A Framework for Road Asset Management

INTERNATIONAL CONFERENCE ON NEW TECHNOLOGIES AND INNOVATION IN RURAL ROADS, 24-26 MAY, NEW DELHI, INDIA
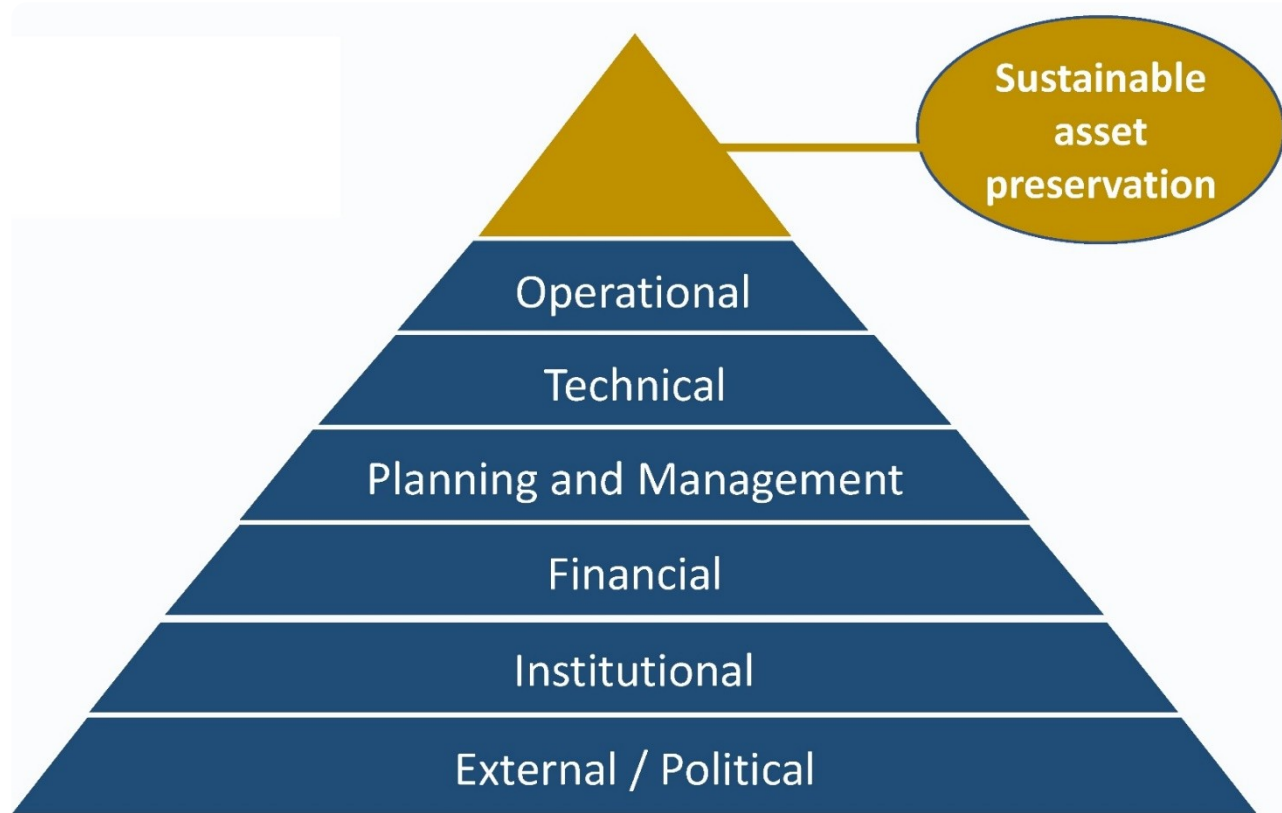
ROBERT GEDDES

Pyramid Power

"The belief that the ancient Egyptian pyramids and objects of similar shape can confer great benefits - The Great Pyramid of Giza can collect and concentrate electromagnetic energy in its chambers and at its base".

Small models of pyramids can preserve food and maintain the sharpness of razor blades.

Road Preservation Pyramid

A holistic approach to the management of roads by considering six building blocks supporting the goal of sustainable road asset preservation.

Road Preservation Pyramid

▶The Road Maintenance Pyramid was used by PIARC in 'Preserve your Country's Roads to Drive Development' (2016).

▶The maintenance challenge is "multi-dimensional" and is influenced by "inter-related factors that can be viewed as a hierarchical pyramid".

