

# Journeying Together: Energy & sustainability

Season of Creation 2020

St Matthew in the City

*Richard Milne, September 6, 2020*

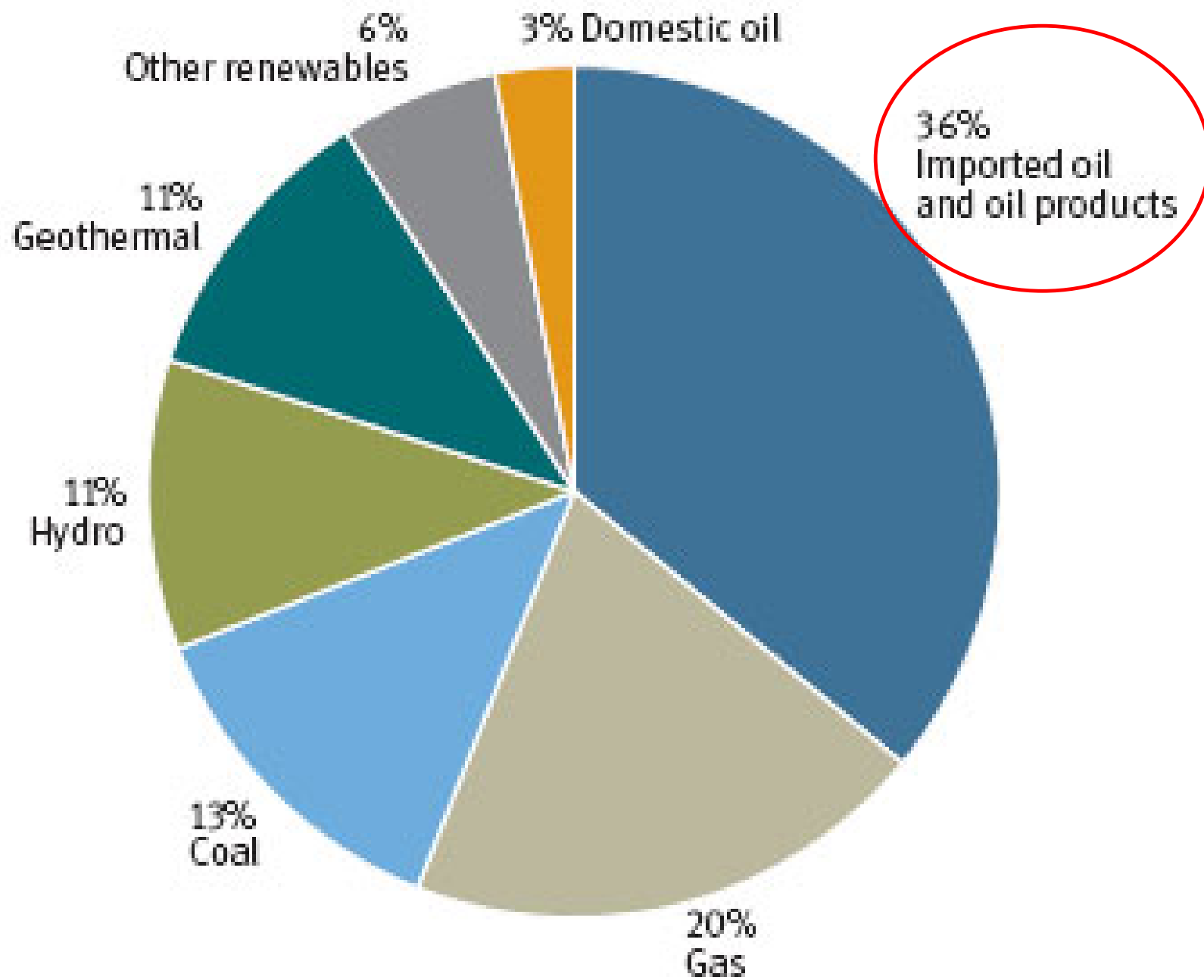
## Marks of Mission of the Anglican Communion:

