



Towards 2018:

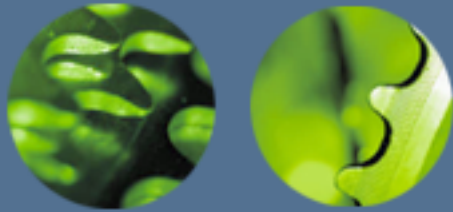
South Africa's 10-Year National Innovation Plan

Dhesigen Naidoo
Department of Science &
Technology



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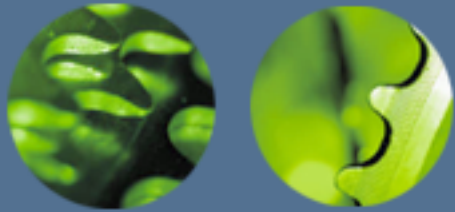
Policy & Institutional landscape

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

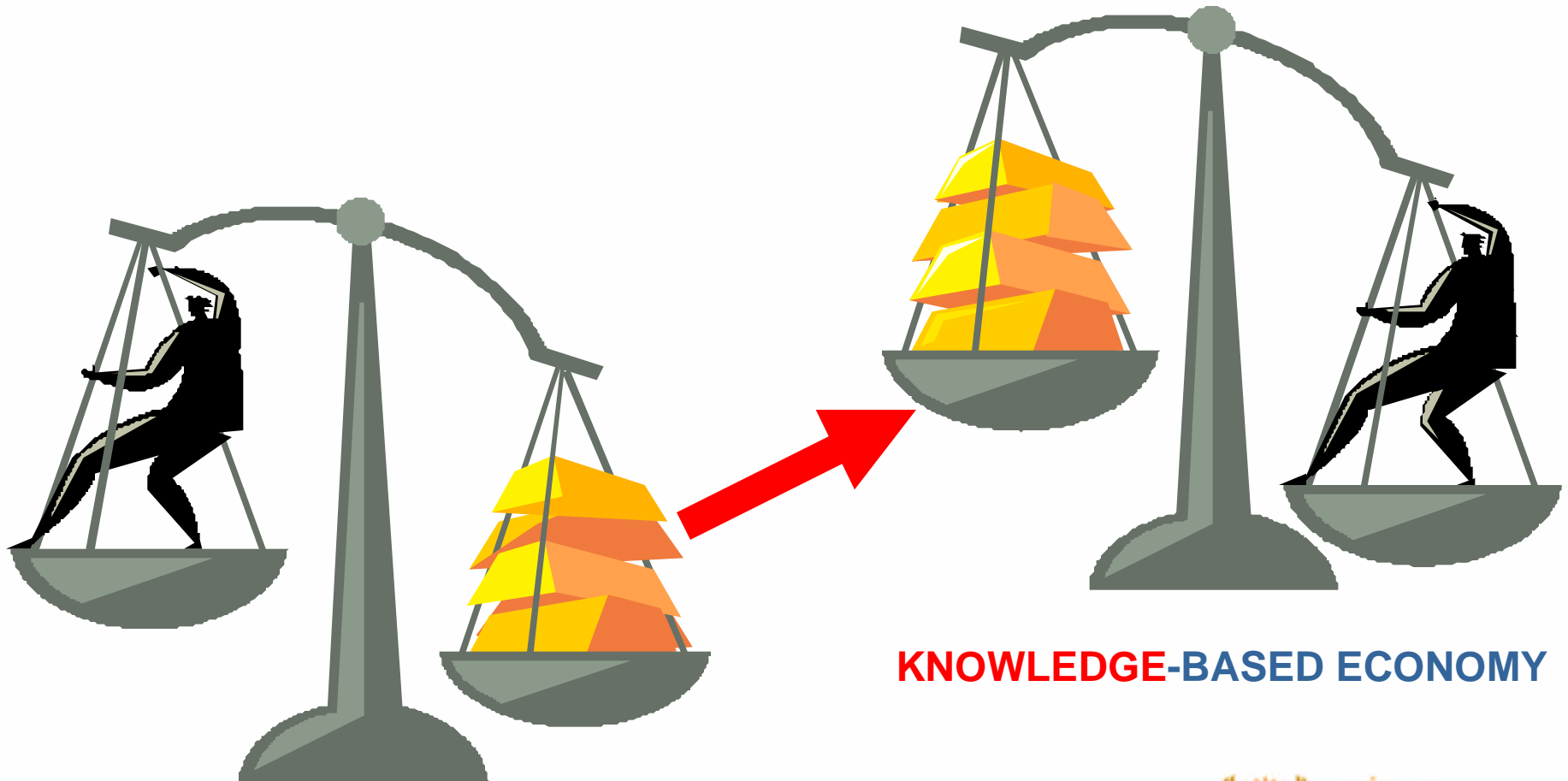


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Towards a Knowledge Economy



