

Minimum standards for maintenance and construction

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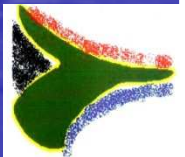
Quality of our operations

**Minimum standards for
maintenance and
construction**



Quality of our operations

**Minimum standards for
planning, design,
maintenance and
construction**



Quality of our operations

**Minimum standards for
planning, design, maintenance
and construction**

**Recap:
Basic principles**



Minimum standards



Minimum standards

Road
user



Serve
our
client

Adequate
speed

safety

comfort

Optimization of costs

Minimum standards



**Adequate
speed**

safety

comfort

Rural

Inter urban

Urban

- through
- collector
- access

Quality of our operations: Minimum standards

costing

- minimise the TOTAL impact

Planning
Design ←
Construction
Management –
 maintenance
 rehabilitation
Operation (road user)



Quality of our operations: Minimum standards

Minimising the TOTAL cost:

Increased responsibility – managers

Eg

Cheap planning	~	poor operation
Cheap design	~	high construction costs

Risk management



Quality of our operations

Minimum standards for
**planning, design, maintenance
and construction**

conclusions:
Basic principles



Nothing new
- safety
- costs



Quality of our operations

Minimum standards for
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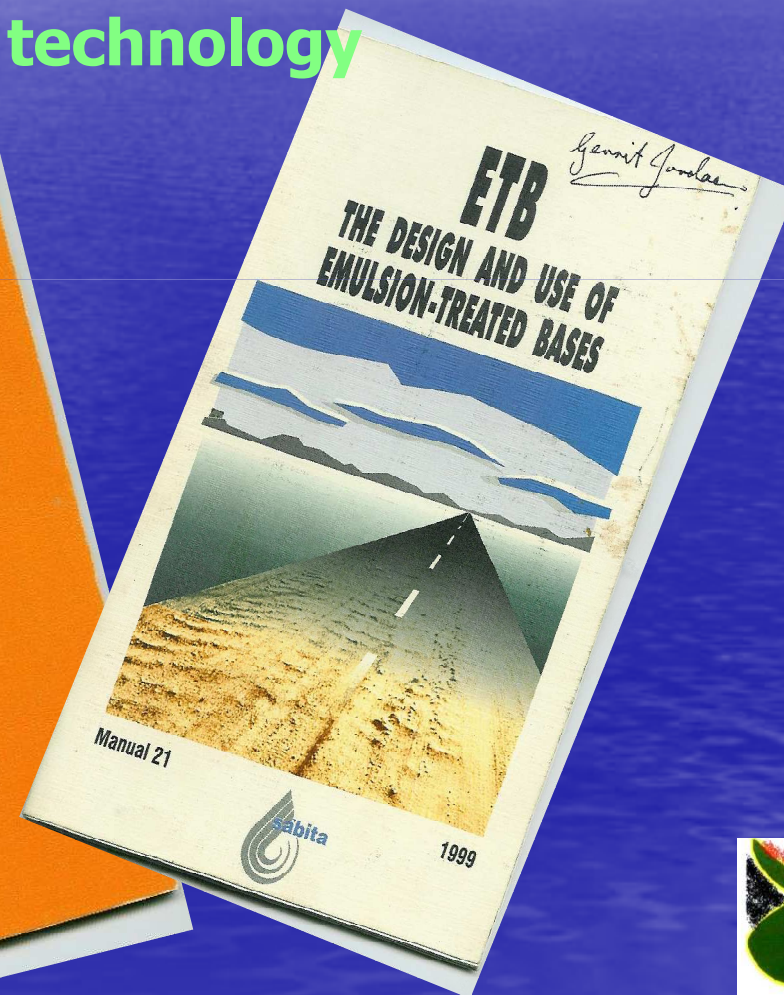
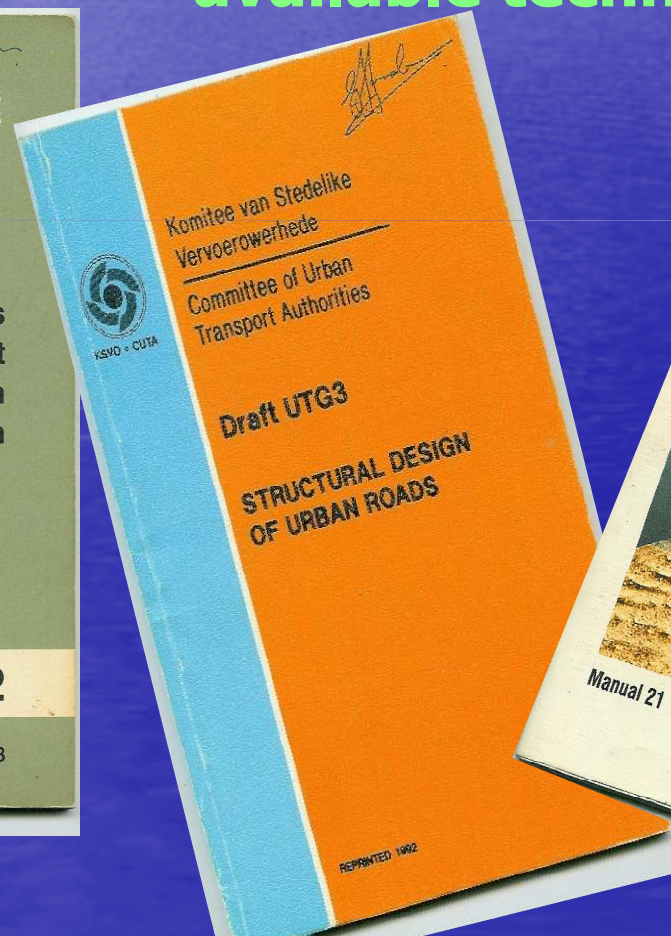
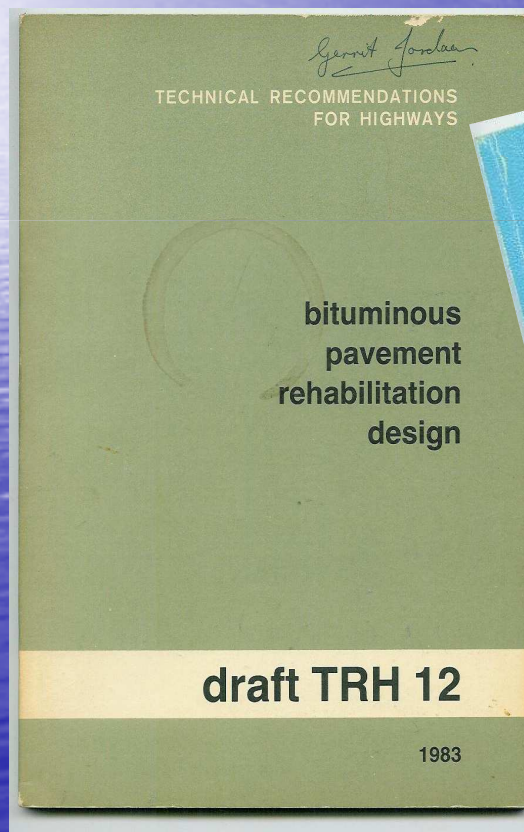
- **available technology**
- **practice**