4. Care of Creation [Nature, habitat, *te whenua*]

5. Social justice:

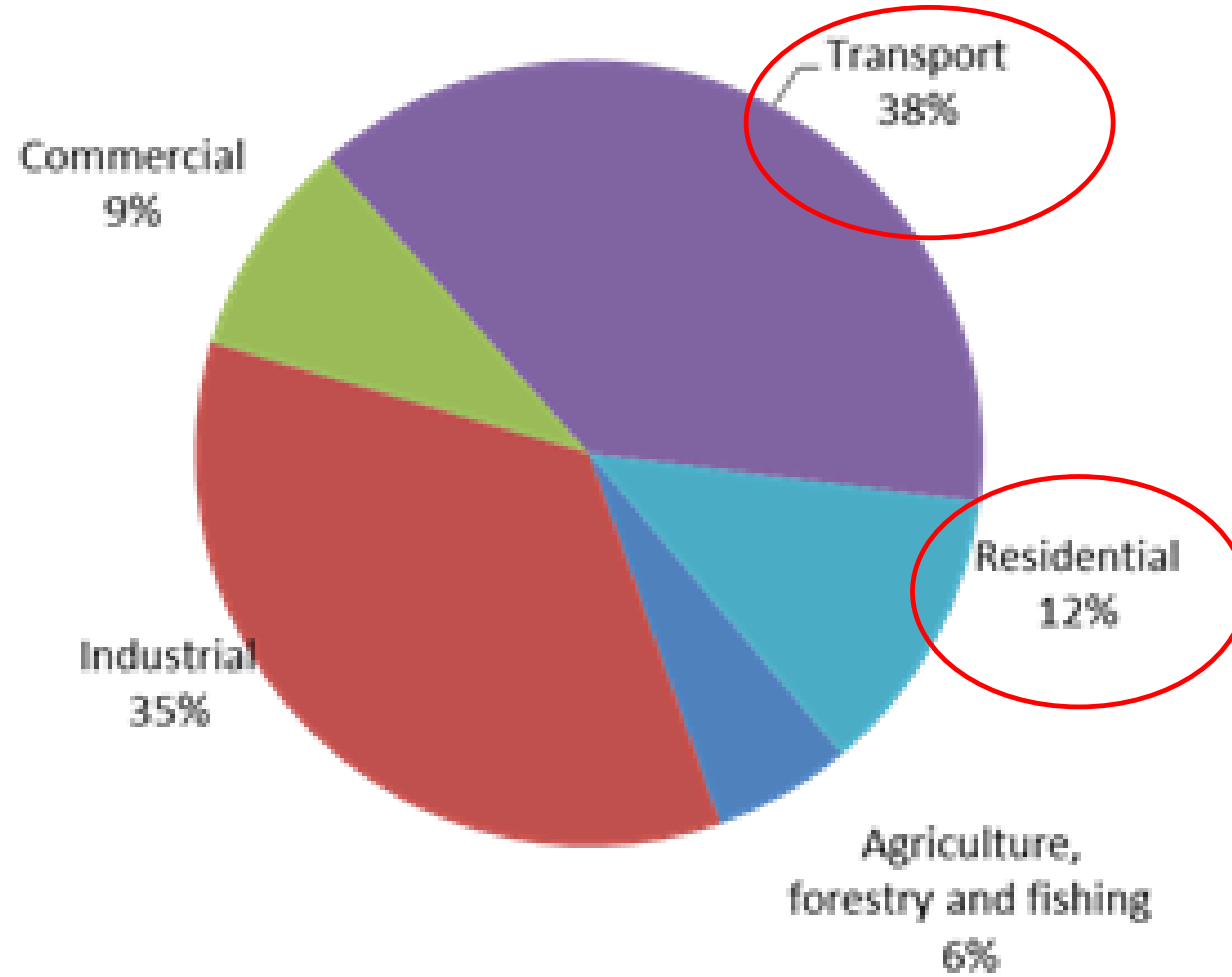
- the poor will suffer first and worst from environmental destruction and climate change
- intergenerational justice: protecting our children's world

