



Topic 3: Designing Innovation Policies to Meet Country Needs

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THE INNOVATION HUB®

Presentation Outline

- ❑ Introduction
- ❑ Lessons from South Korea
- ❑ South Africa's National System of Innovation
- ❑ South Africa's Policy on IP Emanating from Publicly Financed R&D
- ❑ Regional Innovation Systems: Gauteng Province
- ❑ Concluding Remarks

Introduction

Changing Face of Africa



Urbanization growth: 41%
(2000-09)
Highest in the world

**Growing youth population
impacting lifestyle and
commerce.**



Economically active population:
70.7%
Highest in the world



Literacy growth: 8.5%
(2000 -09)
Second Highest in the

Sources:
Emmanuel Okoegwale MobileMoneyAfrica
World bank Note: Data for Sub-Saharan Africa

Changing demographics creating new opportunities

Introduction

Defining Innovation

The process by which an idea or invention is translated into a good or service for which people will pay or use, or something that results from this process

- ❑ Invention is result of the process of putting money in and getting knowledge out
- ❑ Innovation is the result of the process of using new knowledge / adapting existing knowledge to new application and getting money out or extracting value from new application
- ❑ Market-place is important for innovation

Introduction

Characteristics of Innovation

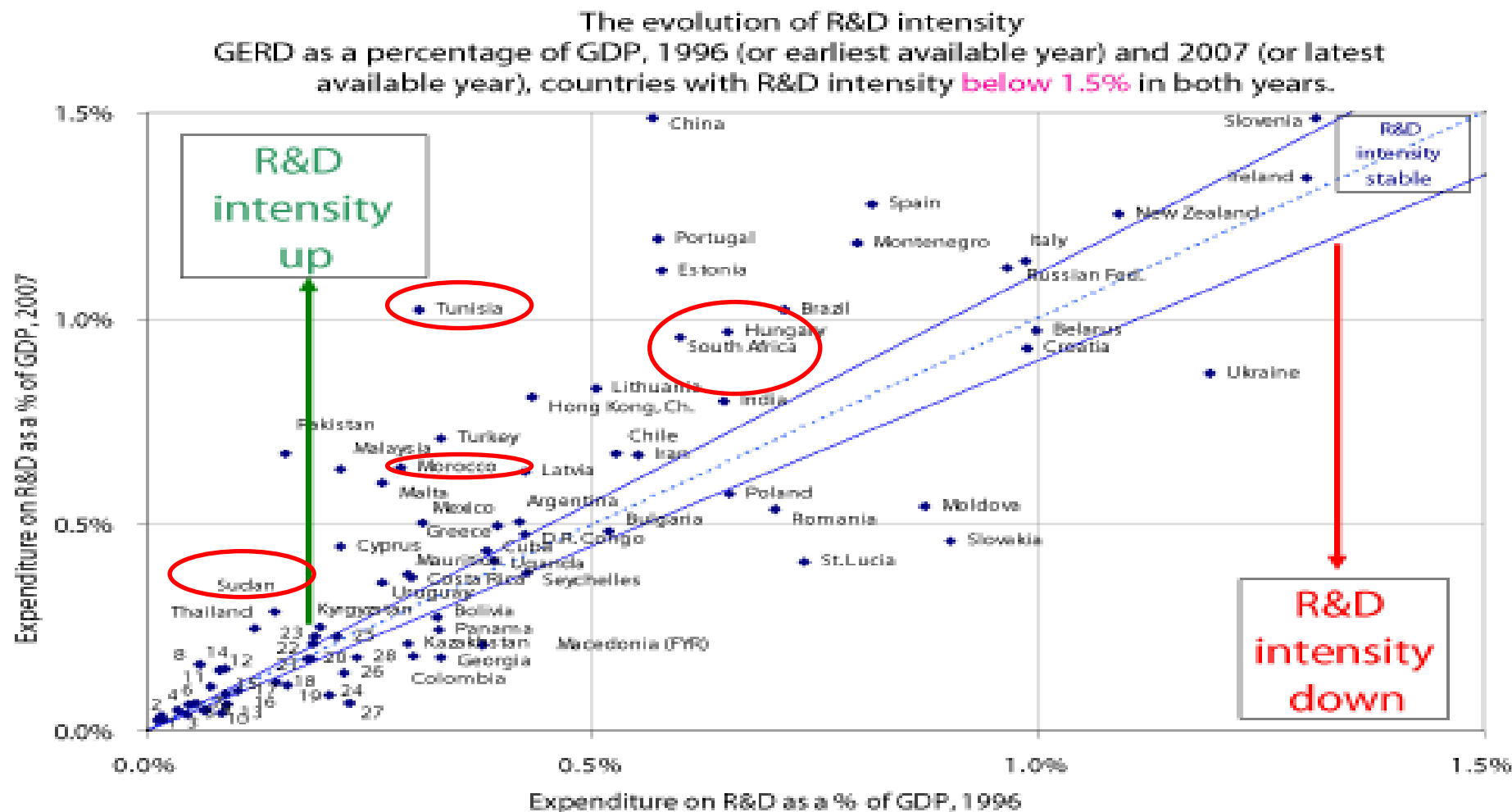
- **Innovation** offers **increased value for the customer** – real innovation must be accepted by an end user
 - *switching to new offering - what does it take?*
 - Innovation **doesn't always entail giant leaps forward**
 - Gradual step-by-step improvements
 - Innovation often means changing something that for the time being at least works

Innovation is a messy process – hard to measure and hard to manage

➤ **Innovation Policy must address (i) fuzzy responsibility / assignment, (ii) lack of coordination, (iii) market needs**

Introduction

R&D Intensity and Innovation – is there a link?



Note: countries in the left-bottom corner of the graph are represented by the following numbers. 1: Zambia; 2: Brunei; 3: Bosnia & Herzegovina; 4: Guatemala; 5: Honduras; 6: Lesotho; 7: Jamaica; 8: Myanmar; 9: Saudi Arabia; 10: Indonesia; 11: Macao, Ch.; 12: Peru; 13: Nicaragua; 14: Ecuador; 15: Paraguay; 16: Tajikistan; 17: Trinidad & Tobago; 18: Philippines; 19: Burkina Faso; 20: Ethiopia; 21: Sri Lanka; 22: Armenia; 23: Mongolia; 24: Kuwait; 25: Egypt; 26: Madagascar; 27: Algeria; 28: Azerbaijan.

Source: UNESCO Institute for Statistics, September 2009

Lessons from South Korea

Comparative GDP per capita: South Korea, sub-Saharan Africa, OECD (US\$)

Year	South Korea	Sub-Saharan Africa	OECD
1960	1 110	430	9 137
1980	3 221	583	17 710
2005	13 210	560	29 376

Source: Grubb *et al.* (2006); Suh and Chen (2007)

The **intellectual property system** was an important **catalyst for the development of indigenous technology by Korean companies**, several of which have become global market leaders. Korea's spectacular transformation from a poor farming economy in the 1960s with a per capita income of less than US \$100 to a highly industrialized country with a per capita income of US \$12,000 today, resulted from a **systematic economic and trade development policy** that included **incentives for technological innovation and the development of domestic intellectual property assets**.