▶Government policy and political support for road maintenance provide the foundation for the pyramid.

www.piarc.org
2016

PRESERVE YOUR COUNTRY'S ROADS TO DRIVE DEVELOPMENT

World Road Association

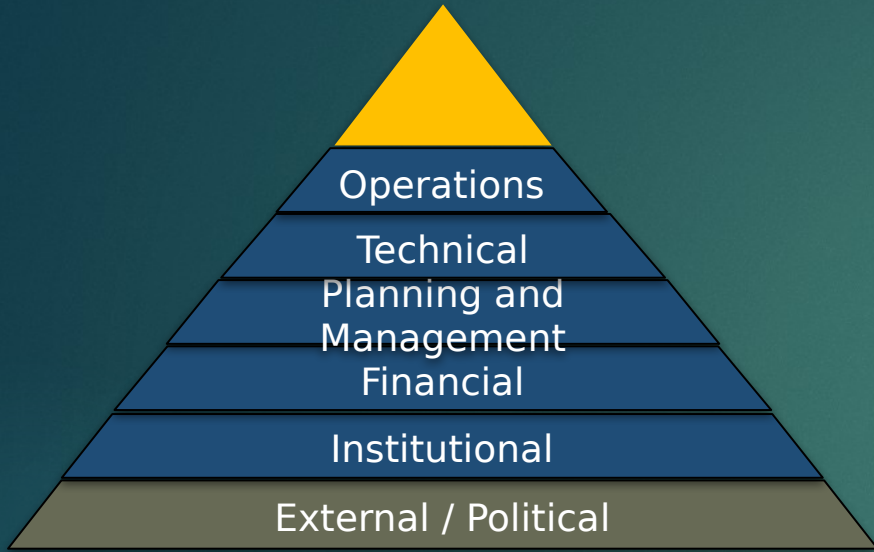WORLD ROAD ASSOCIATION MONDIALE DE LA ROUTE
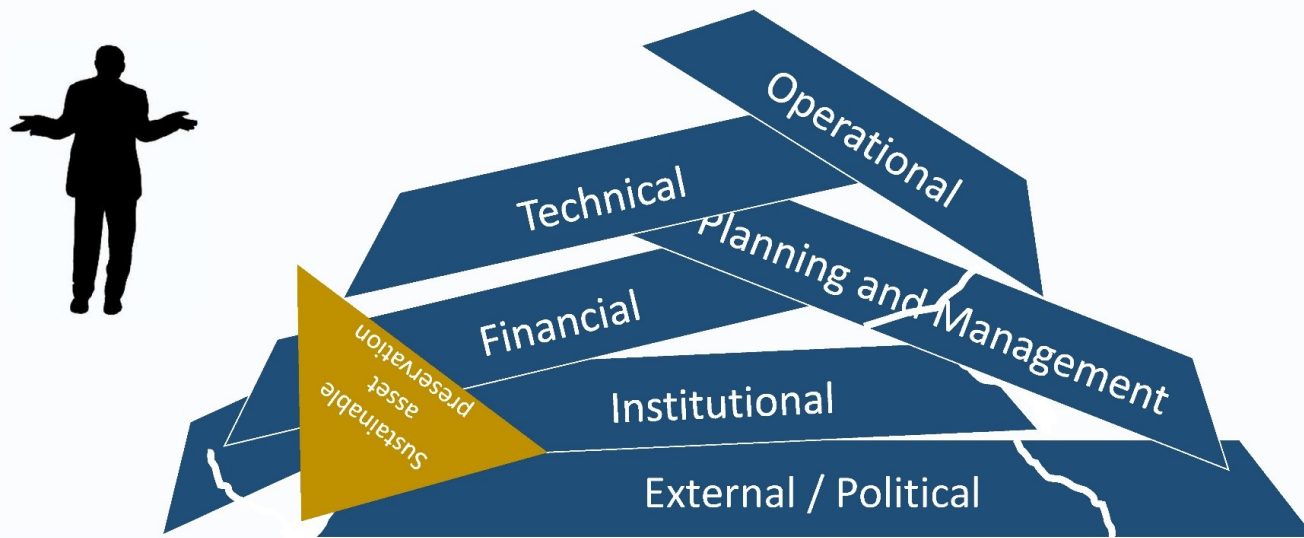
The Road Preservation Pyramid

