

# South African national agriculture and food laboratory capacity, serving an industry in need

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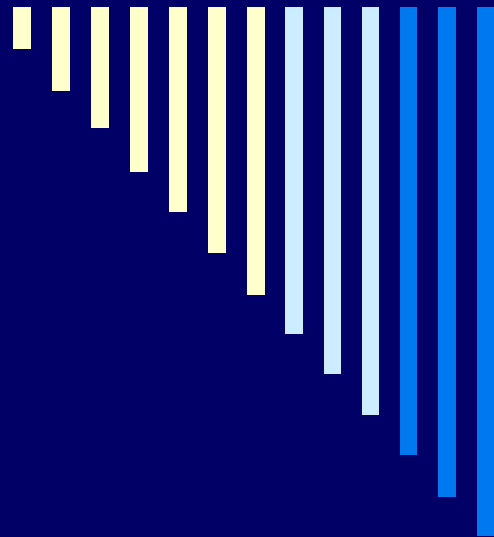
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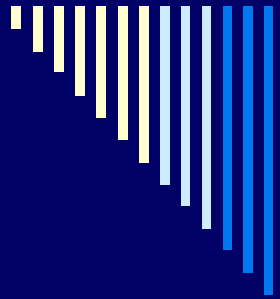
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*“The South African national laboratory landscape must meet industry and government needs in order to support a sustainable growing agricultural and food industry”*

**What is government's needs?**

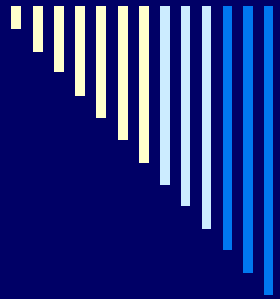
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# Government's needs vs its responsibility

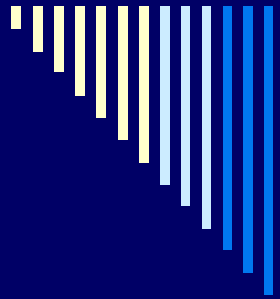
- Government's responsibility: providing adequate, safe, nutritious food to its people



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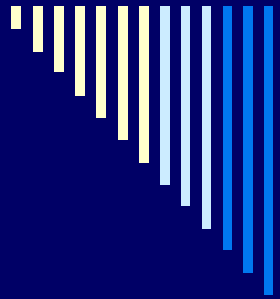
# Government's needs vs its responsibility

- Government's responsibility: providing adequate, safe, nutritious food to its people
  - To ensure and strengthen international trade, government must comply with international standards, regulations and trade requirements
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# Government's needs vs its responsibility

- Government's responsibility: providing adequate, safe, nutritious food to its people
- To ensure and strengthen international trade, government must comply with international standards, regulations and trade requirements
- Have capacity to monitor food contamination in national food control systems.



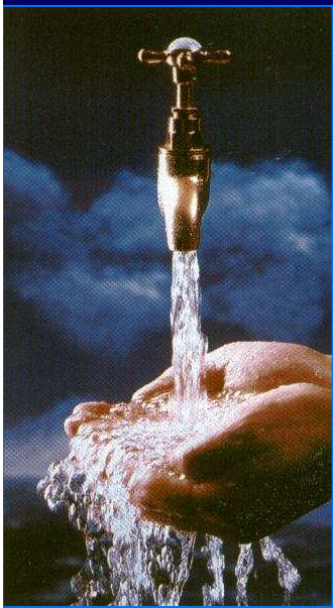
# Government's needs vs its responsibility

- Government's responsibility: providing adequate, safe, nutritious food to its people
- To ensure and strengthen international trade, government must comply with international standards, regulations and trade requirements
- Have capacity to monitor food contamination in national food control systems.
- Monitor imported food and agricultural products
- For export, government must ensure sanitary and phytosanitary (SPS) compliance

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Therefore government needs a network of national laboratory capacity for testing animal, plant, food, beverage and water samples for compliance to international and national standards and requirements.



