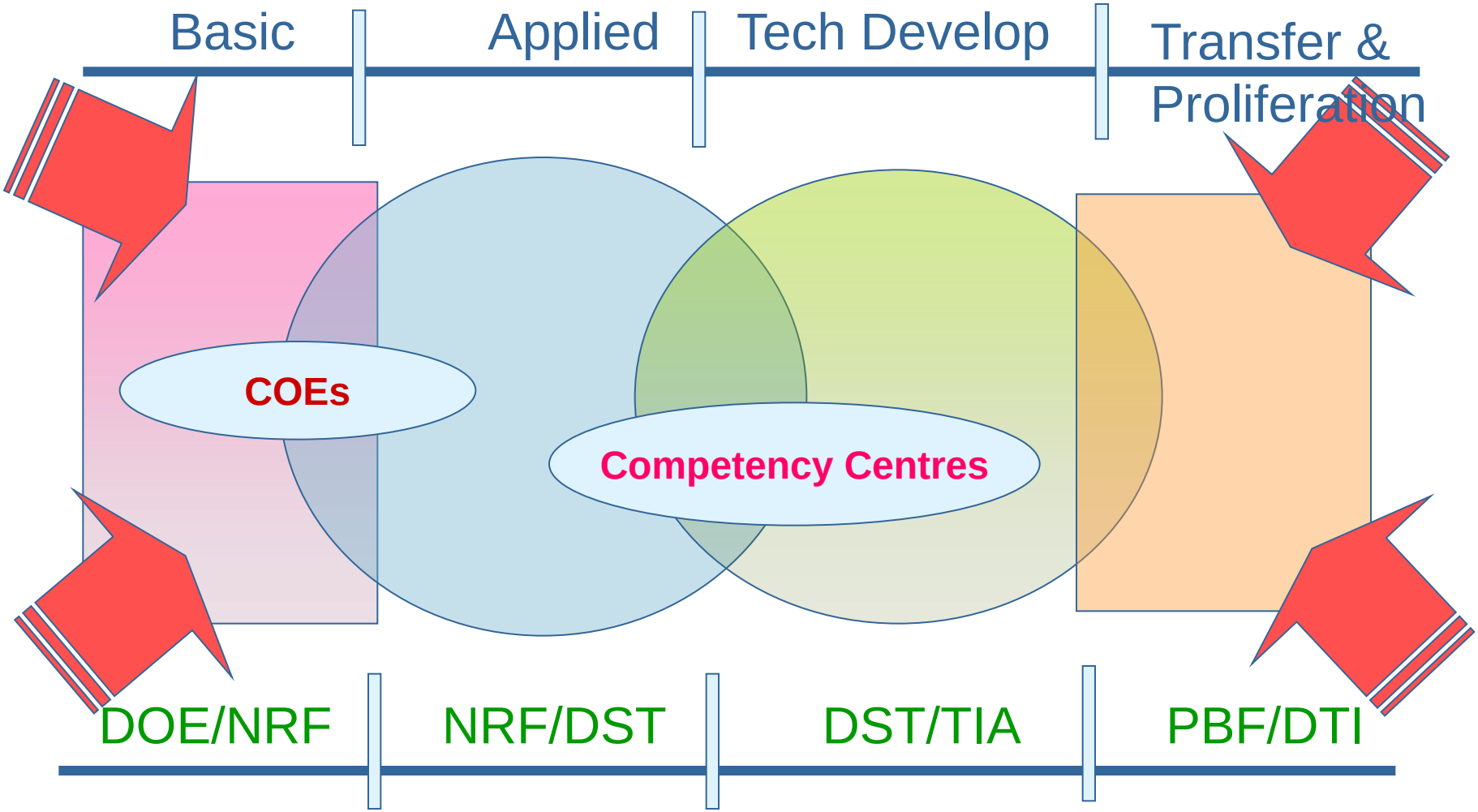
Knowledge Generation and exploitation

- **Technology missions *(for example advanced manufacturing where innovation is possible in the near future);***

- **Conventional sectors *(institutional mandates for growing the research base such that the entire sector and the economy constantly benefits, for example agriculture or health).***