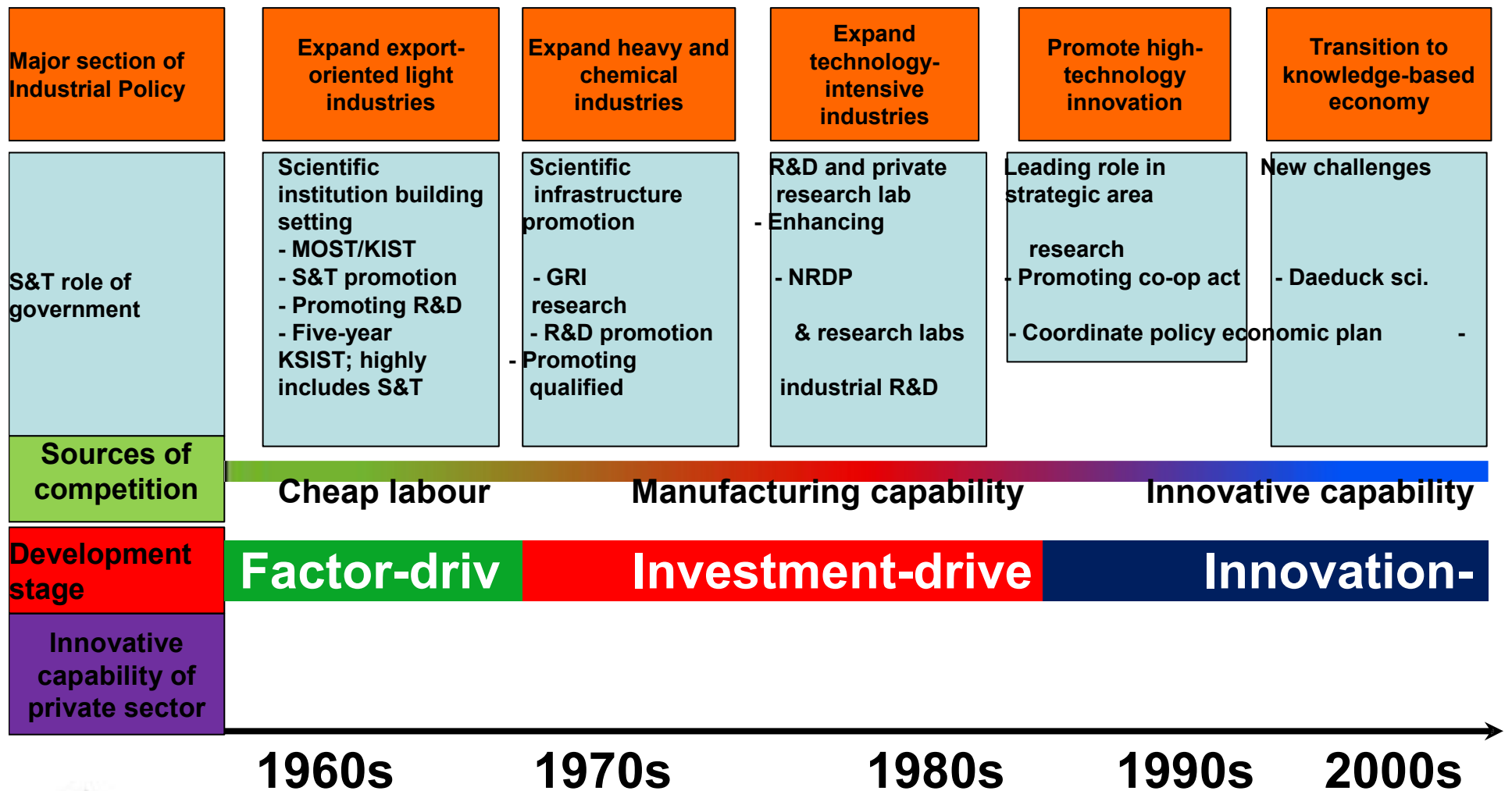
Chulsu Kim, Integrating Intellectual Property into the National Development Policy: the Korean Experience, keynote address at WIPO/ KIPO Ministerial Conference on Intellectual Property for Least Developed Countries

South Korea Lessons


- ❑ **Linking economic and education planning:** government intervention in both sectors to promote overall social and economic development,
- ❑ **Building higher education on a sound foundation of high-quality schooling:** The development of a high-quality higher education system.
- ❑ **Role of higher education in economic development:**
 - Production of human capital for growth and development
 - Research and innovation; technology capture, transfer and development
- ❑ **Role of networks in higher education system**
- ❑ **Meeting the labour market needs of a knowledge-based economy:** Large divergence between employers needs and skills base of university graduates. Institutional differentiation. Need for appropriate incentives to 'steer' education system

Adaptive Nature of Innovation Policy

South Korea Government Innovation Policy



Source: Adapted from Mitchell 1997

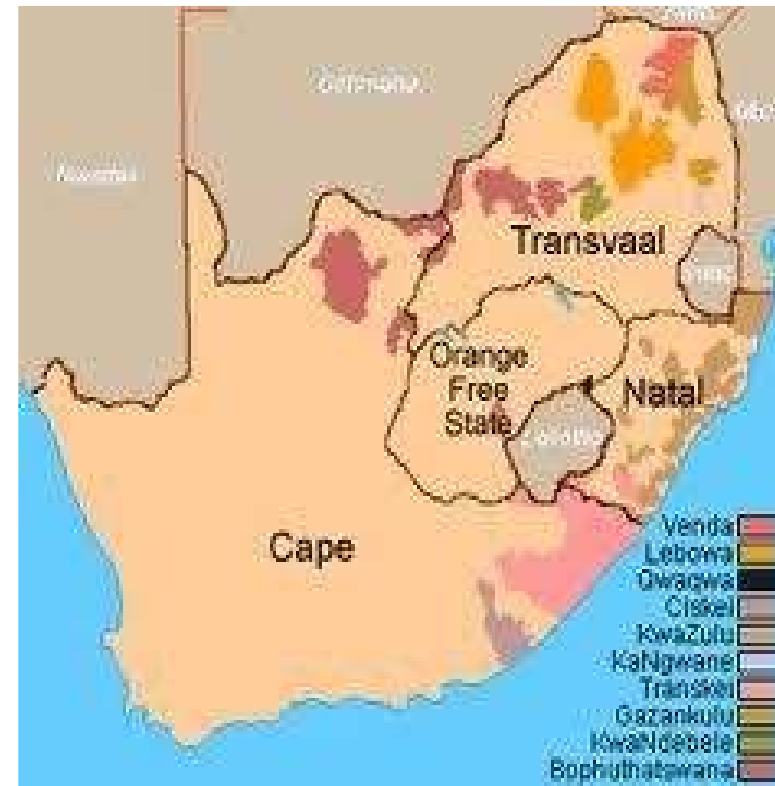
A close-up photograph of a person's hands holding a large, clear crystal ball. The crystal ball is the central focus, and it contains blue text. The background is dark and out of focus, showing the person's torso in a dark suit jacket.

Is what's working
today....
going to work
tomorrow?



South Africa National System of Innovation Background

- ❑ 1994 – marks transition to democracy
- ❑ S&T system was based on ensuring self-sufficiency owing to South Africa's isolation (academic, science & technology, etc)
- ❑ Very strong military research programmes
- ❑ Participation by small part of the population



South Africa National System of Innovation

Failures / Issues Identified by White Paper

- ❑ Fragmented National System of Innovation (NSI)
- ❑ Inadequately co-ordinated NSI
- ❑ Erosion of innovative capacity
- ❑ Poor levels of investment in R&D
- ❑ Urgent need to redress the imbalances created by past policies and actions
- ❑ Lack of resources to meet commitments in respect of regional development
- ❑ A poor competitive position within the global environment.

