Cross-border Transport along CAREC Corridors

Dr Ian Greenwood

BE(Civil), PhD(Eng), FEngNZ(Civil), CPEng(NZ)

Key Issues & Lessons

Significant Challenges

- Economic growth desired to fund social programs
- Economic growth linked to traffic growth
- Traffic growth drives up transport infrastructure demands
- Developing and maintaining infrastructure
  - How to pay for the infrastructure?
    - The role of fuel taxes in a world of EVs?
  - International donors increasing focus on GHGs
- Need to reduce GHGs from transport

- Is there a path that addresses all these issues or are we on a road to nowhere?

Strong Infrastructure Is Key to a Strong Economy

- *"The role of infrastructure in the development and growth of an economy is paramount. Not only does infrastructure have a significant impact on economic development, but infrastructure development also eventually supports economic growth, trade, and investment. Conversely, a deficiency in infrastructure creates bottlenecks to economic development, growth, trade, and investment."*

Developing Infrastructure in Central Asia: Impacts and Financing Mechanisms, ADBI, 2021.

Following International Practice Isn't Desirable

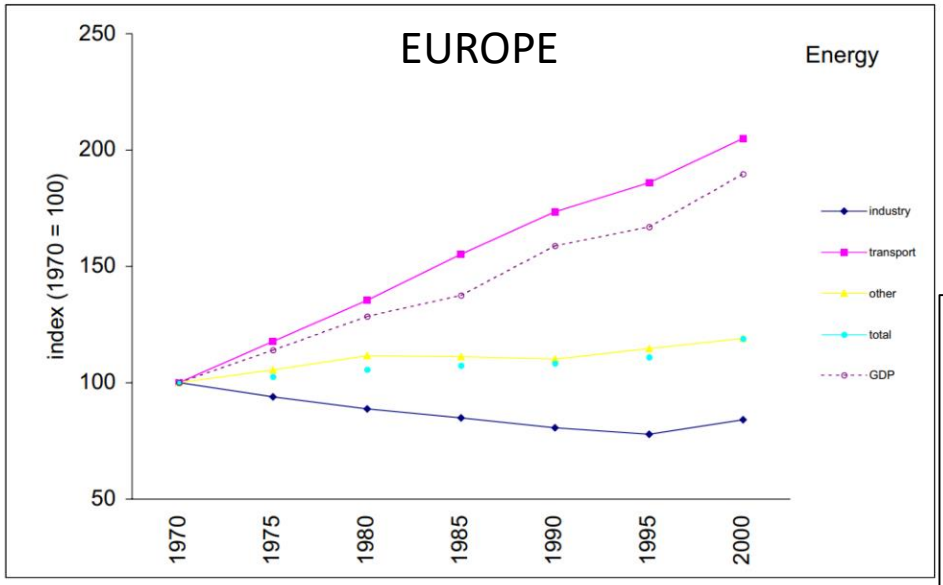
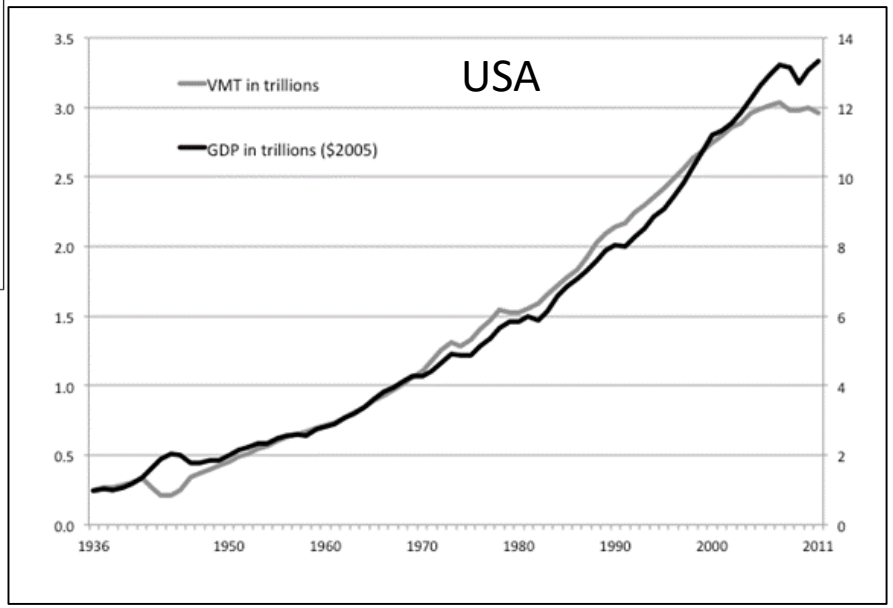