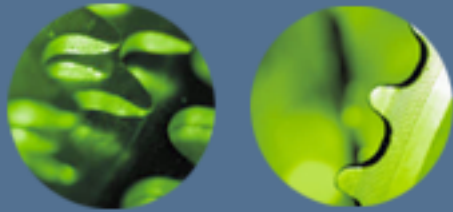
RESOURCE-BASED ECONOMY

KNOWLEDGE-BASED ECONOMY



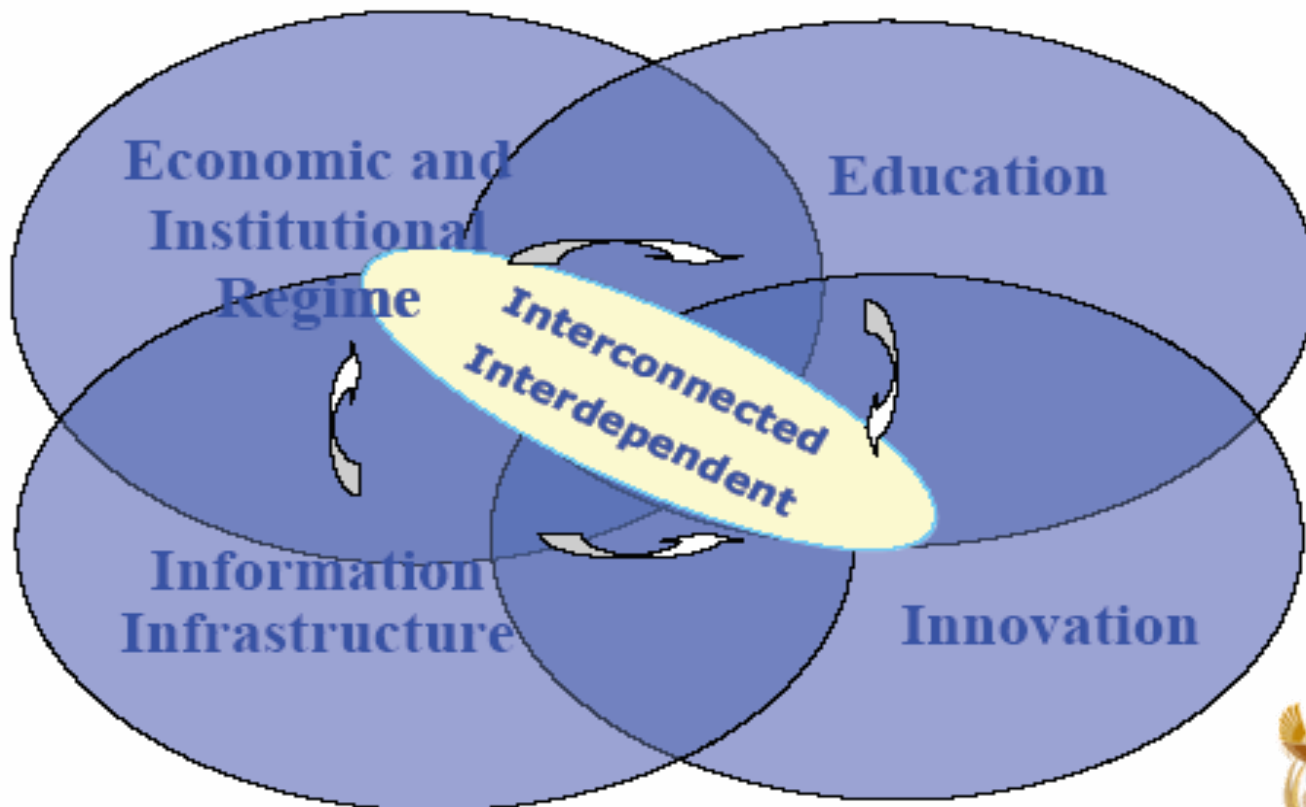
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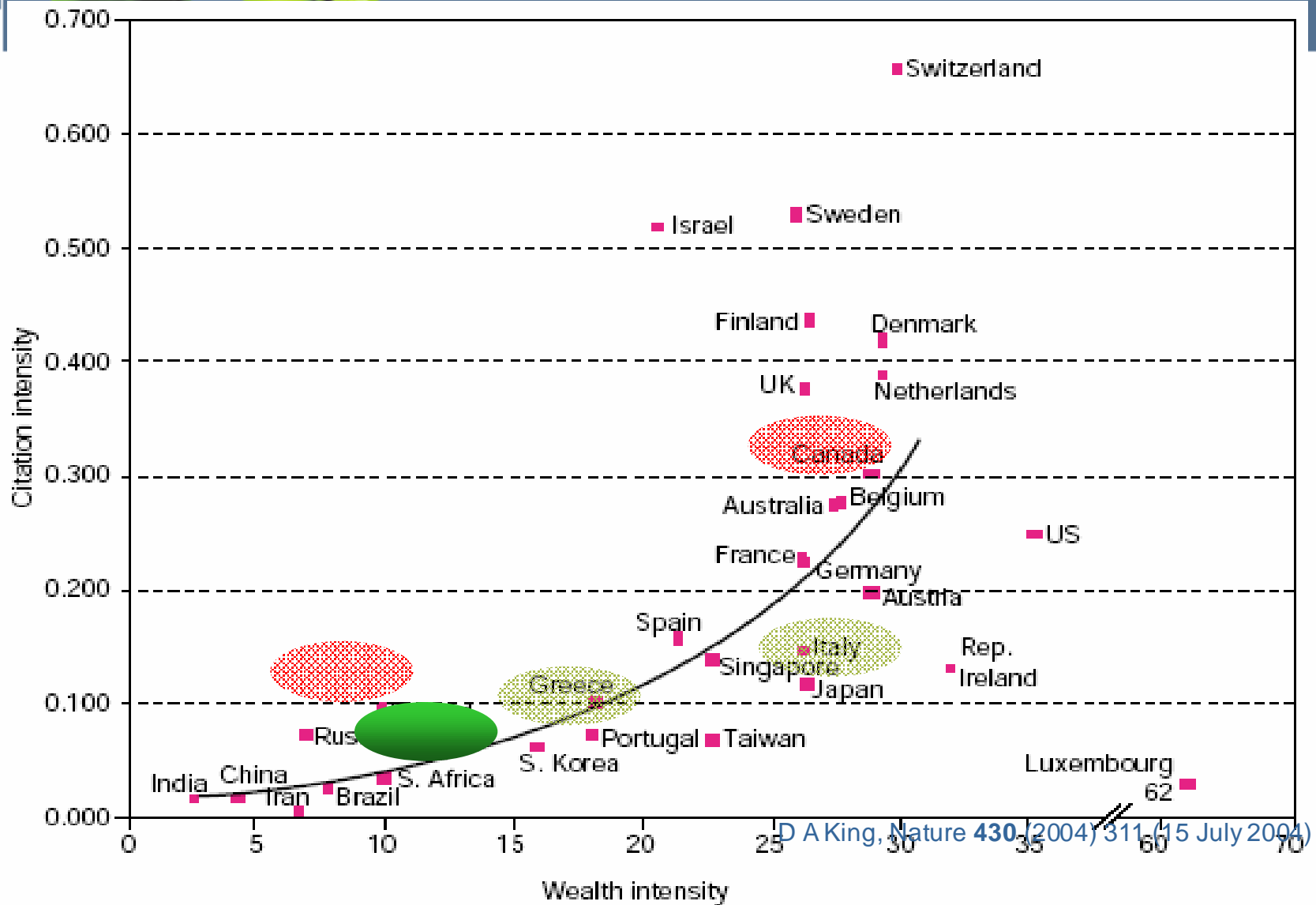


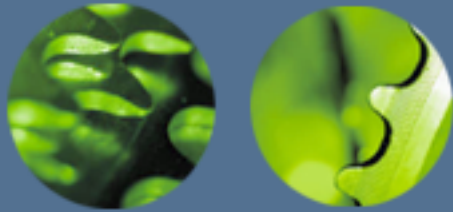
The Knowledge Economy

The Four Pillars of the Knowledge Economy



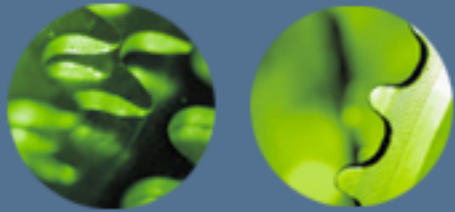
Economic and Scientific Wealth





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)



“Grand Challenges”