WEAK BUILDING BLOCKS WILL CAUSE THE PYRAMID TO COLLAPSE.
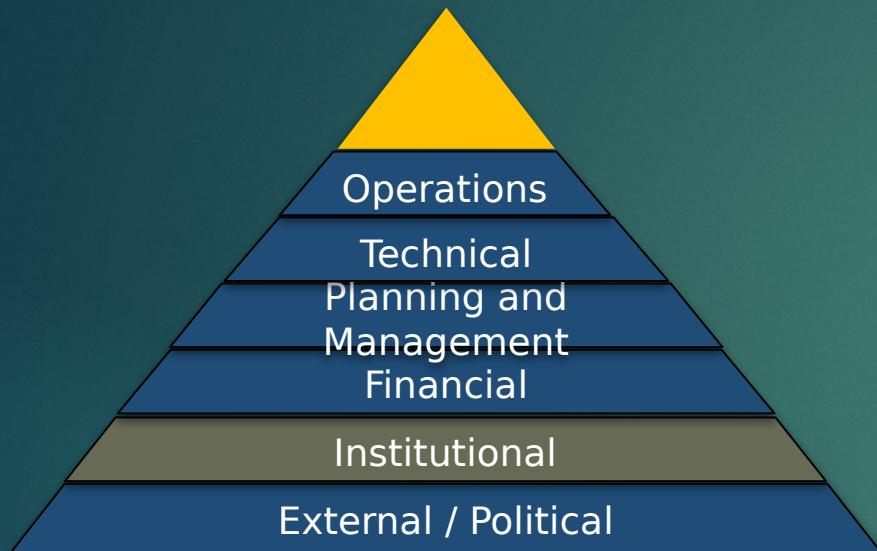
External/Political

- Does the government have a rural road asset management policy which is supported by senior decision makers and adopted at the highest level in government?

- Does the road agency carry out informed consultation and open communications with road users and other stakeholders to understand their needs and expectations?

Operations

Technical

Planning and Management

Financial

Institutional

External / Political

LEGISLATIVE

Road agency

Institutional

Pyramid levels (top to bottom): Operations, Technical, Planning and Management, Financial, Institutional, External / Political

- Does the agency have a corporate mission statement which considers stakeholder needs and expectations?
- Have the basic levels of service for roads have been defined and agreed by stakeholders?
- Is the organisational structure aligned with the AM policy and objectives?
- Does the agency provide training opportunities for staff?
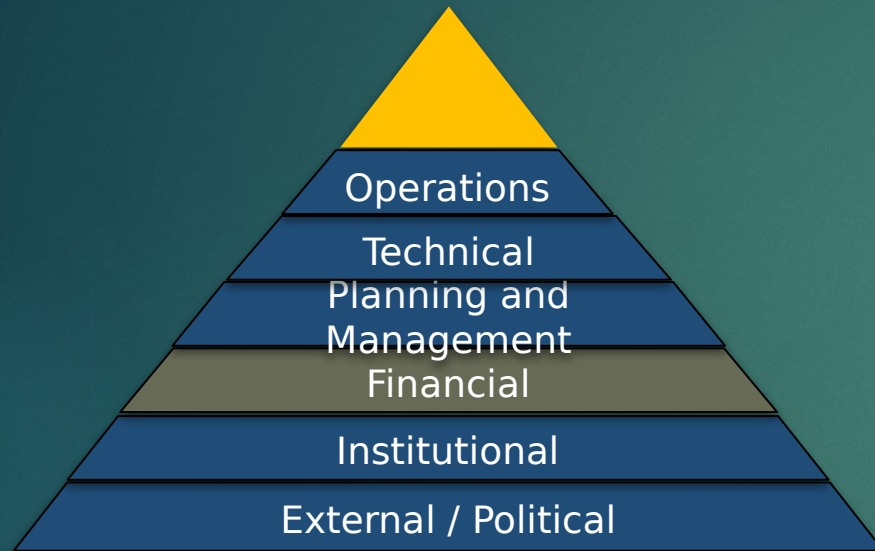- Are road agency staff salaries comparable with the private sector?

Level of service (roads)

- LOS is a description of the <u>performance of the road network</u> that the road agency undertakes to provide.

- The LOS must be <u>easily understood</u> by road users and stakeholders.

- It must be realistic and affordable to the agency.

- The agreed LOS for each road under the control of the road agency should be defined.