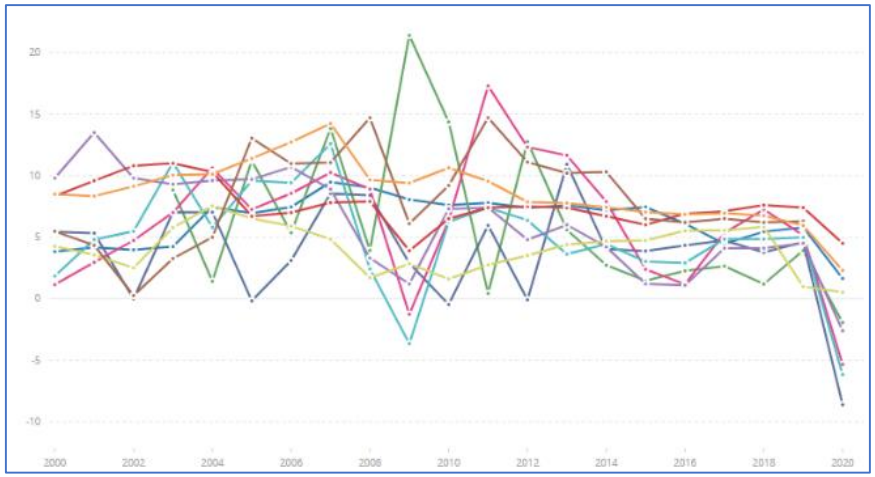
Figure 3. *Trends in energy consumption and economic growth in Europe, 1970 to 2000.*

Decoupling the link between economic growth, transport growth and transport energy consumption in Europe. Dominic Stead & David Banister



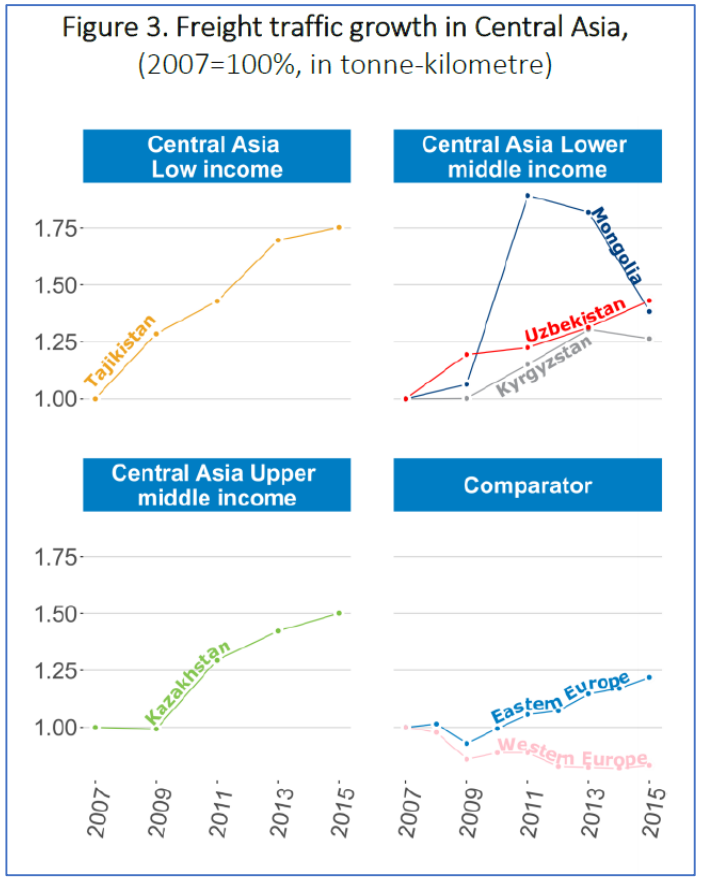
Exploring the Relationship between Travel Demand and Economic Growth
Lisa Ecola & Martin Wachs, US Federal Highway Administration, 2012