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

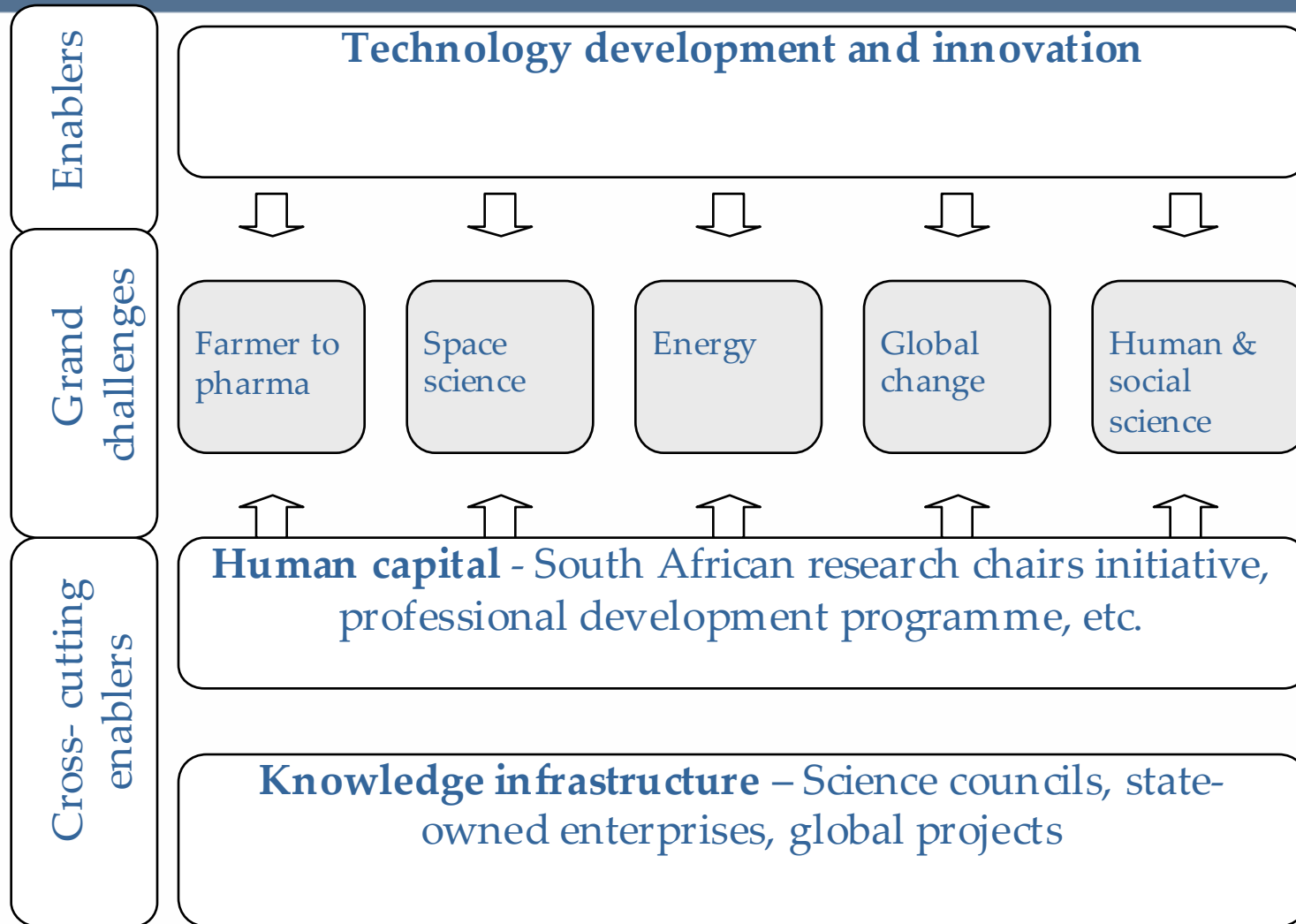


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Knowledge Generation

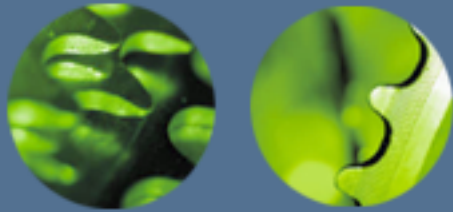




Knowledge Generation

- **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);**



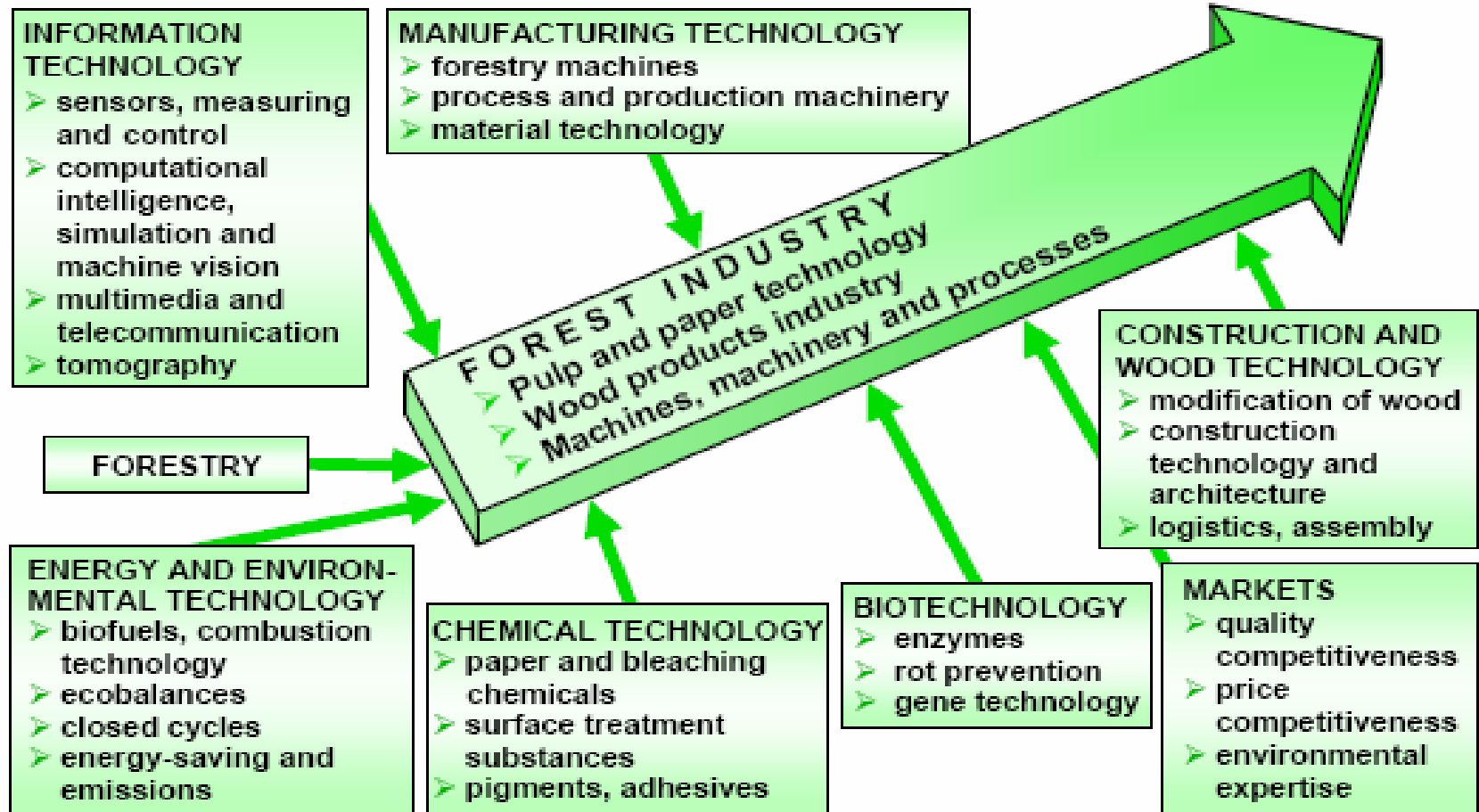


Knowledge Generation and exploitation

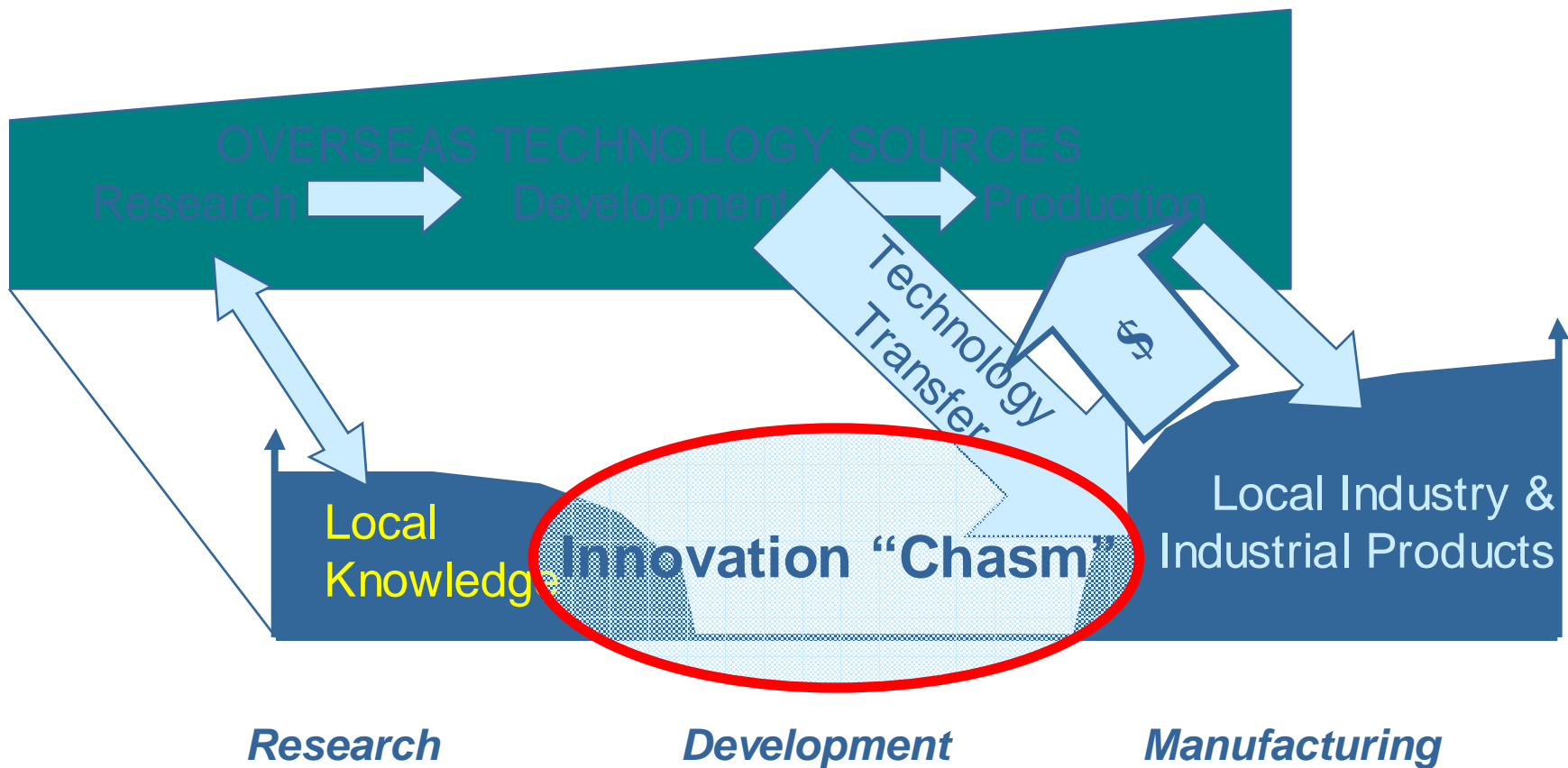