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# Food Security

## Food for the people

Healthy safe nutritious  
**Adequate** food supplies

vs

## Food exports

Grow the economy  
Create jobs

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Governments responsibility is to ensure adequate food supplies for the nation

**Food for the people**

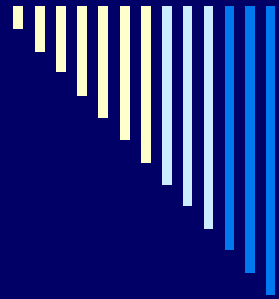
Healthy safe nutritious  
Adequate supplies

vs

**Food exports**

Grow the economy  
Create jobs

Legislative framework



Government's responsibility is to ensure adequate food supplies for the nation

**Food for the people**

Healthy safe nutritious  
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vs

**Food exports**

Grow the economy  
Create jobs

Regulate it

Legislative framework

~~Governments responsibility is to ensure adequate food supplies for the nation~~

Food for the people

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Food exports

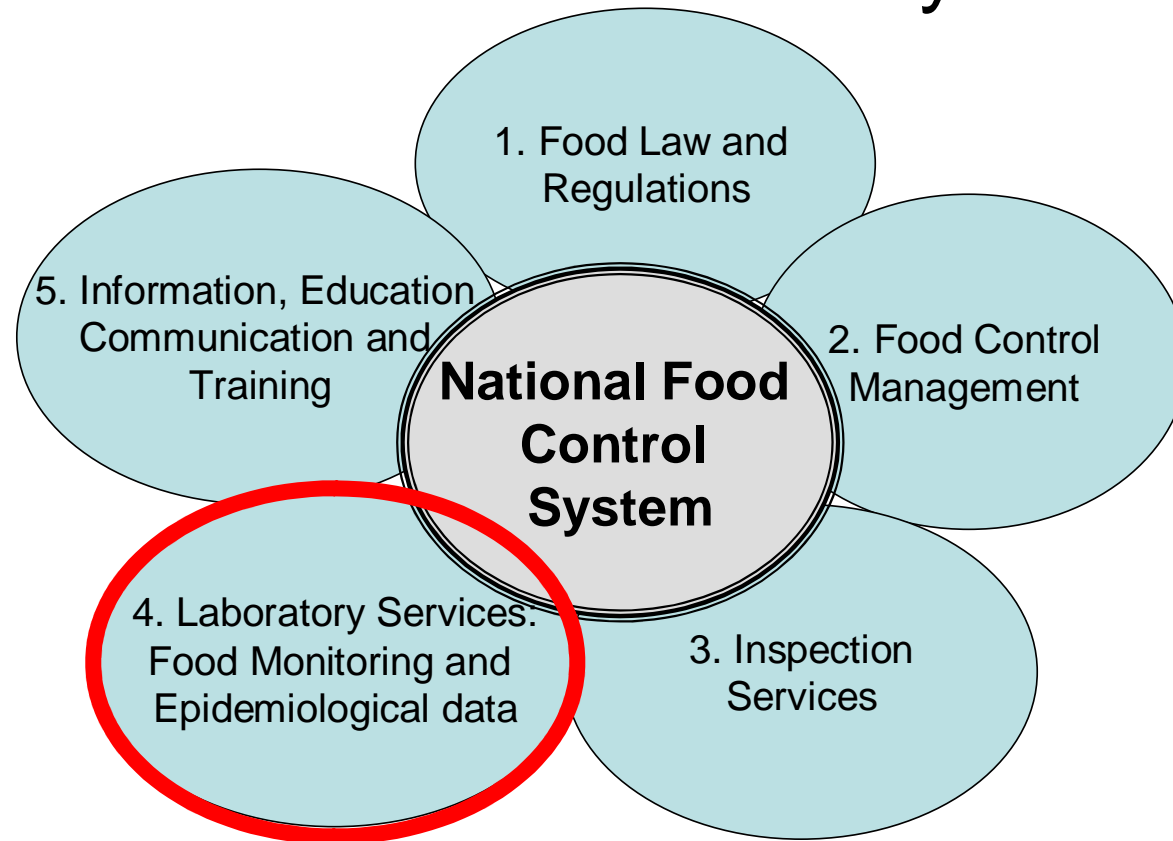
Grow the economy  
Create jobs

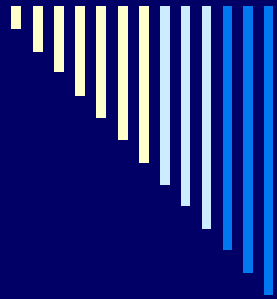
Regulate it

Legislative framework

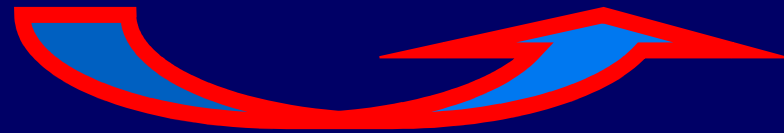
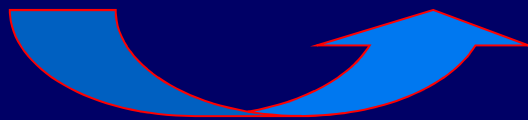
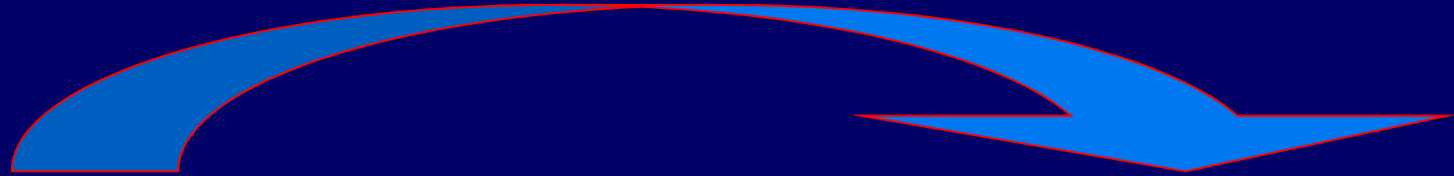
Laboratory Capacity

# Building Blocks of a National Food Control System





# Sanitary and Phytosanitary importance



**Health**

# National SPS Laboratory Capacity

International Accreditation Forum

International Laboratory Association

National Accreditation body

ISO/IEC 17025

OECD GLP

**Public sector:**

**National Laboratory Capacity for:**

Veterinary Diagnostic  
Capability for pests,  
Zoonoses & diseases

Water Analysis  
Contamination  
monitoring

Phytosanitary diagnostics  
for inspection interceptions  
Export rejections, MRL

Food safety  
Microbial/ chemical  
Food samples

Human  
Pathology

Fish diagnostics  
Sensory, microbial  
chemical

# National SPS Laboratory Capacity

International Accreditation Forum

International Laboratory Association

National Accreditation body

ISO/IEC 17025

OECD GLP

Private sector: Laboratory capacity for:

Field testing of chemical products  
for registration i.e. pesticides

Medical pathology

Public sector:

National Laboratory Capacity for:

Veterinary Diagnostic  
Capability for pests,  
Zoonoses & diseases

Water Analysis  
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monitoring

Phytosanitary diagnostics  
for inspection interceptions  
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Food safety  
Microbial/ chemical  
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Human  
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Fish diagnostics  
Sensory, microbial  
chemical

Public sector =

National herbarium

National Insectarium

Microbial culture collections

National herbarium

Public and private sector:

Research Laboratory Capacity for:

