



If you knew what was
coming tomorrow, what
would you change today?

Our Pale Blue Dot: The Megatrends Reshaping
our Future

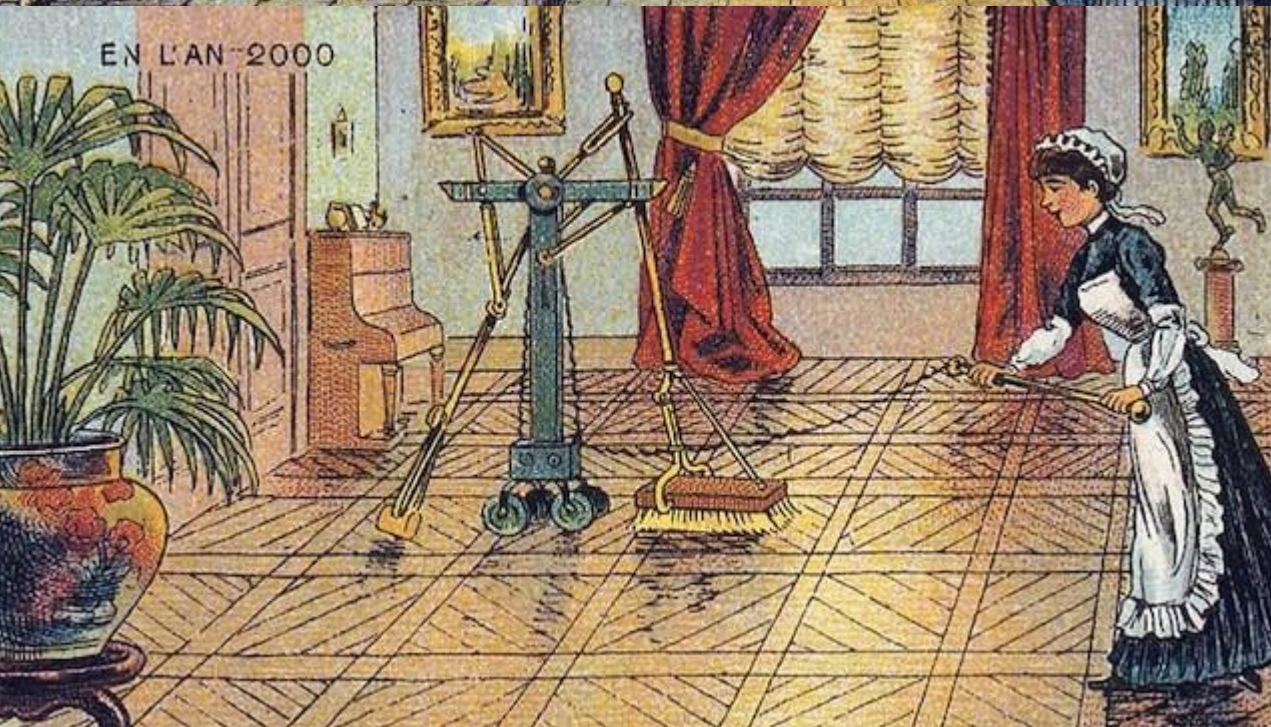
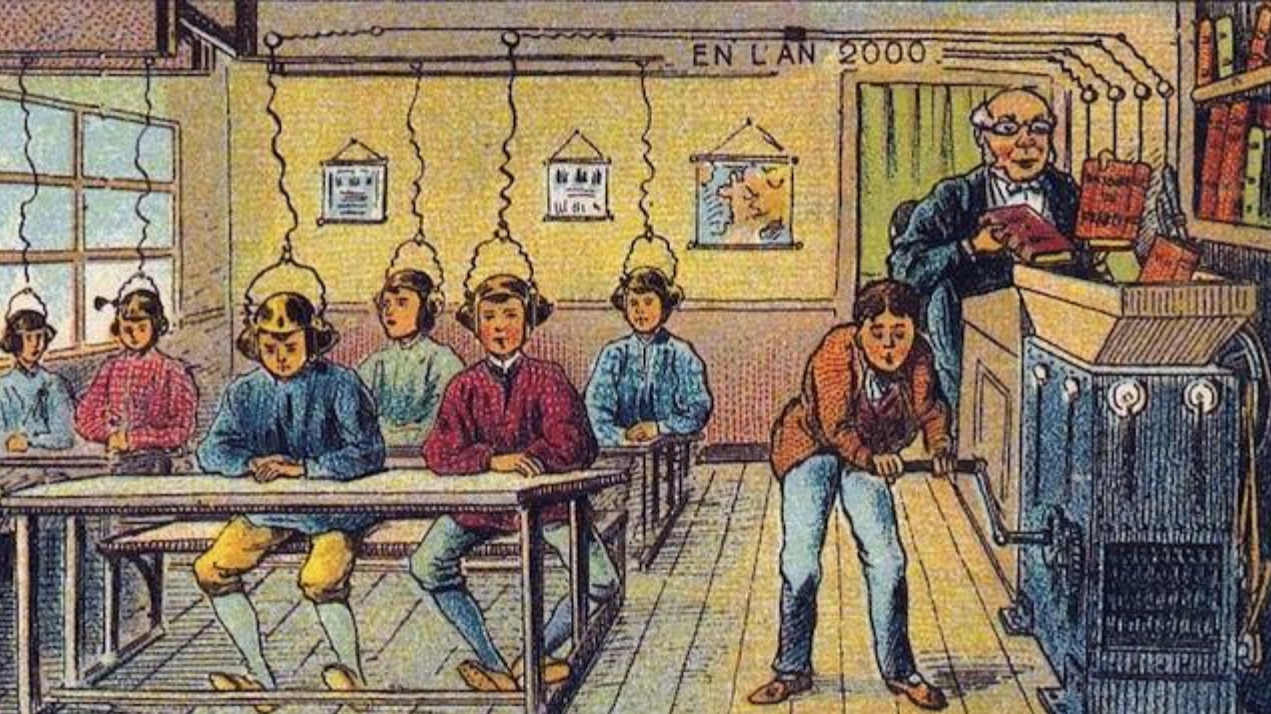
RIMS NZ Webinar 2020



The better the question. The better the answer.
The better the world works.