- **Technology missions (*for example advanced manufacturing where innovation is possible in the near future*);**
- **Conventional sectors (*institutional mandates for growing the research base such that the entire sector and the economy constantly benefits, for example agriculture or health*).**



Securing Competitiveness in the Forest Industry Cluster



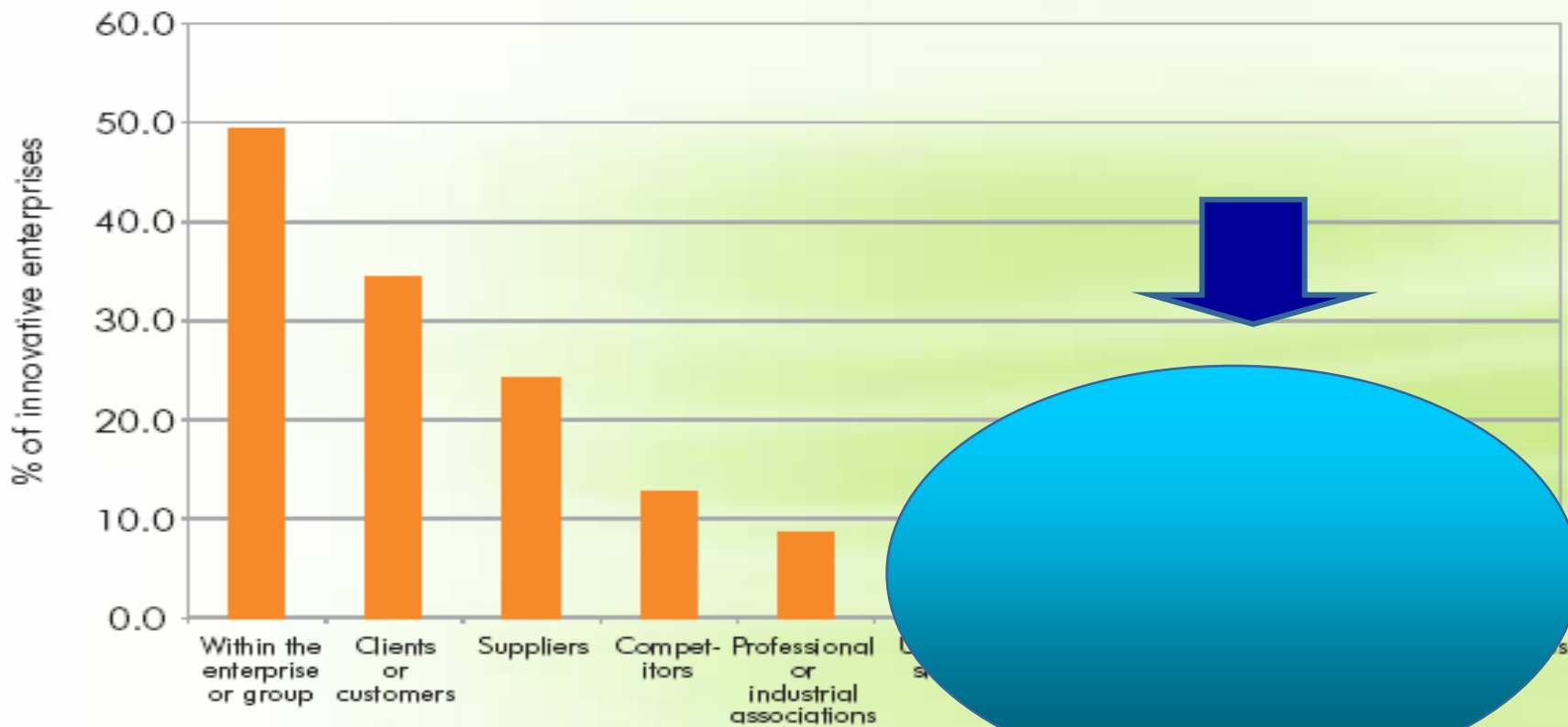
Tech dependency or knowledge economy?