Securing Competitiveness in the Forest Industry Cluster





- Research Chairs
- PGP & HCD instruments
- RISA instruments

- Innovation Fund
- BRICs
- SPII & PII

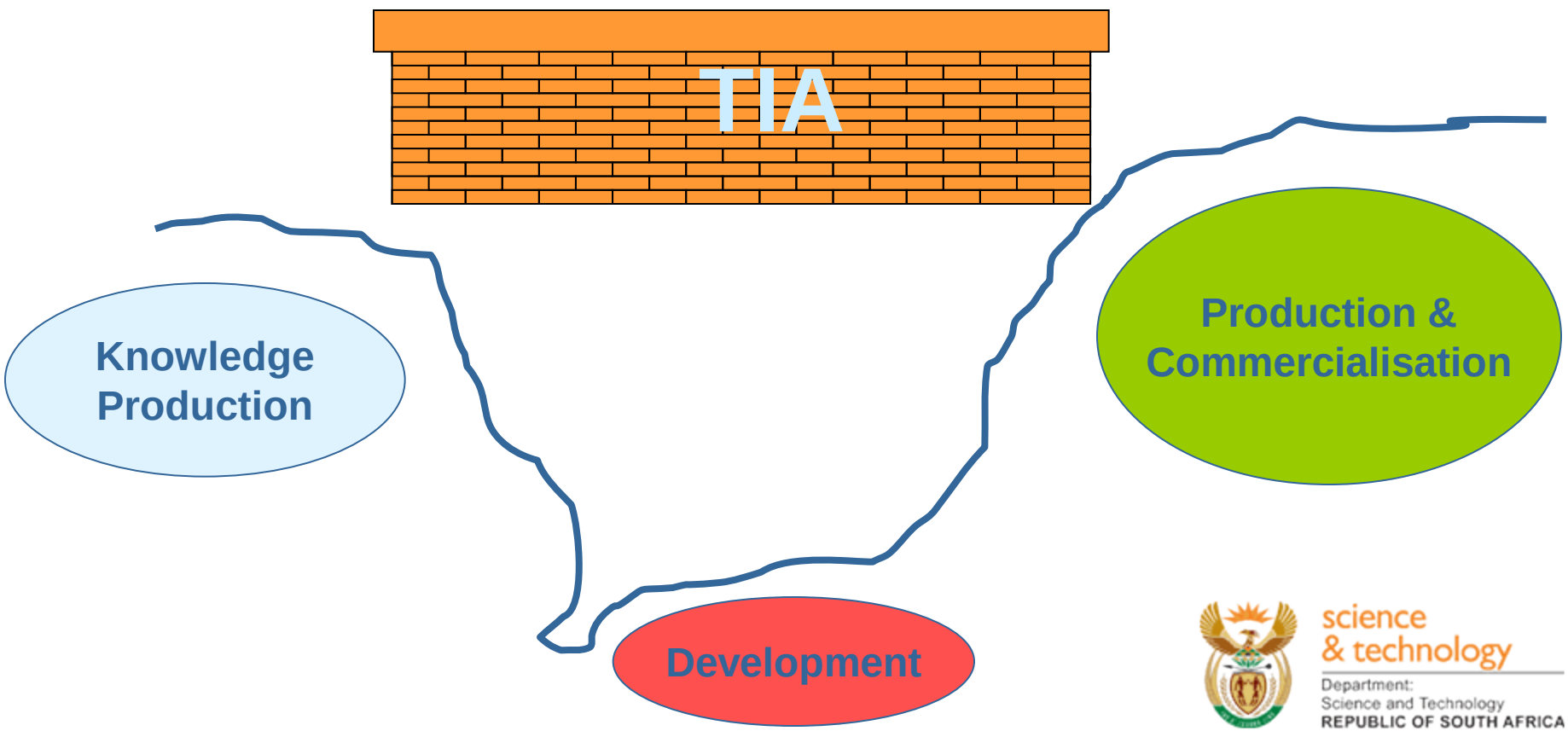
- SEDA
- Khula
- IDC

Publications/new knowledge

Patents/new knowledge products

Innovation Instruments cont:

Bridging the "Innovation Chasm"



