Joint CASANZ TSIG and NZ Transport and Environment Knowledge Hub-Emissions Group (TEKH-EG) Workshop -06 Dec 2018

Rising to the challenge – Managing both health and climate change impacts of transport emissions

Sponsored by NZTA & NIWA

Agenda

Joint CASANZ TSIG and NZ Transport and Environment Knowledge Hub-Emissions Group (TEKH-EG) Workshop

Rising to the challenge – Managing both health and climate change impacts of transport emissions.

NIWA, 301 Evans Bay Parade, Hataitai, Wellington, Thursday 6th December 2018

AGENDA			
09:30 - 10:00	**Registration**		
10:00 - 10:10	Welcome and introduction to the day	Rob Hannaby	TSIG, TEKH-EG & NZTA
Policy, guidance and strategy			
10:10 – 10:25	Cross Government update	Rob Hannaby	NZTA
10:25 - 10:40	Air Domain Report – Our Air 2018. Transport challenges for NZ's Air Quality	Drew Bingham	MfE
10:40 - 10:50	PIARC Air Quality International best practice guide	Rob Hannaby	NZTA
10:50 – 11:05	Transport Knowledge Hub Environment Emissions Group Research Strategy and update on Domain Plan refresh	Sharon Atkins/Greg Haldane Bonita Gestro	NZTA/MoT
11:05 - 11:15	Question and answer session		
11:15- 11:45	**Morning Tea**		
11.45-12.15	Panel discussion chaired by Jeff Bluett: research priorities for TKHE-EG/CASANZ TSIG for 2019	Paul Boulter, Janet Petersen, Tamsin Mitchell, Iain McGlinchy, Ian Longley, Drew Bingham	
Improvements in measuring the impacts of transport emissions			
12:15 - 12:30	Waterview tunnel low cost sensor trial –initial results	Gustavo Olivares	NIWA
12:30 – 12:45	Understanding the sources and trends of roadside air particulate matter pollution	Perry Davy	GNS
12:45 - 13:00	Determining the impact of gross emitting vehicles -RSD database analysis- initial results.	Jeff Bluett	Golder Associates
13:00 - 13:15	PEMS Research finalisation	Jayne Metcalfe	EIL
13:15 - 13:25	Question and answer session		
13:25 - 14:15	**Lunch**		
Improvements in modelling and mapping of transport emissions			
14:15 – 14:45	Release of NIWA national NO_2 model (v.1)	Ian Longley	NIWA
14:45 – 15:00	Updating and extending vehicle fleet emission model	Haobo Wang	MoT
15:00 – 15:15	Vehicle emissions (and concentration) mapping tool update	Keith Hastings	Jacobs
15:15 - 15:20	Development of CASANZ GPG on the assessment and management of air pollution from road transport	Paul Boulter	TSIG, ERM
Delivering improvements in transport emissions			
15:20- 15:35	The rise of electric vehicles in NZ	Mike Bourke /Rebekah Rennell	EECA/NZTA
15:35-15:50	Co-benefits of integrated transport and land-use planning and system thinking in our towns and cities	Claire Pascoe	NZTA
15:50 – 16:00	Question and answer session		
16:00	**Close**		

Key Objectives

- Knowledge Sharing
- Looking to the future

CASANZ Transport SIG

Objective
To be a platform for information sharing and discussion of emerging issues in relation to transport.

Transport Knowledge Hub - Environment

Objectives
- To act as a channel to help implement the Transport Research Strategy and the Transport Domain Plan.
- To raise awareness of relevant search, data analysis techniques and data availability across the transport sector - including international research and connections.
- To identify information/research gaps.
- To ensure research is relevant and to facilitate the take-up of research for policy development.
- To identify opportunities for collaboration amongst members.
- To reduce duplication and provide the opportunity to learn from, and build on others' work.
- To drive quality by providing a forum for peer review and critique.

Purpose of knowledge hubs

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- **Knowledge Sharing**
- **Looking to the future**

The knowledge hubs provide a mechanism for members of the transport research community from public and private organisations, as well as academia, to **connect with each other**.

It is a channel for the sector to work together to **identify and prioritise data and research needs** considering the broader framework of the Transport Domain Plan and Research Strategy.

Development of research priorities

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- The **Transport Domain Plan** outlines the main statistical and information priorities (enduring questions) for the transport sector, and provides guidance on how to address them
- The **Transport Research Strategy** 2016-2020 gives clear guidance on the direction for transport research
- The **Triple-4 Framework** provides clear guidance on how best to prioritise effort according to sector needs. Supports evidence-informed intervention decisions.