Innovation Constraints

FIGURE 6:

Sources of information for innovation rated as highly important by innovative enterprises, 2002-2004

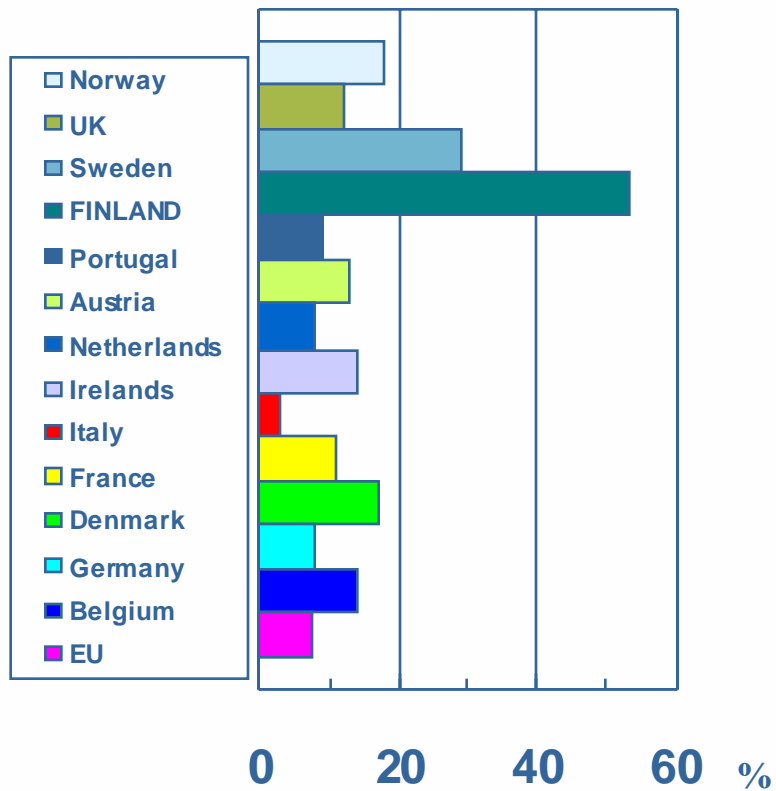


Source: SA Innovation Survey 2005

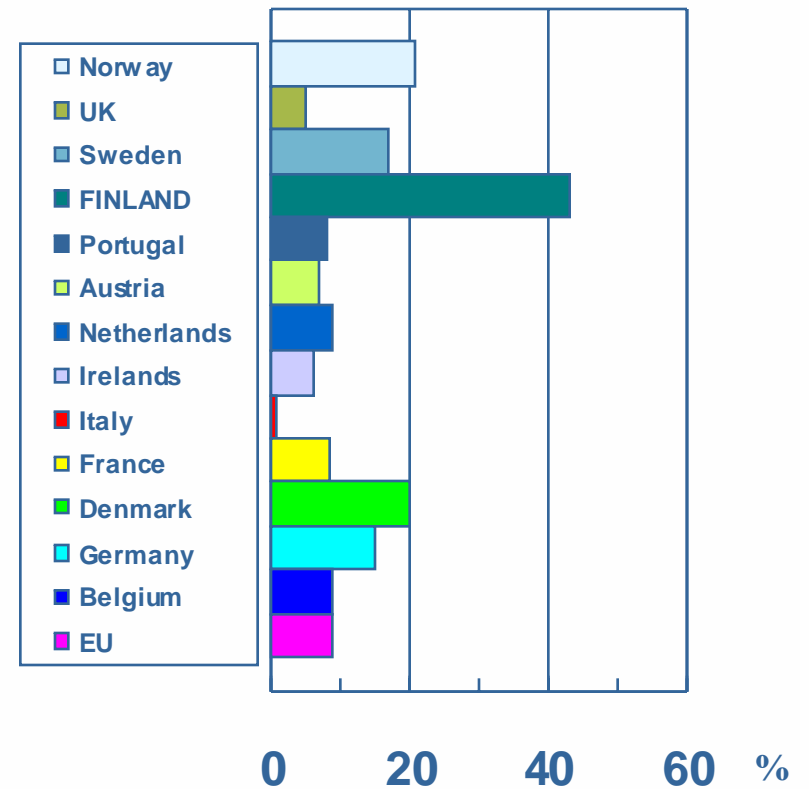
Co-operation : companies, universities & research institutes



Share of innovative companies having co-operation agreements with universities (1994-1996)



Share of innovative companies having co-operation agreements with public research institutes (1994-1996)