## NZs primary energy sources



## NZ's energy demand

### Energy Demand by Sector 2011



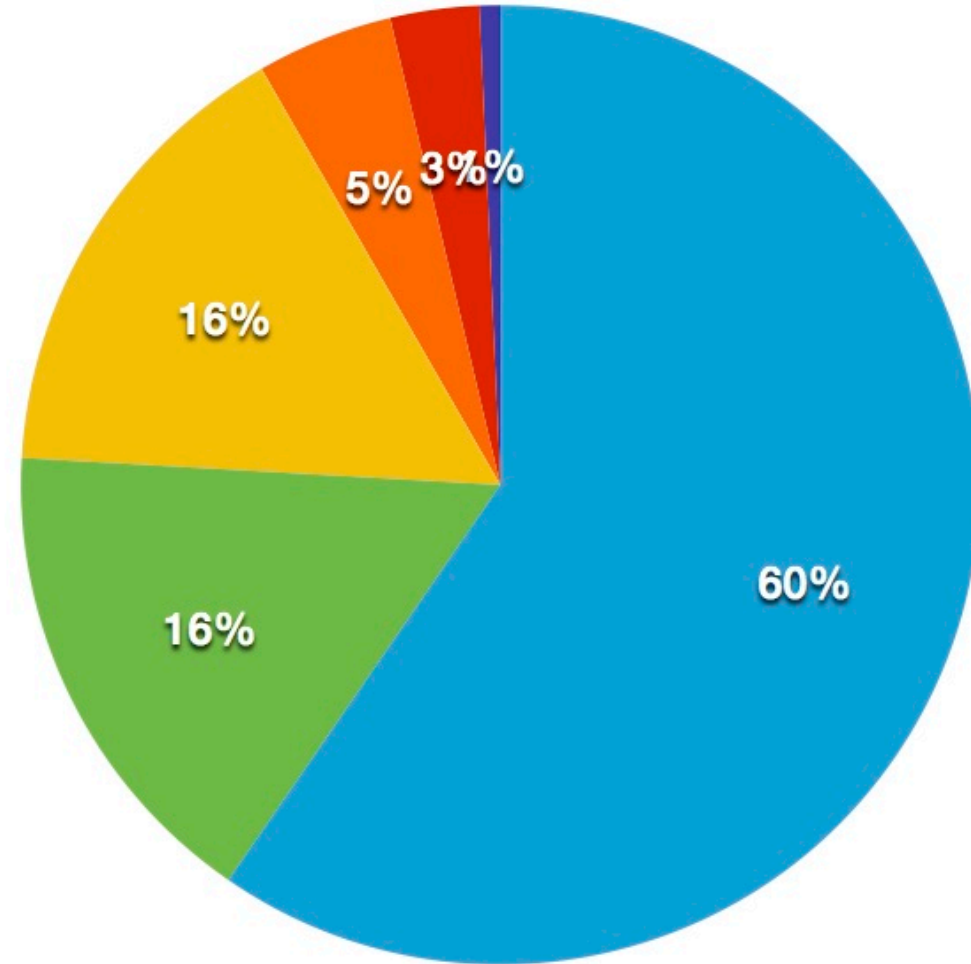
Source: Energy Data File 2012

Electricity: secondary energy source (85% renewable)