Building a better
working world





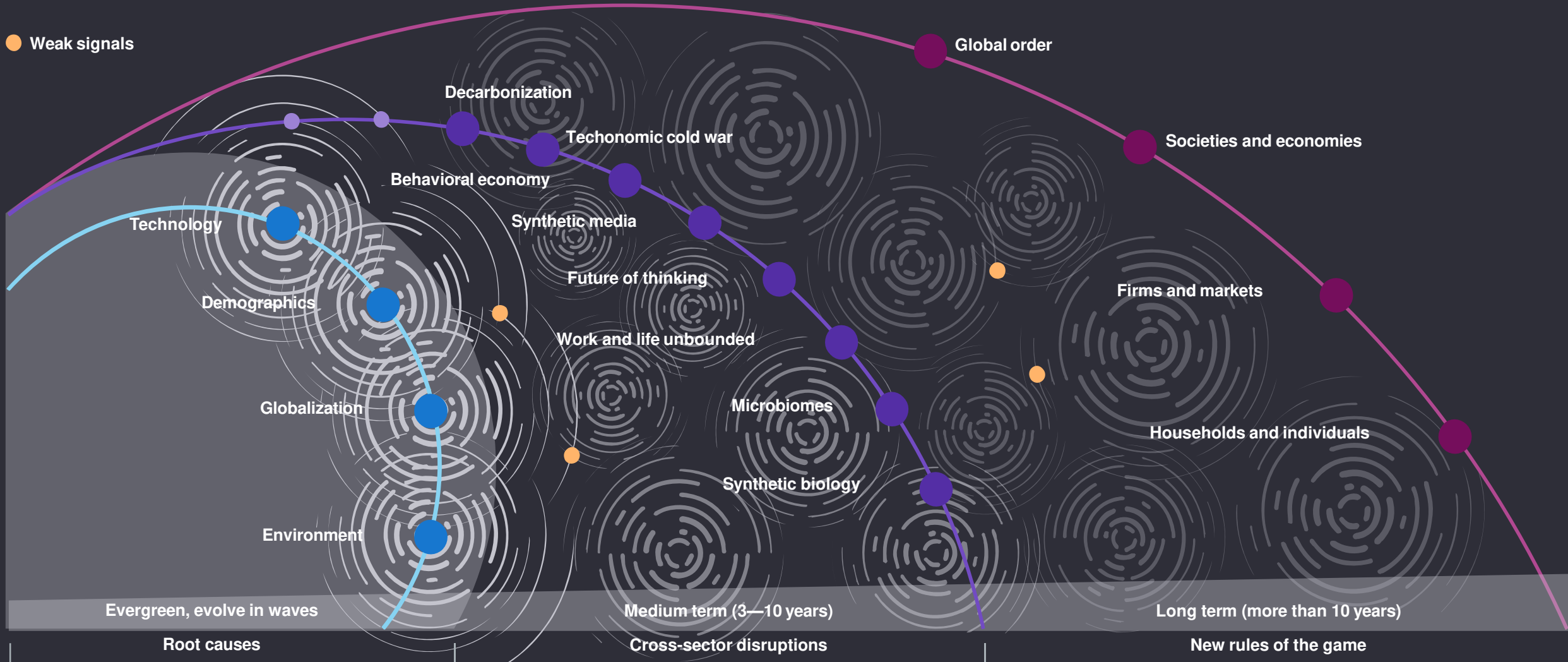
Images: Roomba; Auckland Airport; School Resources

POLLING QUESTION TIME



The upside of disruption

A framework for understanding where disruption comes from, where it's headed – and what it means for you