South Africa National System of Innovation

New Policy Directions from White Paper ...1/2

- ❑ Creation of clear channels for:
 - capacity building
 - science and technology human resource development; and
 - inequity redress

- ❑ Establishment of mechanisms to re-allocate government spending
 - according to new priorities
 - to promote innovative solutions,
 - particularly related to problems of disadvantaged

South Africa National System of Innovation

New Policy Directions from White Paper ...2/2

- ❑ Processes that will challenge government research institutions to derive more support from competitive sources of funding
- ❑ Introduction of processes allowing longer-term perspective in planning and budgeting for R&D
- ❑ Promotion of institutional changes and new management approaches to accommodate the above proposed mechanisms and processes

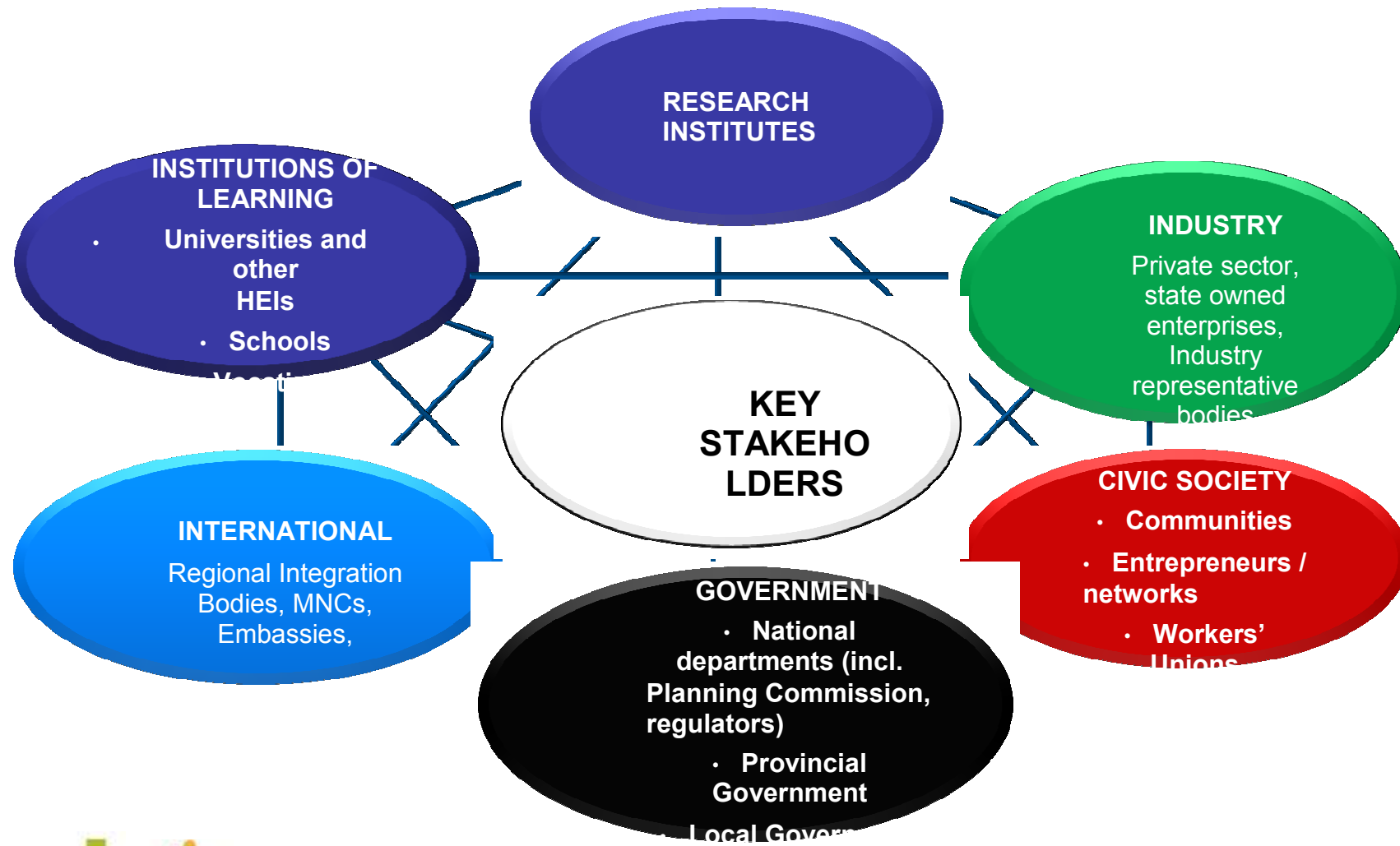
South Africa National System of Innovation

Process of Development

- ❑ Evolves and must be adaptable
- ❑ Reviews
 - *Programmes*
 - *System*
 - *Institutional arrangements*
 - *Policies, legislation, strategies*
 - *Funding*
 - *Inputs, outputs, outcomes*
- ❑ Use of external reviews
 - *Best practices and examples as benchmarks*
 - *Tailor for local circumstances*
- ❑ Foresight Studies in identified areas involving all stakeholders

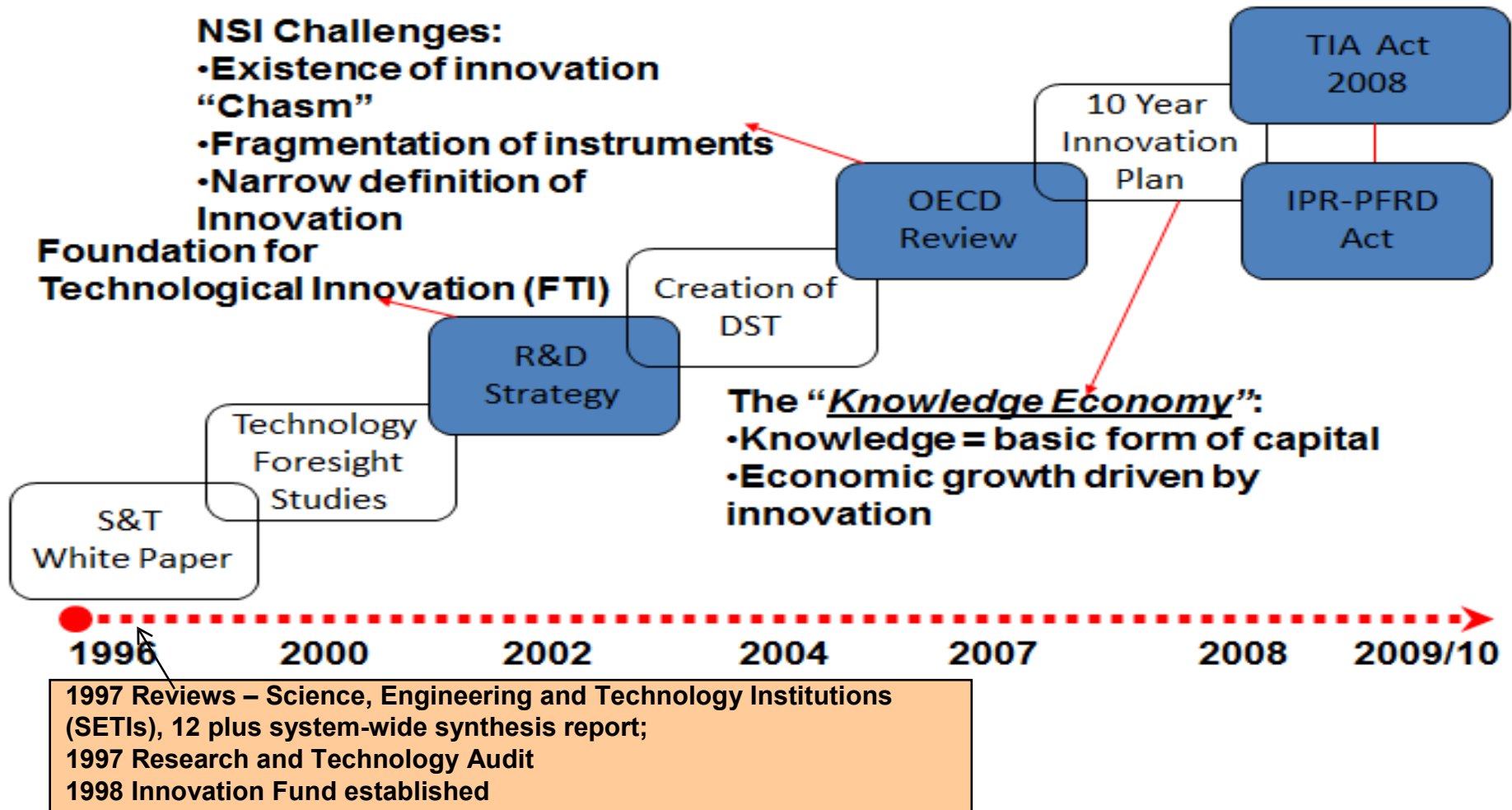
South Africa National System of Innovation