Quality of our operations

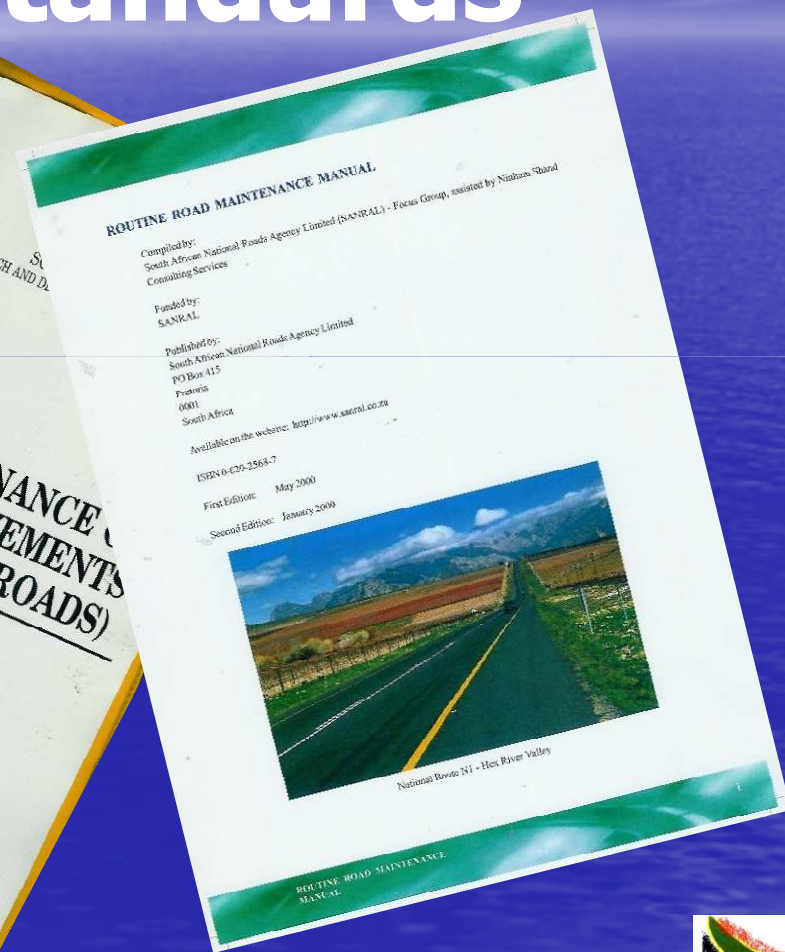
Minimum standards

available technology



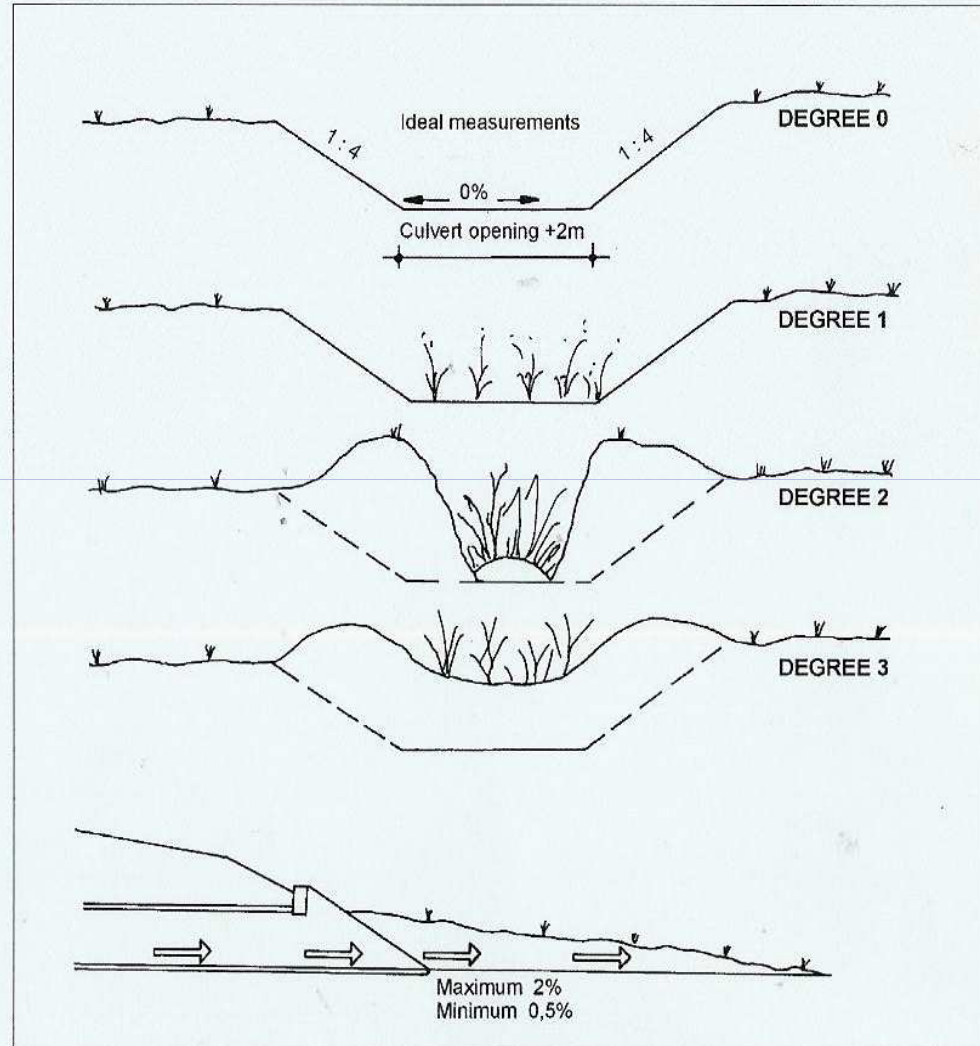
Quality of our operations

Minimum standards



Outlet Drain Incorrect

OUTLET DRAIN INCORRECT	
Degree	Description
0	The outlet drain is well shaped with a wide horizontal floor and side slopes not steeper than 1:4. No erosion, obstructions or silting occurs in the side drain.
1	The outlet drain is well shaped and all water is drained away. There is, however, vegetation in the drain which may obstruct the flow of water. Ponding take place outside the road reserve and only minor erosion may take place.
2	The outlet drain is not well formed and the side slopes are too steep. Dense vegetation also obstructs the flow of water and the water is only partially drained from the road reserve. Erosion may develop in the lower parts of the drain due to incorrect transverse and longitudinal slopes. In certain cases the outlet drain may collapse (steep side slopes) which will obstruct the flow of water.
3	The outlet drain is blocked due to side slope that has collapsed or overgrown to such an extent that hardly any water is diverted from the road reserve. Other water channels develop and water flows over the mitre bank, gravel shoulder or road surface. Damage is caused to the road and / or a dangerous situation exists.



Outlet Drain Incorrect



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Quality of our operations

Minimum standards



Quality of our operations

Minimum standards



Quality of our operations

Minimum standards

available technology



Practice ?







2007 4 4



Quality of our operations

Minimum standards for
planning, design, maintenance &
construction

Practice ?

- **managers**
- **consultants**
- **contractors**



2010 5 20

Quality of our operations

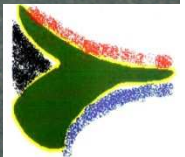
Minimum standards



Potholes

Managers

- knowledge base/continuity
- management systems
- optimization of total cost stream