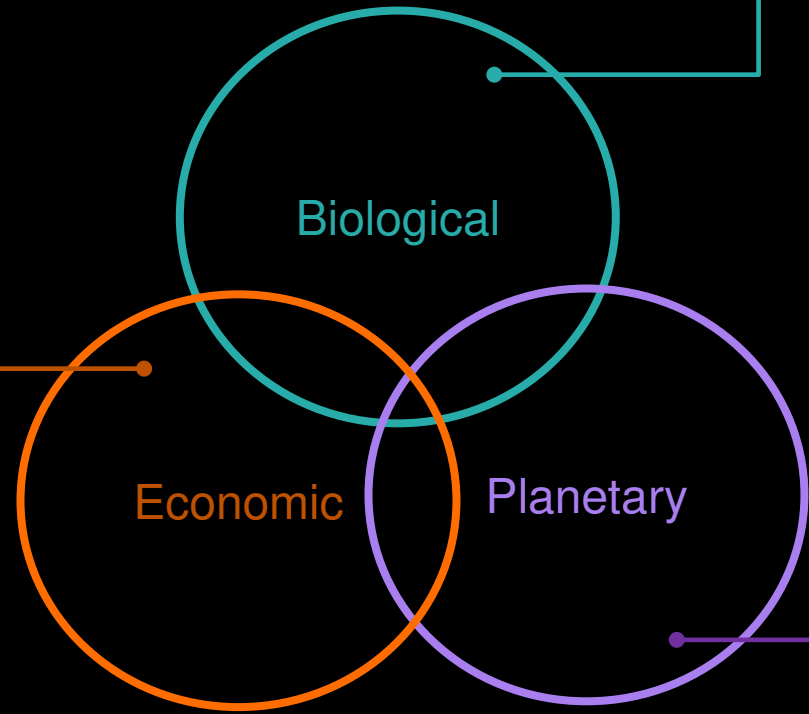


Primary forces

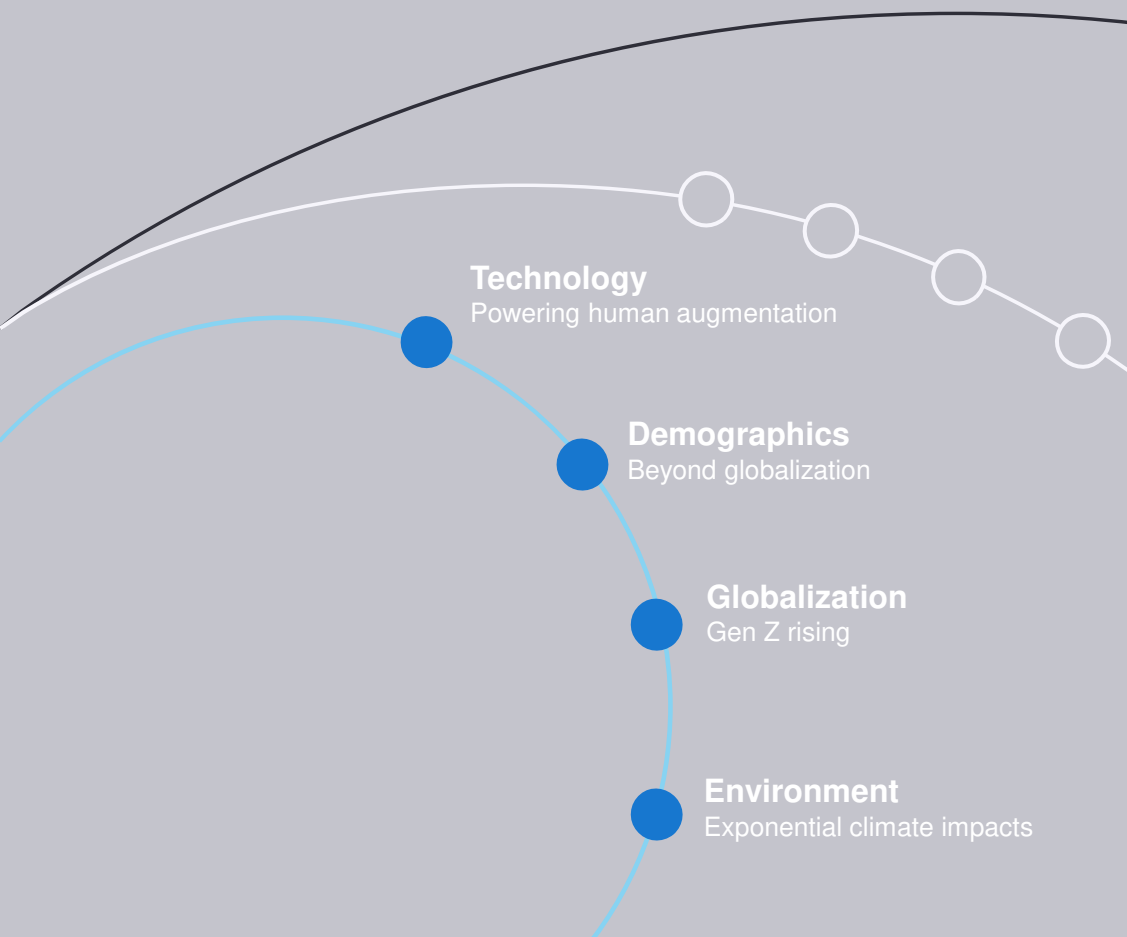
Megatrends

Future working worlds

The hypothesis of boundaries



Primary forces



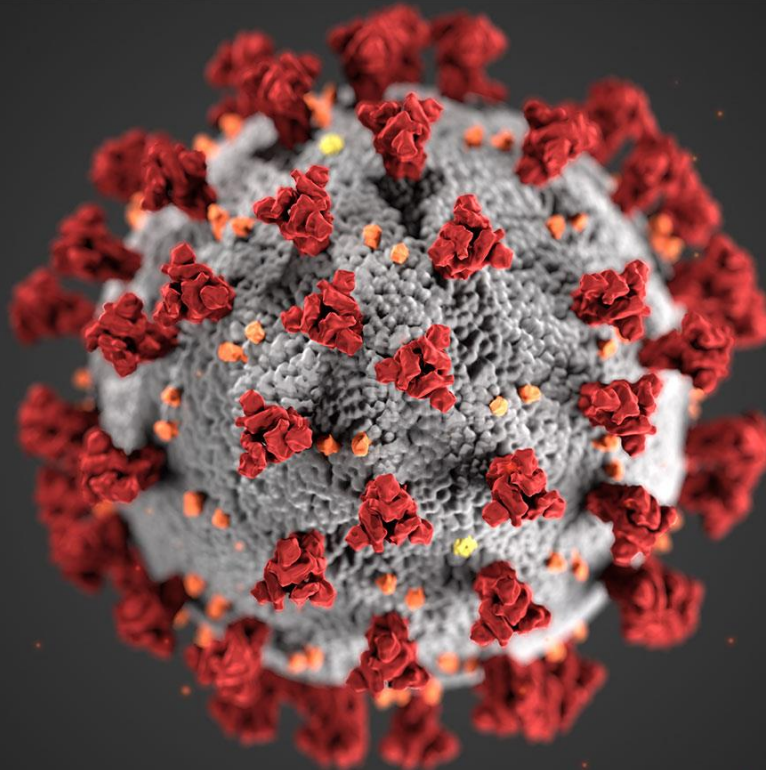
The four primary forces at the root of disruption have existed for millennia. While they are not new, they evolve in waves — and the interaction between these new waves gives rise to new megatrends.

Primary forces

Megatrends

Future working worlds

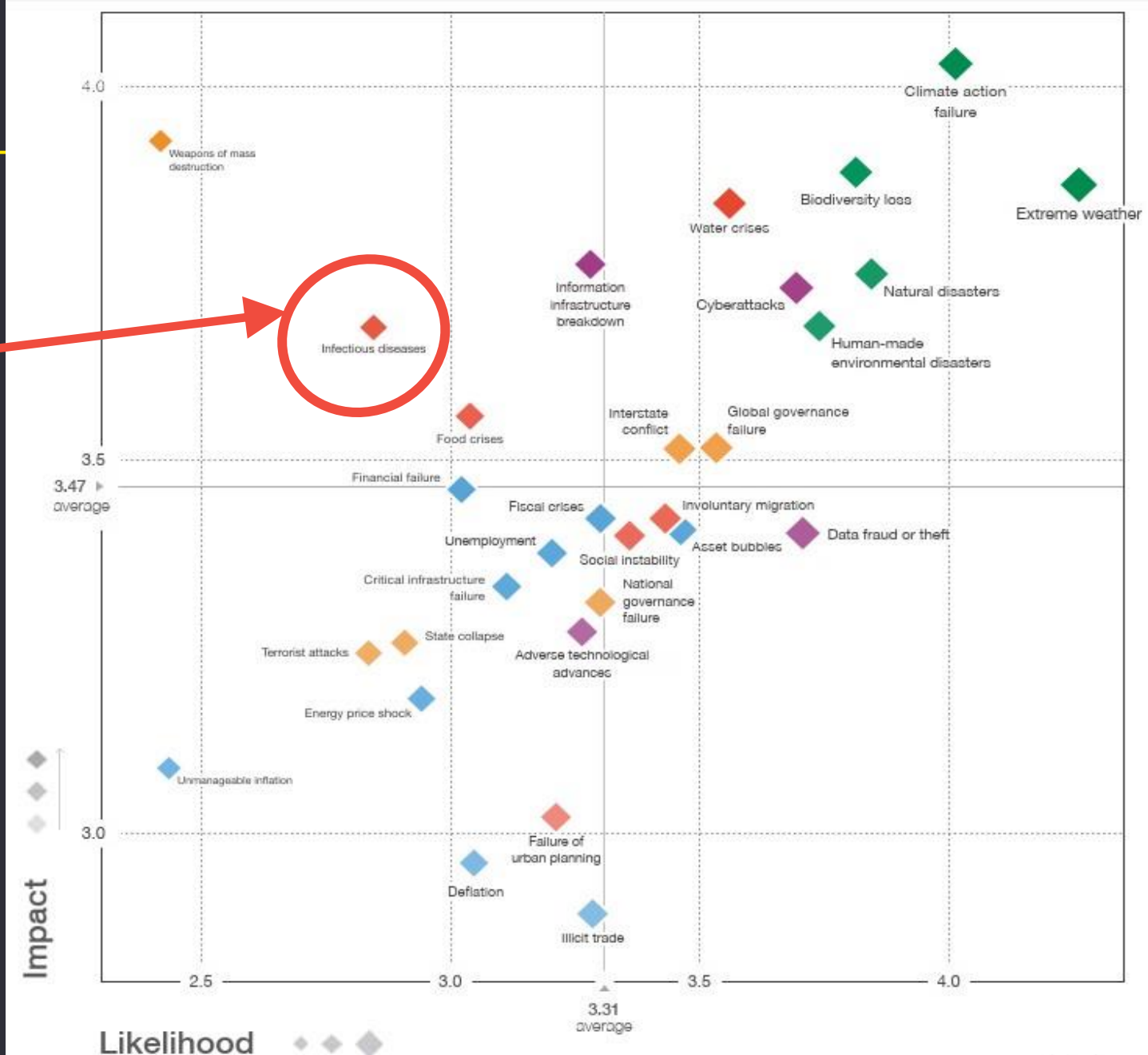
But wait, Matt, doesn't
COVID-19 change all this?