**NEW ZEALAND'S ELECTRICITY GENERATION (12 months to Nov 2014)**

GENERATION TYPE	PERCENTAGE
Hydro	59.6%
Geothermal	16.3%
Gas	15.8%
Wind	4.6%
Coal	3.0%
Wood	0.7%

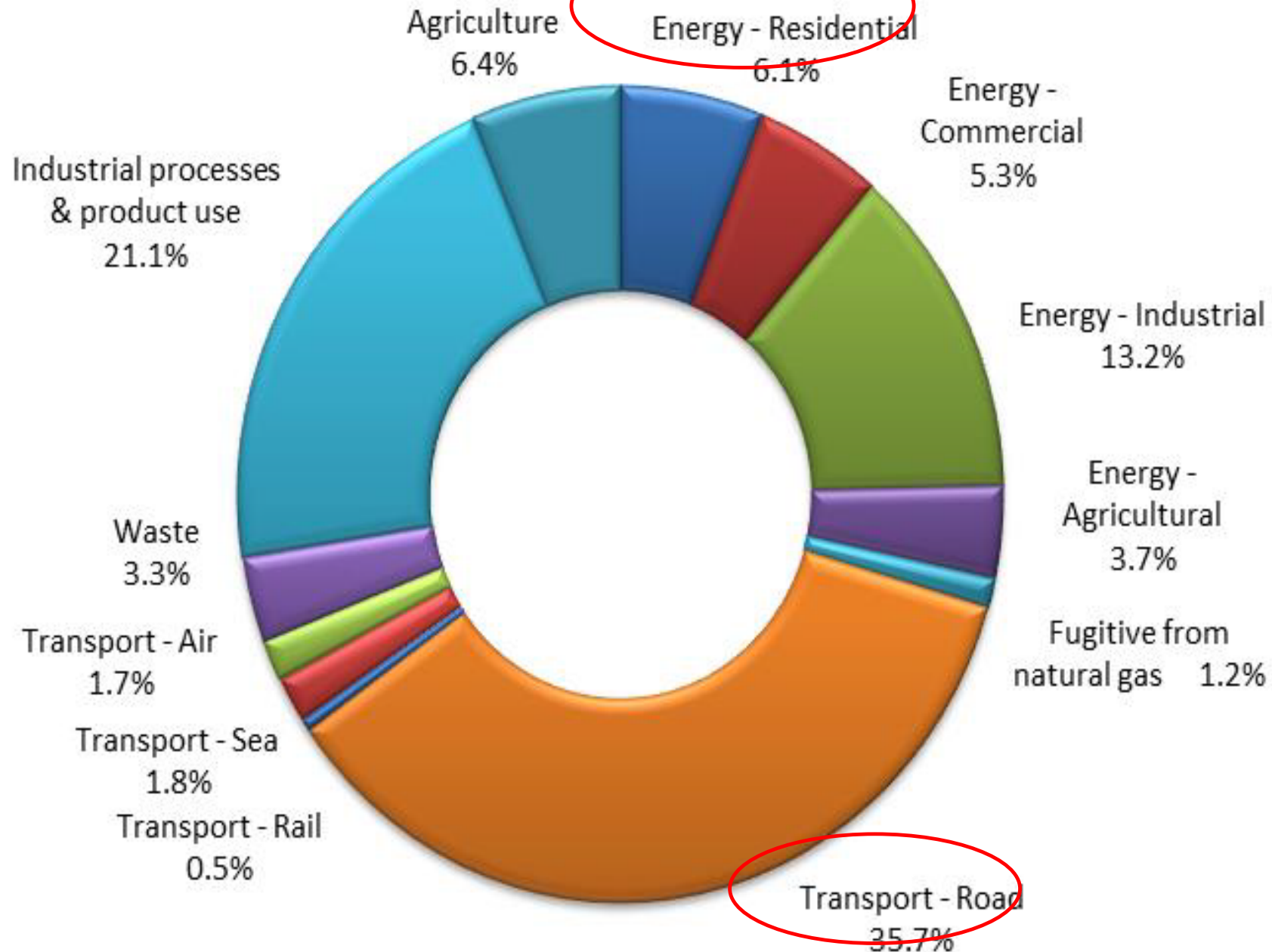
- Hydro
- Geothermal
- Gas
- Wind
- Coal
- Wood



