Decarbonising NZ:

- **Gross Emissions**: $\approx 79$ Mt CO$_2$e
- **Net Emissions**: $\approx 60$ Mt CO$_2$e

**Transition: Land Transport Systems**

**Challenge Statement**

Movement of people and freight will continue to be essential to maintaining our society, but we must reduce the environmental impacts and plan for resilient systems. Energy use associated with transport systems contributes roughly 7.5% of NZ’s net emissions and is a significant source of air and water pollution. Of this, 90% is land transport. Some environmental impacts of buildings and maintaining transport systems are often mitigated, however, there is significant opportunity to do more. A future focused view of the long-term risks from climate change will support greater investment in the development of a more resilient and adaptive transport network.

**Key Opportunities**

- **Beach and community shaping** helps identify the key opportunities for transformation of land transport systems below.
- **Strategic transport network planning**: 90% of transport emissions are from road transport. Can contribute approximately 8.5 Mt CO$_2$e/year, and trucks and buses a further 5.6 Mt CO$_2$e. There is an urgent need to reduce low occupancy, high-emission vehicle use by:
  - **Projects supporting transit and active mode-orientated land development**: A focus on strategic active mode projects that support undesirable city centre access, and those on key spine routes linking new developments to embed new behaviours. Continued focus on projects to increase public transport capacity and importantly access to it, is necessary to support recovering patronage and confidence and remains part of our post-COVID-19 future.
  - **Projects managing and reducing travel demand**: Initiatives that leverage off working-from-home and flexible work times will help to ‘flatten the peak’ and address reduced public transport capacity. COVID-19 has fast-tracked the ability of many organisations to encourage remote working for projects and jobs that can do.
  - **Projects managing and reducing travel demand**: Initiatives that leverage off working-from-home and flexible work times will help to ‘flatten the peak’ and address reduced public transport capacity. COVID-19 has fast-tracked the ability of many organisations to encourage remote working for projects and jobs that can do.
  - **Projects that reduce emissions of vehicle fleet**: Prioritise transitioning to low-emission and electric vehicles through the provision of charging infrastructure, financial incentives, designing EV/low-emission-vehicle lanes and traffic zones, improving vehicle emission standards, and accelerating the update of the existing fleet. For freight, priority should be to upgrade and electrify regional rail networks, and use efficient coastal shipping. Green hydrogen fuel infrastructure could be tested to support low emissions road freight. Fleet electrification will require expansion of electricity capacity and enhanced management of peak demand. Batteries also have limited lifetimes, and projects for recycling and reducing costs should be progressed.
  - **Projects with adaptive transport corridor design**: Provide transport corridors that demonstrate flexibility and an adaptive approach, to allow changes in their function and physical interfaces, that respond to changes in land use and the way we move around in the future.
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**Climate Resilient Infrastructure**

- **Approximately 2,100km of roads are exposed to a 1.5m sea level rise with a replacement value of $1 billion.** Priority should be for projects that support Council climate adaptation planning and avoids at-risk floodplains and coastal areas.

**Reduce Emissions of Vehicle Fleet**

- **Projects that reduce emissions of vehicle fleet**: Prioritise transitioning to low-emission and electric vehicles through the provision of charging infrastructure, financial incentives, designing EV/low-emission-vehicle lanes and traffic zones, improving vehicle emission standards, and accelerating the update of the existing fleet. For freight, priority should be to upgrade and electrify regional rail networks, and use efficient coastal shipping. Green hydrogen fuel infrastructure could be tested to support low emissions road freight. Fleet electrification will require expansion of electricity capacity and enhanced management of peak demand. Batteries also have limited lifetimes, and projects for recycling and reducing costs should be progressed.