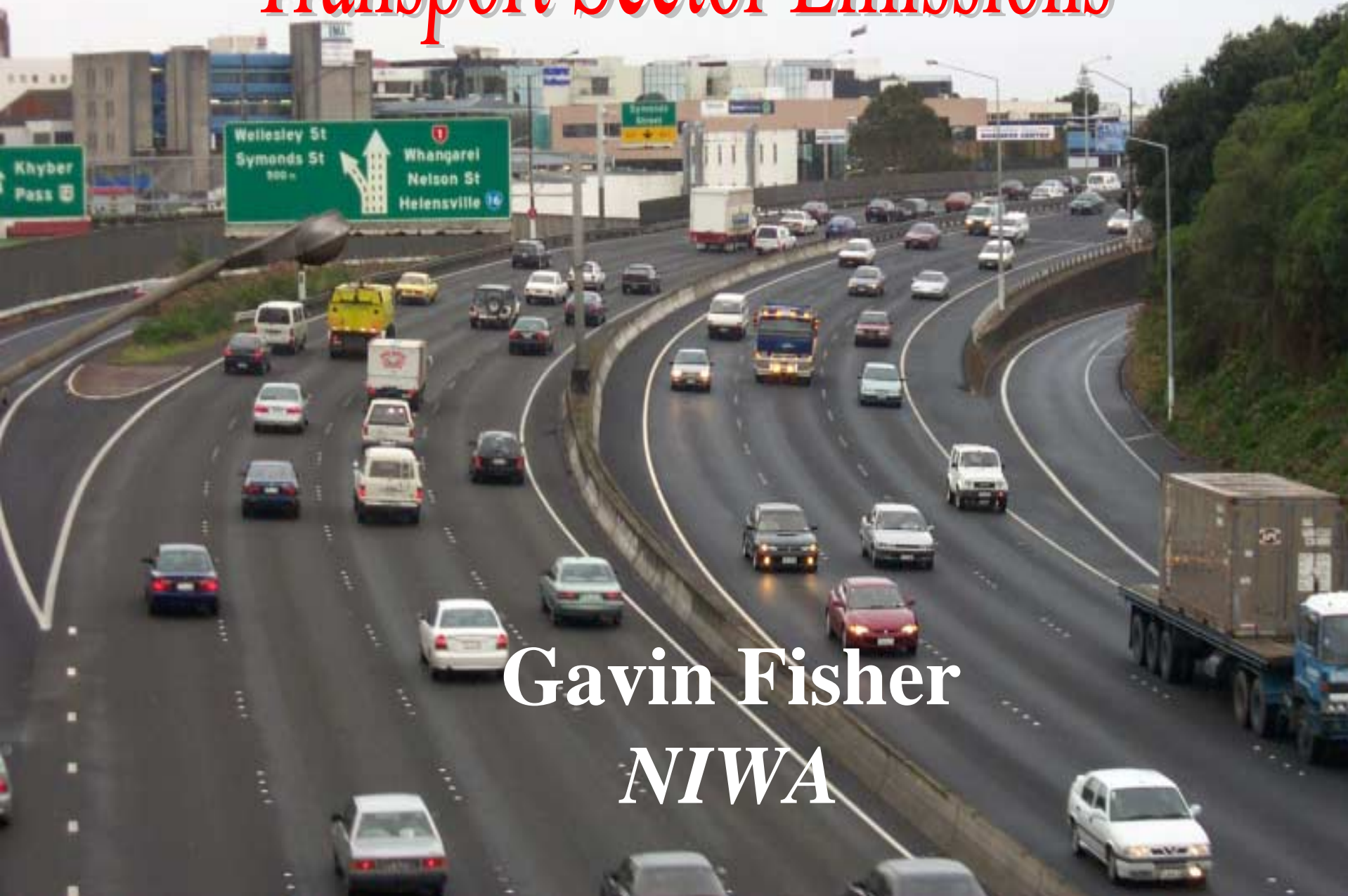


# Transport Sector Emissions

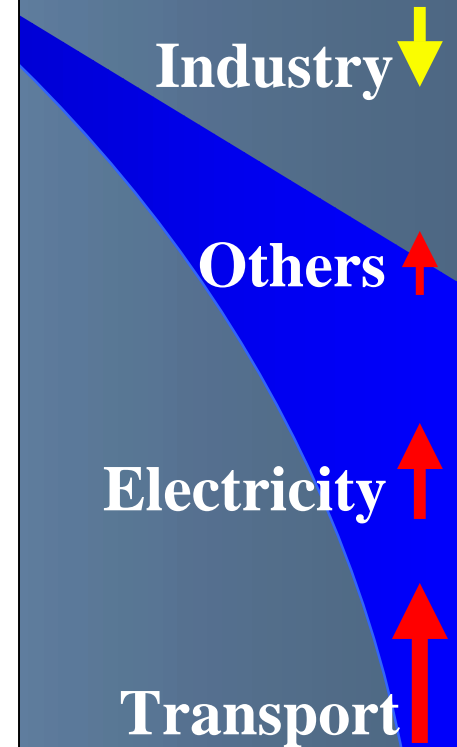
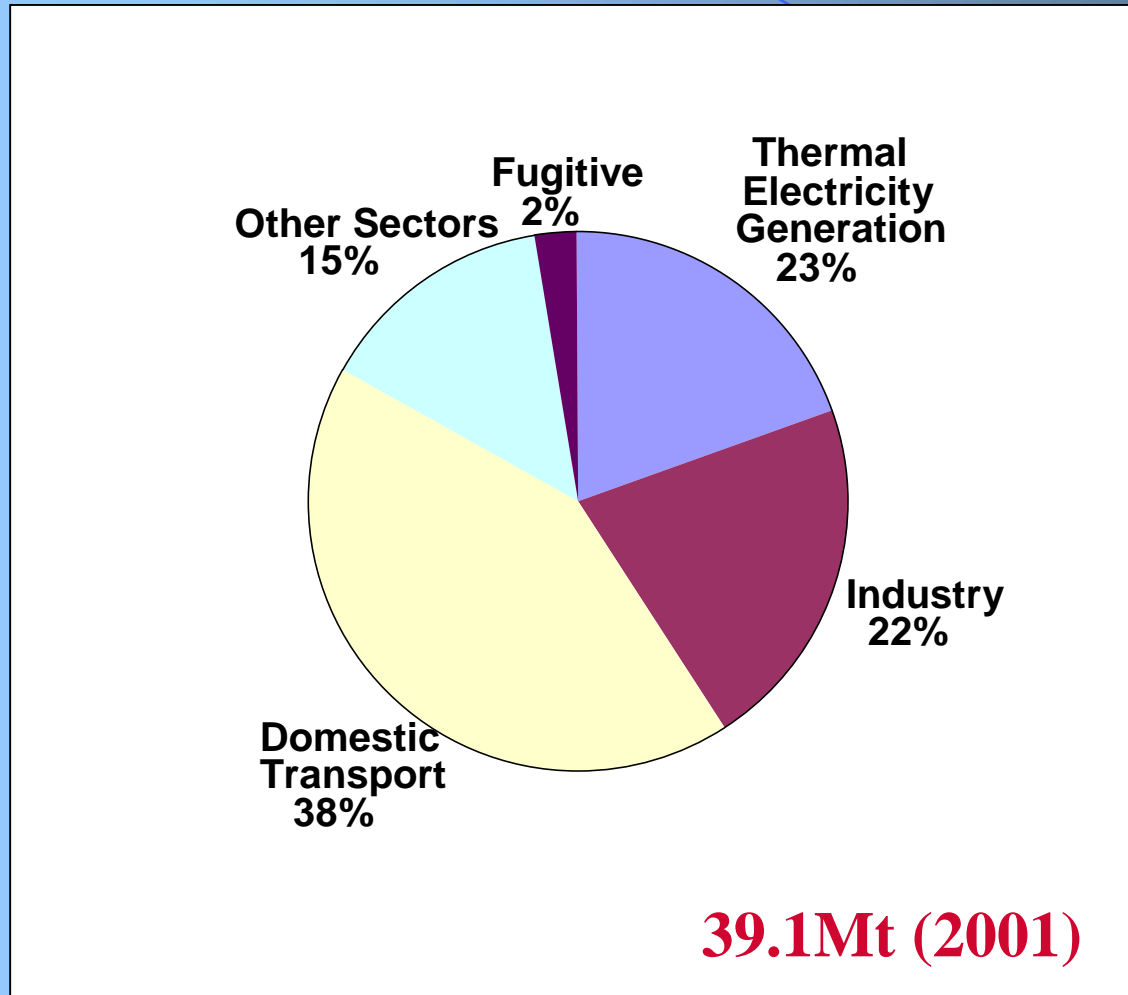


Gavin Fisher  
NIWA

# Some transport facts

- 70% of the world's air pollution comes from transport.
- Most large cities have severe air quality problems.
- The global transport fleet is growing rapidly.
- Auckland has 1M+ vehicles – growing at 4% per year.
- For CO<sub>2</sub> the global emissions are 22,500 Mt per year
- 9,000 Mt (or 40%) are due to transport.
- Most of this is due to motor vehicles.