Source: Eurostat, Enterprise DG, 2nd Community Innovation Survey

Basic

Applied

Tech Develop

Transfer &
Proliferation

NRF

**Specialist
Research Funds**

**International
Research Funds**

TIA

IDC

**Venture
Capital**

SEDA

PBF

Publications/new knowledge

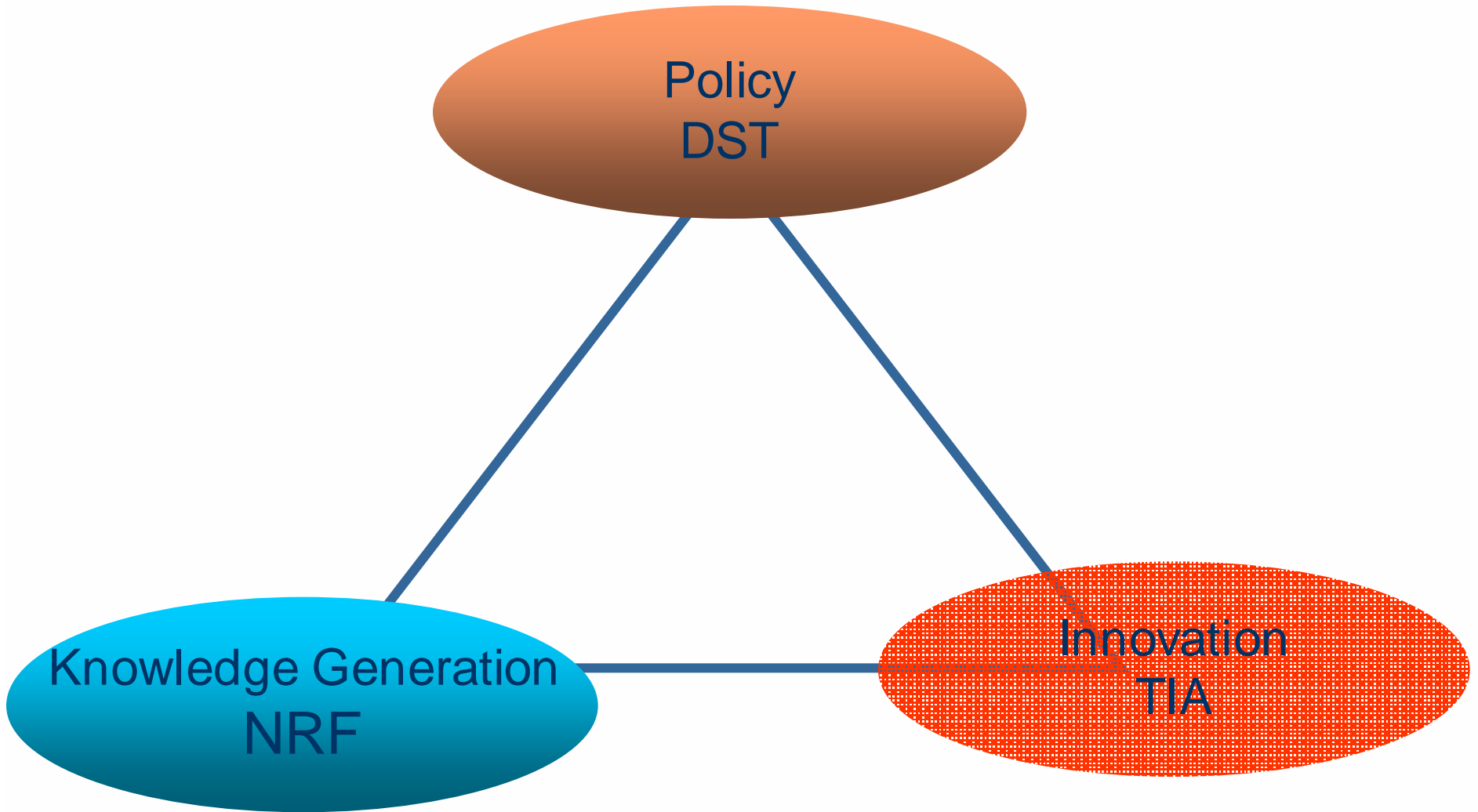
Patents/new knowledge products



Policy
DST

Knowledge Generation
NRF

Innovation
TIA

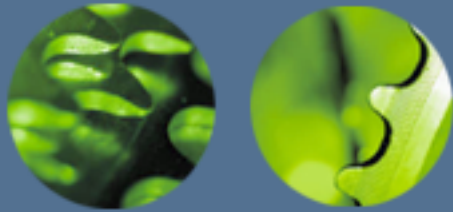




Innovation as a National Competence

- 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**

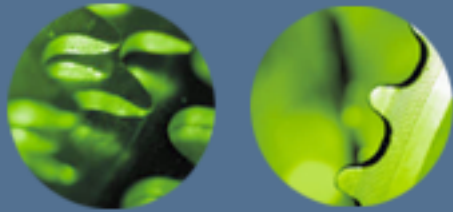




Human Capital Development:

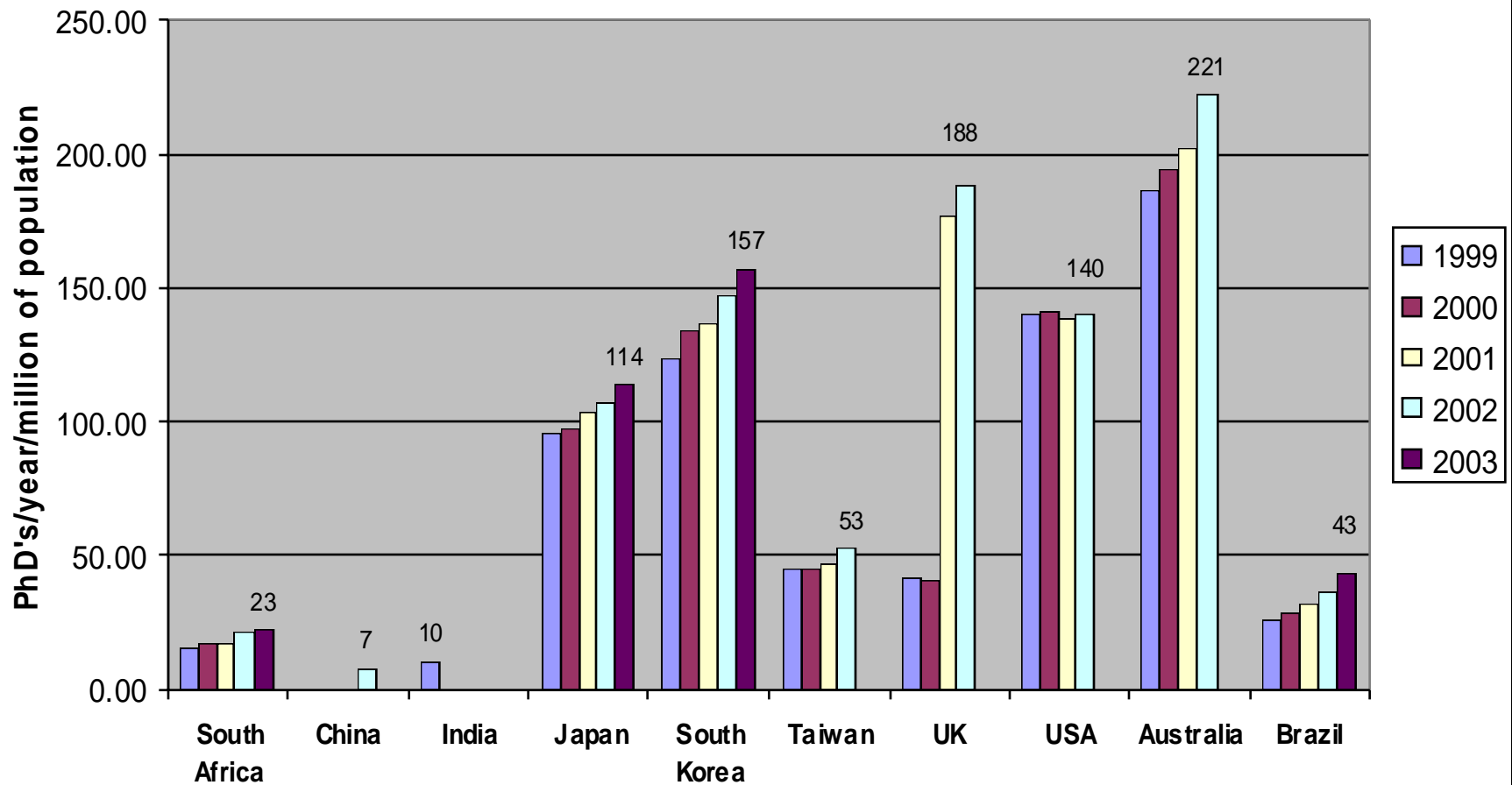
- Increase the number of knowledge workers:
Researchers
- Increase the productivity of researchers
- Address inequalities: Race, gender, regional &
institutional distribution
- Introducing appropriate Innovation Instruments
in the National System of Innovation