Biotechnology

Animal diseases/  
Vaccine R & D

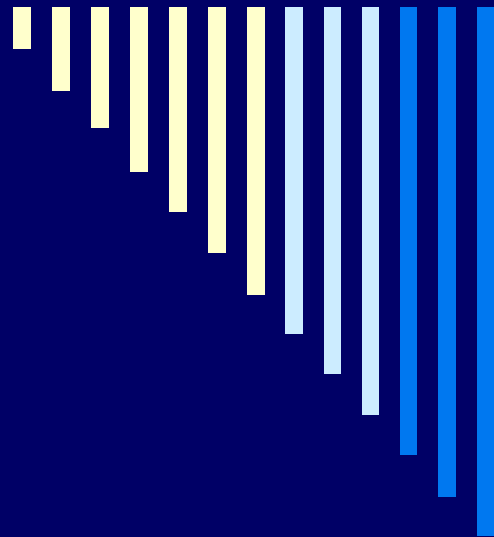
Waterborne diseases  
Viruses, bacteria, protozoa

Plant Diseases: disease  
Lists, taxonomy etc

Soil labs for plant  
nutrient studies

Seed testing labs  
Quality, pathology

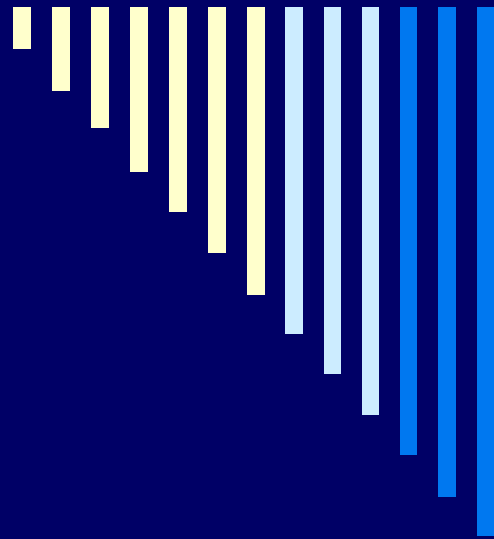
Entomology



*“The South African national laboratory landscape must meet industry and government needs in order to support a sustainable growing agricultural and food industries”*

**What is industries needs?**

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**In addition, laboratory services must provide a spectrum of test methods that cover all aspects of plant and plant products, animal and animal , food and beverage and the fishery industry sector needs in order to ensure a seamless integrated service.**

**What is the South African  
Agricultural and Food  
Landscape?**

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# Agriculture, Food and Beverage Landscape of South Africa

## Plant and Plant Products

Fruits and Nuts  
Vegetables and Herbs  
Spices and Condiments  
Mushrooms  
Olives  
Grains

## Beverage industry

- \* Alcoholic beverages
- \* Non alcoholic beverages
  - Cold beverages
  - Hot beverages
  - Bottled Water

## Animal and Animal Products

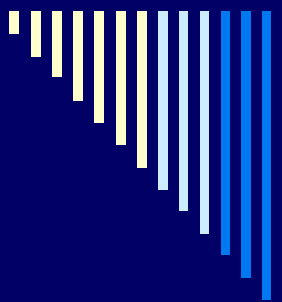
Animal Feed Industry  
Livestock and Meat Production

- Extensive Livestock
- Feedlot Industry
- Red Meat Abattoir Industry
- Pig and Pork Meat Industries
- Milk and Dairy Products
- Poultry Industry
- Egg Industry
- Ostrich Industry
- Crocodile Industry
- Game Industry