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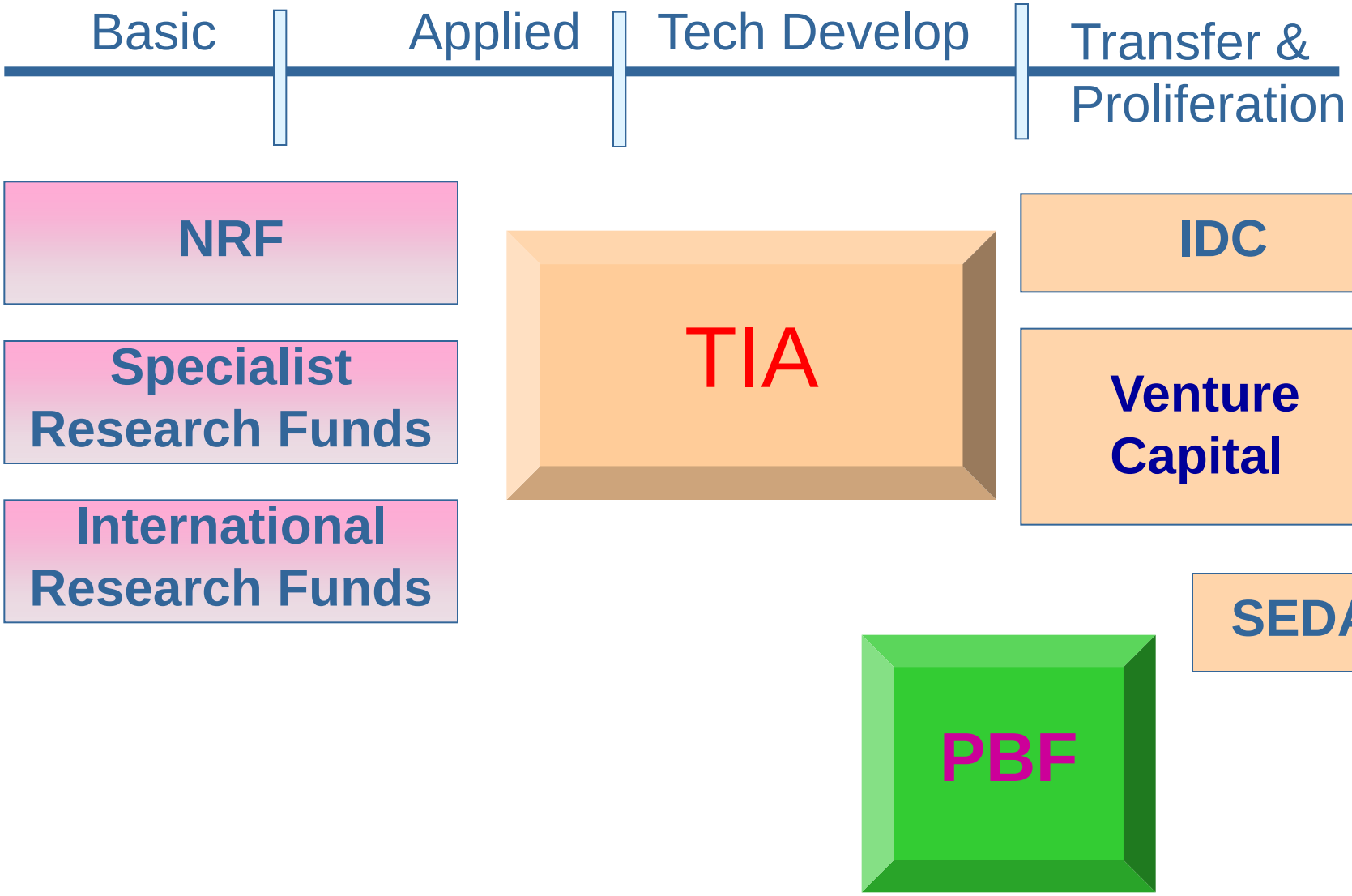
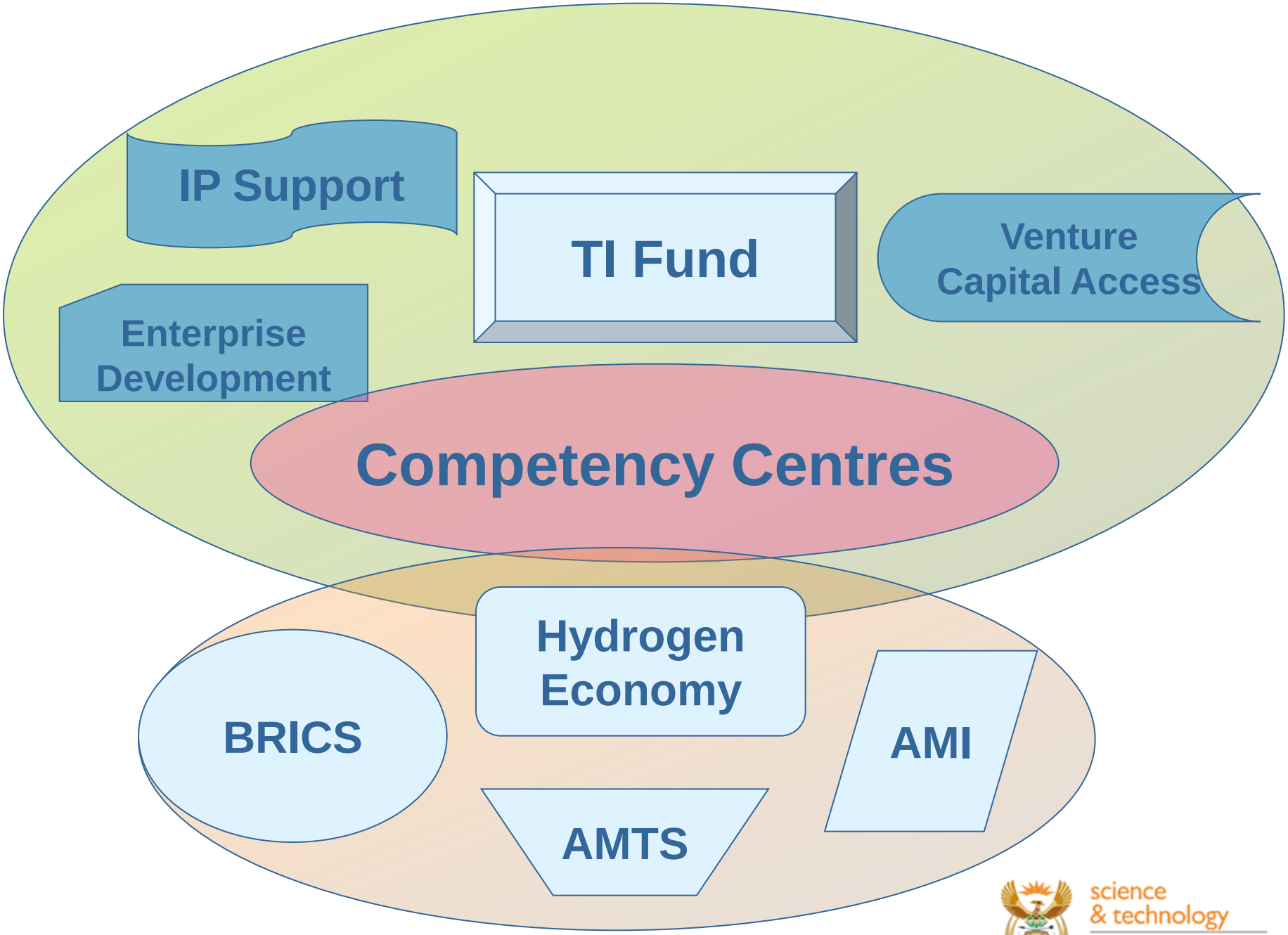