...and anyway, no one
predicted a pandemic!

World Economic Forum - The Global Risks Report 2020

10th largest
impact to
global
economy

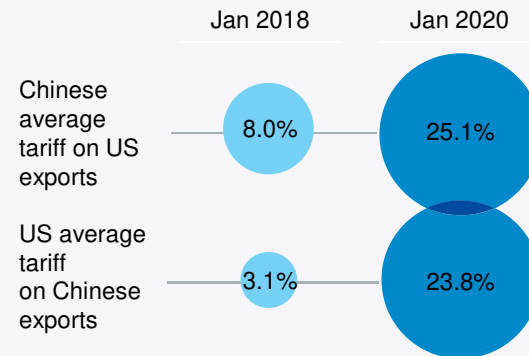


Economic nationalism

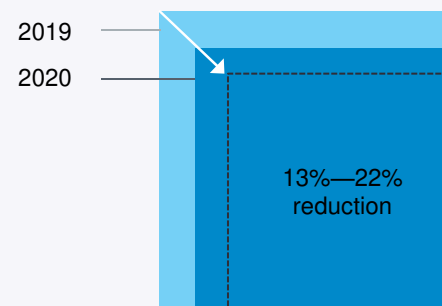
A retreat from globalisation

- Declining interest in globalisation as power struggles play out
- Decline in expatriate workforce – US Visa spill
- Post-COVID highlights importance of meeting national needs
- Increasing intervention in businesses of National Significance
- Potential for more state-sponsored espionage through cyber

Trade wars have recently escalated



Global trade is expected to shrink as a result of COVID-19

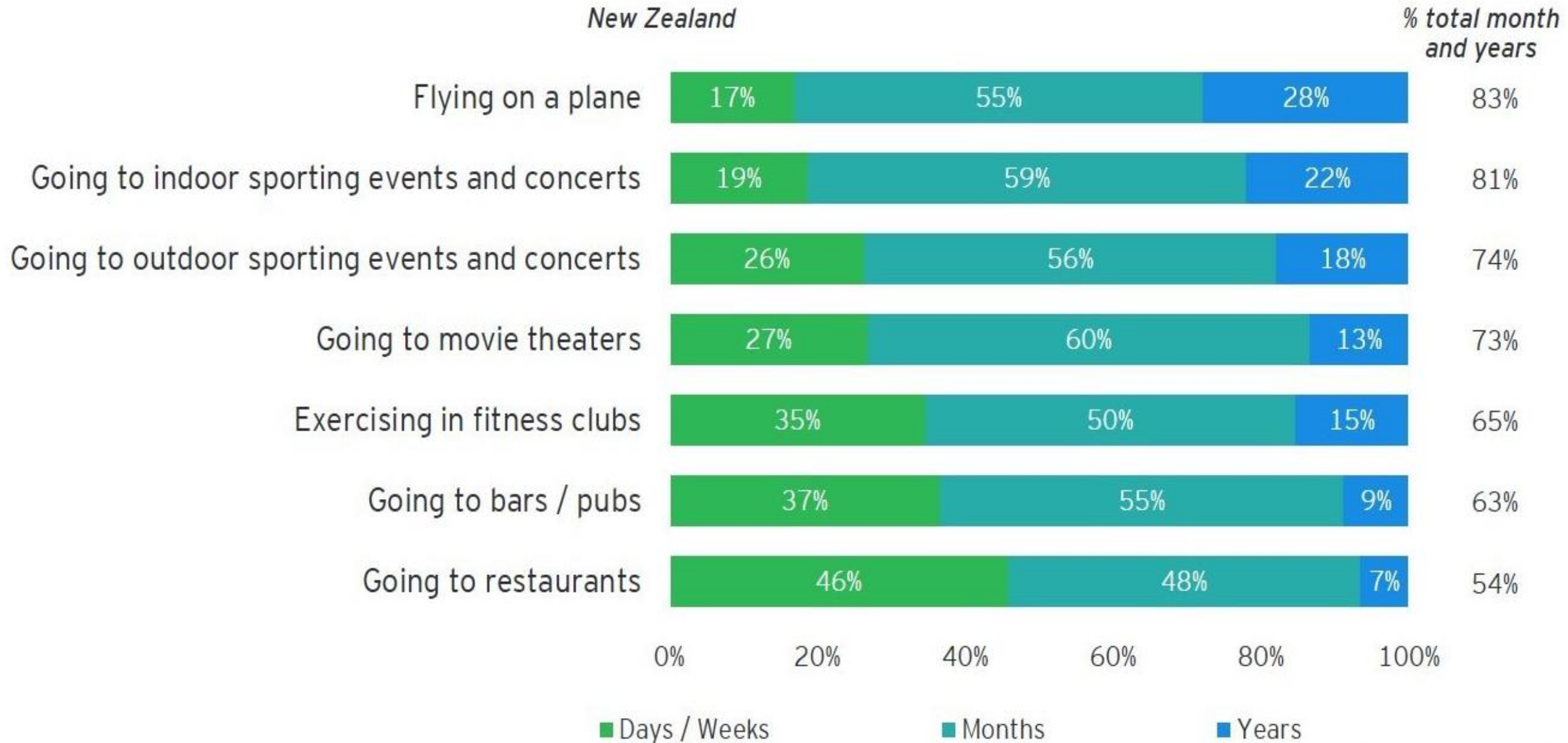


“There’s no way to fix TPP. We need bilateral trade deals. We do not need to enter into another massive international agreement that ties us up and binds us down, like TPP does.” – Donald Trump