T10 Safety & Health	The transport system can result in harm to people and their health. This topic covers the risk profiles across transport modes and the factors that contribute to these **risk profiles**. Such information helps to understand how these risks lead to transport related harms, their causes and the mitigation opportunities.
Enduring questions	**EQ10.2** What is the **risk profile of different types of transport**, what factors contribute to this risk and in what quantities and proportions, and how are these things changing, including modally, regionally and temporally? **EQ10.3** What are the **sources and types of health impacts from transport**, what are the harms and benefits of these impacts, who experiences them, and how are these things changing, including modally, regionally and temporally?
High priority initiatives	**R10.1** Develop health and safety risk profiles and exposures that lead to transport-related harm
Medium priority initiatives	**R10.2** Integrate data sources to develop transport harm cost profiles
T11 Environment	The relationship between transport and the environment is critically important. This topic is about understanding the **types of emissions** that come from the operation of the transport system. This information is critical to understanding not only how transport and the environment interact, but also the mix of policy responses required to address related impacts.
Enduring questions	**EQ 11.1** In what ways and to what extent does the transport system impact on the environment and how are these things changing, including spatially, modally and temporally? **EQ 11.2** In what ways and to what extent does the environment impact on the transport system and how is this changing, including spatially, modally, and temporally?
High priority initiatives	**R11.1** Research into transport emissions profiles **R11.2** Develop environmental impact framework for emissions and infrastructure
Recommended initiatives	**R11.3** Conduct strategic environmental horizon scanning **R.11.6** Conduct research into the impact of large ships on local environments while in port

TRIPLE-4 KNOWLEDGE DEVELOPMENT AND PRIORITISATION FRAMEWORK

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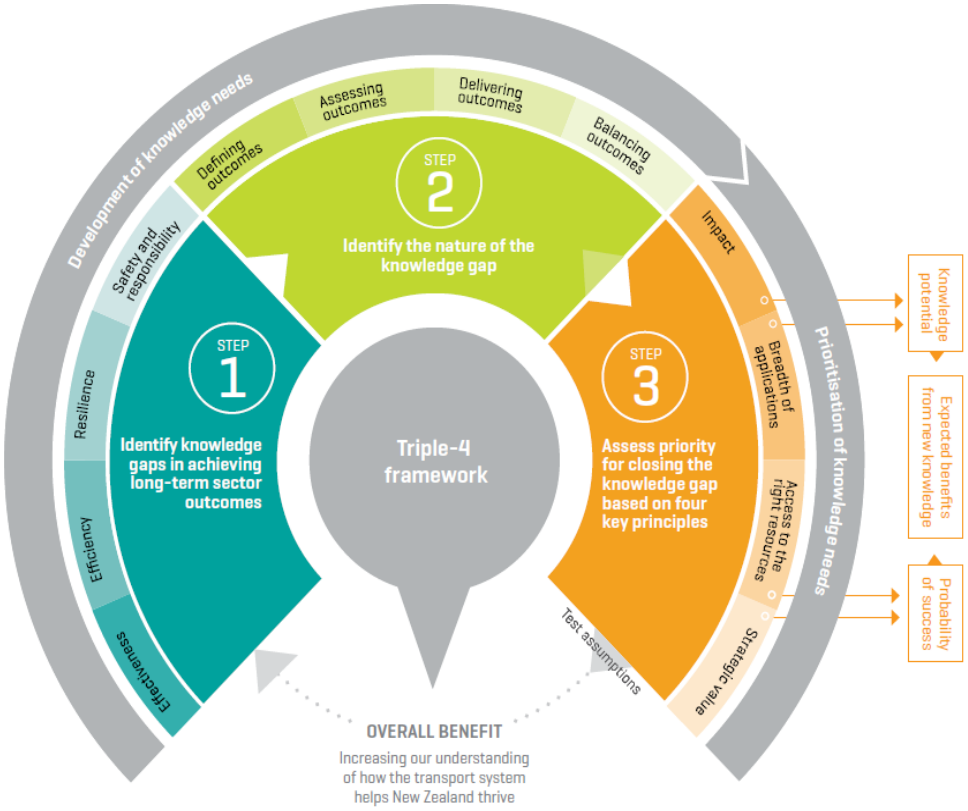

Overview	
Purpose	To gather additional information on people's attitudes, preferences and perceptions about transport.
Problem definition and knowledge development opportunity	People's attitudes, perceptions and preferences greatly influence their transport choices. In order to understand why people make the transport choices they do, it would be useful to have additional information about why they have these attitudes, preferences and perceptions. This type of information would be useful to supplement economic modelling techniques to inform a range of policy, investment and operational decisions. At present, data on people's attitudes, preferences and perceptions is limited largely to a small number of surveys conducted by commercial operators (which are not publicly available), and individual, often qualitative, studies carried out in the academic sector. There is an opportunity to work with the academic sector to develop the skills and knowledge of the public sector in this field.
Response	Develop research and capability – carry out additional surveys to gather information on people's attitudes, preferences and perceptions of the cost, reliability, security, safety and convenience across different modes of transport.