Financial

Operations

Technical

Planning and Management

Financial

Institutional

External / Political

- Is there a stable, adequate and sustainable source of funding for roads?
- Is an annual valuation carried out of road infrastructure assets?
- Is a budgeting processes in place for maintenance and investment plans?
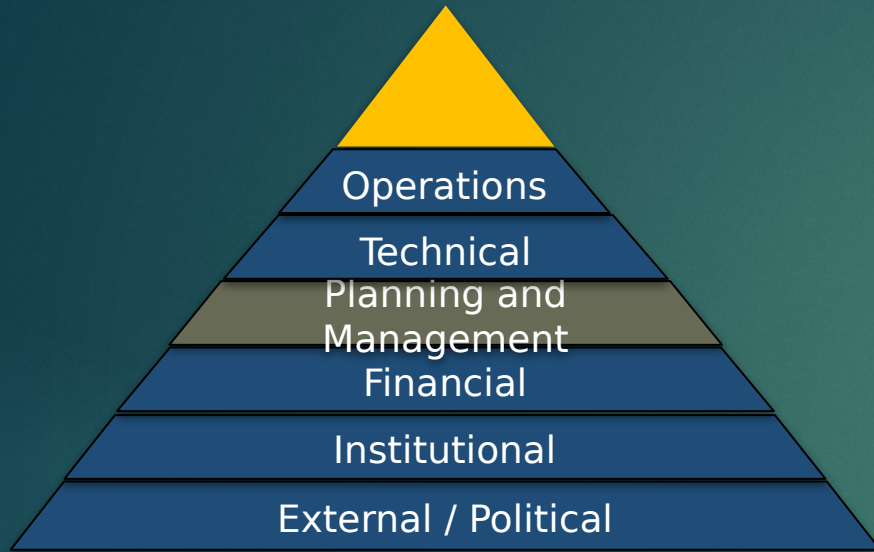- Are robust financial accounting and auditing procedures in place?

Road Financing
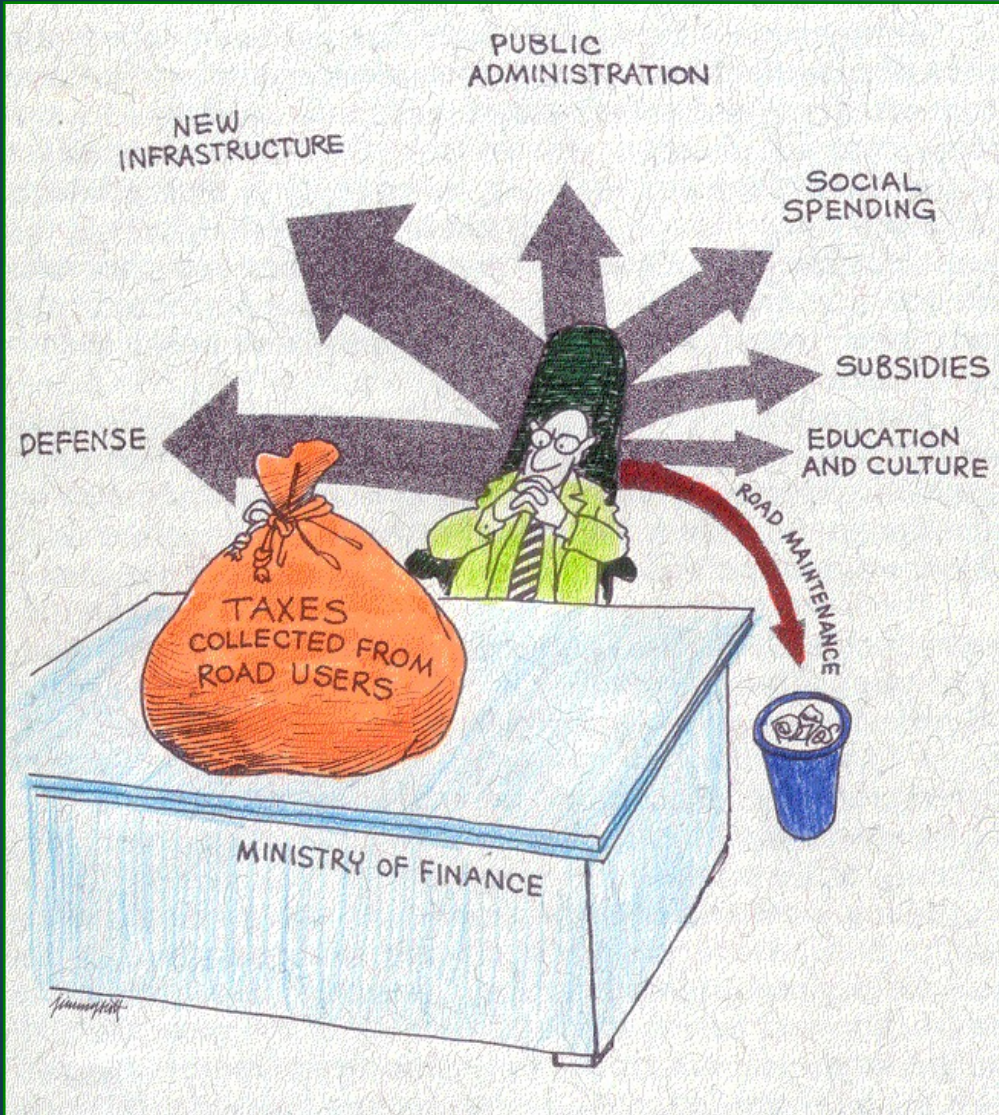
- Funding of maintenance is influenced by political decisions
- Maintenance is often over-looked in favour of capital projects
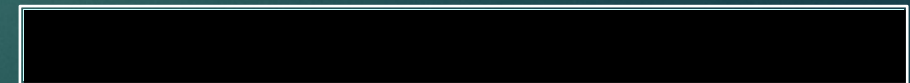- State budget is NOT a viable option in the long term.