Basic
Applied
Tech Develop
Transfer & Proliferation
NRF
Specialist Research Funds
International Research Funds
TIA
IDC
Venture Capital
SEDA
PBF
Publications/new knowledge
Patents/new knowledge products



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Innovation as a National Competence

1. **Technology Innovation Agency (TIA)**
2. **Intellectual Property Rights Bill (IPR)**
3. **Centres of Competence**
4. **Public Benefit Foundation (PBF)**
5. **Regional Innovation Systems**
   - **Technology Parks**

Human Capital Development:

- Increase the number of knowledge workers: Researchers
- Increase the productivity of researchers
- Address inequalities: Race, gender, regional & institutional distribution
- Introducing appropriate Innovation Instruments in the National System of Innovation

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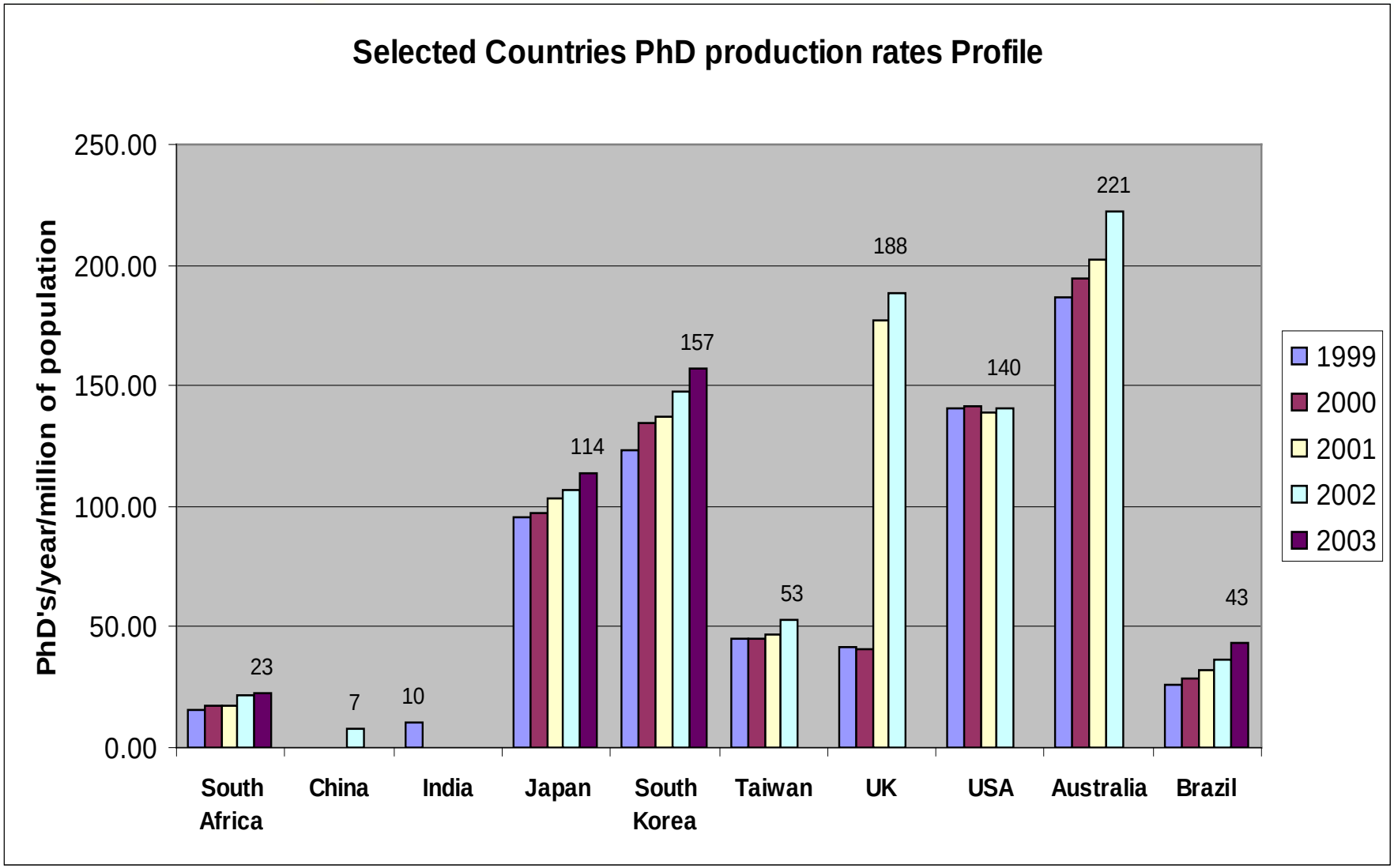
Knowledge-based Economies



Strategic Positioning:

IN WHICH LEAGUE DO WE WANT TO PLAY?

Country	Factor
China??	X 0.34
India??	X 0.44
Brazil	X 1.9
Taiwan	X 2.3
Japan	X 4.9
USA	X 6.1
South Korea	X 6.8
UK	X 8.2
Australia	X 9.7

South Africa
In
2026 (20 yrs)