Trends Across CAREC Members



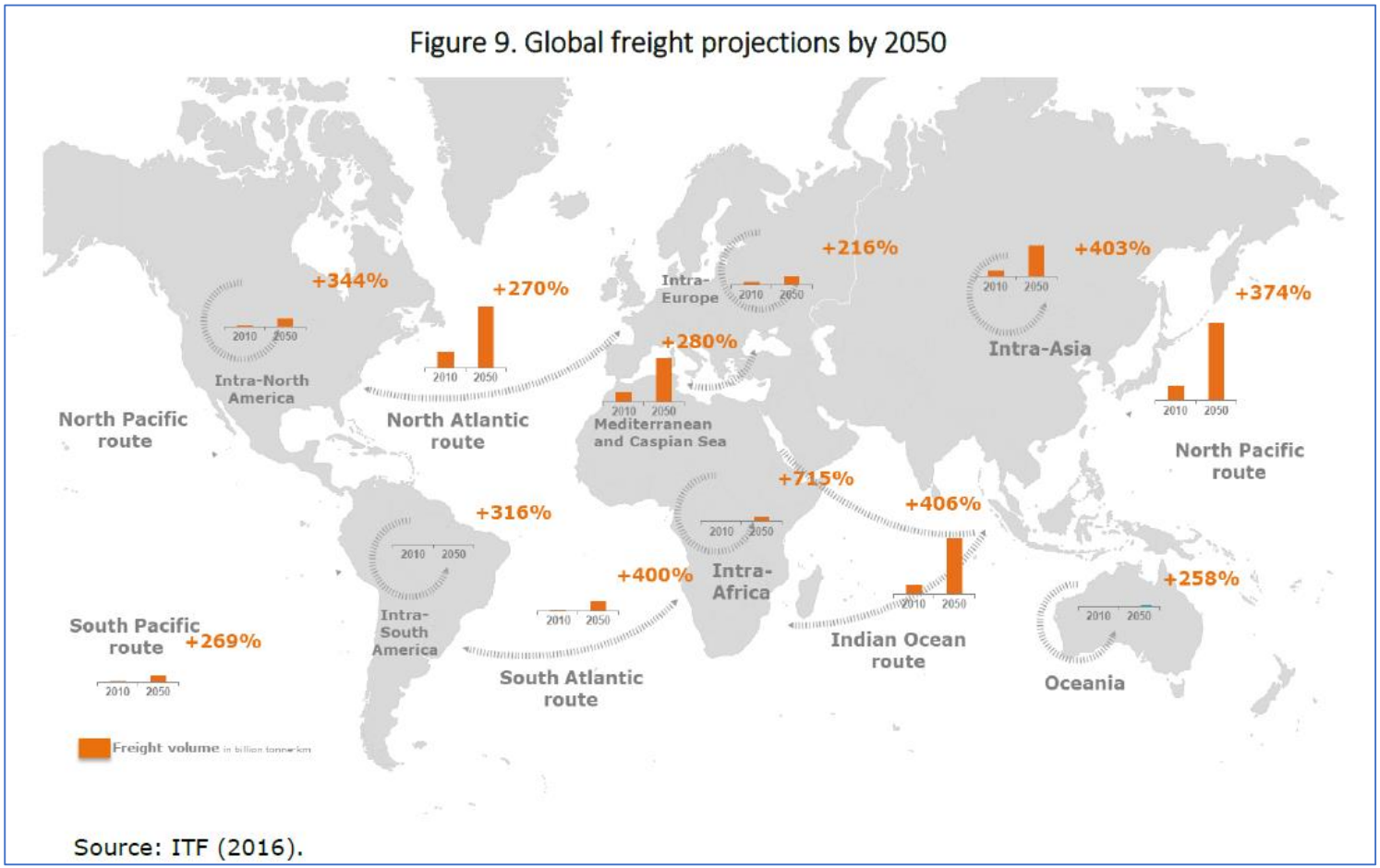
Source: worldbank.org

"As road links and border crossing points are improved, an increasing number of trucks are crossing the region's borders. In the first decade of this century... Today, this number is ten times higher in some locations."



ITF (2019), "Enhancing Connectivity and Freight in Central Asia", International Transport Forum Policy Papers, No. 71, OECD Publishing, Paris