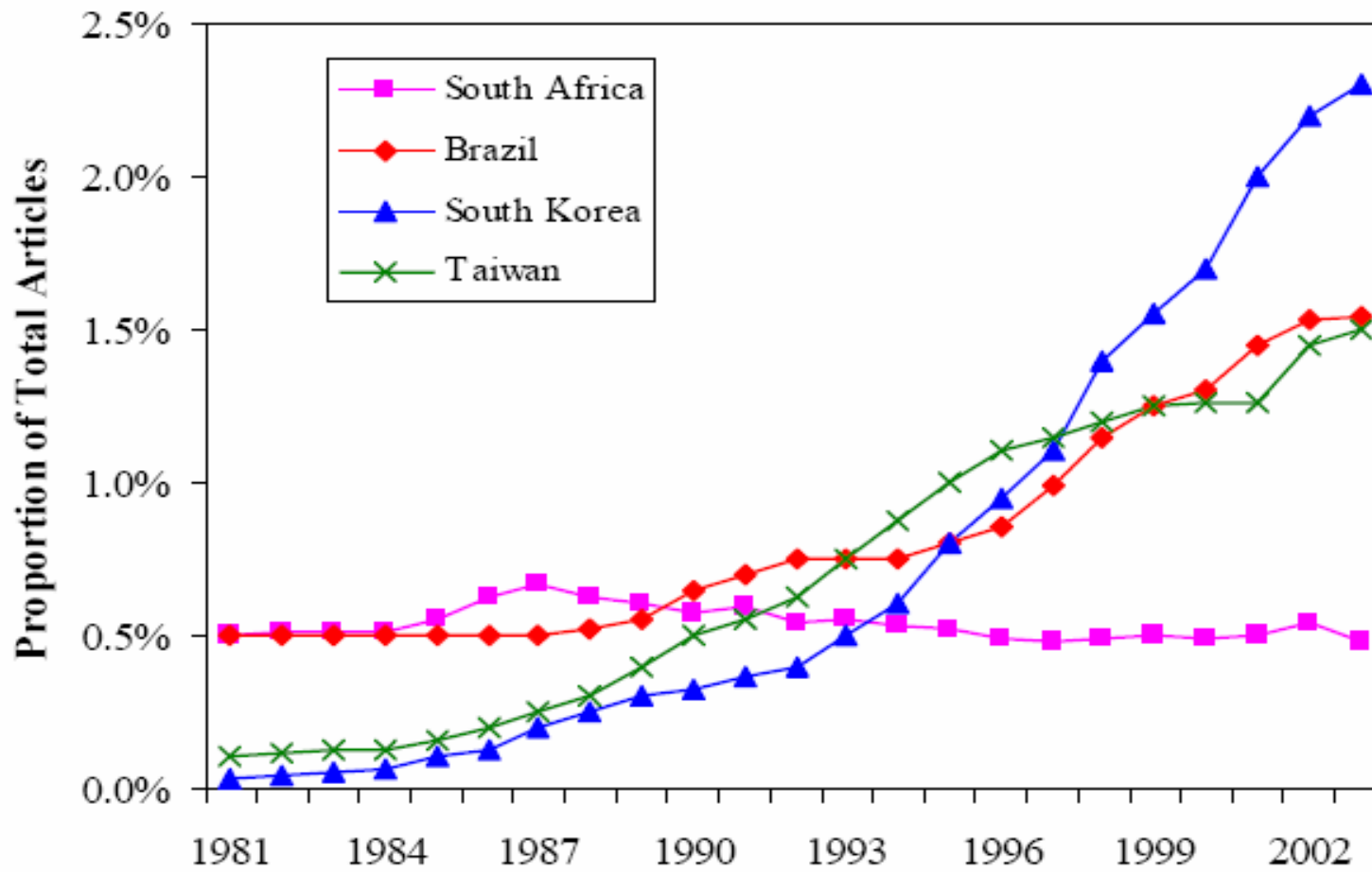
Knowledge-based Economies

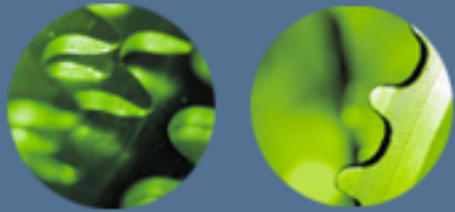
Selected Countries PhD production rates Profile





Research Outputs: International Comparison





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



Set HCD Strategy

Outputs

People and knowledge
Innovation in a knowledge economy

Interventions

AS&LS
Innov H

Studentships

Post Doc

Res grants
SARChI
Tier 2

SARChI
Tier 1
CoC

CoE
CoC

Undergrad – post grad – post doc – jnr res – snr res-intnl renowned-Nobel laureate