On 2020 skilled visa cancellations: it’s about **“getting Americans back to work as quickly as possible.”**



Post COVID – Time taken for New Zealanders to feel comfortable again with activities

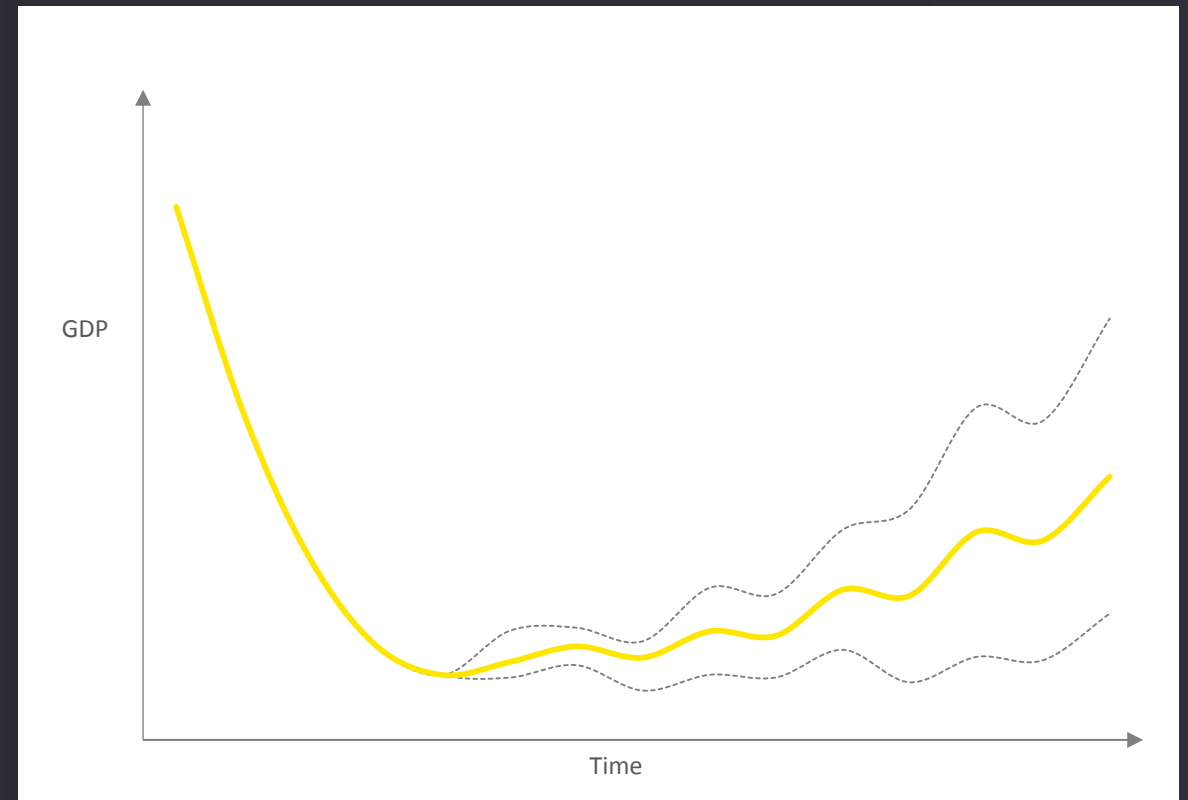


Post COVID-19 recovery

- 1st quarter contraction of 1.6% met the definition for a recession, ending 10 years of expansion
- Our younger generation will be the most impacted, now and in the longterm



