



Innovative Solutions to defend SOUTH AFRICAN road infrastructures against the effects of Climate Change

By: PC SIBIYA

About Presenter



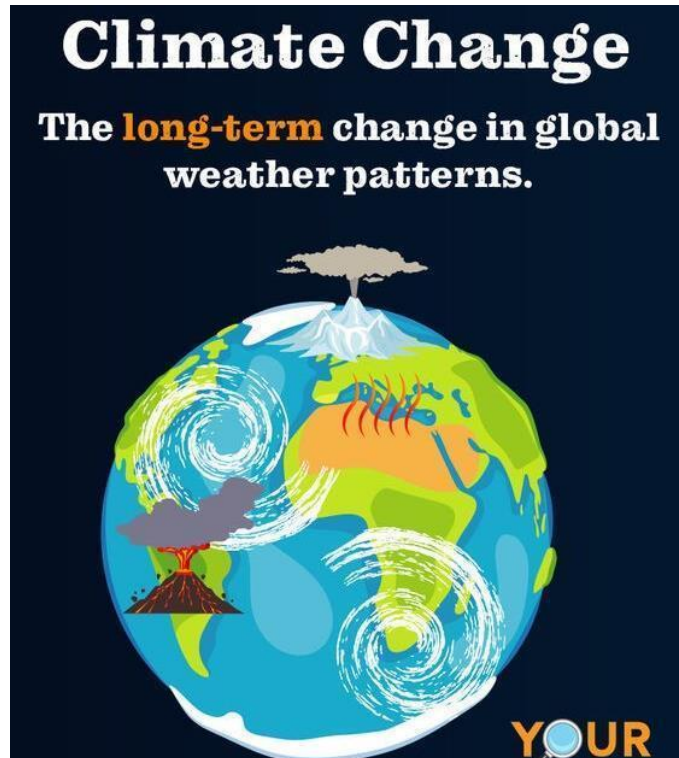
Ms. Pretty Sibiya is a proactive and adaptable graduate engineer specializing in Transport and Infrastructure. She holds a BSc degree in Civil Engineering from the University of KwaZulu-Natal. Currently employed in the Geometrics team at WSP South Africa, Ms. Sibiya is passionate about making a lasting impact in the civil engineering field. She serves as the Secretary on CESA YPF Gauteng South and eagerly anticipates leveraging her skills and knowledge to address complex engineering challenges while continuing to learn and grow in her rewarding career.

About Co- Author

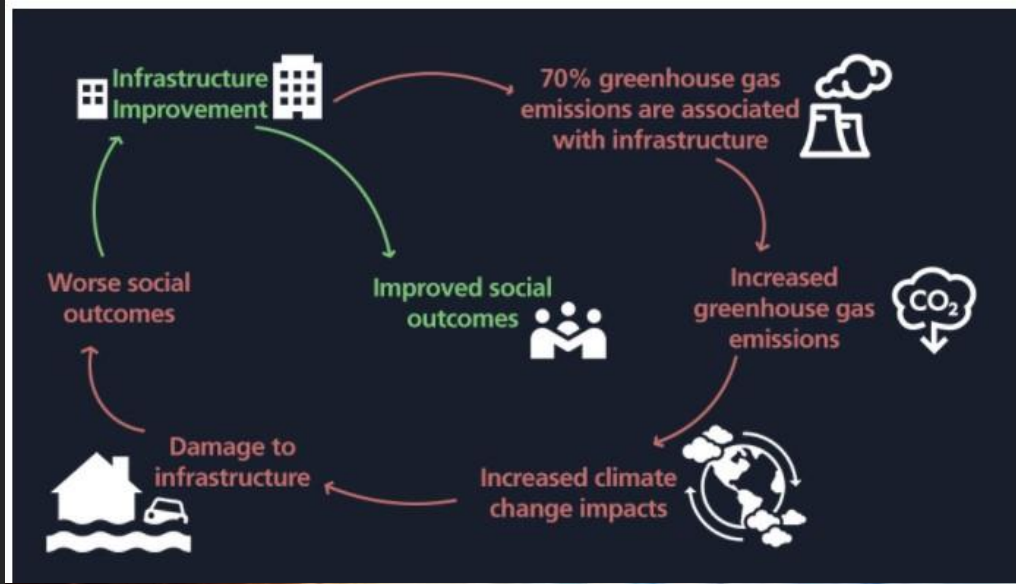


Ms. Devashni Arumugam holds a Bsc Civil Engineering degree from the University of KwaZulu Natal. She is currently a member of the Geometrics team at WSP South Africa. Ms Arumugam specializes in Geometric design and site modelling with a passion for Digital Engineering. Her ability to approach complex engineering problems with a fresh perspective. She leverages her knowledge of geometry, modelling, and computer-aided design (CAD) to develop innovative solutions that meet both technical requirements and design aesthetics.