Planning and Management

Pyramid (top to bottom):
- Operations
- Technical
- Planning and Management
- Financial
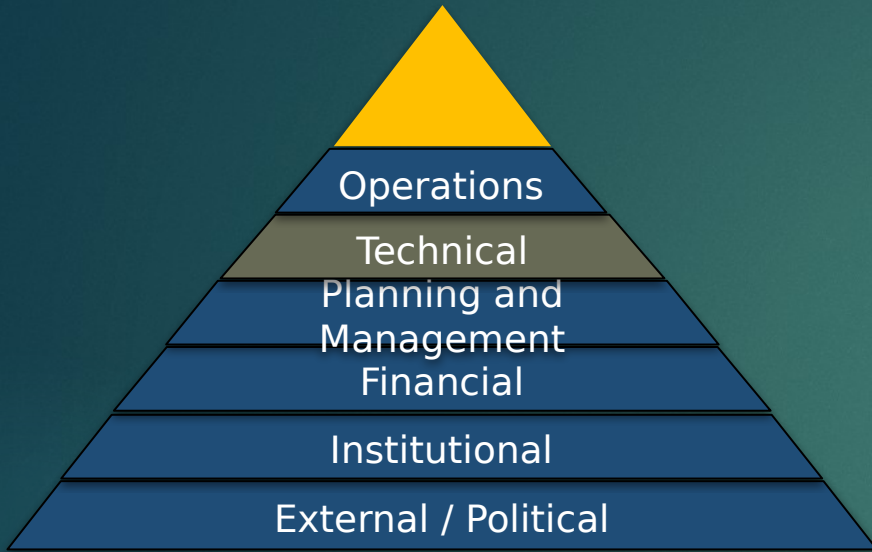- Institutional
- External / Political

Does the agency:

- Operate an Asset Management System with network definition and network condition?
- Regularly update the database for the preparation of prioritised annual and longer-term maintenance and development plans.

HDM - 4
HIGHWAY DEVELOPMENT & MANAGEMENT

nROMAPS
a complete asset management system

RONET
Road Network Evaluation Tools

Technical

Operations
Technical
Planning and Management
Financial
Institutional
External / Political

Are the design standards for roads:
* Clearly defined?
* Appropriate to local conditions and the needs of road users?
* Affordable?
* Sustainable?

The "Technical" building block can also consider the technical aspects of road asset management:
* road referencing systems
* condition monitoring methodology
* roughness progression curves
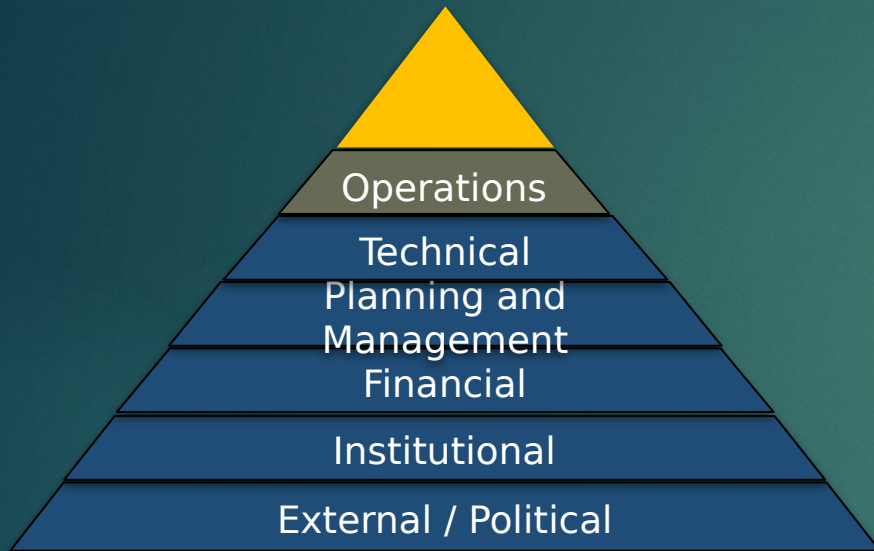* gravel loss equations.