Freight is Projected to Grow by 400% by 2050



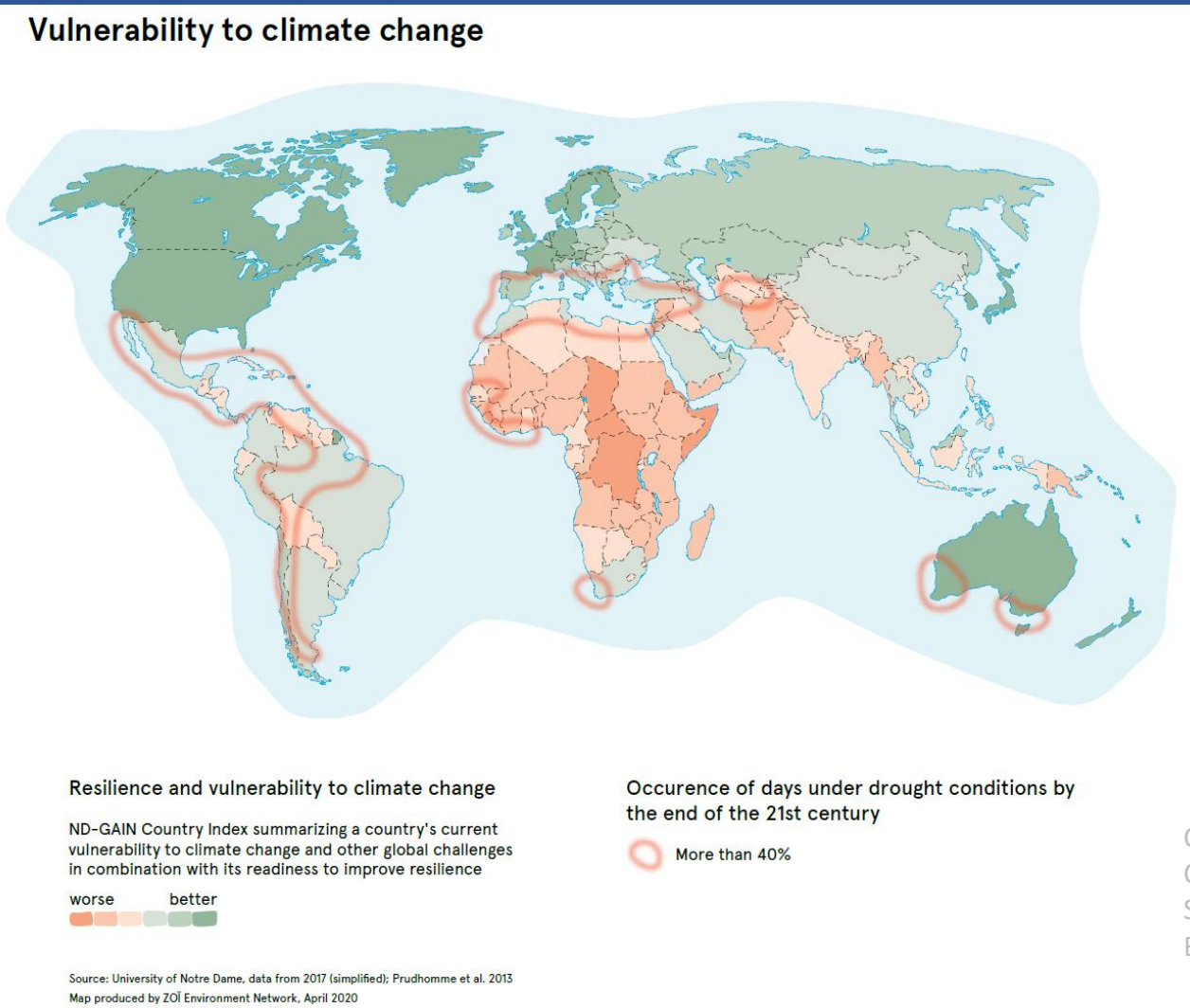
ITF (2019), "Enhancing Connectivity and Freight in Central Asia", International Transport Forum Policy Papers, No. 71, OECD Publishing, Paris

United Nations Climate Action Pathway

- Transport - Vision and Summary (2021) states that:
  - "By 2050, passenger and freight transport will be completely decarbonized by shifting to a more sustainable, diverse and resilient range of modes and vehicle technologies".
  - "In addition, improvements in transport infrastructure and systems are also required, and ensuring the resilience of transport systems is also a key priority".

- How to transport 400% more freight, yet reduce emissions by 100%, while ensuring a resilient transport system?