# Carbon Dioxide



Methane and nitrous oxide  $\text{CO}_{2e} = 41.7 \text{ Mt}$

# Hypothesis

**“After all the ‘big’ dischargers are taken care of (eg VGAs), the best option for NZ reductions in CO<sub>2</sub> is the transport sector – especially petrol and diesel motor vehicles”**

# Where do the numbers come from?

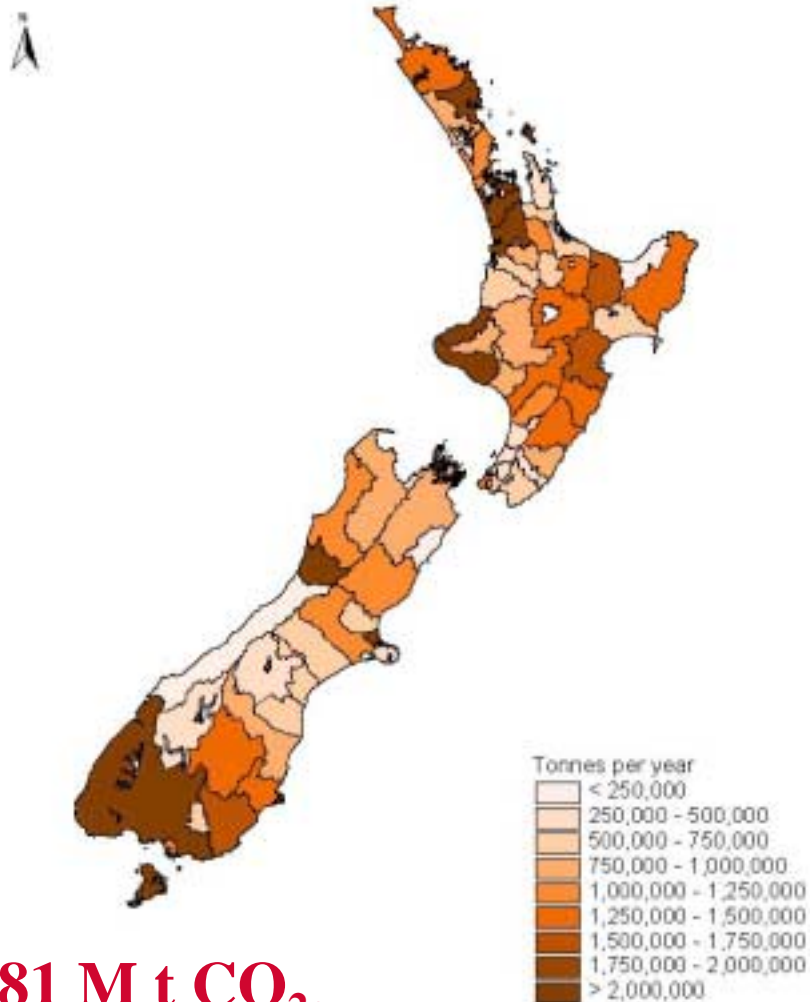
- One – new national inventory.
- Two – new on-road measurements.
- Three – new programmes and technologies
- Four - common sense.

<http://www.niwa.co.nz/ncces/-ghge->

# TOTAL GREENHOUSE GAS EMISSIONS BY TLA - 2001

## CARBON DIOXIDE, METHANE AND NITROUS OXIDE

(Estimates are reported in units of CO<sub>2</sub> equivalents using Global Warming Potentials published in the IPCC Third Assessment Report (TAR)).



