Travel Demand Management in NZ: A Cautionary Tale

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Introduction (I)

NZ ratified Kyoto Protocol in 2002:

- GHG emissions during 2008-2012 ≤ 1990 level

Five criteria for evaluating options:

- size of reduction in GHG emissions;
- net benefit after winners compensate losers;
- practicability of implementation;
- impact on competitiveness of NZ businesses;
- impacts distributed fairly on different groups.

Introduction (II): GHG Types

Emission Types	1990		2005		Change	
	Level Mt	Share %	Level Mt	Share %	Level Mt (%)	Share (%)
CO_2	25.3	41.1	35.9	46.5	10.4 (40.9)	68.3
CH_4	25.5	41.2	27.2	35.2	1.7 (6.6)	11.0
N_20	10.4	16.8	13.3	17.2	2.8 (27.3)	18.6
Other	0.5	0.9	0.8	1.1	0.3 (60.0)	2.1
Total	61.9	100.0	77.2	100.0	15.3	100.0

Introduction (III): GHG Sources

Emission Source	1990		2005		Change	
	Level Mt	Share %	Level Mt	Share %	Level Mt (%)	Share (%)
Energy Transport	8.8	14.2	14.2	18.4	5.4 (61.8)	35.6
Energy Other	14.8	23.9	19.3	25.0	4.5 (30.2)	29.3
Industry	3.3	5.3	4.3	5.6	1.0 (31.8)	6.9
Agri-culture	32.5	52.5	37.5	48.5	5.0 (15.2)	32.4
Other	2.5	4.1	1.9	2.5	-0.6 (-24.0)	-4.2
Total	61.9	100.0	77.2	100.0	15.3	100.0

Introduction (IV)

CO_2 share is large & growing quickly.

Agriculture share is large but declining.

Transport energy share is medium but growing fast:

- 89% transport emissions from road transport;
- 0.73 motor vehicles/person;
- 75% all trips (83% work trips) by private vehicle;
- 2.5% all trips (6% work trips) by public transport.

NZ Transport Strategy (2002)

Vision: by 2010, an "affordable, integrated, safe, responsive, and sustainable transport system".

Key objectives:

- assisting economic development;
- assisting safety and personal security;
- improving access and mobility;
- protecting and promoting public health;
- ensuring environmental sustainability.

Updated NZ Transport Strategy (2007)

NZTS and Land Transport Management Act (2003) have been ineffective, hence Updated NZTS.

New goals for NZ:

- "halve per capita domestic GHG emissions by 2040";
- "be the first carbon neutral country in the world".

New instruments:

- Emissions Trading Scheme (ETS) from Jan. 2009;
- petrol & diesel to include 3.4% bio-fuel by 2012.

Updated NZ Transport Strategy (2007)

Proposed ETS has met strong opposition:

- minimal reduction in GHG emissions;
- delayed application to agriculture (largest source);
- large credits to large industrial producers, etc.;
- household, small/medium enterprises & road users (33% GHG) bear 90% of cost to 2013.

Major concern about sustainability of bio-fuels.

Auckland Road Pricing Study (2006)

All trips between north & south must cross isthmus:

94% residents & 'all' businesses say very important or important to reduce congestion.

Auckland Road Pricing Study (2006)

Single Cordon

Charge $6 on Harbour Bridge & $3 elsewhere ($6 maximum/day) for inwards travel across cordon.

Auckland Road Pricing Study (2006)

Double Cordon

Charge $6 on Harbour Bridge & $3 elsewhere ($6 maximum/day) for inwards travel across each cordon.

Auckland Road Pricing Study (2006)

Area Charge

Charge $5/day for entering or travelling within CBD & adjoining inner suburbs.

Auckland Road Pricing Study (2006)

Strategic Network Charge

Charge $0.00-$0.25/km on motorways & major arterials, depending on congestion level ($6 maximum/day).

Auckland Road Pricing Study (2006)

Parking Levy Scheme

Charge $10/trip for parking on public & private land within CBD and main regional commercial centres.

Auckland Road Pricing Study (2006)

	base case	single cordon	double cordon	area	strategic network	parking levy
Δ(av.cost) affected trips (%)	n/a	+63	+70	+62	+41	n/a
Δ(public transport) (%)	n/a	+31	+46	+36	+16	+28
Δ(walk+cycle) (%)	n/a	-1	+2	+9	+0	+3
Δ(fuel) (%)	n/a	-9	-13	-11	+6	-4
Benefit/Cost Ratio	n/a	3.5	2.9	2.3	0.7	4.0

Auckland Road Pricing Study (2006)

Public consultation revealed:

- 75% of submitters against road pricing;
- lack of alternative to using car (inadequate public transport system);
- lack of 'ring road' around congested area;
- perception that roads have already been paid for via taxes;
- flat charge would affect less-wealthy excessively.

Travel Plans (I)

School-based travel plans (& walking buses):

- reduce car travel to school (currently >50%).

Workplace travel plans/strategies (e.g. UC):

- reduce need for extra parking for growth;
- allow funds to be used for teaching & research.

Goals not opposed, but instrument opposed:

- car parking fees, with income used to promote more sustainable modes.

Travel Plans (II)

Earlier (1975) parking fee scheme was aborted:

- lack of consultation;
- minimal travel behaviour data and analysis;
- high level of opposition.

This time opposition overcome:

- thorough analysis of travel behaviour data;
- considerable consultation.

Staff Mode Choice (%)

year	staff				
	car	bus	cycle	walk	other
1966	64.0	9.6	14.4	6.4	5.6
1971	60.8	10.0	16.0	7.2	6.0
1976	59.0	3.0	22.0	8.0	8.0
1993	69.1	0.5	18.2	10.3	1.9
2000	68.4	2.5	15.0	12.5	1.6
2004	68.6	4.2	15.5	10.9	0.8

Student Mode Choice (%)

year	students				
	car	bus	cycle	walk	other
1966	35.2	10.4	27.2	9.6	17.6
1971	31.2	10.4	28.0	12.8	17.6
1976	32.0	5.0	23.0	23.0	17.0
1993	38.1	2.2	37.6	18.4	3.7
2000	49.0	5.7	14.5	29.6	1.2
2004	42.7	10.5	12.2	33.1	1.5

GHG Emissions Reduction Options

Restrain growth in economy ('volume effect').

Reduce ratio of GHG to GDP ('emission intensity'):

- shift economy towards lower emission activities ('composition effect');
- reduce emissions associated with current activities ('efficiency effect').
- i.e. de-couple transport & economic growth.

Conclusion (I)

Efforts to reduce GHG emissions ineffective because:

- conflicts between goals not recognised & guidance on conflict resolution not provided;
  - easy to justify 'business as usual';
- lack of thoroughness in identifying & evaluating policy options;
  - many options not considered & effectiveness of options not clear;

Conclusion (II)

- policy direction ambiguous;
  - promoting TDM while heralding large increase in road building;
  - easy to justify 'business as usual';
- setting unrealistic targets;
  - credibility of proposals (& proposers) reduced;

Very difficult to design a coherent, integrated & effective TDM package to reduce GHG emissions:

- recent large fuel price increases a blessing.