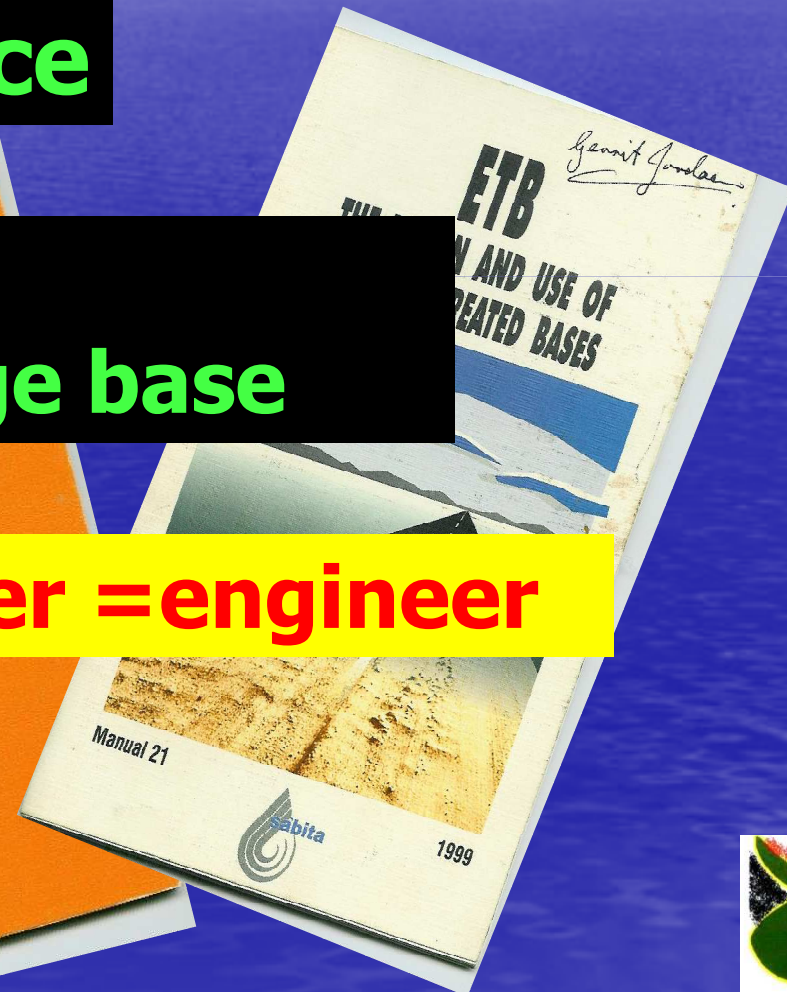
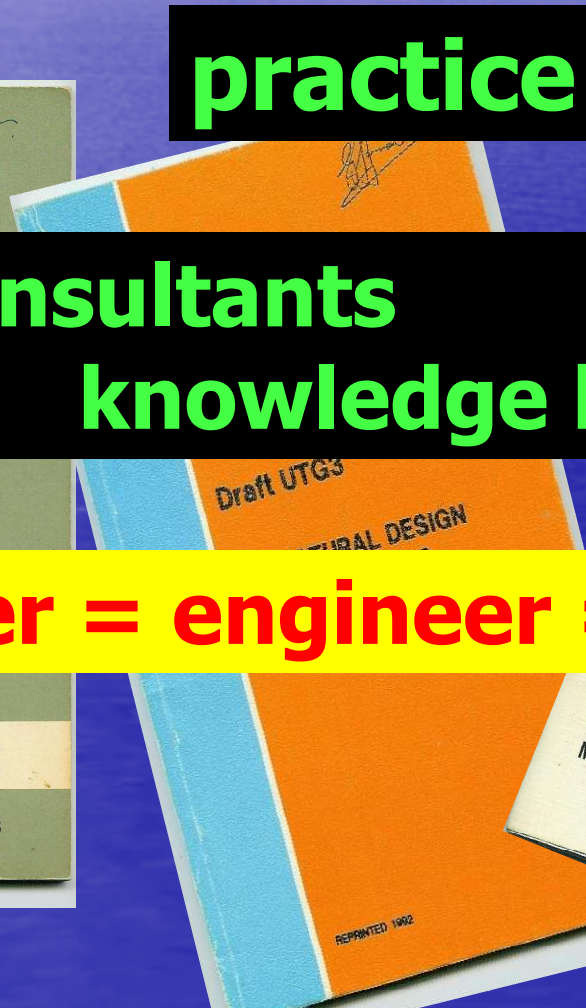
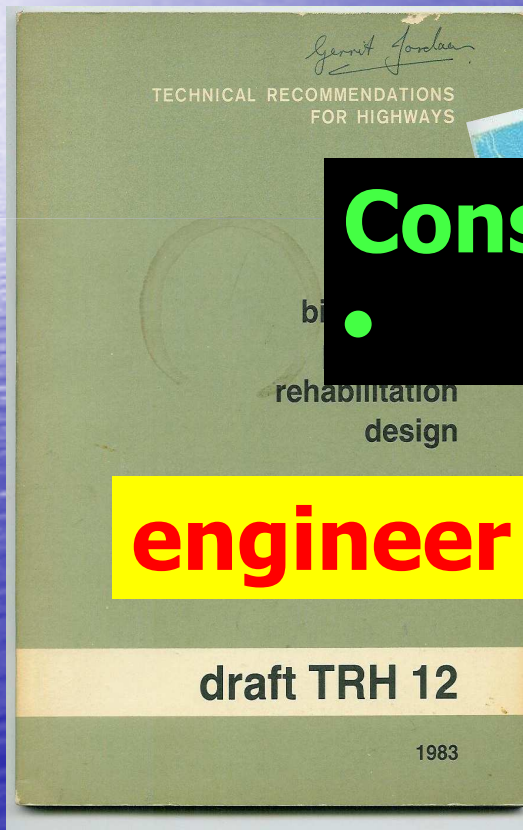
Quality of our operations

Minimum standards

practice

Consultants
• **knowledge base**

engineer = engineer = engineer



Quality of our operations

Minimum standards

practice

Consultants

- **knowledge base**

engineer ≠ engineer ≠ engineer

**tertiary
training**



Quality of our operations

Minimum standards



Contractors

- knowledge base
- operational skills



Quality of our operations

Minimum standards for
planning, design, maintenance
and construction

- managers
- consultants
- contractors

don't now that you don't know

5 20



Quality of our operations

Minimum standards for planning, design, maintenance and construction

In summary

- **technology** - very good to excellent
- **practice** - national - good
provincial - ? to poor ?
municipal - ? to very poor ?