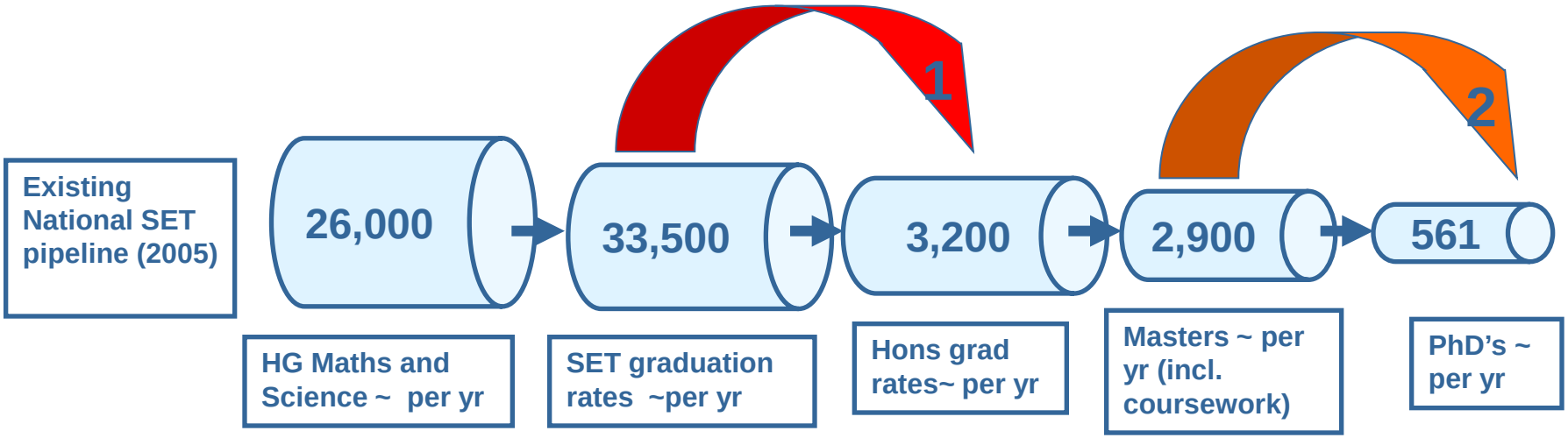
A **5 x increase**
to present
situation

South Africa
In
2026 (20yrs)

A **10 x increase**
to future
situation

Points of leverage from current situation:

1. < 10% proceed from a basic degree to pursue honours
2. Only 19% proceed from Masters to Doctoral studies