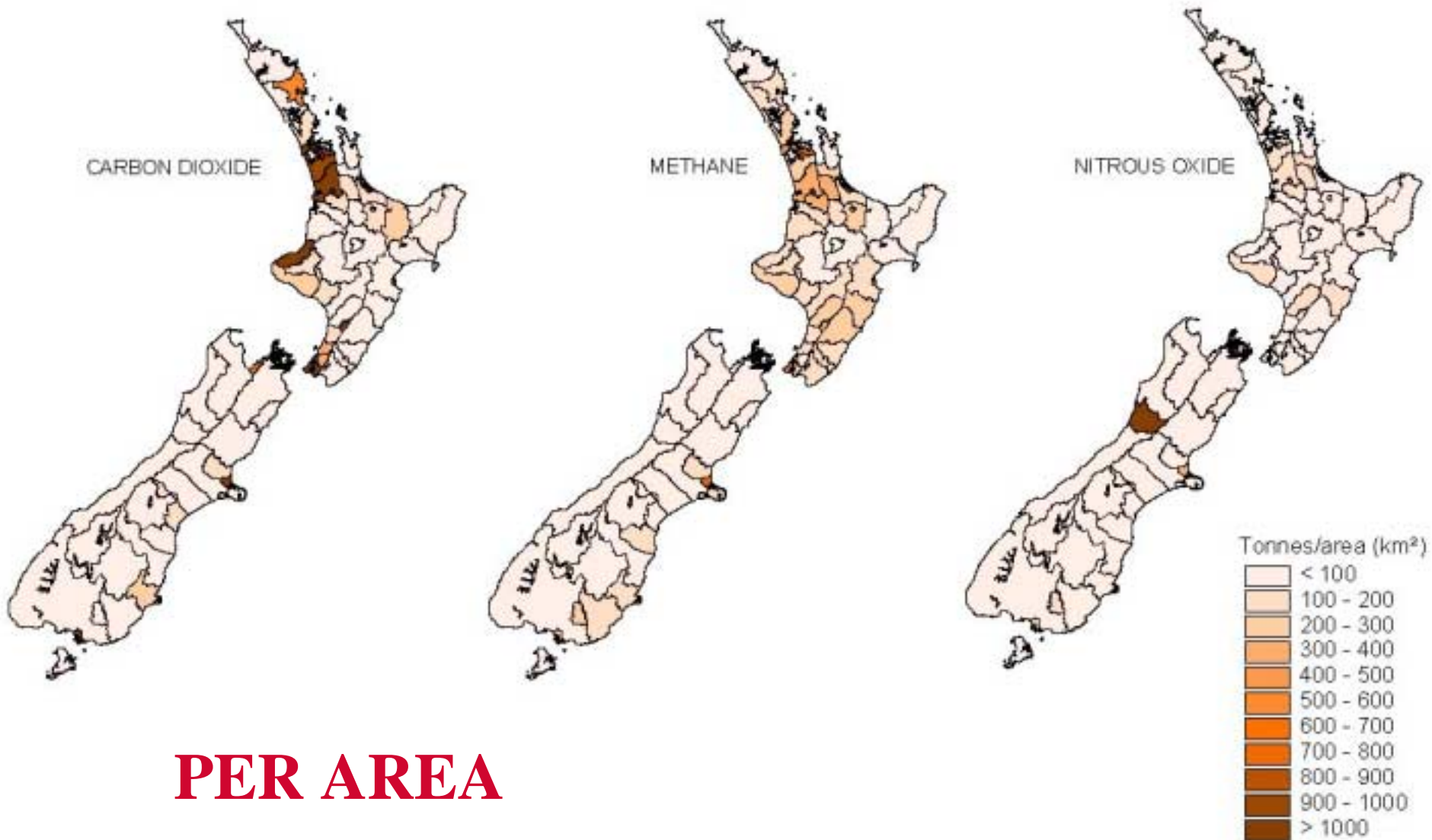
81 M t CO<sub>2e</sub>

# Total emissions by region

This is everything

# TOTAL GREENHOUSE GAS EMISSIONS PER AREA (KM<sup>2</sup>) BY TLA - 2001

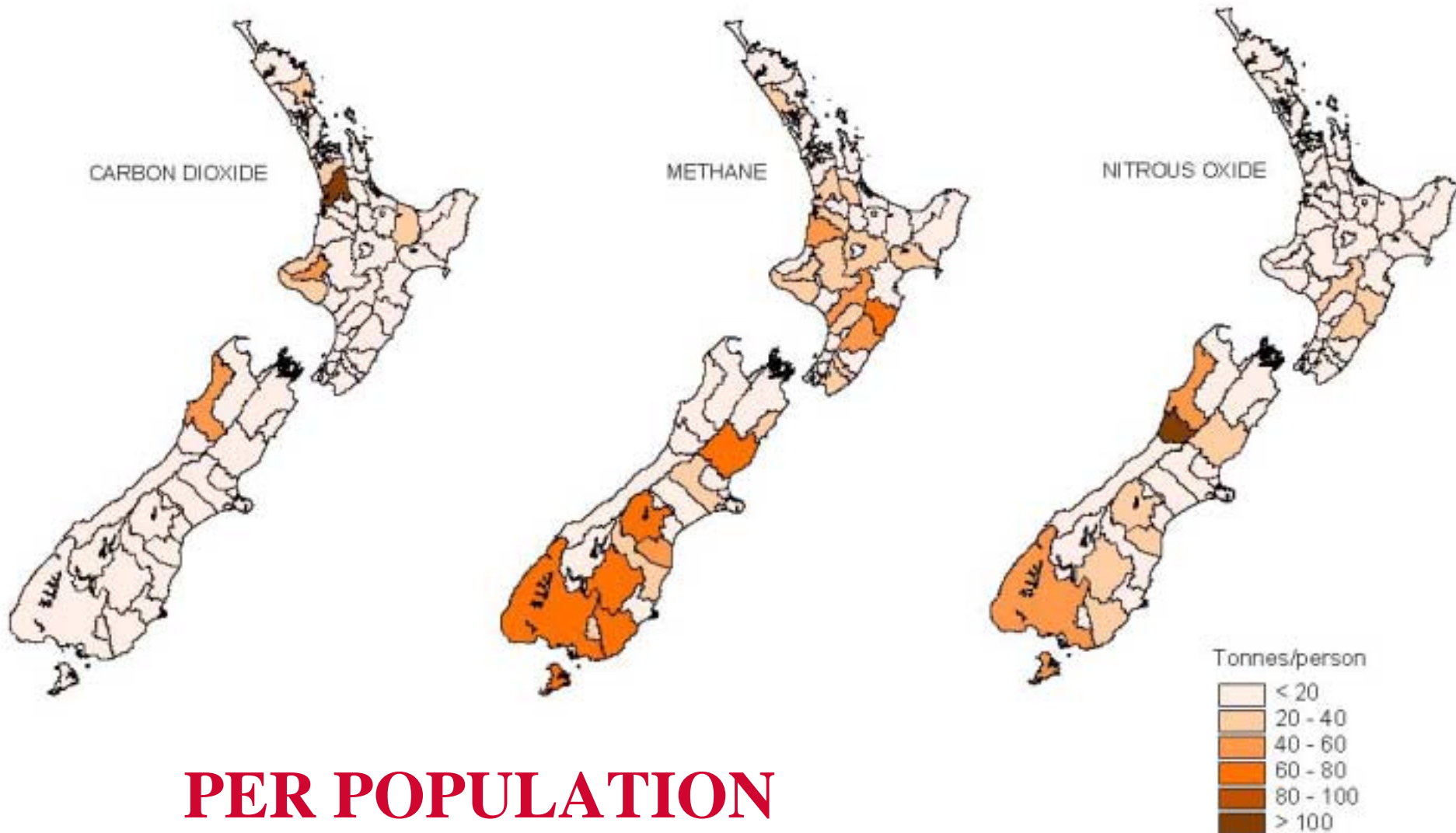
(Estimates are reported in units of CO<sub>2</sub> equivalents using Global Warming Potentials published in the IPCC Third Assessment Report (TAR))