Triple-4 assessment			
Knowledge gap in achieving long-term sector outcomes	Effectiveness Efficiency Safety & Responsibility	The proposed research will provide additional measures to better understand user needs and preferences to assist policy and investment planning to ensure the transport system is effective, efficient and safe	
Nature of knowledge gap	*Better understanding user preferences will help:*		
	Measuring outcomes	Inform how outcomes might be best assessed	
	Delivering outcomes	Identify the type of interventions to influence outcomes	
	Balancing outcomes	Identify appropriate balance and trade-off between outcomes	
Assessing priorities	Impact	The proposed research will add to current stock of knowledge as such information is currently incomplete	H
	Breadth of application	The information will be useful to a range of stakeholders and applications	H
	Access to right resources	Some methods are available for testing but the research will require a large sample size to obtain representative results	M
	Strategic value	The knowledge can be used to inform the Government Policy Statement on Land Transport Investment and many other strategic policy decisions	H

GPS 2018 & TRANSPORT OUTCOMES FRAMEWORK

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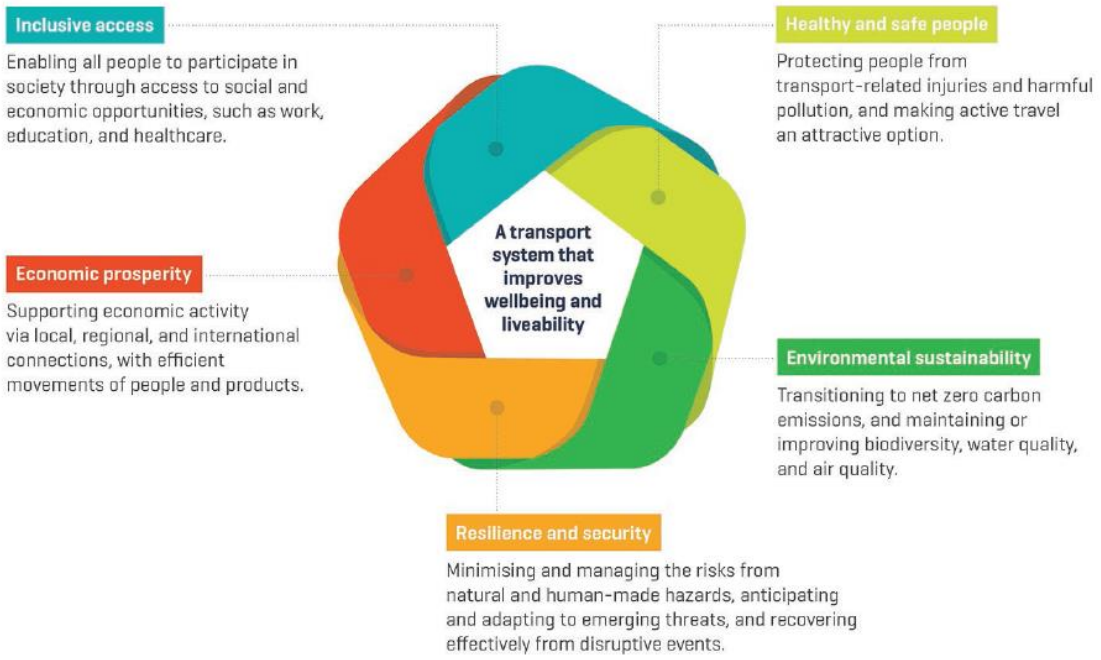
GPS 2018:
Strategic direction

Figure 1: Strategic direction of the GPS 2018



Progress with stocktake/research prioritisation

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- July 2017 workshop – Stocktake and overview of existing databases
- Dec 2017 workshop – Panel discussion/need for gap analysis and research action plan
- Feb – June 2018 –Subgroup (Incl. MoT, MoH, MfE, NZTA & reps for CASANZ TSIG and NAQWG) undertake gap analysis and develop research priorities
- June–July 2018 – Consultation on research priorities with the wider emissions group
- July 2018 – present – Finalisation of research priorities. Discussions with NZTA Research and Evaluation Programme team. Start to take forward priority initiatives.