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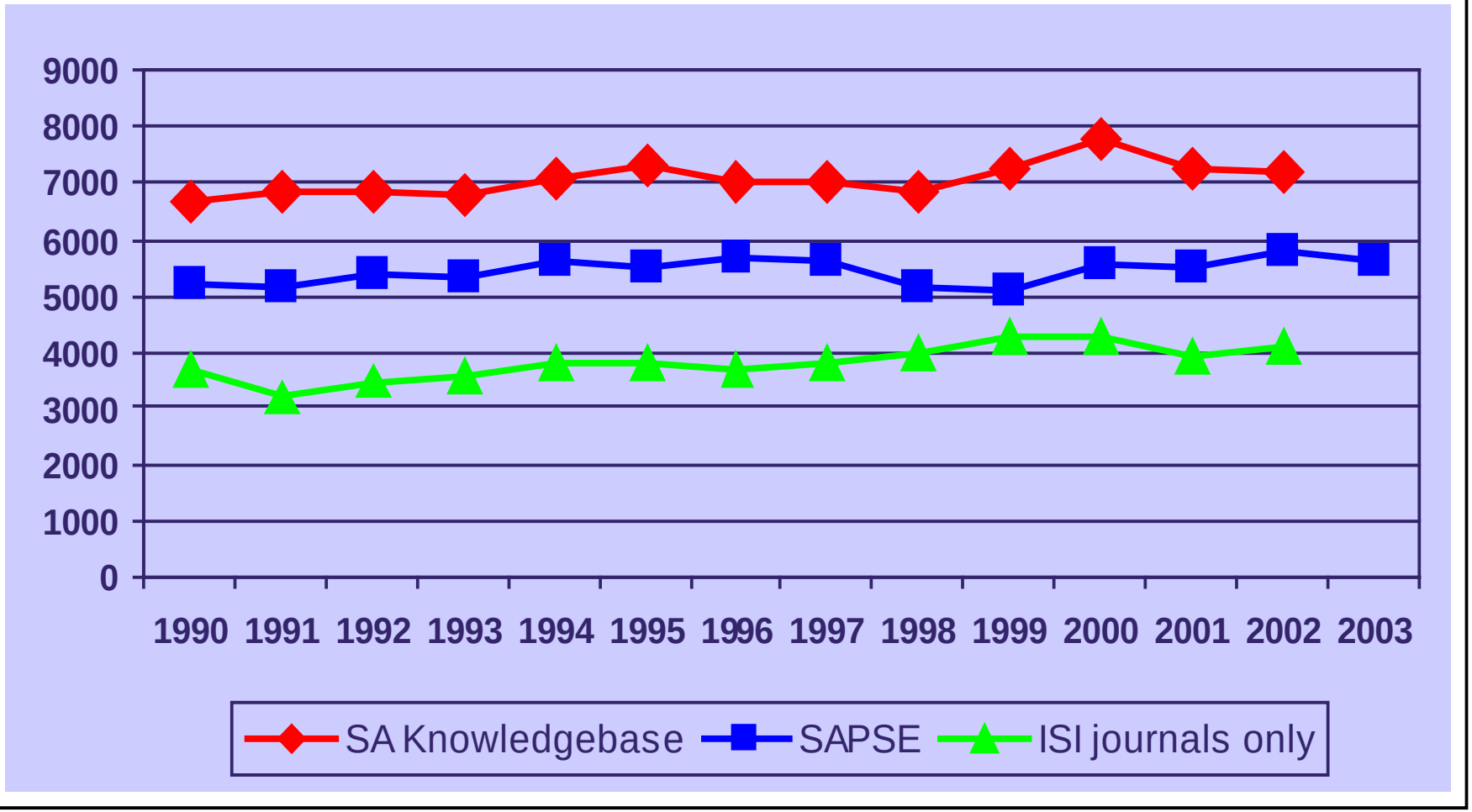
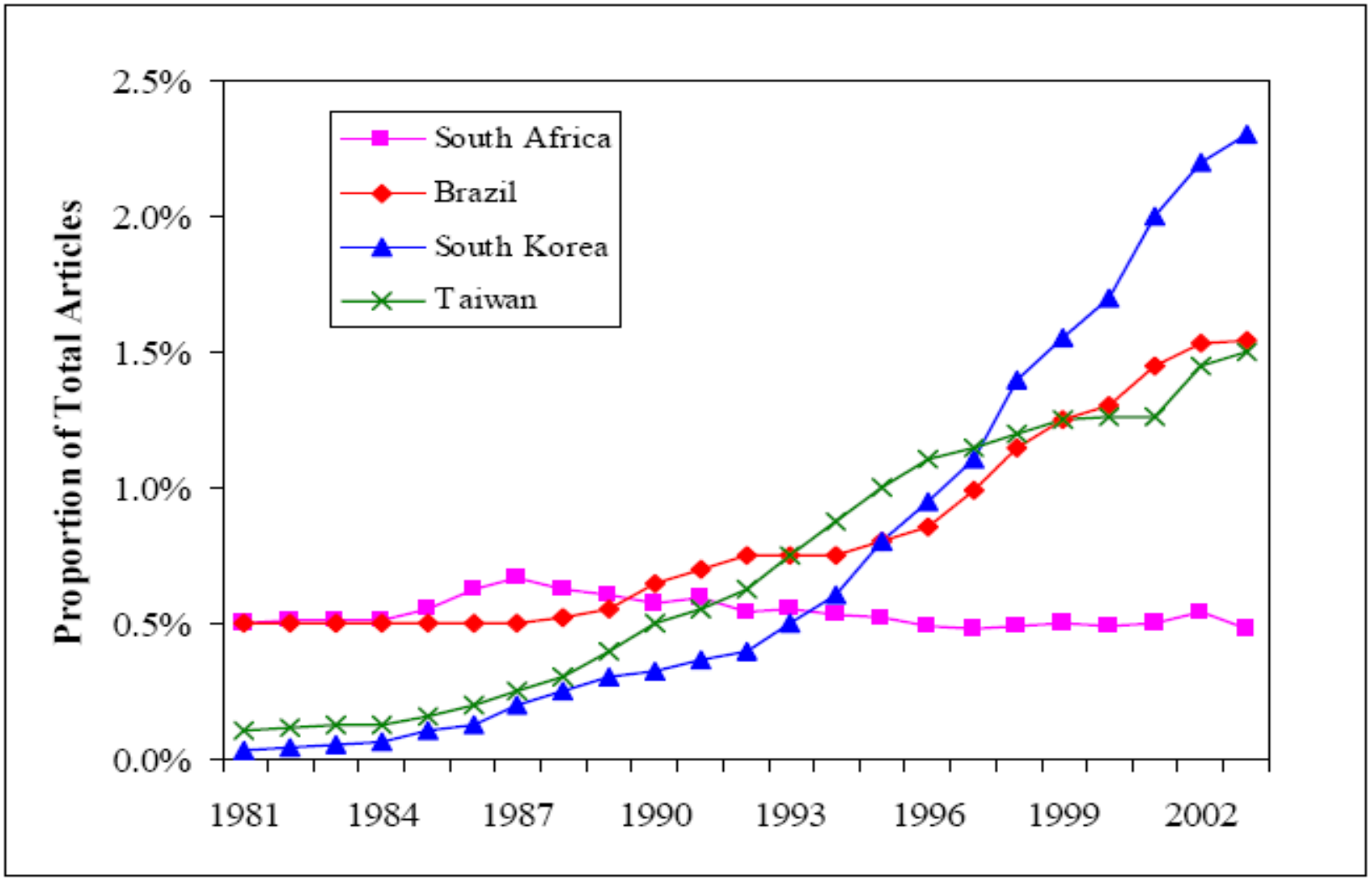
Research Outputs:
Scientific Journals