**PER AREA**

## TOTAL GREENHOUSE GAS EMISSIONS PER PERSON BY TLA - 2001

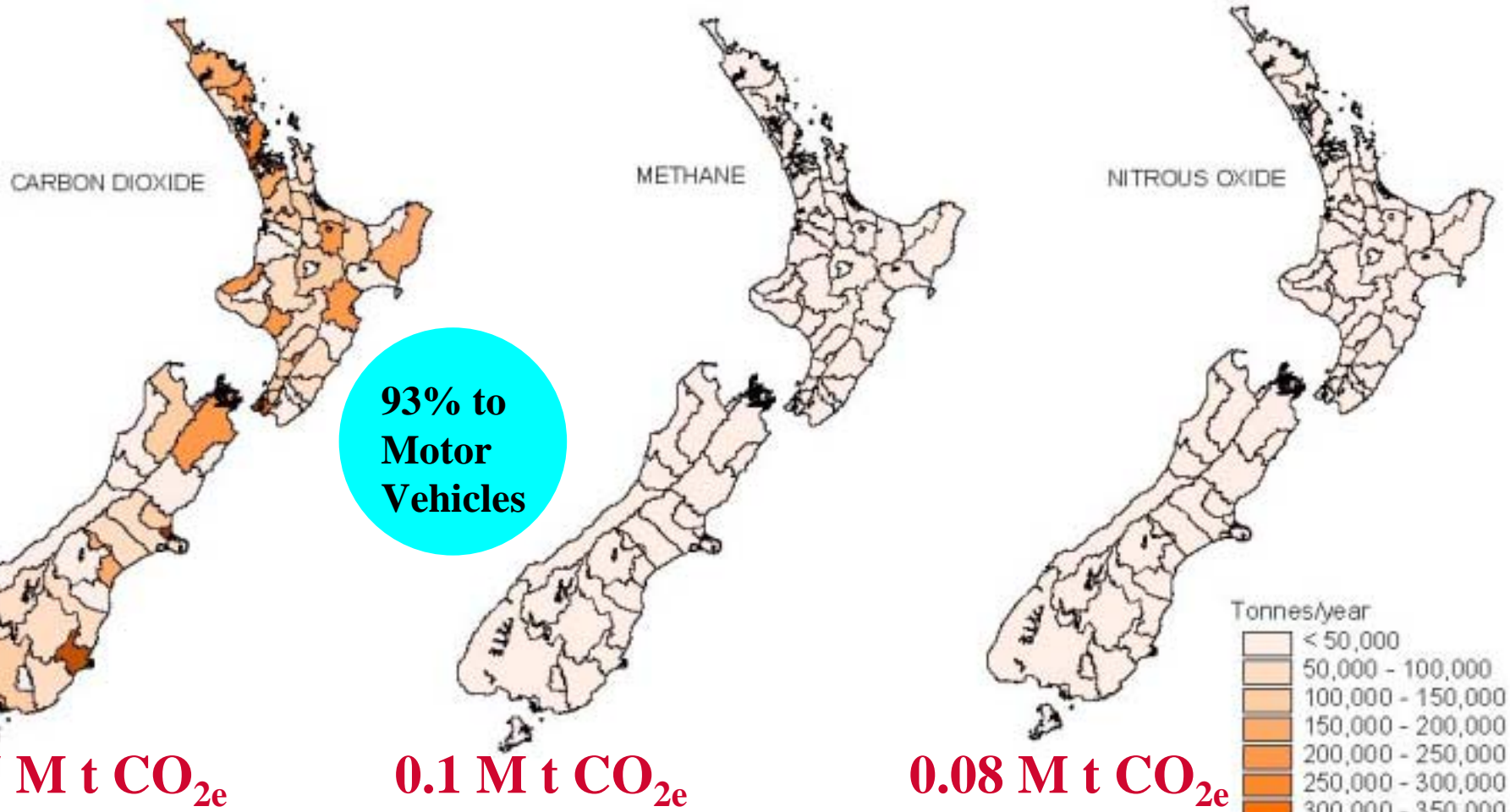
(Estimates are reported in units of CO<sub>2</sub> equivalents per person using Global Warming Potentials published in the IPCC Third Assessment Report (TAR))