10 m wide

6 m wide

4.5 m wide

Operations

Pyramid levels from top to bottom: Operations, Technical, Planning and Management, Financial, Institutional, External / Political

- Is an appropriate form of contract used for road maintenance?
- Does the agency have an appropriate balance between in-house (force account) operations and outsourced maintenance works?
- Are non-core activities outsourced by the agency?
- Is the scheduling of maintenance works aligned with the financial year and the rains?
- Does the agency carry of independent technical auditing of works?
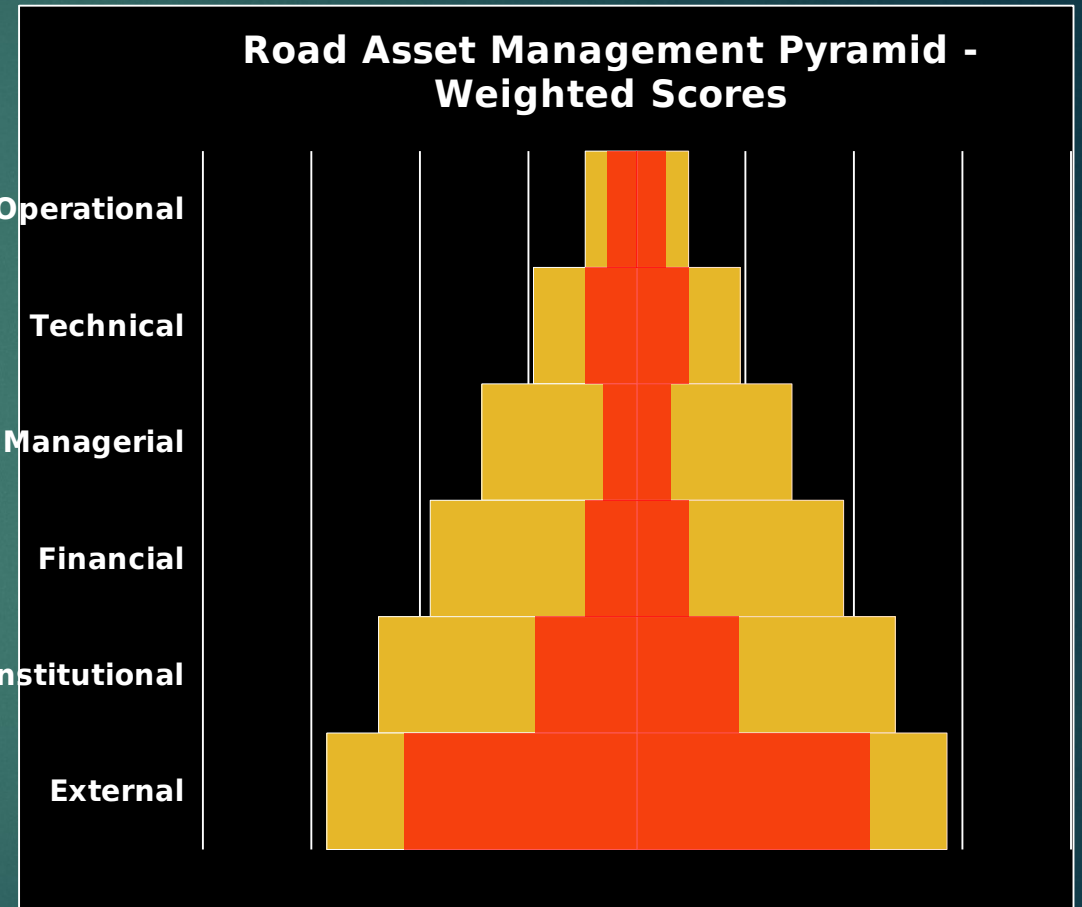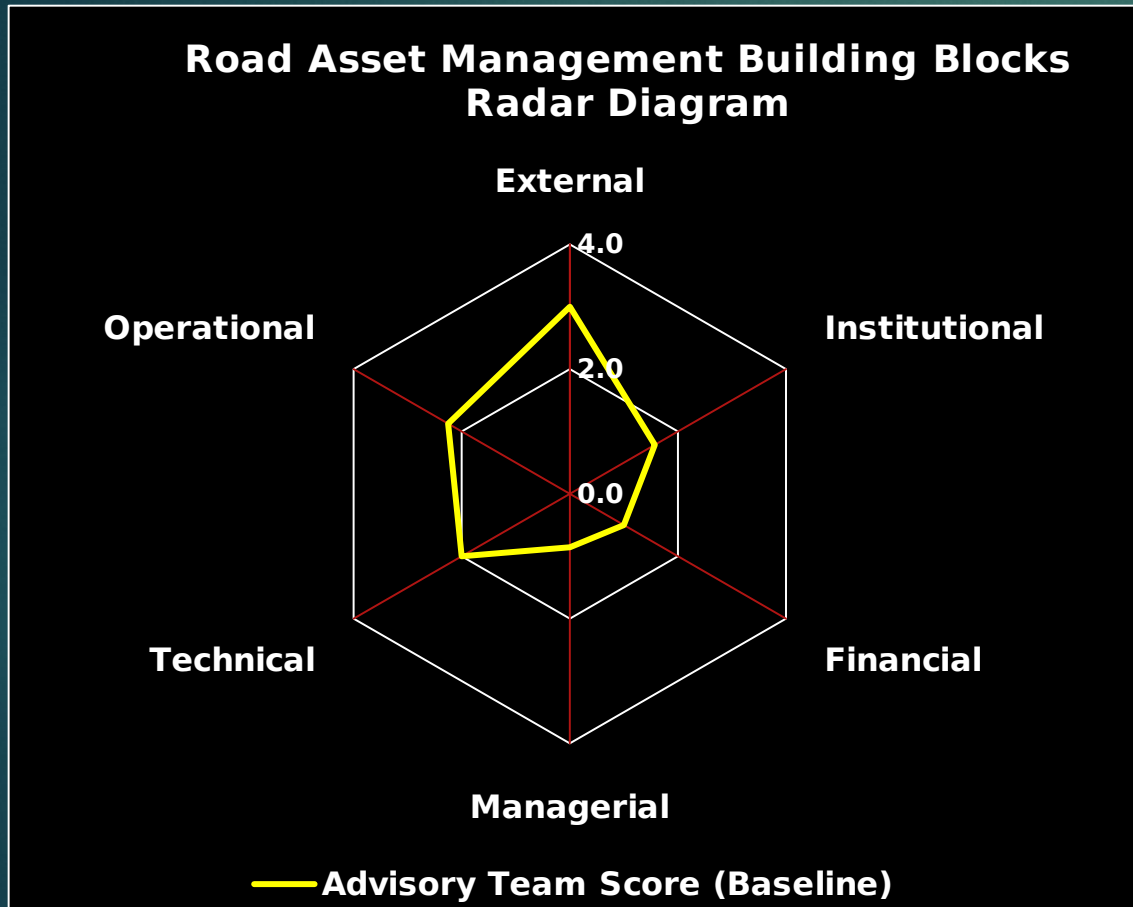
Performance assessment

Weighting Ranking	Building Block	Max. Possible Score	Agency score	Weighting
1	External	4	3.0	0.29
2	Institutional	4	1.6	0.24
3	Financial	4	1.0	0.19
4	Managerial	4	0.9	0.14
5	Technical	4	2.0	0.10
6	Operational	4	2.3	0.05
Road Sector Sustainability Assessment Score			1.8	1.00
Road Sector Sustainability Rating			Fair	
Road Sector Sustainability Index (RSSI)			0.46	(Scale: 0 - 1)

Assessment Scoring Criteria:	
< 0	Very Poor
0-1	Poor
1-2	Fair
2-3	Good
3-4	Very Good

Performance assessment

Road Asset Management Building Blocks Radar Diagram

External
4.0
Operational
Institutional
2.0
0.0
Technical
Financial
Managerial

—— Advisory Team Score (Baseline)

