The Climate Emergency and the Climate Change Commission

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What’s happening?
Why is this happening?

• The sun emits (mostly) visible light
  – Absorbed by the earth

• The earth emits heat (infrared) radiation
  – Absorbed (and re-radiated) by the atmosphere
    • By “greenhouse” gases (carbon dioxide, water vapour, etc)

• Change the climate by
  – Changing sunlight
  – Changing greenhouse gas amounts
The Problem

Carbon dioxide concentration

- Mauna Loa
- Law Dome
- Taylor Dome

Highest for 3 million years

30 years

230 years
Atmospheric Warming

Rate of rise, 1920-2019: 1.01°C/century
1970-2019: 1.83°C/century
1990-2019: 2.08°C/century
2000-2019: 2.32°C/century
Global Ocean Heat Content

>90% of the warming going into the oceans

300 billion trillion ($3 \times 10^{23}$) Joules
Global sea level

GMSL from TOPEX/Poseidon, Jason-1, Jason-2 and Jason-3 satellite altimeter data

Seasonal signal removed
Inverse barometer correction applied
GIA correction applied

Monthly
3-month running mean

Trend = 3.5 mm/year

Time span: Jan 1993 -> Nov 2019

CSIRO
Ice Sheet Melt

Exchange rate: 360Gt ice = 1mm SLR
Where to from here?

At current emission rates:
- 1.5°C warming = 10 years
- 2°C warming = 20 years
- 3°C warming = 50 years

Or, 1.5°C warming = emissions reduced 50% by 2030
100% by 2050
So what?

Sydney, Melbourne urged to prepare for 50°C days by end of century

By Jake Evans
Updated Wed at 10:29pm
Risk

- Climate change and weather extremes the most likely and the most damaging
- “...the world is most clearly sleepwalking into catastrophe.”
  — World Economic Forum, 2019
What do we do?

- Decarbonise the economy
  - Here, and internationally
  - By 2050, for 1.5°C warming
- 100% renewable electricity production
  - Then 100% renewable energy production
- Changes to land use (fewer cows)
- Reduce waste, increase energy efficiency
- For true sustainability
  - Halt all forms of growth
    - Economic, population, resource use...
How?

- NZ ag. emissions are large

Carbon dioxide the main event: Get to zero emissions by 2050
100% renewable electricity (5Mt)

Cleaner industry, less fossil-fuelled

Increased forestry to buy time (3.5Mt)

Total saving 28Mt = 40% reduction on 2015 ...
...by 2030
Trees planted
since the One Billion Trees Programme was announced*
149,174,000

Government has directly funded

Right tree, right place, right purpose

Tree seedlings
expected to be planted in 2019**
83,100,000

12% are native species
88% are exotic species

* estimated
** surveyed

As at 7 January 2020
Potential Actions

• Retreat from the coast
  – Easy to say, difficult and costly to do ➔ start early

• Retreat from flood plains
  – Improve drainage, don’t build bigger stop banks

• Agriculture: move crops south
  – Move towards dryland farming in the east
  – Introduce new crops in the north
  – Improved water storage & management

• Plan for forced migration
  – Be ready to take migrants, help other nations
  – Work with other nations to resolve tensions

• Make our economy more self-reliant..?
Action

Everyone!

– Anything that makes a difference, makes a difference
– Riding a bike, making clothes last longer...

– Talk about the problem

But this is a societal, global problem
– Governments must change how economies operate
– Steer business in the right direction

– Get active
– Help the Government see what to do
The Commission

- Role of the Climate Change Commission?
- Set up to advise Government on emissions reductions
- Five-year budgets, first one developed this year
- Exact form yet to be decided
  - Sectoral targets for reduced emissions
  - Input into how to go about reductions
    - Incentives for EVs, amount of new generation capacity needed etc

- CCC advises Government
  - How will this play out in practice?
The Commission

• A major programme of engagement starting
  – Hear from as many people/sectors as possible
• Sector workshops & hui beginning soon
• Meetings with key stakeholders
• Public consultation in second half of the year

• [https://www.climatecommission.govt.nz/](https://www.climatecommission.govt.nz/)
  – enquiries@climatecommission.govt.nz
New Zealand’s role

• Total New Zealand emissions 0.2% globally
  – But we’re in the top 10 per capita
  – All countries must act

• We are well-placed to become zero-carbon
  – 80% renewable electricity now, plenty of sun & wind
  – A small economy that can move quickly

• An opportunity to lead, to inspire
  – And to help other countries

• New Zealand gets noticed internationally –
  – Let’s use that power
Summary

The atmosphere is changing rapidly – We are entering a climate not seen for thousands of years.

Everything is changing – Sea levels rising at an accelerating rate – Temperatures rising, climate changing – More coastal inundation, floods, heatwaves, drought…

Adaptive planning required – now and in the future

Future change dependent on emissions (our actions) – The greater the warming, the more damage done

Sooner we stop emitting  sooner we stop climate change

Thank you