Research priorities identified

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Research area	Research question
1. Environmental and health impact assessment	How can we better quantify the real cost (to human health, the environment and the economy) of air quality impacts from road transport?
2. Vehicle emissions (Heavy vehicles)	How can we improve our understanding of the contributions of heavy vehicle (bus and truck) emissions to air quality and GHG emissions?
3. Vehicle emissions (Gross emitters)	How can we improve our understanding of how extensively gross emitting vehicles (e.g. poor maintenance and tampering) undermine fleet improvements and what can be done to practicably address this?
4. Vehicle emissions (Non-tailpipe)	How can we improve our understanding of the current and likely future impacts of non-tailpipe emissions?
5. Air quality monitoring	Does our existing monitoring capture the air quality risks from road traffic and how can we improve our monitoring of air quality risks?
6. Land use planning and transport	What influence does land-use and transport planning have on air quality and climate change and what role can integrated land-use and transport planning play in improving air quality and reducing climate change impacts?
7. Shipping emissions	How can we better quantify the impact of ship emissions on air quality and the environment?
8. Real world fuel consumption	How can we improve our understanding of real world fuel consumption and the contributions of transport to GHG emissions?

Triple-4 assessment for each research question

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Overview			
Purpose	To improve the understanding of the real costs of environmental and health impacts of road transport		
Research question	*How can we better quantify the real cost (to human health, the environment and the economy) of air quality impacts from road transport?*		
Problem definition and knowledge development opportunity	Air pollution health effects in New Zealand have been quantified nationally in the HAPINZ study (released in 2007, updated 2012). In both of these, due to the lack of alternative data, the assessment of social costs associated with air pollution effects has centred on the value of a statistical life (VoSL). Internationally, best practice is moving towards the use of changes in life years (with valuation based on VoLY) rather than premature mortality (measured using VoSL). At the same time, many jurisdictions also use a "damage cost" approach expressed in $ per tonne of pollutant which are derived from the overall social costs associated with each pollutant. It is difficult to assess risks and weigh up benefits against costs for transport improvements with the current VoSL/HAPINZ approach. The approach is frequently used for tasks it was not designed for, in the absence of an alternative. HAPINZ is ill-suited to distinguish between multiple project options and tends to under-represent the impact of transport emissions. HAPINZ is out of date, difficult to use and update and could be broadened to include other pollutants and impacts, and its flexibility/future proofing improved. Opportunities are provided by increased availability of open and machine-readable datasets, and developments in scientific methods and evidence.		
Response	Investigate improved damage costs for costing health and other impacts of transport emissions. Scope to include: • Review of international best practice and end-user needs. • New HAPINZ health impact assessment model to include improved social cost assessment, other pollutants and impacts. Consideration in design of future proofing/flexibility to enable easy updates and improve model accessibility. • Develop a national model for exposure to NO_2, PM and BC exposure. Scope could include consideration of daytime versus residential population exposure, additional health outcomes, non-health outcomes (such as impacts on economic activity, tourism, annoyance, GHG emissions etc), and link with modelling of noise outcomes. Review opportunities for capturing relevant NZ health surveillance data.		
Related enduring question/ recommended initiatives	EQ10.3, EQ11.1 R10.1 (High priority), R10.2 (medium priority)		
Triple-4 assessment			
Knowledge gap in achieving long-term sector outcomes	Important to long term sector outcome EQ10.3 to inform health effects of transport impacts.		
Nature of knowledge gap	HAPINZ is out of date (last update 2012) and methodology is not in accordance with current international best practice.		
Assessing priorities	Impact	Impact will be high. Important to understanding exposure and health effects of transport emissions, to inform policy decisions.	H
	Breadth of application	Wide range of applications. Current HAPINZ model is probably the most broadly used tool in the emissions space.	H
	Access to right resources	Some funding already sourced for an update to HAPINZ with programme 2018/19. But need to add to the current scope with additional funding to get a model that meets required response.	M/H
	Strategic value	Aligns well with GPS environment strategic priority and transport outcomes framework (healthy and safe people and environmental sustainability)	H

Prioritisation

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- All 8 have been identified as knowledge gaps and priority areas for further work

- Highest priority were identified as:
  - RQ1 Environmental and health impact assessment
  - RQ6 Land use planning and transport
  - RQ5 Air quality monitoring (supports 1&6)
  - RQ8 Real world fuel consumption
  - RQ2&3 Vehicle emissions (heavy vehicles, gross emitters)

What priorities are currently being taken forward?

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- We have been moving forward with a number of research projects:
  - Low costs sensor trials & national monitoring network review (RQ5, supports RQ1,6)
  - RSD database analysis (RQ3,8)
  - Vehicle emission (and concentration) mapping (RQ1)
  - Dust risk /exposure mapping (RQ4)
- Scoping out/seeking funding for other priority research proposals e.g. HAPINZ update, RSD next round, further PEMS analysis

Next steps?

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- Scoping out/seeking funding for other priority research proposals

- Action for TKHE-EG subgroup – start to frame up a 10 year ‘roadmap’ for transport emissions