Key Stakeholders



South Africa National System of Innovation

South Africa's Innovation Policy Milestones



South Africa National System of Innovation

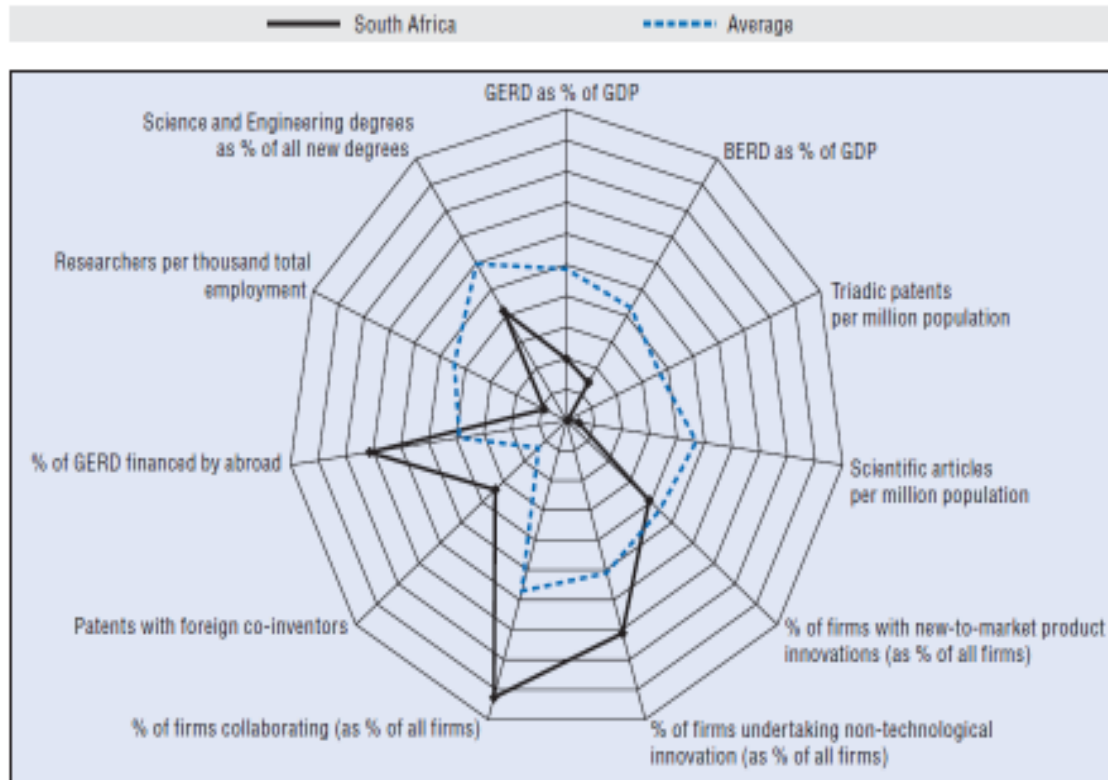
Policy Responses to the Failures

Systemic and Market Failures	Policy Response
Informational failures	<i>Research and Technology Audit</i> Strategic Cluster studies <i>Research and Technology Foresight</i> Essential National Health Research – priority setting process
Institutional mismatches between (public) knowledge infrastructure and market needs	<i>Facilitating joint industry-research co-operation</i> <i>Science and technology human capital development</i> <i>Public-private partnering</i> <i>Support of pre-competitive research</i> <i>Technology transfer and diffusion programmes</i> Joint industry-research centres of excellence Skills development Life-long learning and outcomes-based approach to education
Inefficient functioning of markets	Competition policy and regulatory reform
Absence of a “demanding customer”	Public procurement reform (exploiting buying power to promote innovative behaviour and technology transfer)
Government failure	Privatisation Outsourcing Public consultation

South Africa National System of Innovation

Some Metrics

Science and innovation profile of South Africa



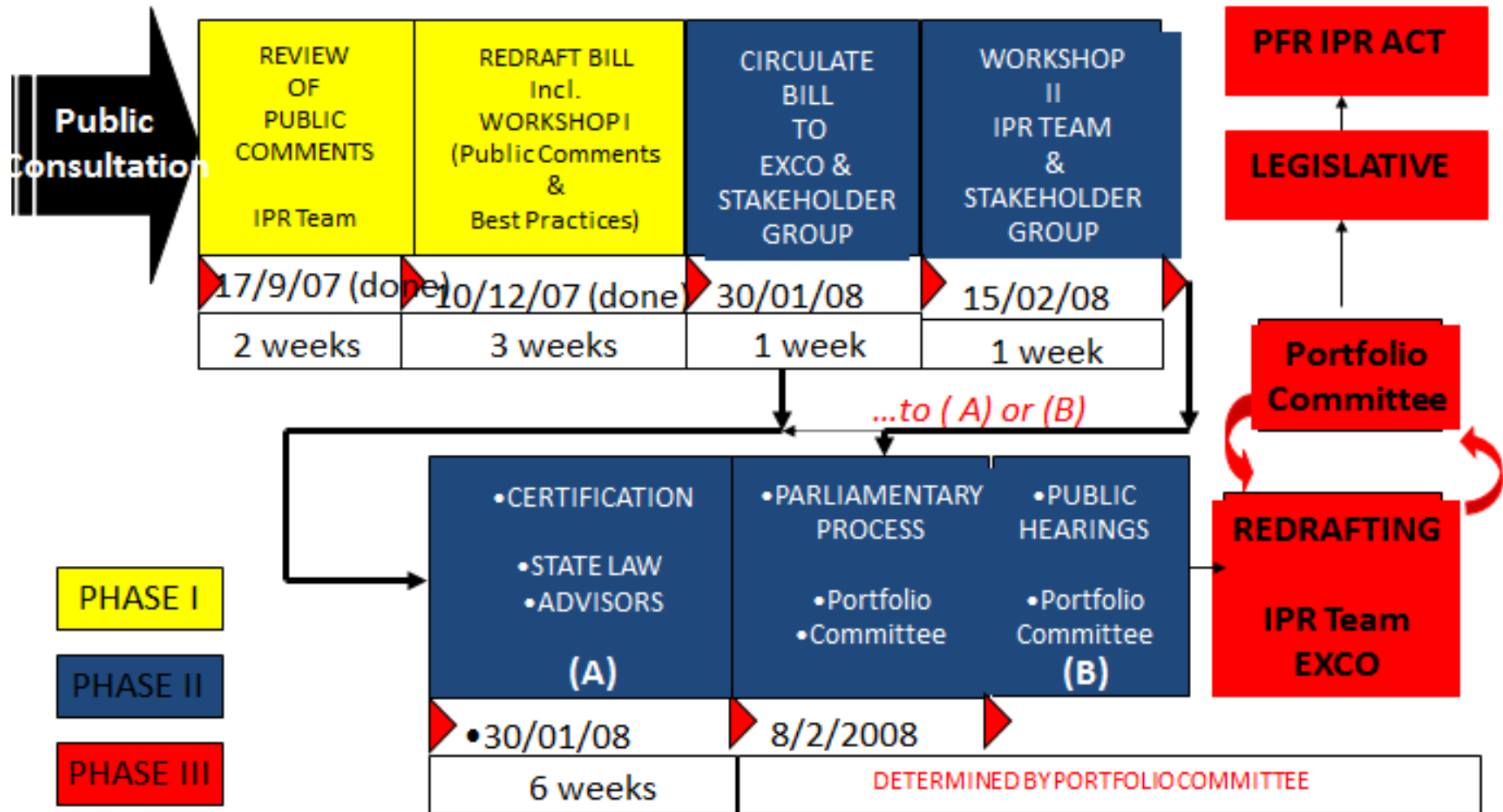
SA is out of kilter with international norms & this can have severe long-term consequences