## Other Products

Honey  
Sugar  
Salt  
Oils  
Minimal processed food  
Processed Food

**Fish and Fish products**



# Industries needs

**Food Safety assurance**

**Microbial Safety assurance**



**Foodborne pathogens**

**Mycotoxins**

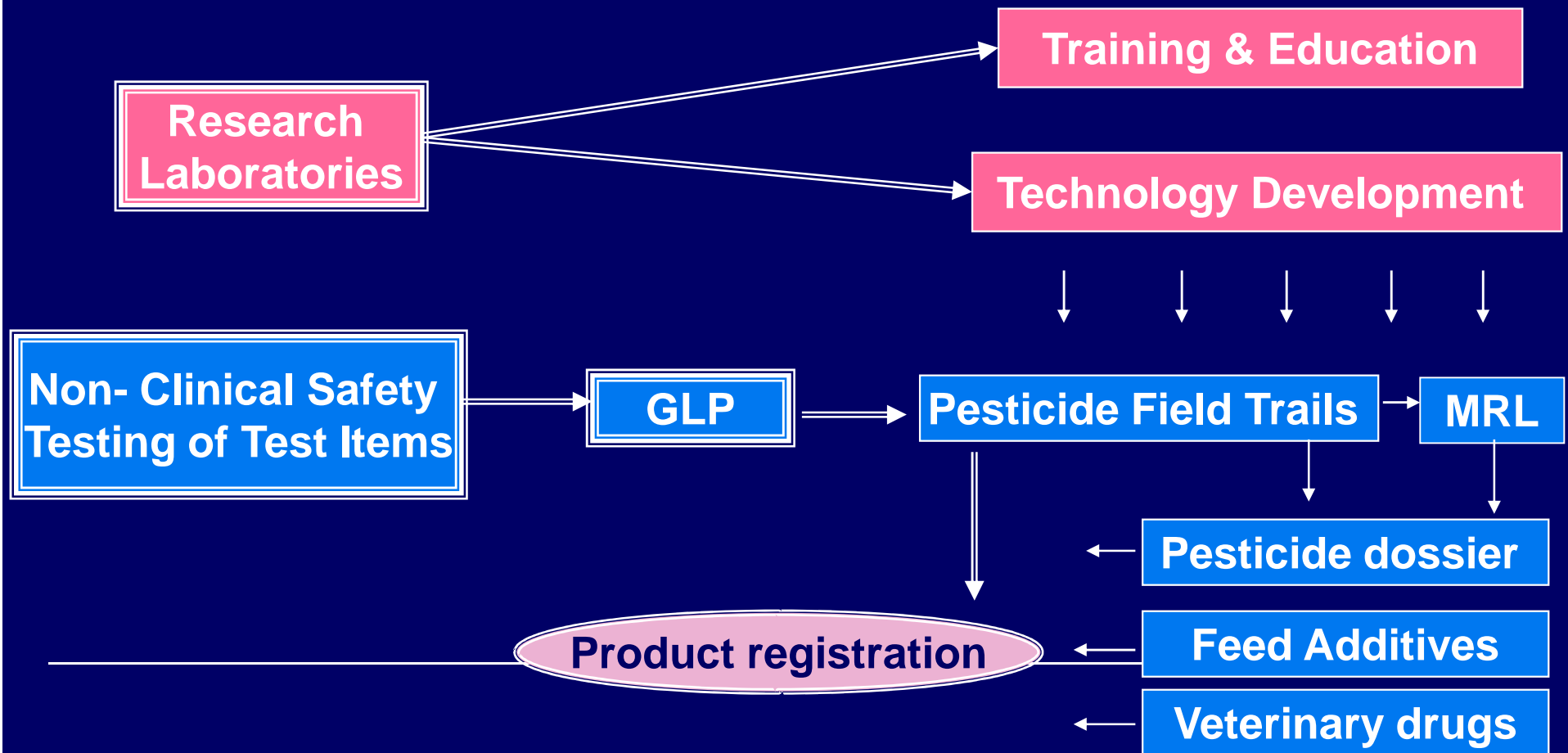
**Biotoxins**

**MRL**

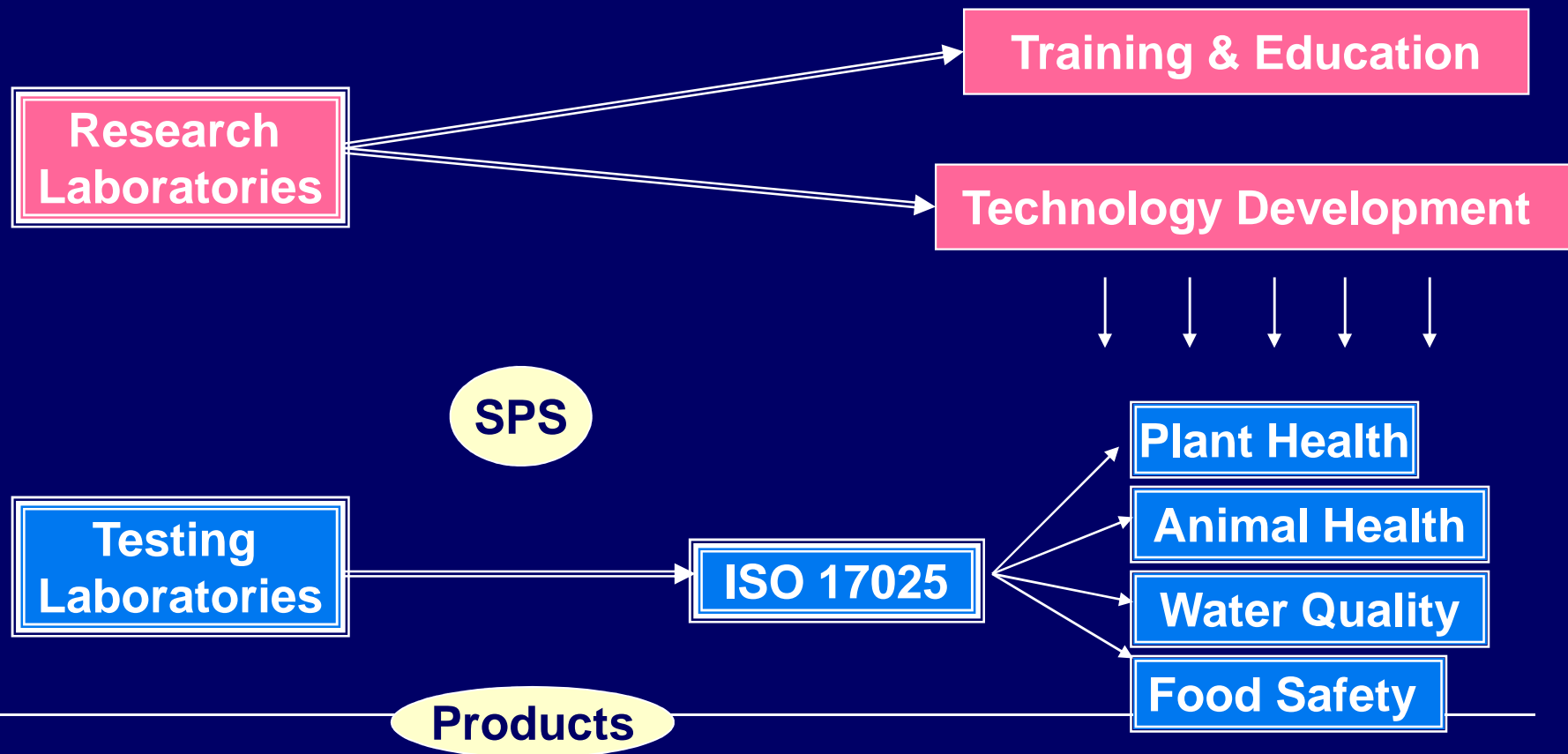
**Chemical Safety assurance**

**Heave metals**

# Laboratory Needs to ensure Global Market Access and Food Security



# Laboratory Needs to ensure Global Market Access and Food Security





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## Finding 1: Academic level

- ❑ **Overall very few laboratories comply with any of these standards and an extensive network of awareness, training and support will have to be provided to get full compliance and eventual accreditation.**
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# A Solution?

- **An extensive network of awareness, training and support will have to be provided to get full compliance and eventual accreditation.**
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## **Finding 2: Government Level**

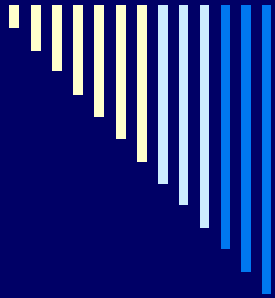
- National governmental and reference food laboratories are not all accredited to ISO/IEC 17025 but has moved towards implementing the standard**
  - This reflects the progress but also the challenges.**
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# Governmental capacity