**PER POPULATION**

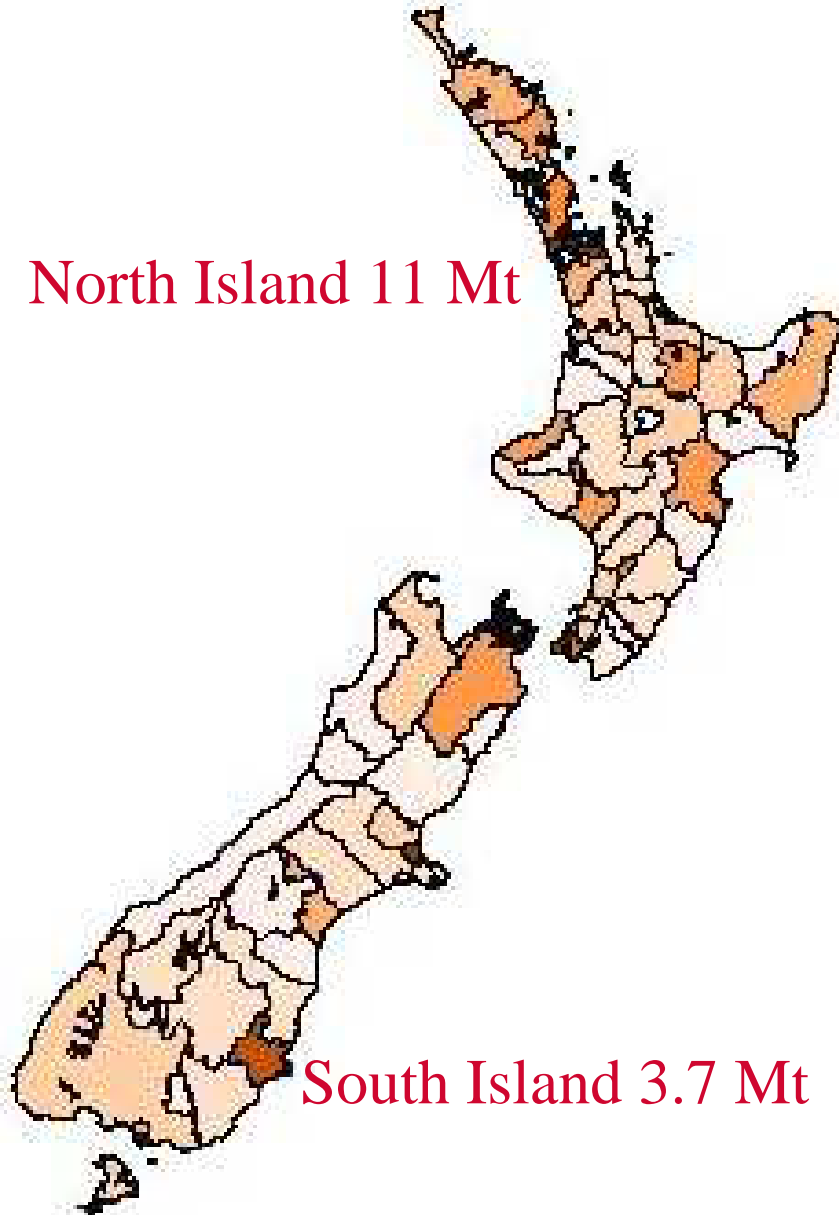
# TRANSPORT GREENHOUSE GAS EMISSIONS BY TLA - 2001

(Estimates are reported in units of CO<sub>2</sub> equivalents using Global Warming Potentials published in the IPCC Third Assessment Report (TAR))



# JUST TRANSPORT

North Island 11 Mt



South Island 3.7 Mt

# Transport CO<sub>2</sub> by region

This is just CO<sub>2</sub>,  
just from transport,  
by Territorial Local  
Authority area