Source: OECD Science, Technology and Industry Outlook, 2008

- ❑ **Relatively low number of innovation related inputs** (science and engineering graduates, researchers, innovation enabling skills)
- ❑ **Relatively low number of outputs and markers** (scientific research, patent production, R&D expenditure)
- ❑ **Higher than average dependence on innovation being funded and driven internationally**
- ❑ **Business sector accounts - 44% of gross expenditure on R&D (GERD)**

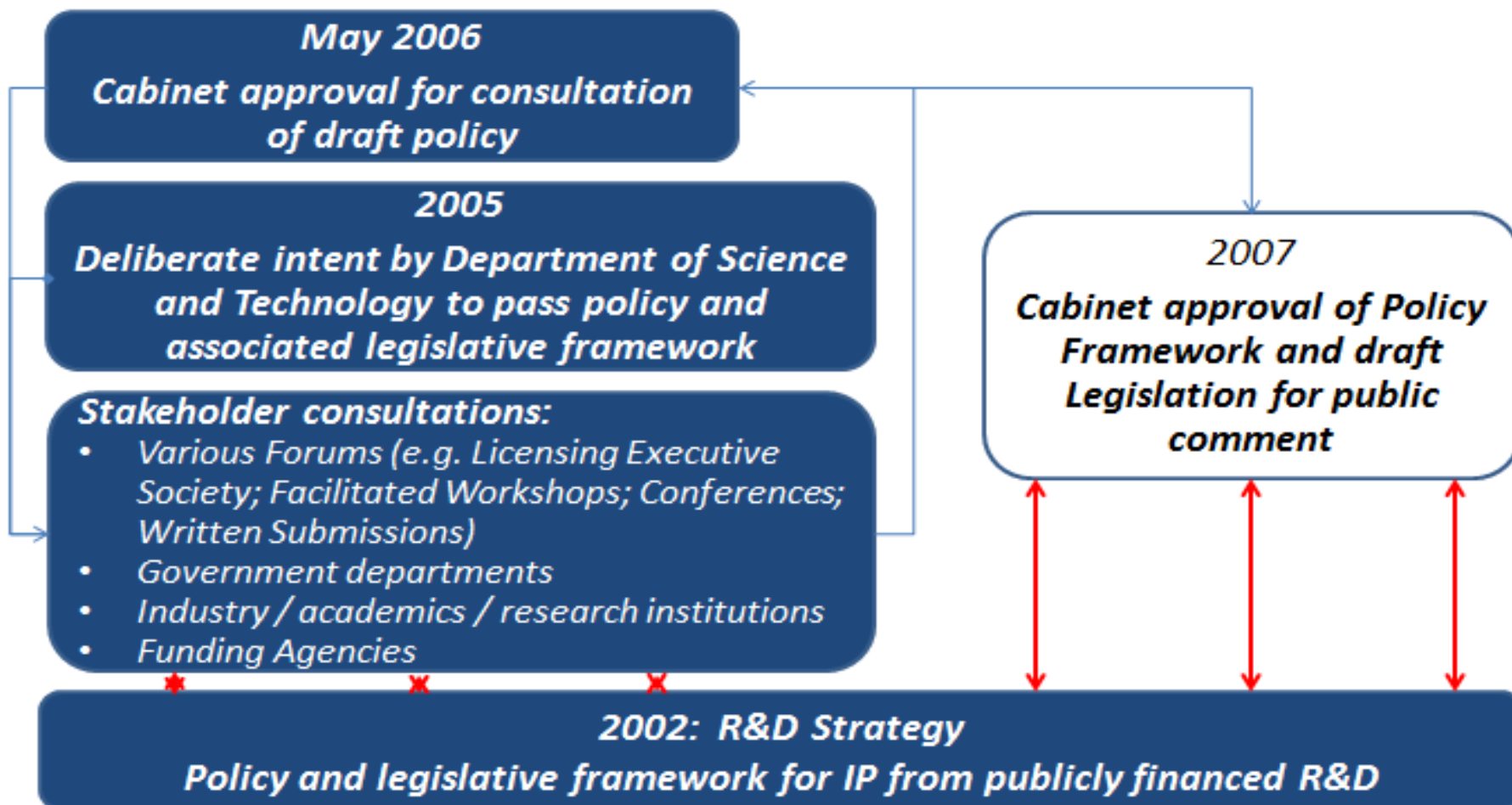
Policy on IP from Publicly Financed R&D

Development Process / Path



Policy on IP from Publicly Financed R&D

Development Process / Path



Policy on IP from Publicly Financed R&D

Development Process / Path

WORKSHOP 1 (2 Day Break away Sessions)

OBJECTIVES

Discuss the public comments received during the public consultation process

Bill for

Discuss and agree in international best practices which are in alignment with Publicly Financed IPR Policy Framework

Agree on revisions and amendments to the IPR Bill

Revise the IPR Bill

Discuss and agree on issues to be incorporated into regulations

OUTCOME

Revised IPR

submission to

– EXCO

– State Law

Advisors;

– further consultation with Stakeholder Group

Policy on IP from Publicly Financed R&D

Development Process / Path

DAY 1 (AGENDA)

Discuss Public Comments (am)

– Agree on grouping into:

- Group A: Constructive and language suggestion
- Group B: Concerns worth noting
- Group C: General Comments / for noting /
in support

– Identify common themes from public comments

Identify sections of the Bill to be redrafted / amended

Discuss international best practices and case

OUTCOMES

Agreement on clauses for revision

General input into Day 2 of revision of Draft Bill

Policy on IP from Publicly Financed R&D

Development Process / Path

DAY 2 (AGENDA)