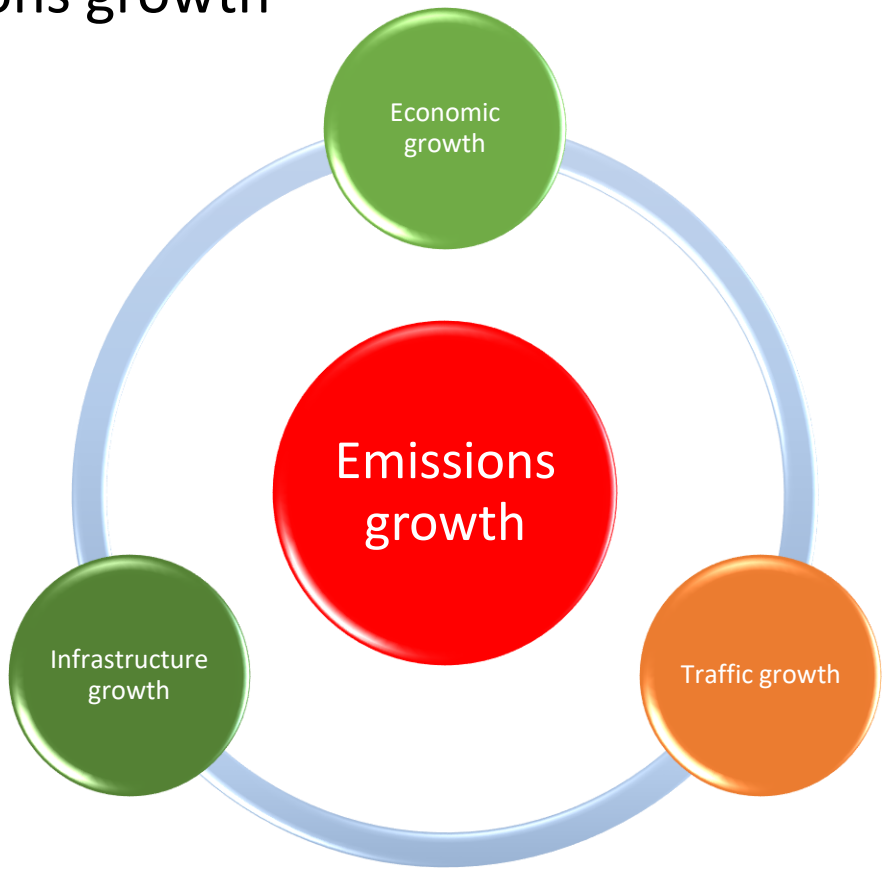
Much of CAREC Region is Vulnerable to Climate Change



Climate change in Central Asia Illustrated Summary. The World Bank, 2020.

Need a Decoupling

- We need to break the chain through decoupling economic growth from emissions growth