Introduction



Climate Change and Engineering

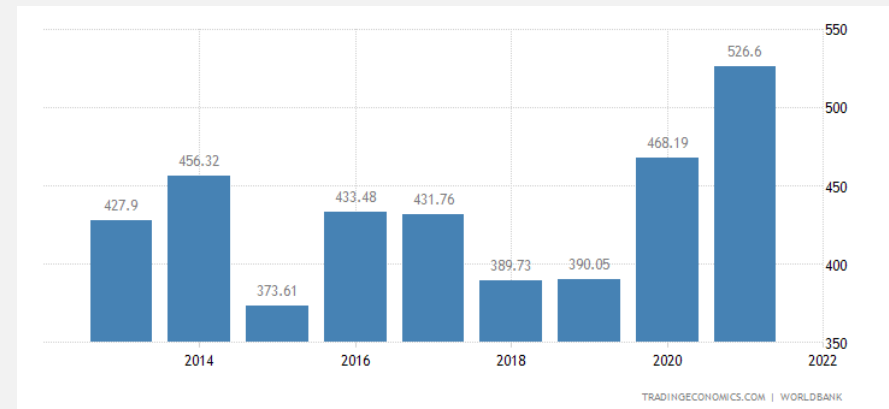


- Vulnerability and Resilience
- Adaptation and Mitigation
- Transportation and Mobility

A local Perspective



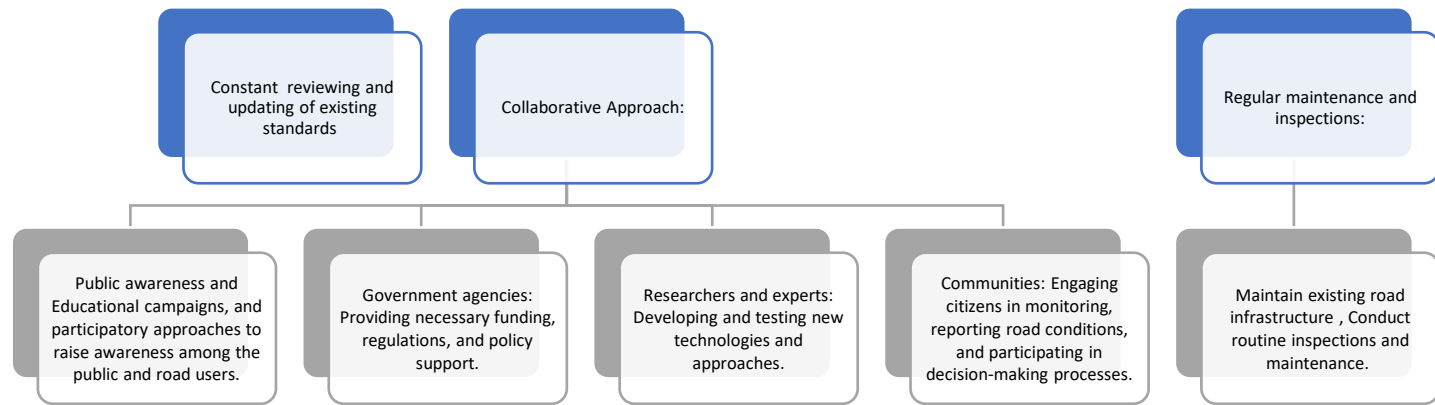
- Increased Rainfall throughout the country
- Health and Safety Concerns
- Community Resilience and Preparedness



Current Challenges



Ways to improve South Africa's road Drainage systems to combat increased rainfall.



Use of Technology

Smart Highways:

- Incorporating innovative technologies into road infrastructure.
- Smart transportation systems employ real-time data collection.

Intelligent Monitoring and Early Warning Systems:

- Intelligent monitoring systems that utilize sensors, remote sensing technologies, and data analytics to detect early signs of road infrastructure damage caused by high rainfall.
- Remote Monitoring and Control Centres.
- Smart Underground Drainage Blockage Monitoring.