- It's not an 'L', nor a 'V' shaped recovery for Australia

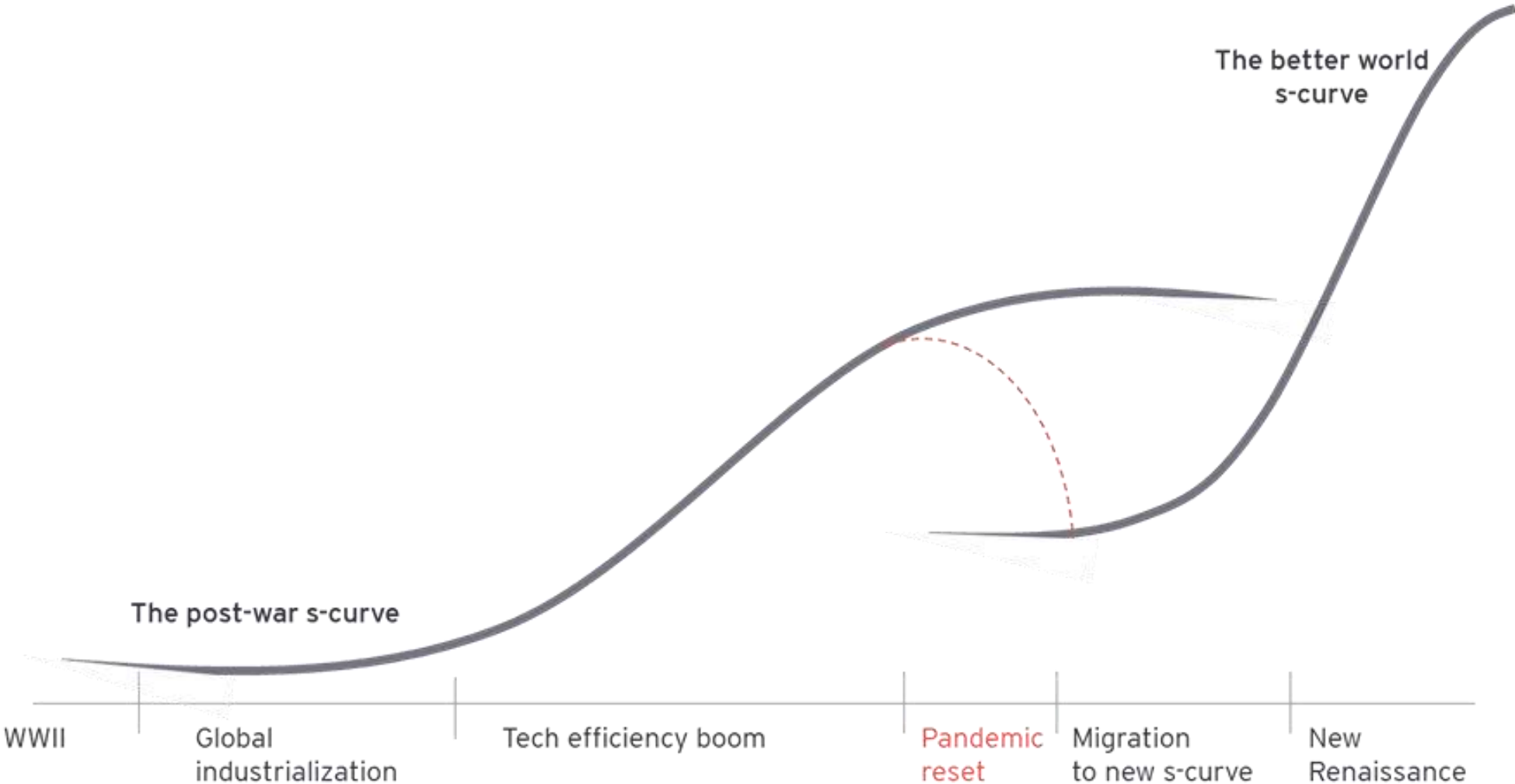


COVID and a green recovery

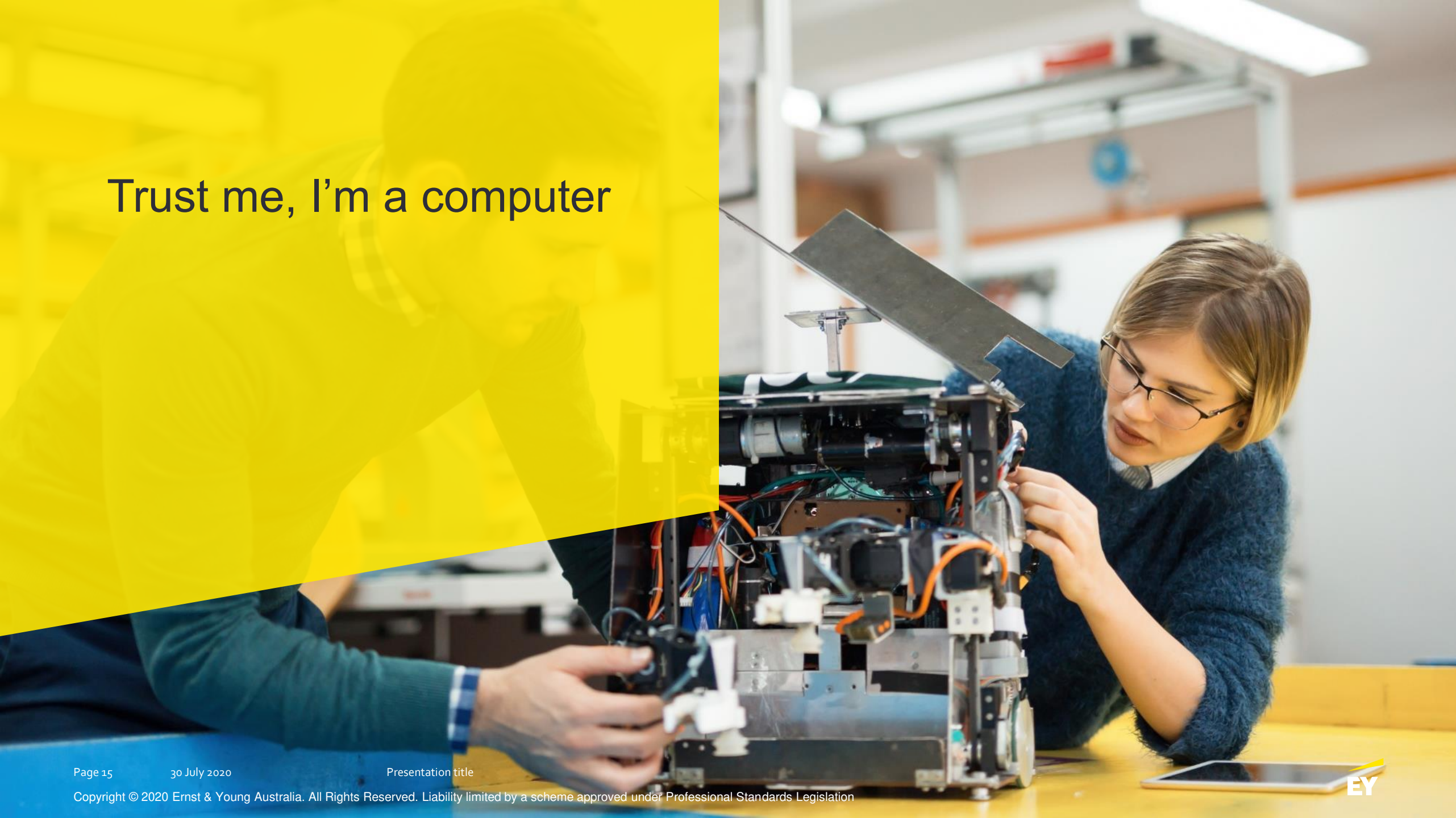
- €750bn
- 25% allocated to climate action



COVID-19 and the migration to a new s-curve



Trust me, I'm a computer



POLLING QUESTION TIME



“

In less than ten years quantum computers will begin to outperform everyday computers, leading to breakthroughs in artificial intelligence, the discovery of new pharmaceuticals and beyond.