- DAFF = National Analytical Services = 2
    - Veterinary laboratory network
  - DoH = Forensic labs = 3
    - National Health Laboratory Services
      - National Health *Laboratory Services Act no 37 of 2000*
      - 265 public sector labs
  - DWAE
    - *Water Services Act No 36 of 1998*
    - National water monitoring system
-



# A Solution?

- A strategy is to improve the national food laboratory landscape in South Africa.
- Get more government labs into accreditation
- Need for food dedicated reference labs

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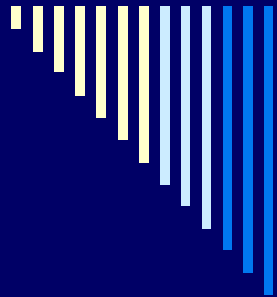
## **Finding 3: Private Sector Level**

- Private sector has made significant strides towards ISO/IEC 17025 accreditation, but need more capacity in various fields**
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# Industry initiatives

- South African Wine Laboratory Association for wine labs
- 50 members
- 3 accredited to ISO 17025
- Own proficiency scheme



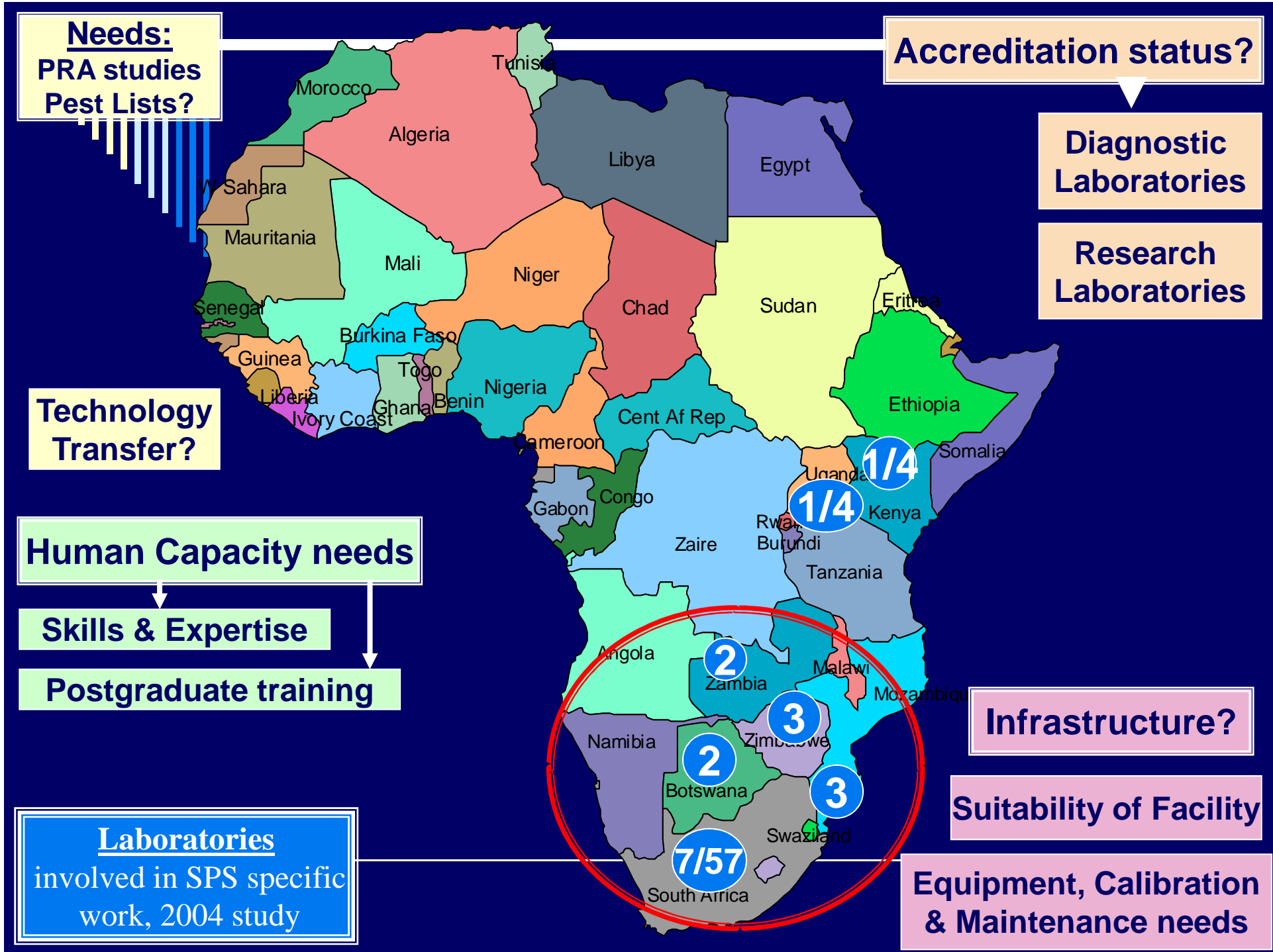


**National capacity: What is the level of compliance in meeting international requirements in:**

- ISO/IEC 17025: 2005
- OECD, Good Laboratory Practices.

□ In the food sector

- Accredited veterinary labs = 9
- GLP labs for pesticide trials / veterinary testing = 7
- Food labs = 47 accredited
- Fish testing labs = 15 accredited
- Seed testing 24, none ISO accredited one ISTA accredited
- Animal sector = 15 labs
- etc