Road Asset Management Pyramid - Weighted Scores

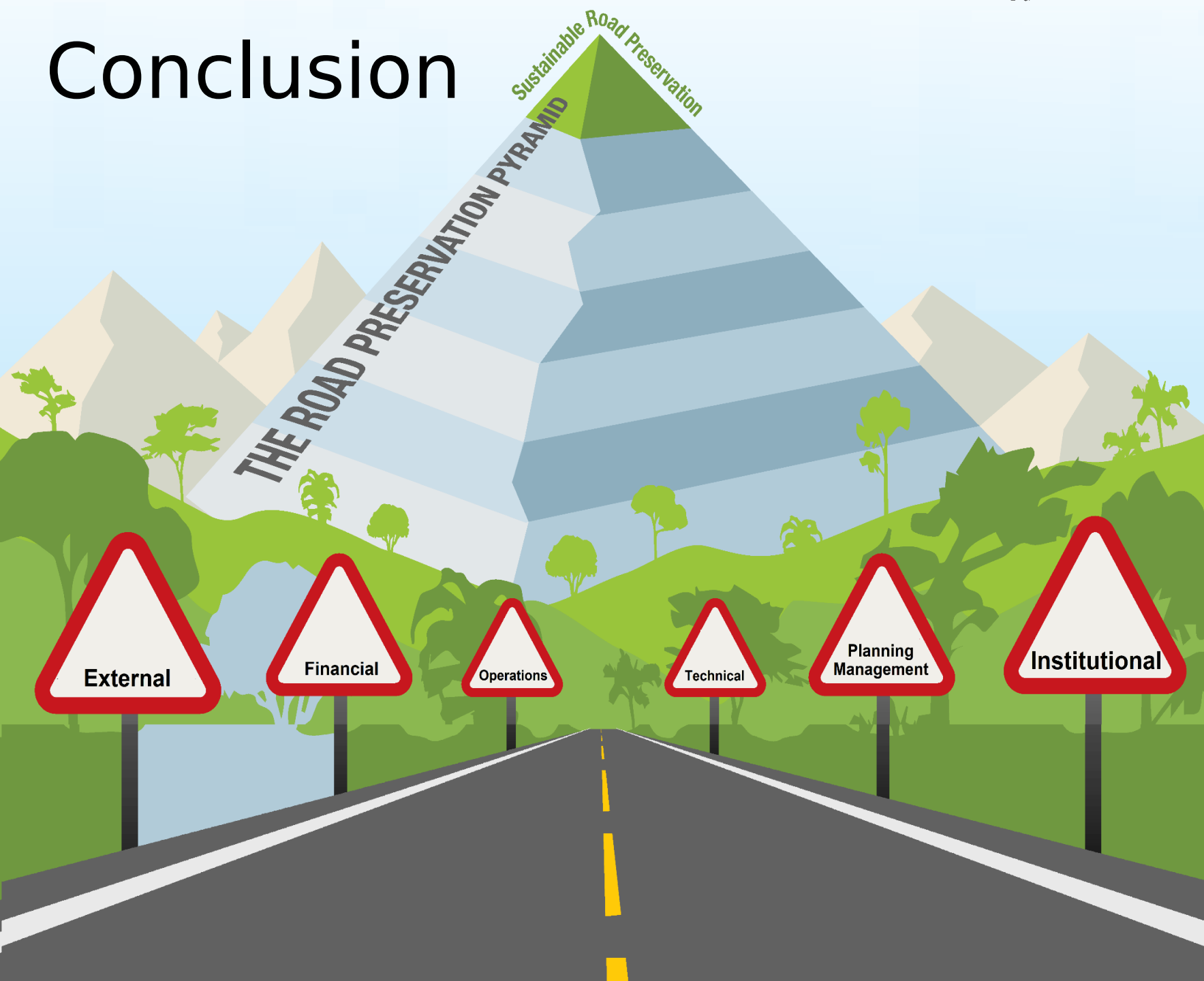Operational
Technical
Managerial
Financial
Institutional
External

Performance assessment

▶ Changes in performance can be monitored over time.

▶ The relative performance of road agencies can be compared

▶ Road agencies can identify specific actions required to address shortcomings in their road asset management.

Conclusion

- The Road Preservation Pyramid has no magical powers.
- Commitment is required from the government, the road agency and road users to achieve sustainable road asset management.
- All six building blocks of the Road Preservation Pyramid must be addressed.

END

THANKS FOR YOUR ATTENTION