Prof. Jeremy O'Brien

Director of the Centre for Quantum Photonics at the University of Bristol

The fight for supremacy

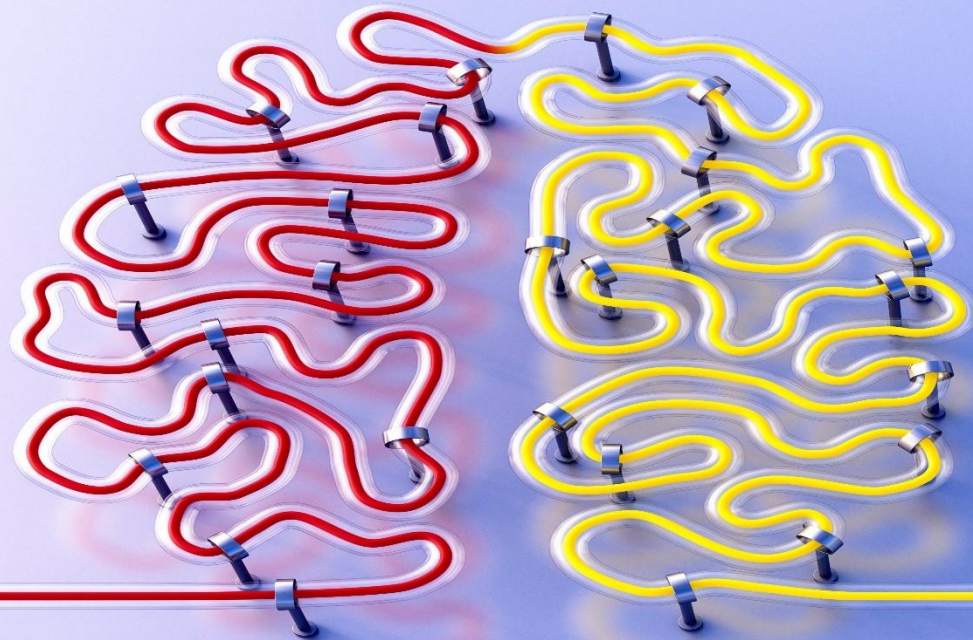
**Connectivity and
the Internet of
Things**

**Data ownership
and control**

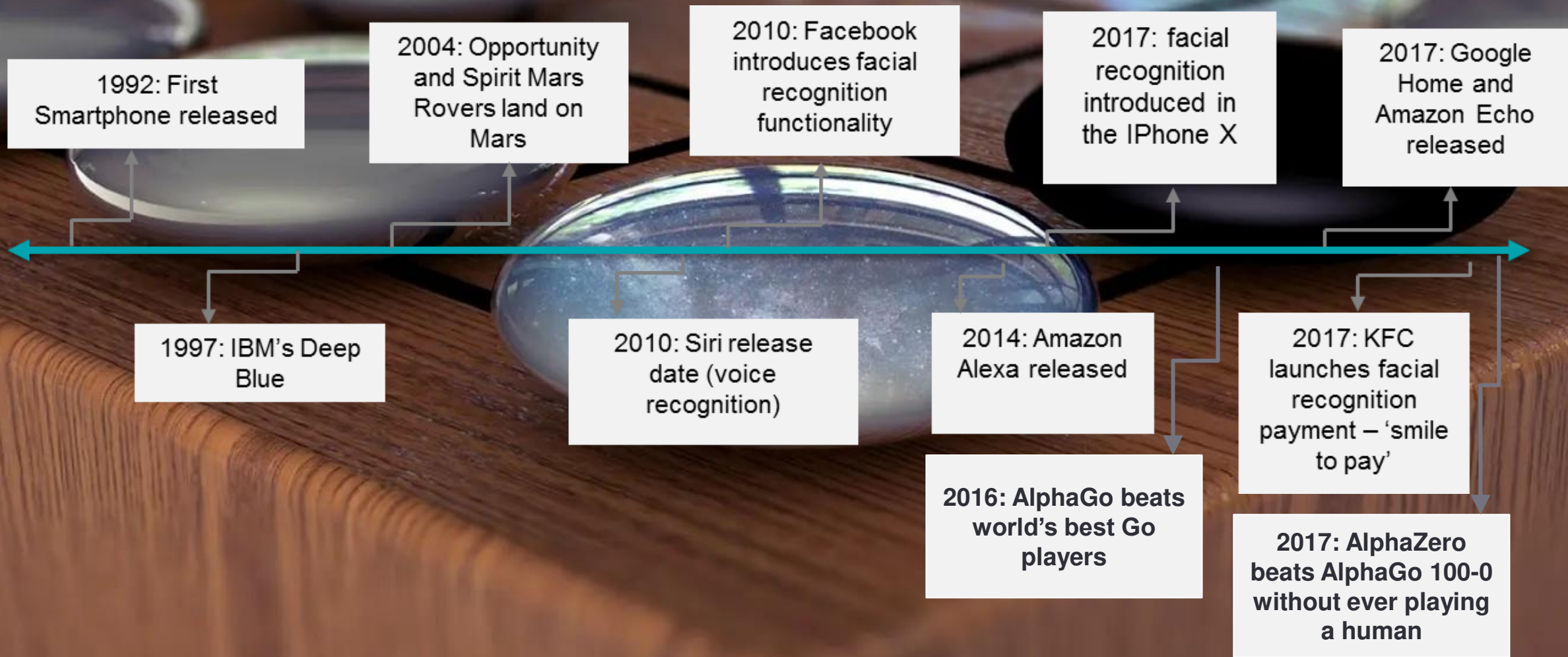
**Machine Learning
Algorithms**

A.I.