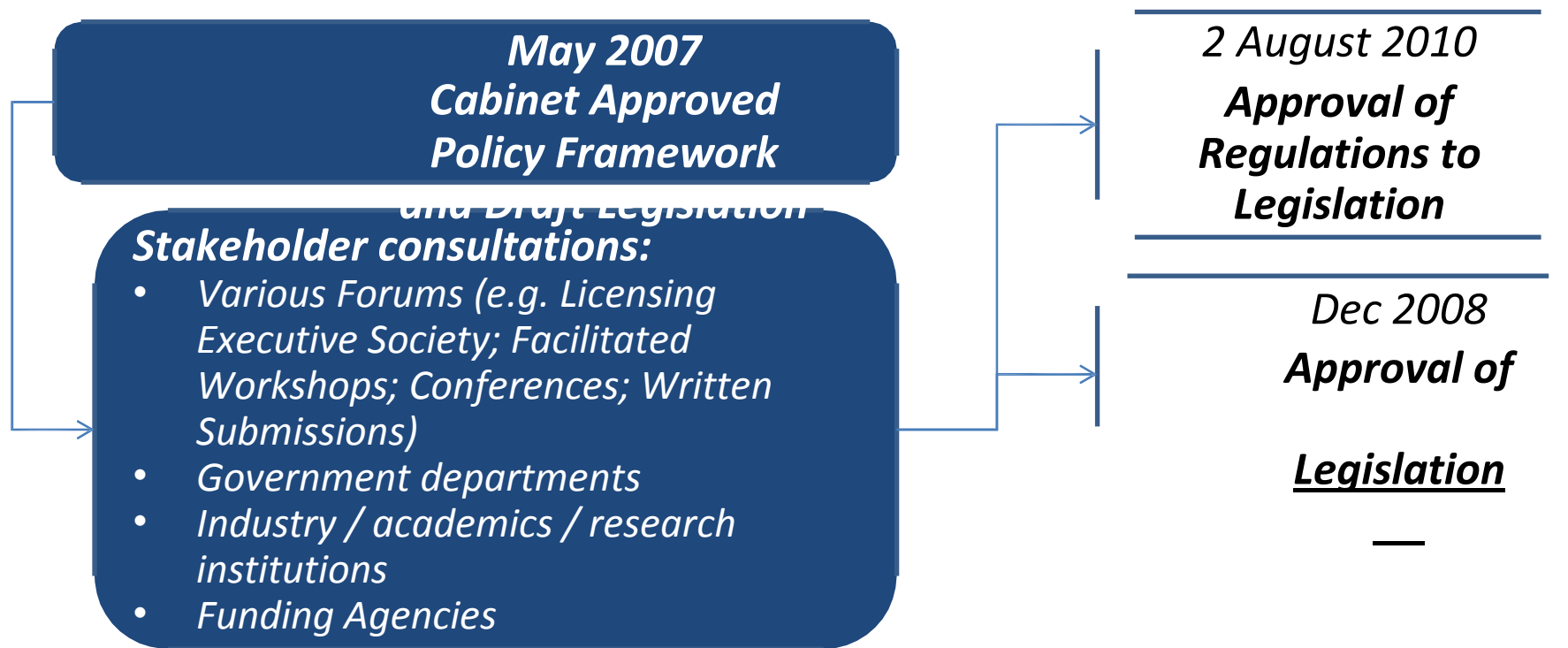
- Revision and redrafting of identified provisions of the Bill
- Consider the 'revised' Bill in light of:
 - public comments;
 - International best practices;
 - Publicly Financed IPR Policy Framework
- Discuss possible provisions for regulations

OUTCOMES

Revised Draft Bill to be circulated internally for final proof reading and checking prior to sending to Stakeholder Group and State Law Advisors

Policy on IP from Publicly Financed R&D

Development Process / Path



Policy on IP from Publicly Financed R&D

Importance of References in Process / Path

REFERENCES

Framework for:

- Consultation – areas on which you need input and also demonstration of what want to achieve
- Decision making – test the inputs and suggestions against references
- Drafting – ensures consistency and precedents

OUR REFERENCES

South Africa's R&D Strategy

IPR Policy Framework

IPR Bill as published for public comment + Cabinet Feedback

Public Comments / Consultations

International Best Practices

- Bayh-Dole (USA)
- India process - Ministerial Directive
- Canada
- Chile
- Other

IPR-PFRD Act

Object

*“The **object** of this Act* is to make provision that **intellectual property emanating from publicly financed research and development is:***

- **identified;**
- **protected;**
- **utilised and commercialised**

*fo the **benefit of the people of the République.....”***

IPR-PFRD Act

Summary of Key Provisions

Disclosure and Ownership of Intellectual Property

- * Recipient has title to IP
- * Obligation to protect
- * NIPMO may in national interest where recipient elects not to proceed

Institutional Arrangements

- * National Intellectual Property Management Office (NIPMO)
- * Office of Technology Transfer

Benefit Sharing Arrangements

- * > 20% of initial gross revenues
- * > 30% of nett revenues

Co-financed R&D

- * Option to exclusive licence
- * Joint Ownership possible

Government Rights

- * non-exclusive licence for national need
- * Non-commercialisation
- * Assignment in case of non-disclosure

Local IP Transactions

- * Licences no approval required
- * Assignment: NIPMO Approval

Off-shore IP Transactions

- * Exclusive Licences & Assignments require approval
- * Capacity in and benefits to Republic

Full Cost R&D

REGULATIONS, 2010

Regional Innovation System

Gauteng Province: Overview



- 23.7% of the national population (12.2 million)
- 35.6% (R675bn) of South Africa's GDP
- 10% of Africa's GDP
- 52% of the share of national R&D (2008-2009)
- 63% of national trade
- Host to > 40% of South Africa's SMMEs
- 30% of GHG emissions and power demand