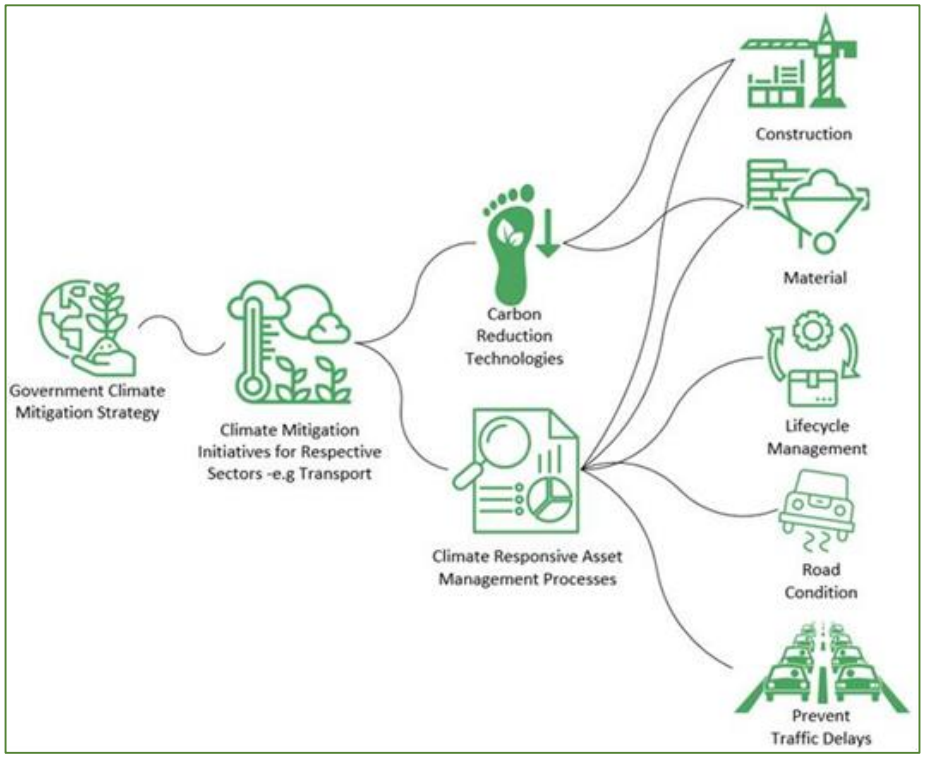
Policy Recommendations

Funding the Right Projects and Policies

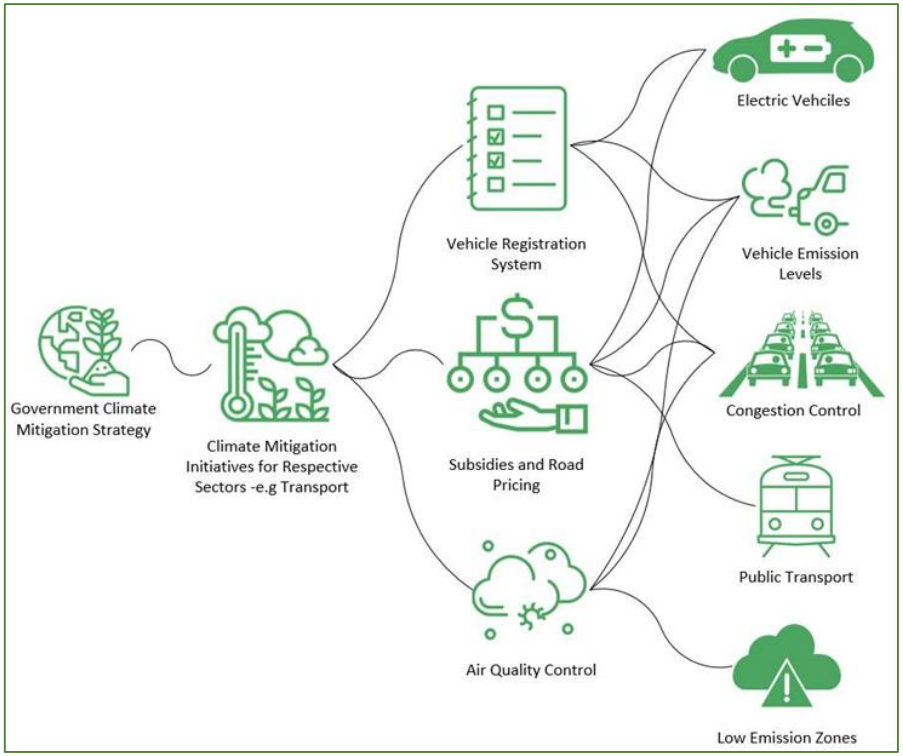
- Many of the international financial institutions have committed to ensuring their own operations and investments are aligned with the Paris Agreement

- Asian Development Bank announced in July 2021 that the:
  - "ADB will achieve full alignment of its sovereign operations by 1 July 2023. Alignment of its non-sovereign operations will reach 85% by 1 July 2023 and 100% by 1 July 2025."