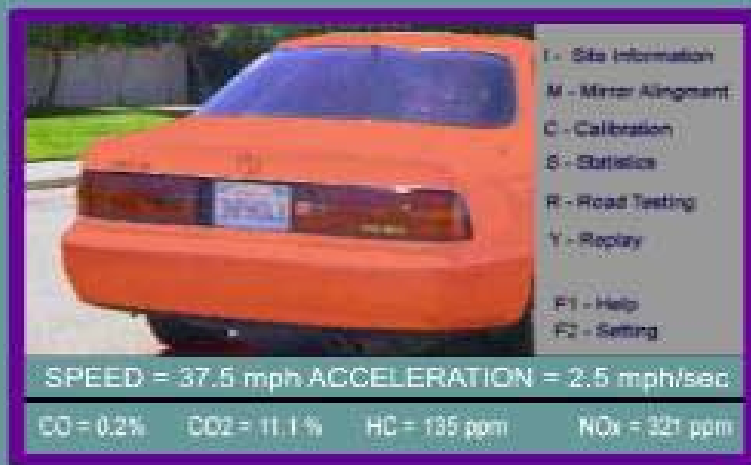
TRANSPORT

# On-road vehicle emissions testing

2<sup>nd</sup> April 2003 – South Auckland



# How remote sensing works

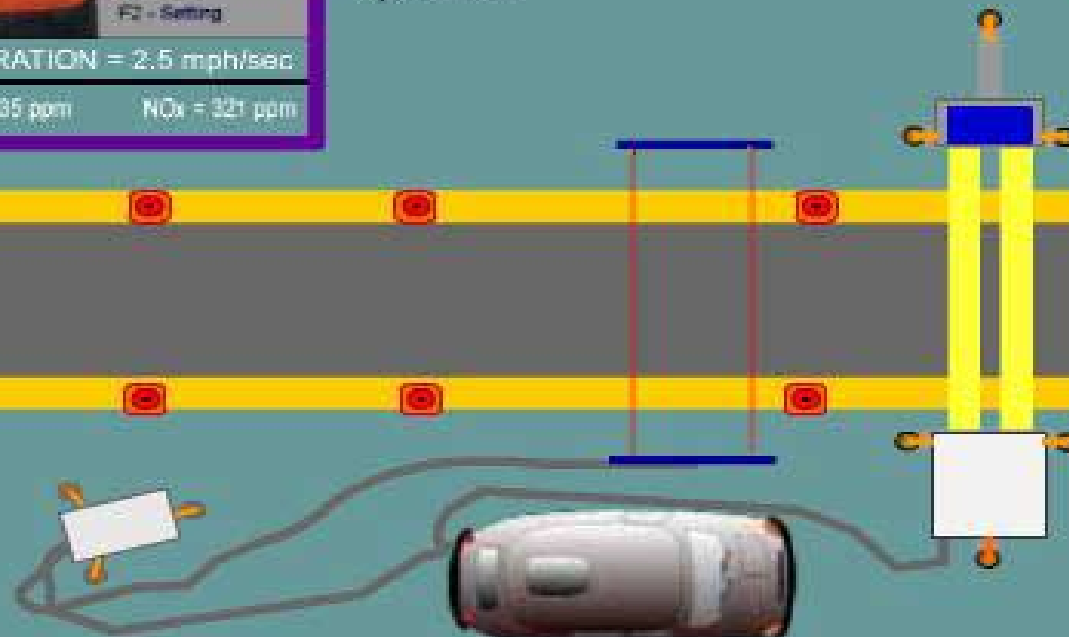


- 3 active systems collect all relevant information in less than 1 second.
- Hold the cursor above any button to highlight the components of a system
- Click for a description of system operation