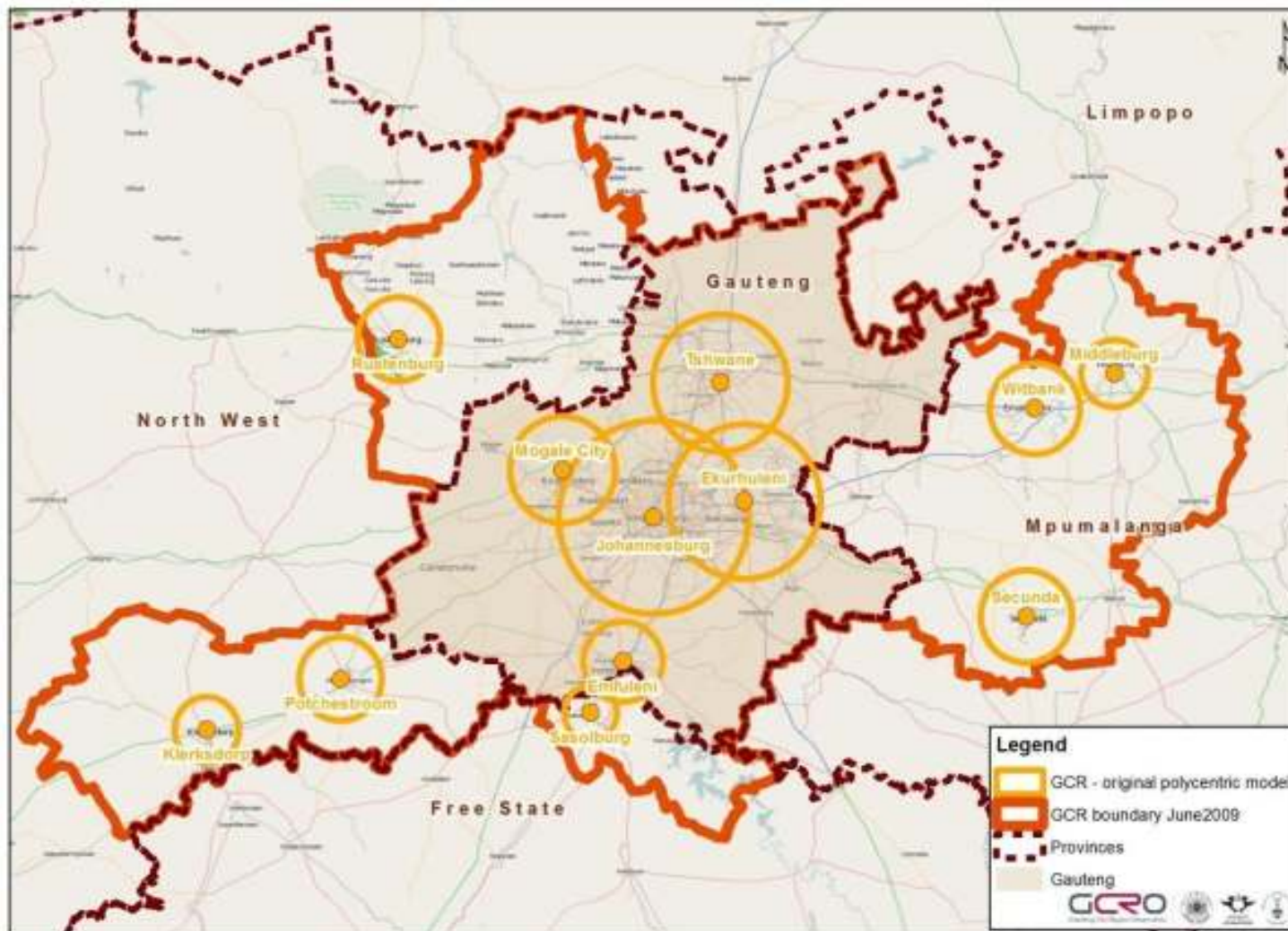
Higher Education Institutions

Science Councils

South Africa's strengths and challenges are amplified in Gauteng – opportunity to be a leader in innovation

Gauteng Innovation System

Global City Region



Gauteng Innovation System

OECD Territorial Review Gauteng City-Region (2011)

Some Characteristics of Innovation System

- Innovation system could better meet **needs of low-income earners**
- **Relatively low levels of entrepreneurial activity**
- **Growing and insufficient partnerships and inter-firm linkages** – essential for companies to take on more significant innovation risks and enhance access to markets
- **Scope to increase number & quality of national / international inter-firm linkages**

Constraints

Cost Factors

- **Lack of funds**
- **Innovation costs perceived to be too high**

Knowledge Factors

- **Underdeveloped skills / lack of qualified personnel**
- **Lack of information and technology**
- **Lack of information on markets**
- **Difficulty in finding co-operating partners**

Market Factors

- **Market dominated by established enterprises**
- **Uncertain demand for innovative good or services**

Gauteng Innovation System

Recommendations from ECD Territorial Review

Expanding Economic Opportunity

- Position Economic Development policy in a city-region framework
- **Improve productivity growth**
- **“Green” Gauteng’s Growth**
- **Expand Innovation**
- Build mega-infrastructure for a mega-region

Improve productivity growth

- **Enhance technological capacity of firms**

“Green” Gauteng’s Growth

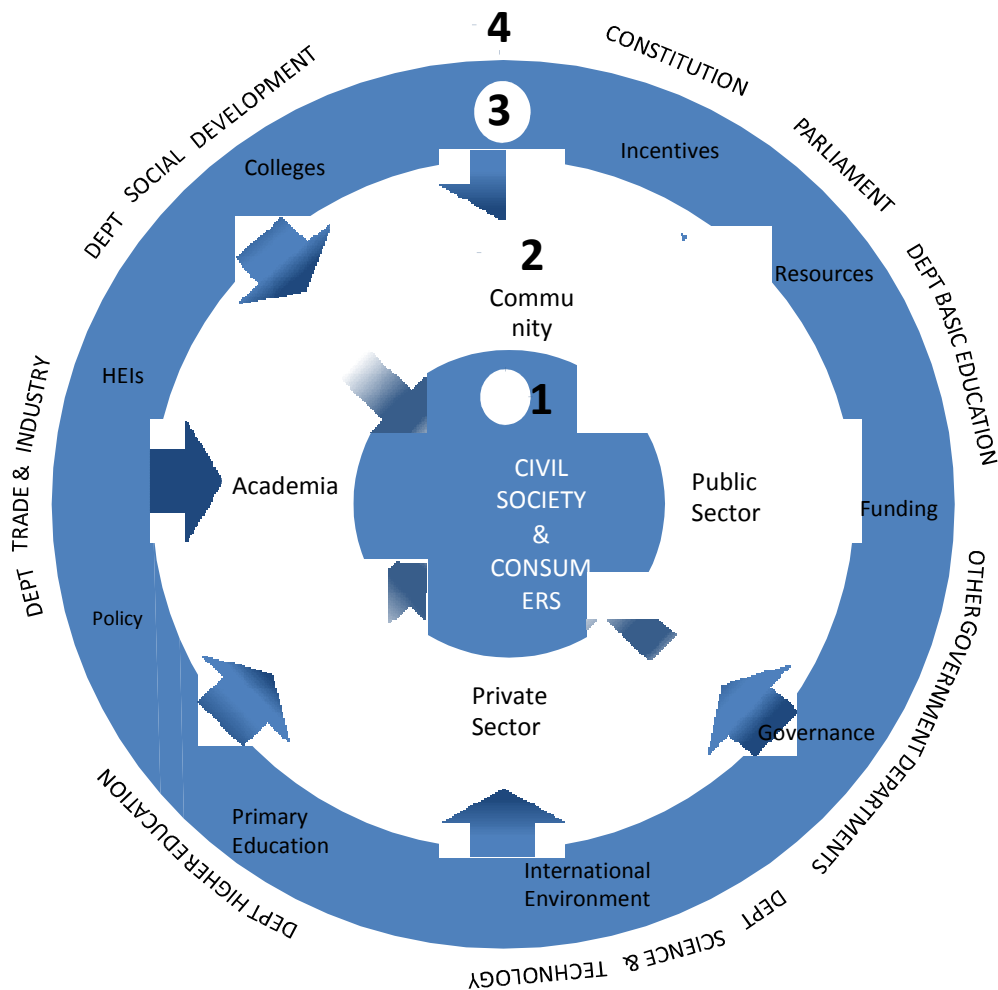
- **Place GCR in position to create new sectors in renewable energy and clean tech (incl. production processes) within Africa and beyond**
- **Expand level of solar energy provision**
- **Leverage green economy as basis for regional export**

Expand Innovation

- **Expand experimentation with clusters in Gauteng beyond manufacturing sector**
- **Build extensive publicly accessible electronic database on patents**
- **Delegate responsibility of monitoring progress of regional innovation system to a government institution**

Gauteng Innovation Strategy, 2012

Overview



Gauteng Innovation Strategy aims to:

accelerate innovation in all its forms, in order to bolster and support the broader strategic objectives of **sustainable social and economic development,** and **sustainable employment**