Undertake a Full GHG Analysis of Transport

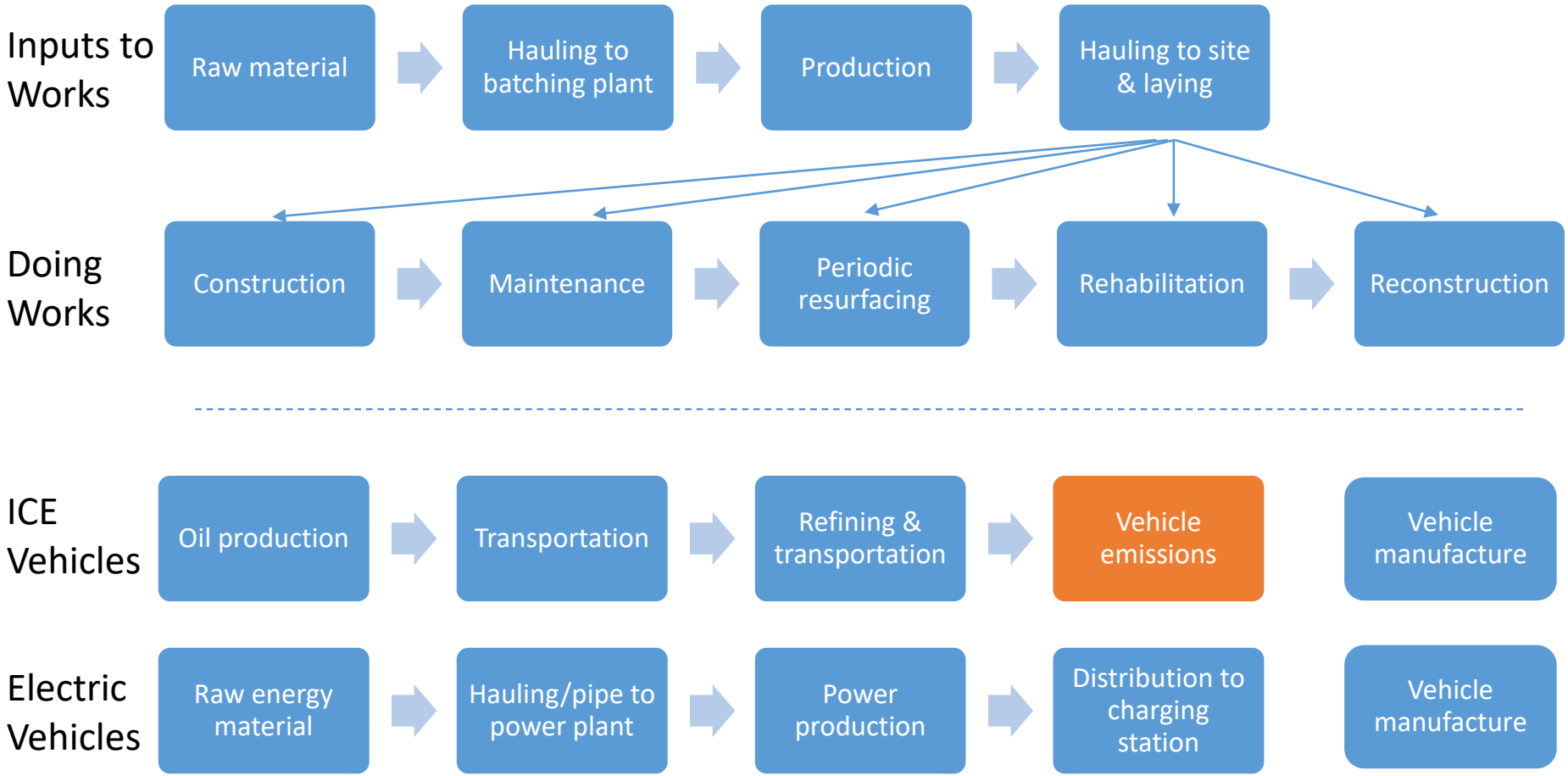


Need policies for every component!!



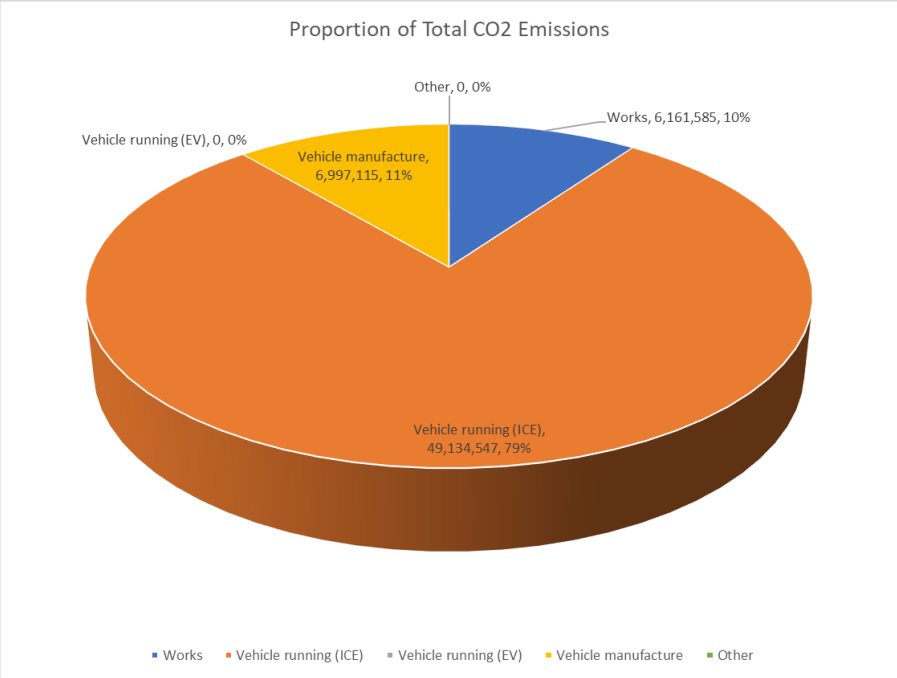
Source: Dr Theuns Henning
Department of Civil and Environmental Engineering
The University of Auckland