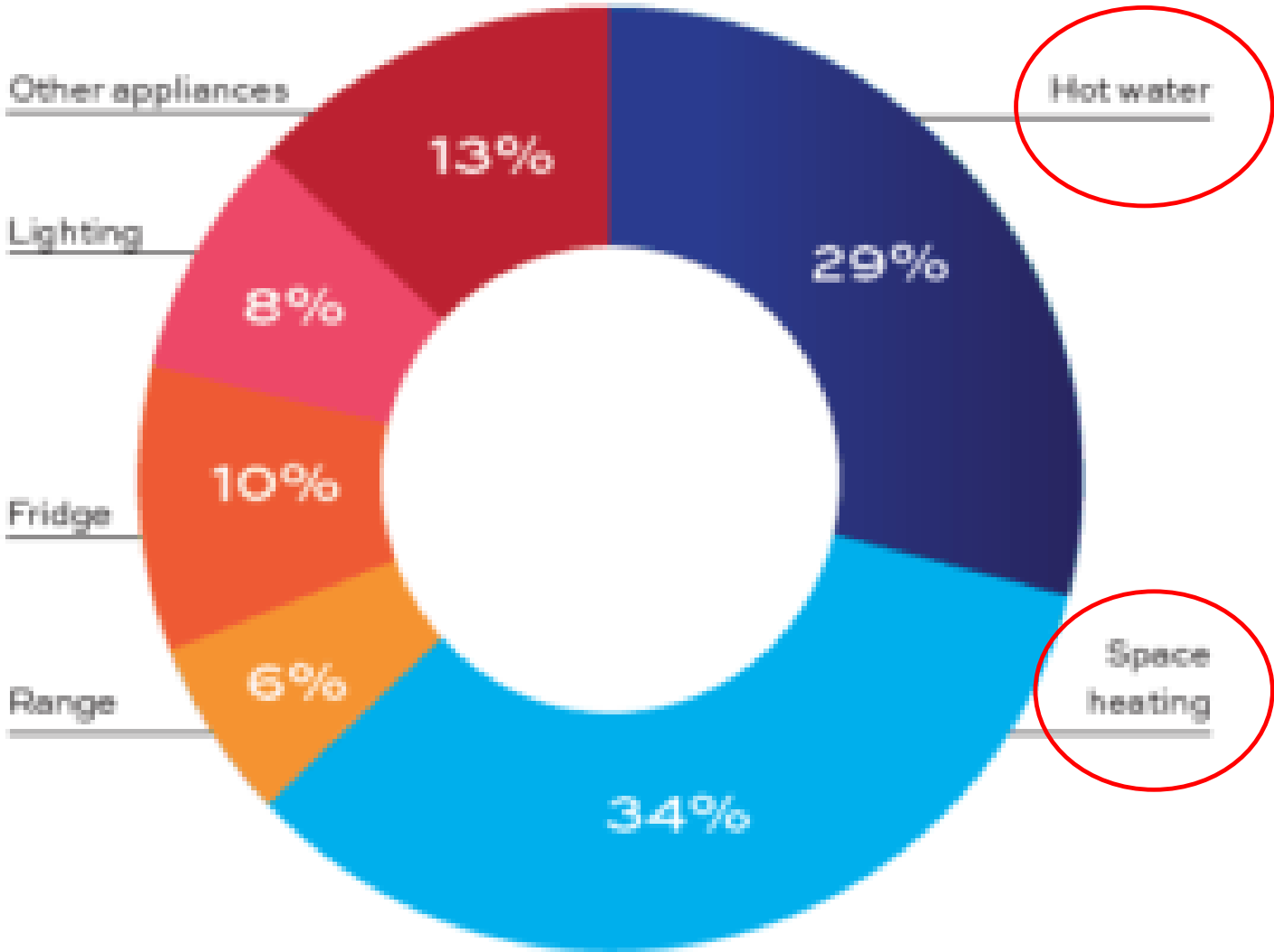
# Energy use and carbon emissions

- Using primary energy emits 'greenhouse gases'
  - carbon dioxide, methane, etc
- These cause the atmosphere and oceans to heat up
- Heating changes the climate
  
- SO: to help protect our planet, we can
  - **reduce our energy consumption**
  - switch to renewable energy sources

# Auckland's greenhouse gas emissions profile (2015)



Here's how we use our home electricity:  
typical energy consumption for an  
existing New Zealand house



- Heat pump
- Central heating
- Oil filled heater
- Bathroom heater



# *FutureFit* carbon calculator

Auckland Council

<https://www.futurefit.nz/>

Breakout groups, 5 minutes

# What can we do about our domestic energy consumption? [some ideas]

- Cost saving options
  - **Live more simply and consume less** (food, transport, clothing, appliances, travel etc)
  - Switch appliances off at wall
  - Fewer/shorter/cooler showers/baths
    - Reduce shower flowrate (11 L/min) and thermostat temperature (55°C)
  - Heat & light only those spaces that are being used (turn it off!)
  - Use fans instead of A/C in summer
- Cost neutral options
  - Switch to 'cleaner' electricity (Ecotricity, Meridien etc)
- Low cost options
  - Switch incandescent lights to LEDs

# What can we do about our domestic energy consumption?

- Invest in our children's wellbeing (and ours)
  - Switch to efficient heating and lighting
    - Passive heating, heat pumps, low emission log burners
    - Low energy appliances (> 3-star efficiency rating)
    - Rooftop solar panels (*SolarCity* will lease systems)
- AND
  - Use low carbon transport options (Alan)
  - Reconsider food (Bobbi) & waste generation and disposal (Cathy)

# Questions and steps

- What action would I personally like to take to reduce my carbon footprint?
- What support might I need to make this happen?
- How can we support each other?
  - have a Facebook group to encourage each other
  - share knowledge about solar energy/tips around reducing waste
  - figure out a carpooling to church system
  - help each other with setting up a compost/garden
  - go to a tree planting day together, etc.

*'Live simply so that others may simply live.'*

Mahatma Gandhi

# To calculate carbon emissions (CO<sub>2</sub>e)\* from fuels for home heating:

Wood pellets:	divide kwh by	14 kg
Electricity:	divide kwh by	10 kg
Natural gas:	divide kwh by	5 kg
Coal:	divide kwh by	0.5 (= double it)

Obtaining 100 kwh (units) of energy from natural gas emits 20 kg of CO<sub>2</sub>e

One 2 kwh gas heater running for 8 hours emits  $2 \times 8 / 5 = 3.2$  kg CO<sub>2</sub>e

Switching from natural gas to wood pellets reduces emissions 3-fold

\*carbon dioxide and other greenhouses gases

# What can we do about our transport?

- Walk or cycle
  - Free, low impact on the environment; good for your health.
- Use public transport
- Carpool with friends
  - to church? grocery shopping? work?
- Work remotely and use video conferencing and 'Duo' etc
- Reduce air travel, especially abroad.
- If you fly, pay to offset your emissions (*eKos or environmark*).



# CO2-equivalent emissions by mode and distance travelled (Toitu)