enablers

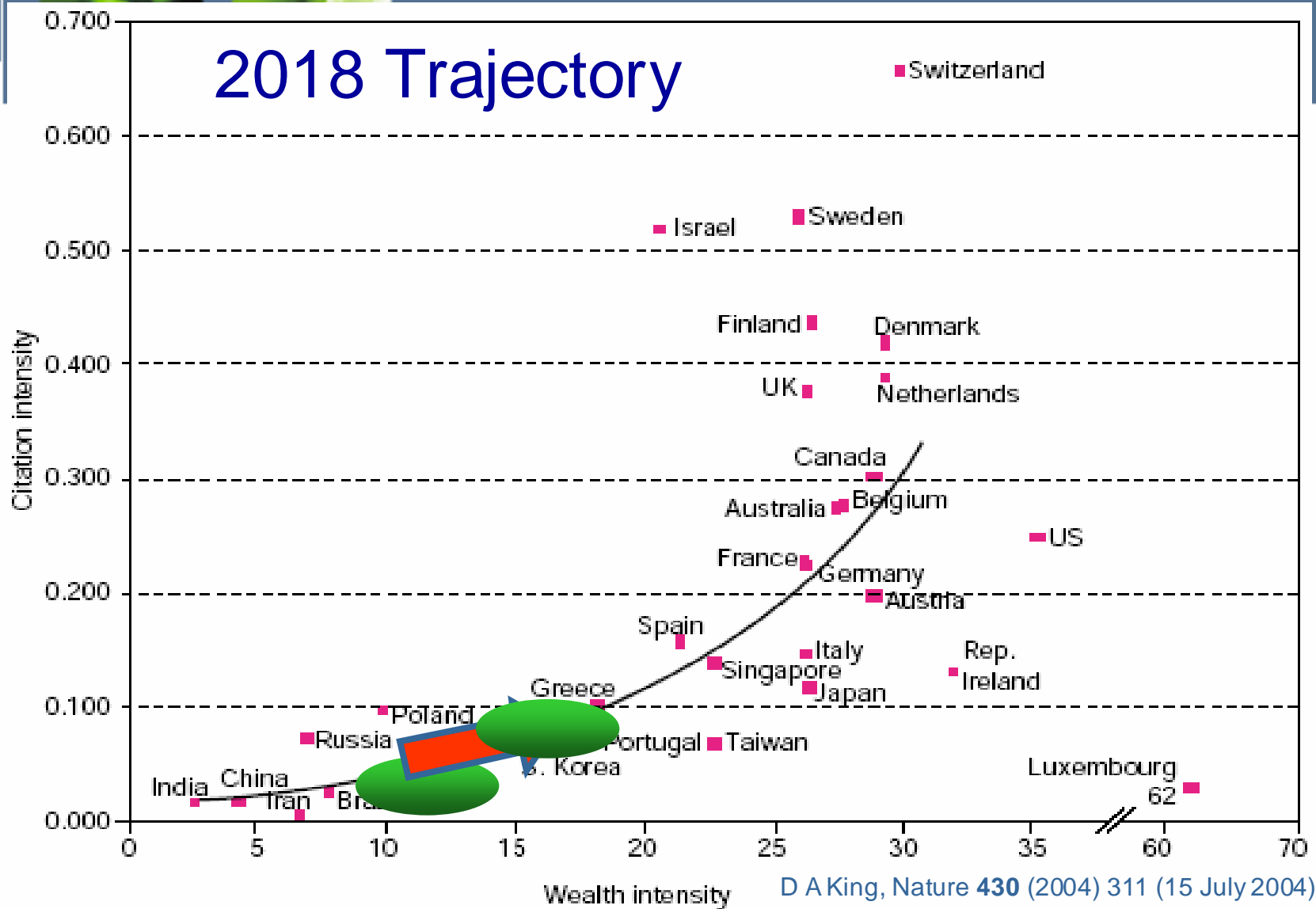
Global Knowledge Networks

Race and Gender

Attraction & Retention



Economic and Scientific Wealth

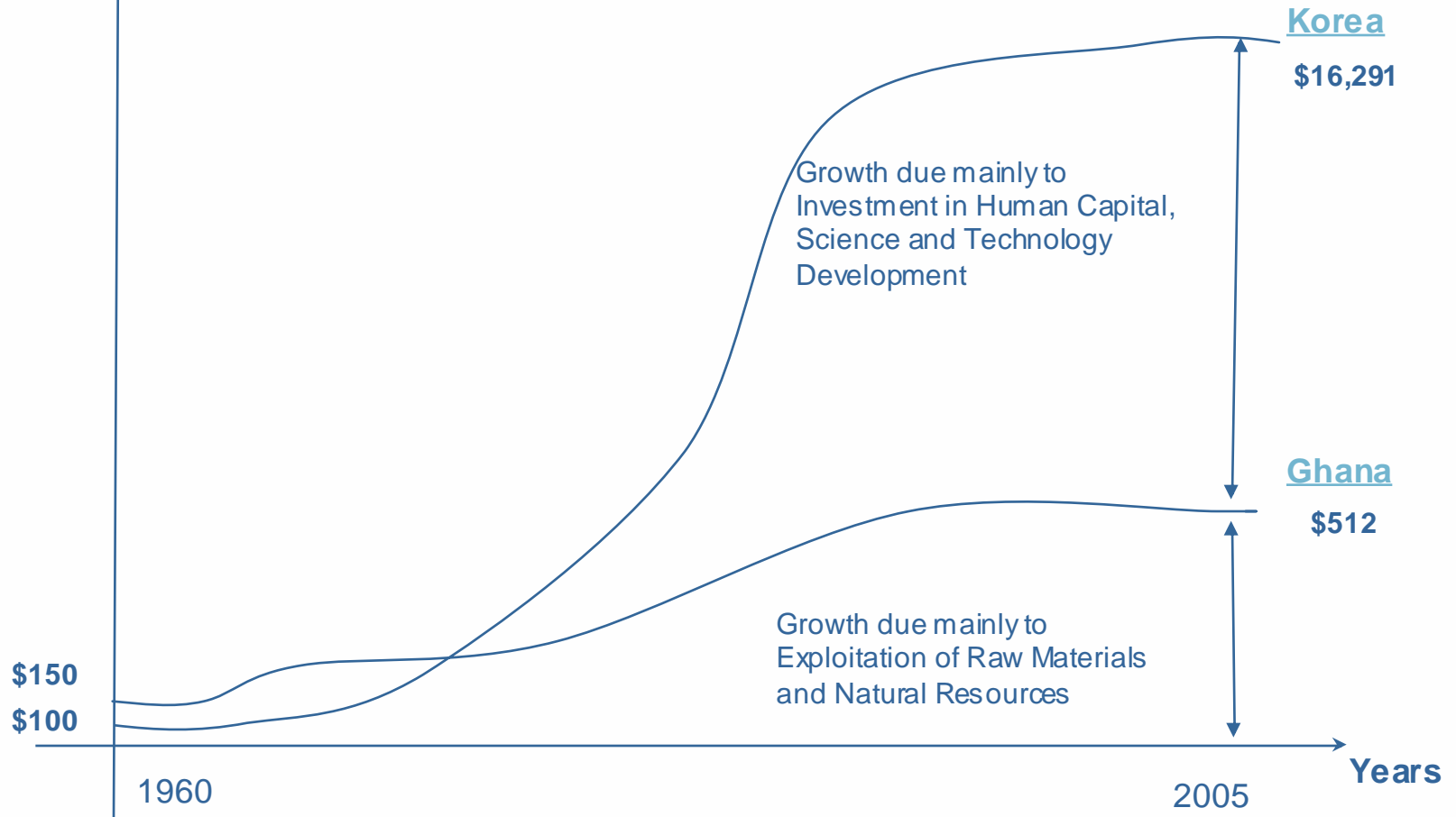




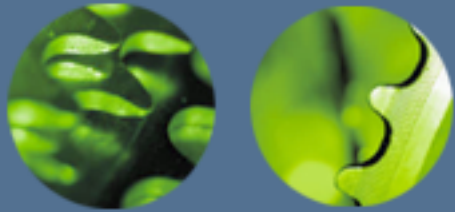
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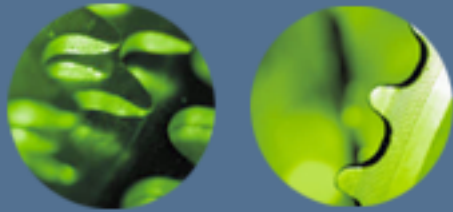


SOURCE: African Development Bank



Korea

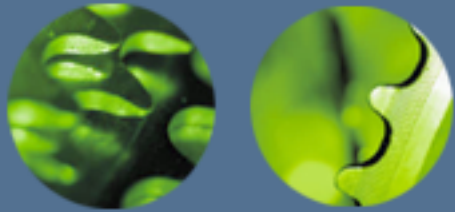
- Area: 98,477 sq. km; Arable Land: 17%
- Population: 49 million (early growth rate of 0.42%)
- **Schooling: Primary 99%; Secondary 95%, Literacy 98%**
- Mining and Manufacturing 26%; Services 67%
- Nominal GDP: \$788 billion in 2005, estimated at \$897 billion in 2006
- Economic Growth rate of 4.5% average
- Natural Resources: Limited Coal, iron, limestone, kaolinite and graphite
- Exporter of Electronic products: Semiconductors, Cellular phones & Equipments, Computers, Ship building, etc. ←
- 11th Largest Economy in the World



Ghana

- Area: 238,538 sq. km; Arable Land: 70%
- Population: 22 million (yearly growth rate of 2.7%)
- **Schooling: Primary 70%; Junior Secondary 24%; Senior Secondary 6%; Literacy 62%**
- Mining and Manufacturing 16.2%; Services: 5.9%
- Nominal GDP (2005): \$9.5 billion
- Economic Growth rate of 4.3% average
- Natural Resources: Gold, Timber, Diamonds, Bauxite, Manganese and Fish
- Exporter: Cocoa, Gold, Timber, Diamonds, Manganese





Cases of Growth

- **Other Similar Examples of Income Per Capita:**
 - **Morocco: \$4,400 in 2006**
 - **Tunisia: \$8,600 in 2006**
 - **Malaysia: \$12,700 in 2006**
 - **Japan: \$33,100 in 2006**
- **In most of these countries, industry and services accounted on average for 23 to 25% of the growth**
- **These require skills and innovation, thus investment in education and training**