Quality of our operations

Minimum standards for
planning, design, maintenance
and construction

practice

X

Education system

- **tertiary level**



Quality of our operations

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Education system

- Tertiary level
 - national priorities
 - differentiate at tertiary level
 - remuneration



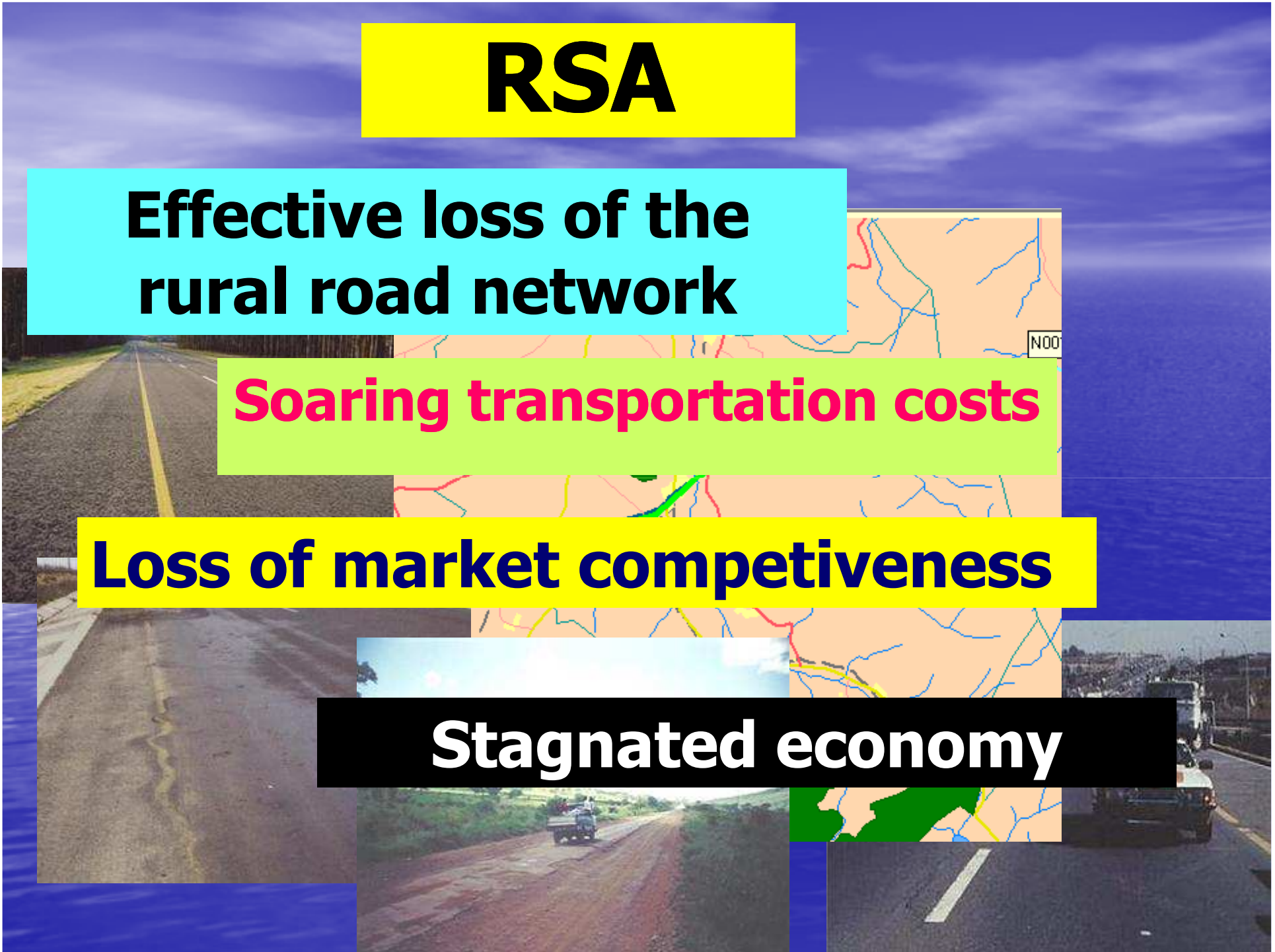
RSA

Effective loss of the rural road network

Soaring transportation costs

Loss of market competitiveness

Stagnated economy





Facing the challenge