**Needs:**  
PRA studies  
Pest Lists?

**Accreditation status?**

**Diagnostic Laboratories**

**Research Laboratories**

**Technology Transfer?**

**Human Capacity needs**

**Skills & Expertise**

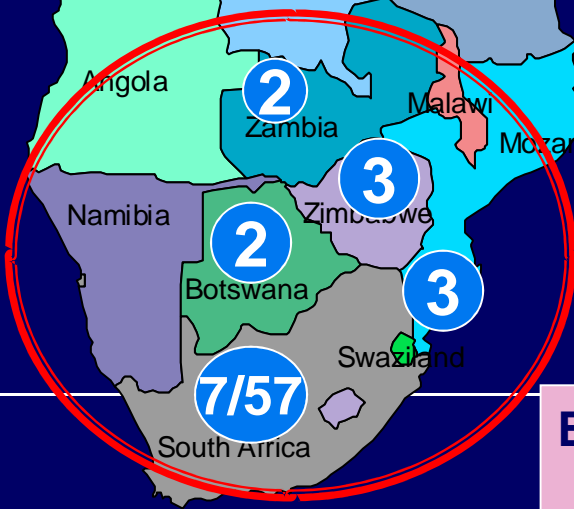
**Postgraduate training**

**Laboratories**  
involved in SPS specific work, 2004 study

**Infrastructure?**

**Suitability of Facility**

**Equipment, Calibration & Maintenance needs**



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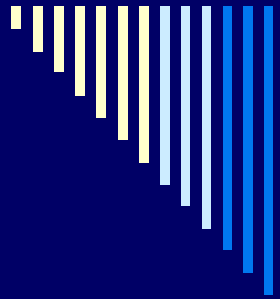
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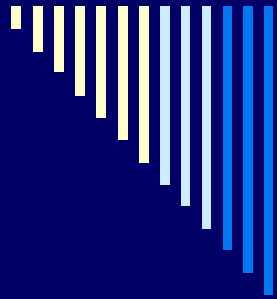
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# An African Perspective: The Way Forward

- ❑ Need Metrology Laboratories to give traceability of measurement
- ❑ Need access to reference materials
- ❑ Regional Agency for maintenance and support
- ❑ Southern African countries, equipment data base
- ❑ Establish regional networks to ensure sustained accreditation



# A South African Perspective: The Way Forward

- ❑ Need awareness and understanding of accreditation systems – SANAS
- ❑ Need to understand importance of metrology Laboratories
  - To give traceability of measurement
- ❑ Need support for maintenance of culture collections etc
- ❑ Need capacity to maintain equipment, train students

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# Thank you for the NLA

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