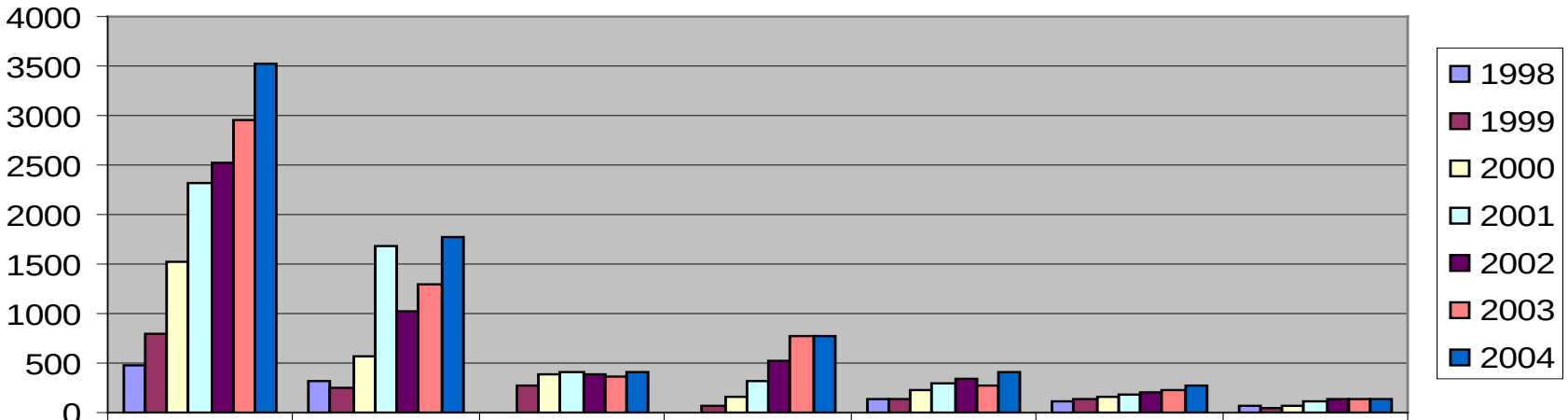


Research Outputs:
International Comparison



Research Outputs: Patents

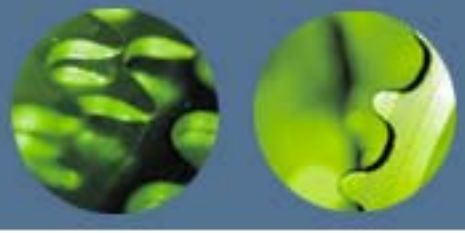
PCT INTERNATIONAL APPLICATIONS ORIGINATING FROM SELECTED DEVELOPING COUNTRIES



	R.Korea	China	South Africa	India	Singapore.	Brazil	Mexico
1998	485	322	0		127	114	67
1999	790	240	281	61	144	126	51
2000	1514	579	386	156	225	161	71
2001	2324	1678	419	316	288	173	104
2002	2520	1017	384	525	330	201	132
2003	2951	1293	355	764	282	220	131
2004	3521	1782	416	784	415	280	137

S&T Across Govt

- Inter-Departmental S&T initiatives (Technology Managers Forum);
- Infrastructure investment in line with ASGISA (i.e. rail, road, air, energy, etc.);
- Public procurement innovation (support local innovations incl. SMME's and techno start-ups); and
- Monitoring S&T in SA (annual reviews, surveys and patent statistics).



OECD Review: Key Findings

- Human Capital for SET is sub-optimal.
- A long term planning Framework is needed.
- The governance framework needs more vertical and horizontal integration.
- There is an innovation chasm with an insufficient number of research products directly influencing the real economy.
- Science, Technology and Innovation for the 2nd economy should be more pronounced and visible.

Conclusions

- Application of knowledge to generate new products and services;
  - Five “grand challenges” as a mechanism to create focus and developing a research agenda with specific national outcomes;
- Ensure innovation as a national competence is strengthened by appropriate mechanisms (i.e. TIA; Centres of Competence);
- Enhance country’s ability to generate knowledge including early stage research areas;

CONCLUSION (CONT)

- Infrastructure
- Internationalisation of our Research Enterprise

KE A LEBOGA

Thank you