Many Sources of CO_2 Emissions

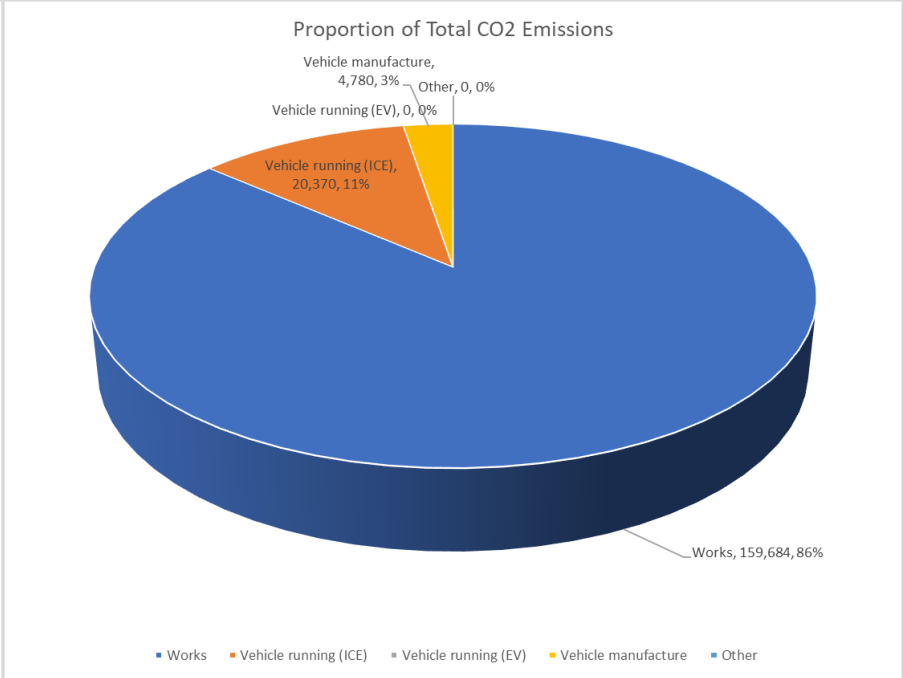


Outcomes from CAREC Based Projects

High traffic volume network



Low traffic volume project



Some Trends for Consideration

- From current ADB funded study
  - Maintaining a road network in good condition is broadly CO_2 neutral compared with operating traffic on a network in poor condition
  - The lower the traffic flows, the more that focussing on CO_2 impacts from the physical works matters
  - Managing road speeds to avoid excessive speed change cycles is very important to minimising CO_2 emissions
  - There are extensive opportunities to offset CO_2 impacts through the appropriate use of planting trees.
    - These will sequester CO2, as well as stabilize banks against erosion, reduce dust impacts on neighbouring properties, and reduce snow impacts on the road

Ensure Processes Capture Climate Change and Climate Resilience

- What is the future climate that you are designing for?

- How resilient do you need your transport infrastructure to be?

Road Class	Impassability Time for Flood Events: Return Period (RP)			
	5 Year RP	10 Year RP	50 Year RP	100 Year RP
National Highway	Nil	Nil	< 2 hours	<12 hours
Provincial Road	Nil	<6 hours	<24 hours	<2 days
Urban Road	Nil	<6 hours	<24 hours	<2 days
District Road	<2 hours	<12 hours	< 2 days	<5 days
Rural Road	<12 hours	<2 days	<5 days	<7 days
Farm Access	< 24 hours	<5 days	<10 days	<10 days


Summary

Summary

- Transport is key to the economic strength of a country.
- International trends of increasing GHG emissions associated with increasing GDP is not sustainable or desirable.
- How to transport 400% more freight by 2050, yet reduce emissions by 100%, while ensuring a resilient transport system?
- Decoupling of economic growth from transport growth and emissions growth is essential to meet global commitments on climate change.
- GHG emissions are present throughout the transport system and a holistic view is needed to minimize impacts.
- These wider challenges can only be fully understood when analyzed within a holistic Road Asset Management framework.

Thank you

Dr Ian Greenwood

BE(Civil), PhD(Eng), FEngNZ(Civil), CPEng(NZ)

ian@gaic.nz