(Ref; A. Pompigna and R. Mauro, 2022)



Wireless solar powered cameras used on California and Pennsylvania scour critical bridges.

Benefits and Impacts

Benefits of implementing innovative solutions:

Enhanced resilience and durability of road infrastructures.

Reduced maintenance costs and disruption to transportation systems.

Improved safety for road users.

Sustainable water management and environmental preservation.

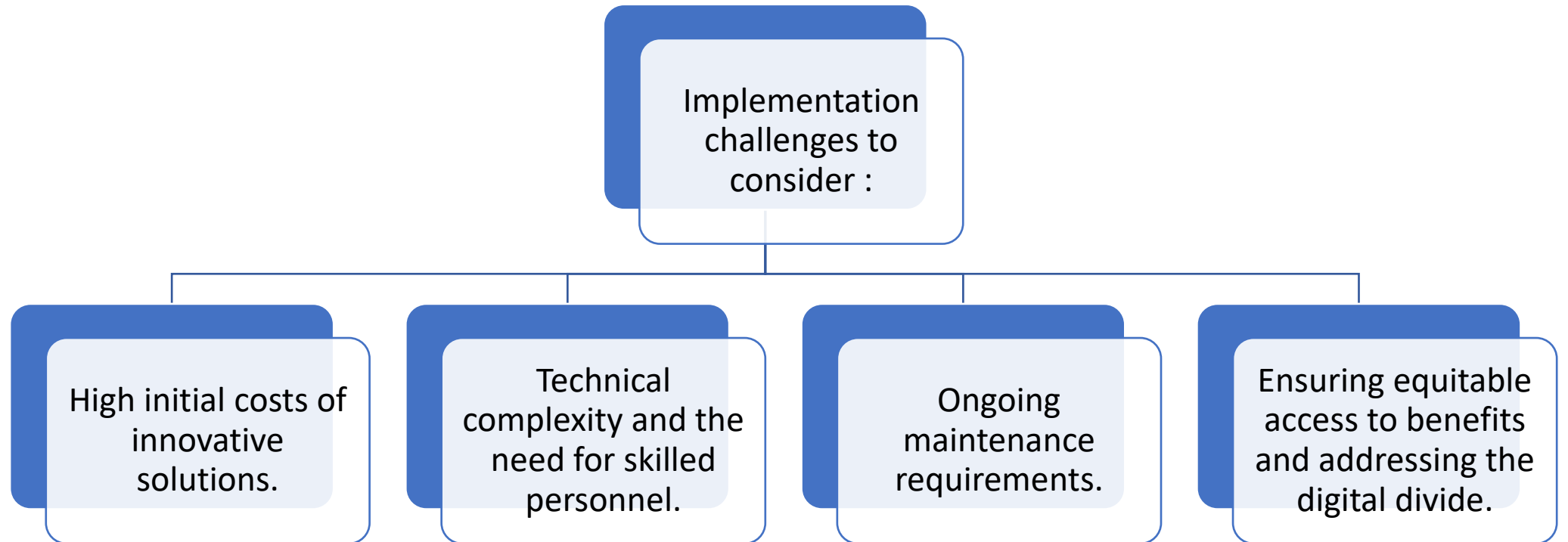
Impacts of not taking action:

Increased road damage, leading to higher repair costs.

Traffic congestion and delays due to road closures.

Higher Safety risks.

Implications that comes with implementing these methods



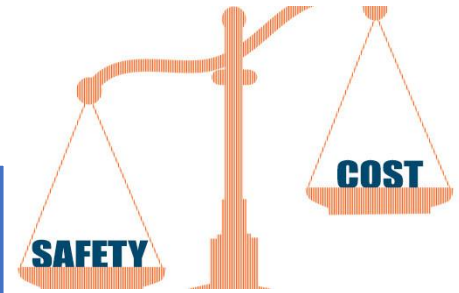
Conclusion

Adopting innovative solutions to protect road infrastructure in South Africa from climate change is crucial for:

- Building resilience
- Ensuring sustainable development
- Safeguarding community well-being

Investment in these solutions and utilization of advanced technologies can:

- Create a climate-resilient and efficient transportation network
- Promote economic growth
- Enhance the overall quality of life for citizens in South Africa.



Thank you



- **Contact details**

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- QUESTIONS & DISCUSSIONS