Net-zero carbon freight transport by 2050

Greenhouse gas ("GHG") emissions from the transport sector make up about 20% of New Zealand's total greenhouse gas emissions each year. Transport also represents over 40% of New Zealand's greenhouse gases from the energy sector. Light passenger vehicles account for about 60% of CO_2 transport emissions, heavy trucks about 20%.

The challenge

Your challenge: ***advise the Board of Directors of Hermes Ltd, a nation-wide freight company, on a strategy that will result in the company delivering net-zero carbon transport services by the end of 2050***.

Criteria for judging the policy

- Practical solutions to reduce the company's carbon footprint
- Evidence on the costs to the company of transitioning away from fossil fuels
- Meeting growth in the demand for transport services within New Zealand
- Growing the company's profitability
- Well-researched pragmatic and creative recommendations
- Recommendations that are supported by a sound argument

Your report

- Will be a report to the Board of Directors.
- They will assess your report on
    - Clear understanding of the transport services market
    - Strategy to reduce CO_2 emissions, beginning in 2019
    - Investment needed to achieve net-zero carbon by 2050
    - Projections for market share associated with the strategy
    - Implications for profitability

- Your report is limited to 10 sides of A4 paper. If you wish, use diagrams to illustrate your policy.

The problem

New Zealand's gross GHG emissions increased 24% from 1990 to 2015 but 2015 emissions were lower than the year with the highest emissions, which was 2006. Net GHG emissions increased 64% from 1990 to 2015 due to reduced uptake of CO_2 from forests. In 2015, the energy sector produced 87% of all CO_2 emissions. Road vehicle emissions were up 80% from 1990, and made up 37% of all CO_2 emissions in 2015. Transport services powered by fossil fuels are a major source of CO_2. Clearly, transport is not the only source of greenhouse gases; agriculture leads the pack in this regard. However, unlike agriculture that has no known technology to reduce emissions from livestock, there are technologies available for reducing emissions from transport. Hermes sets a target of net-zero CO_2 emissions from its transport fleet by 2050.

Problem environment

New Zealand's freight task will increase by 50 per cent over the next 30 years, with freight volumes in the Auckland and Canterbury regions projected to grow by 78 per cent and 73 per cent respectively. This growth will mean an extra 137 million tonnes of freight moved. Currently about 50 tonnes of freight is moved each year for every person in New Zealand; by 2050 this will increase to 67 tonnes per person.

Hermes is a New Zealand business that delivers a nation-wide service to over 300 destinations on a daily basis. Services to clients include across town, region to region, and connecting international links. Hermes does not have holdings overseas and is a listed company on the NZ stock exchange. Assets are valued at NZ$1bn and include 500 trucks, and warehouses distributed throughout New Zealand. Labour includes 400 truck drivers, 2,000 warehouse workers and 400 management. Revenue in 2018 was NZ$1bn and earnings before interest, tax, depreciation & amortisation was $100m. Debt is NZ$100m. The average truck covers 100,000 km a year at a cost of NZ$3.00 per km. Diesel fuel costs 25% of the total cost per kilometre. Hermes trades in its trucks after 5 years of service.

There are obvious alternatives to diesel-powered transport. For example, various forms of EVs are on the market now and hydrogen powered EVs are being developed. New Zealand does not manufacture these vehicle alternatives and must rely on supply coming from

manufacturers overseas. Achieving net-zero carbon can be achieved, at a cost, by phasing in these alternative transport technologies. Other options exist within the business.

New Zealand's emissions trading scheme ("ETS") is in operation and all transport related sources of CO_2 must obtain permits to cover their emissions beginning in 2019. Today, carbon credits trade at NZ$20 per tonne of CO_2 and are expected to increase to NZ$100 per tonne of CO_2 by 2050. The company can invest in forestry to offset its CO_2 emissions. It can buy forests at various stages of growth and/or plant trees. The cost of these alternatives obviously vary.

Assumptions

- New Zealand's emissions trading scheme is in operation.
- Hermes set a target of achieving net-zero CO_2 emissions by 2050
- Only concern is the use of diesel for trucks (not light trucks and company cars).
- Begin with the existing profile of vehicles and emissions.
- Vehicle transport alternatives must be imported.
- The company can buy cover for its emissions of CO_2.
- There is a market for forest land and land suited to forestry.
- Clearly state additional assumptions considered necessary to complete the project.

Process

Release of the challenge	Friday 22 March
Tutorial	Friday 22 March at 5pm

Office Hour with Basil	Monday 25 March at 1pm
Submissions close	Friday 29 March at 5pm
Short-list 5 finalists	Monday 1 April
Presentations by 5 finalists	Thursday 4 April at 6pm

The following panel will decide on the following awards for each team of 4 participants:

1st place	$5,000 ($1,250 each)
2nd Place	$2,500 ($625 each)
3rd Place	$1,500 ($375 each)
2 remaining teams	$500 ($125 each)

The panel of judges includes:

- 2 x Energy Education Trust of New Zealand members
- Principal Advisor from the New Zealand Productivity Commission