Speed & Acceleration

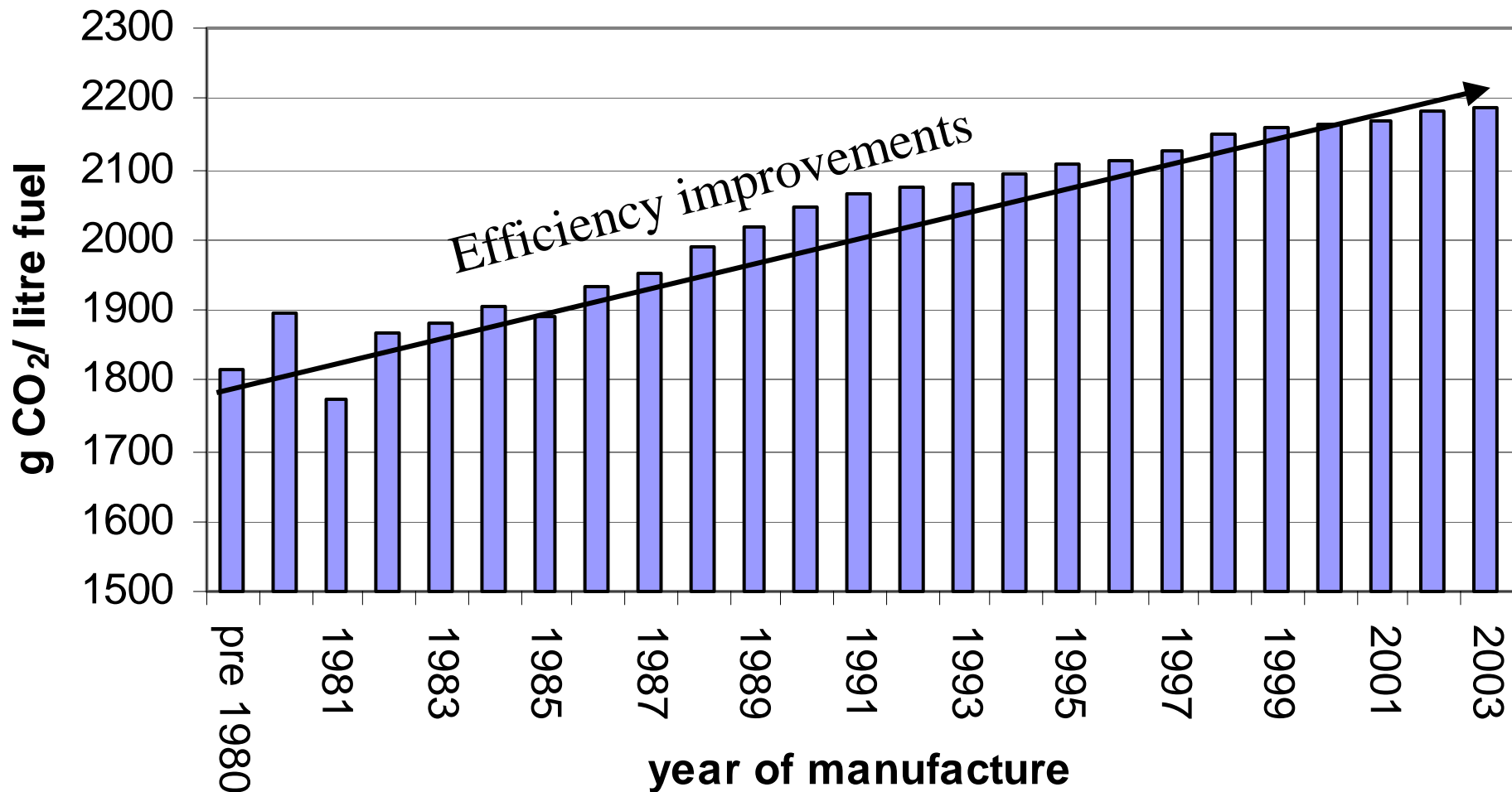
Exhaust Emissions

Camera Capturing



Size of equipment enlarged for presentation purposes

# Grams CO<sub>2</sub> per litre of fuel



# Grams CO<sub>2</sub> per kilometre travelled



# Kilometres travelled

The average car in the fleet (in Auckland) does 11,000 km pa

That's  $11,000\text{km} \times 180\text{g} = 2 \text{ tonnes CO}_2$

There are 2.7 million cars in New Zealand

That's  $2 \text{ tonnes} \times 2.7 \text{ M cars} = \underline{5.4 \text{ Mtonnes CO}_2}$

**Still only a third of the total – rest is the freight fleet**

**PLUS.....**

It costs us about 50c in fuel to produce each kilogram of CO<sub>2</sub>.

That means a saving of 0.5M t CO<sub>2</sub> is equivalent to a saving to us, and the country, in imported fuel, of \$250M



GreenFleet can be a springboard

for your business to implement a

sustainable transport strategy

GreenFleet contact: Sarah Burke, Project Manager  
Phone 09 920 9403 Email [sarah@sustainable.org.nz](mailto:sarah@sustainable.org.nz)  
PO Box 147 263, Ponsonby, Auckland

# Practical Ideas

## GREENFLEET Programme

- Be 'transport efficient'
- Tree planting offsets
- Alternative fuels and vehicles

>>> 30% saving >>>30% CO<sub>2</sub>

Join – [sarah@sustainable.org.nz](mailto:sarah@sustainable.org.nz)

# Example 1

## Try Taxis

30-40,000 in Auckland alone –  
who knows what VKT's

30 minutes a day idling – maybe an extra 1  
litre of fuel – that's 2 kgs CO<sub>2</sub> – that's  
30,000 t CO<sub>2</sub>

Plus couriers, freight operators, buses.....

**ELIGIBLE?**

# Example 2

## Fleet conversion



New hybrids now on the market

Same mileage for half the fuel cost – half the emissions

Typically a car will emit 40 t CO<sub>2</sub> in its lifetime – hybrid will halve this to 20 t – a permanent sustained saving

Switching 5% of the fleet will save 400,000 t CO<sub>2</sub>

**ELIGIBLE?**

# Example 3

**What about “government”?**

**Ministries, Councils, Cities, Police, Schools, Military**

**Then SOEs, contractors, supplier chain**

**Could easily be a million vehicles!**

**GreenFleet – 30% ->>>>>>> 1.5 Mt pa**

**Hybrids – 50% ->>>>>>> 2.5 Mt pa**

**ELIGIBLE?**

# Accepted Hypothesis?

“With some reasonably straightforward approaches, many of which have good direct fuel saving anyway, NZ can reduce its CO<sub>2</sub> emissions from transport from the current 14.7 Mt (38% of total), to perhaps 10-11 Mt (<30% of total) within the next 5 years.”