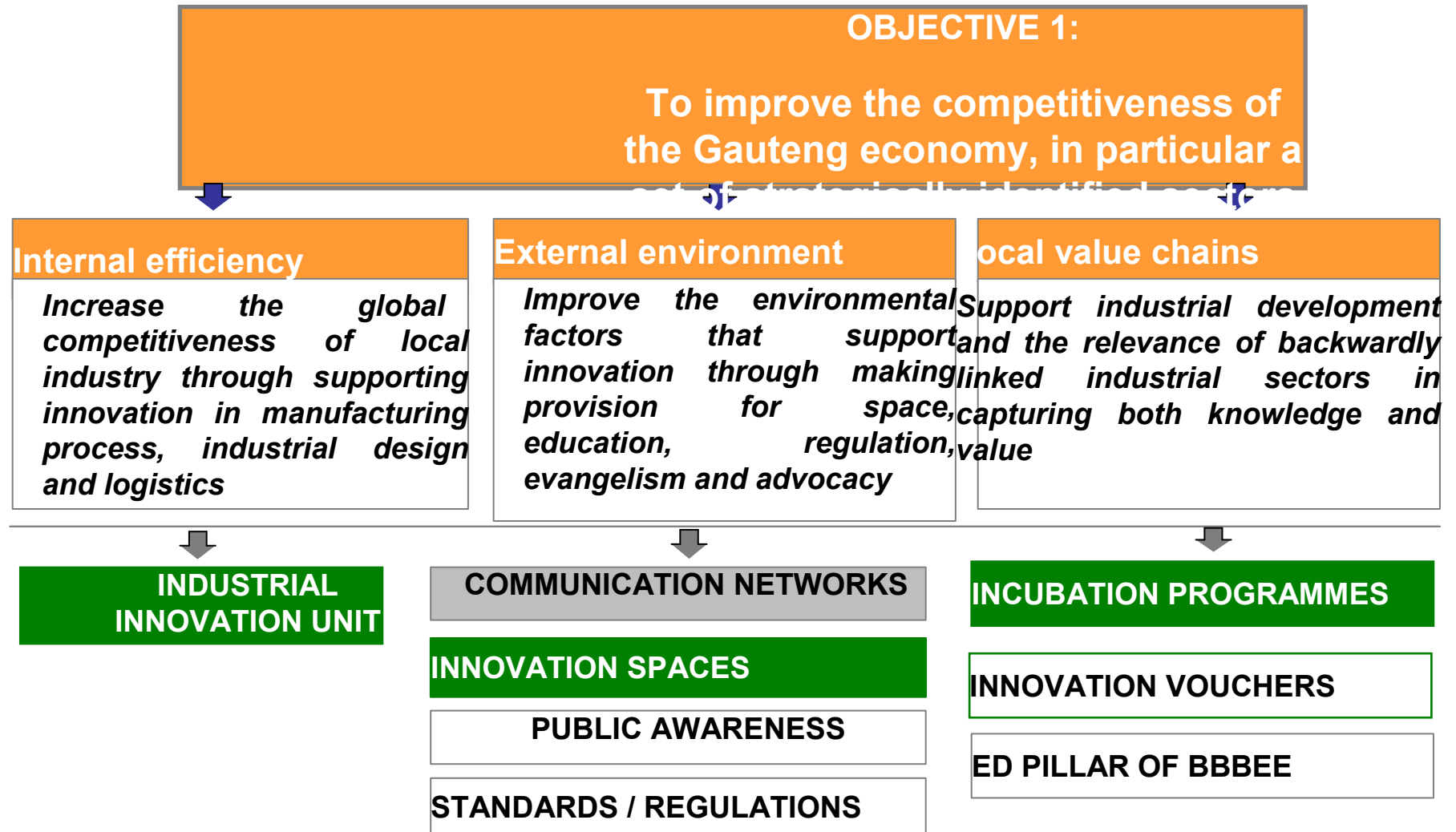
Gauteng Innovation Strategy, 2012

Overview



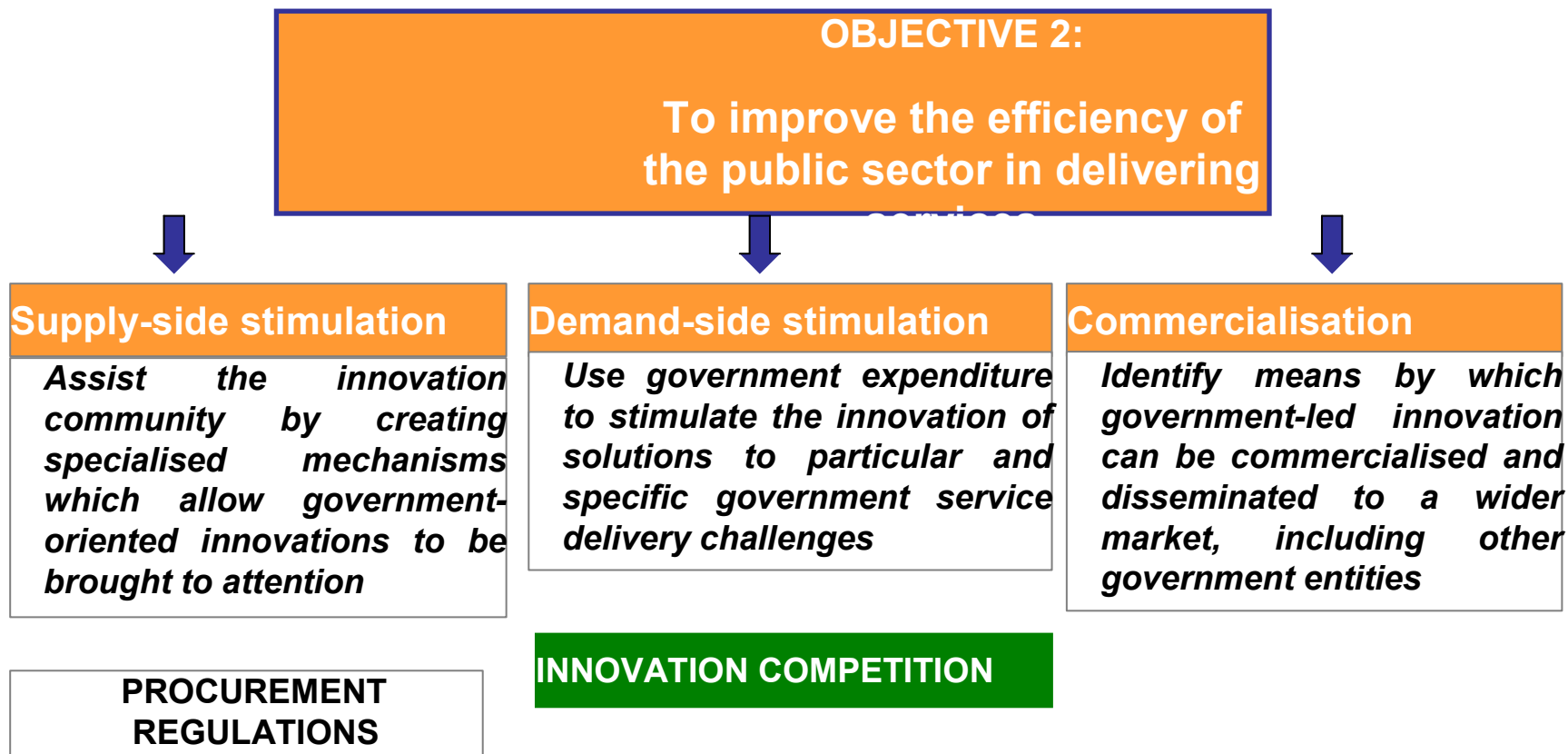
Gauteng Innovation Strategy

Strategic Objective 1



Gauteng Innovation Strategy

Strategic Objective 2



Gauteng Innovation Strategy

Strategic Objective 3

OBJECTIVE 3:

To improve the livelihood and quality of life of citizens within the GCR



Inclusive Socio-Economic Innovation

Recognise the indigenous knowledge and capacities of communities to identify alternative economic value chains that will provide innovative solutions to address social challenges in communities (for example food security and job security.)



Community Innovation Commercialized

Identify community developed innovative solutions and foster the massification of those solution through replication and incubation

REPLICATION & INCUBATION

Concluding Remarks

- ❑ **International Best Examples / benchmarks** are important and provide appropriate precedents and validation
 - must contextualise / nuance for local environment
- ❑ **Consultative process essential and requires patience**
- ❑ **Drafting process can be an arduous process**
 - Agreed framework important
 - Long term focus taking into account socio-economic and political impact
 - Leadership at appropriate level and ensure coordination
 - Working groups and representative stakeholder focus groups
 - Time lines a guide - flexible to ensure buy-in

Concluding Remarks



Innovation is a lever in socio-economic development and competitiveness!