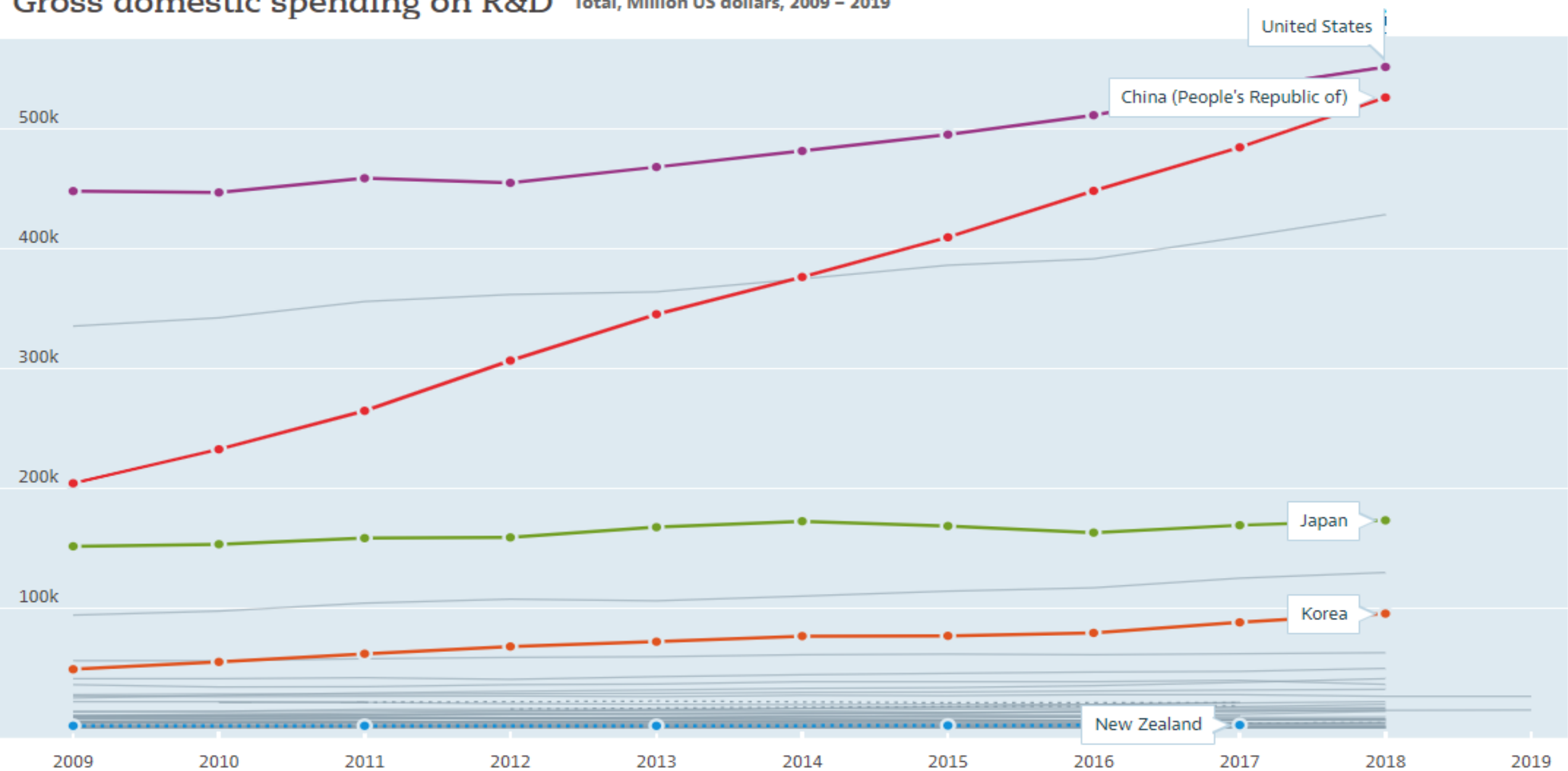
Computing
speed 1,000,000
x faster than
neurons



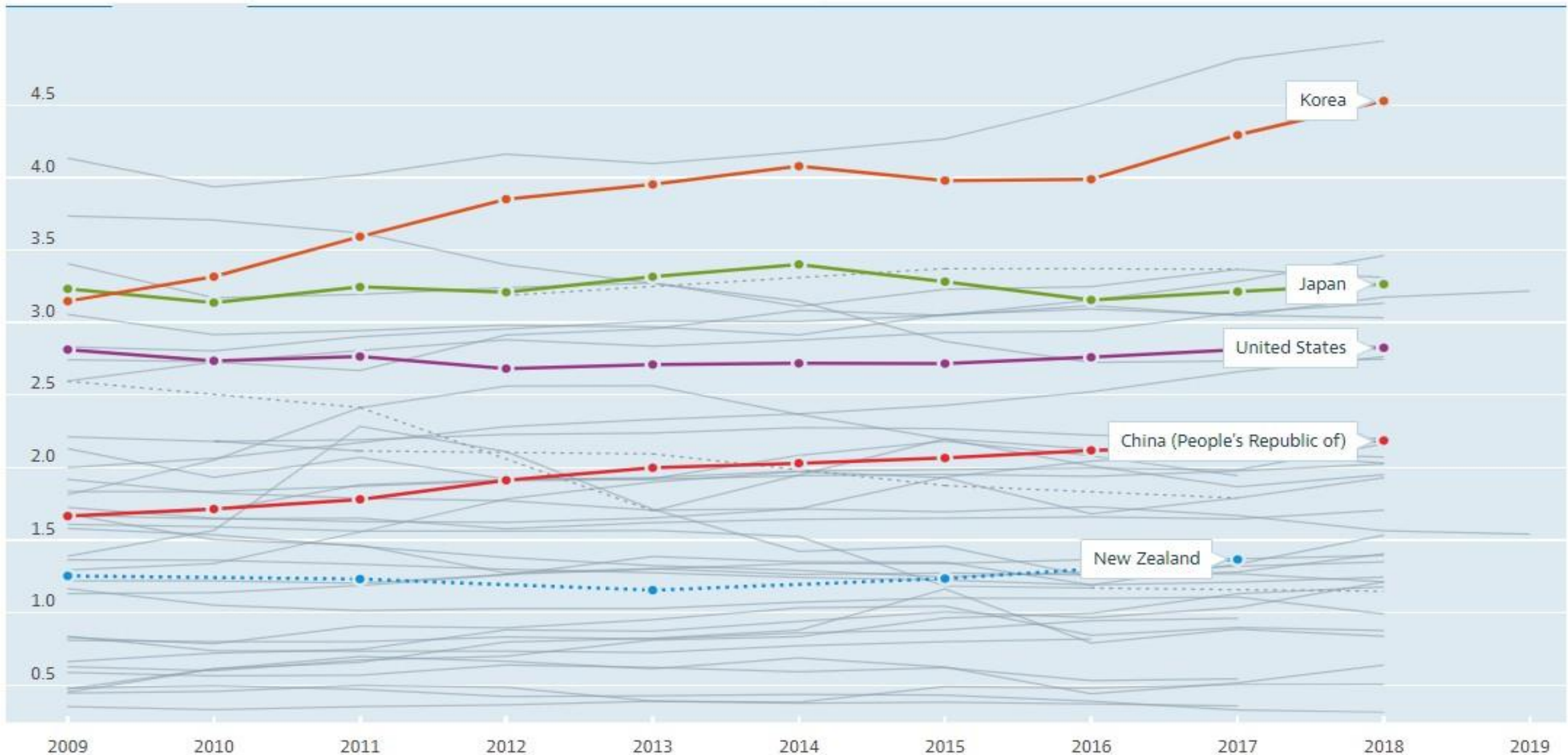
Intelligence not
limited by size
of a cranium



Gross domestic spending on R&D Total, Million US dollars, 2009 – 2019

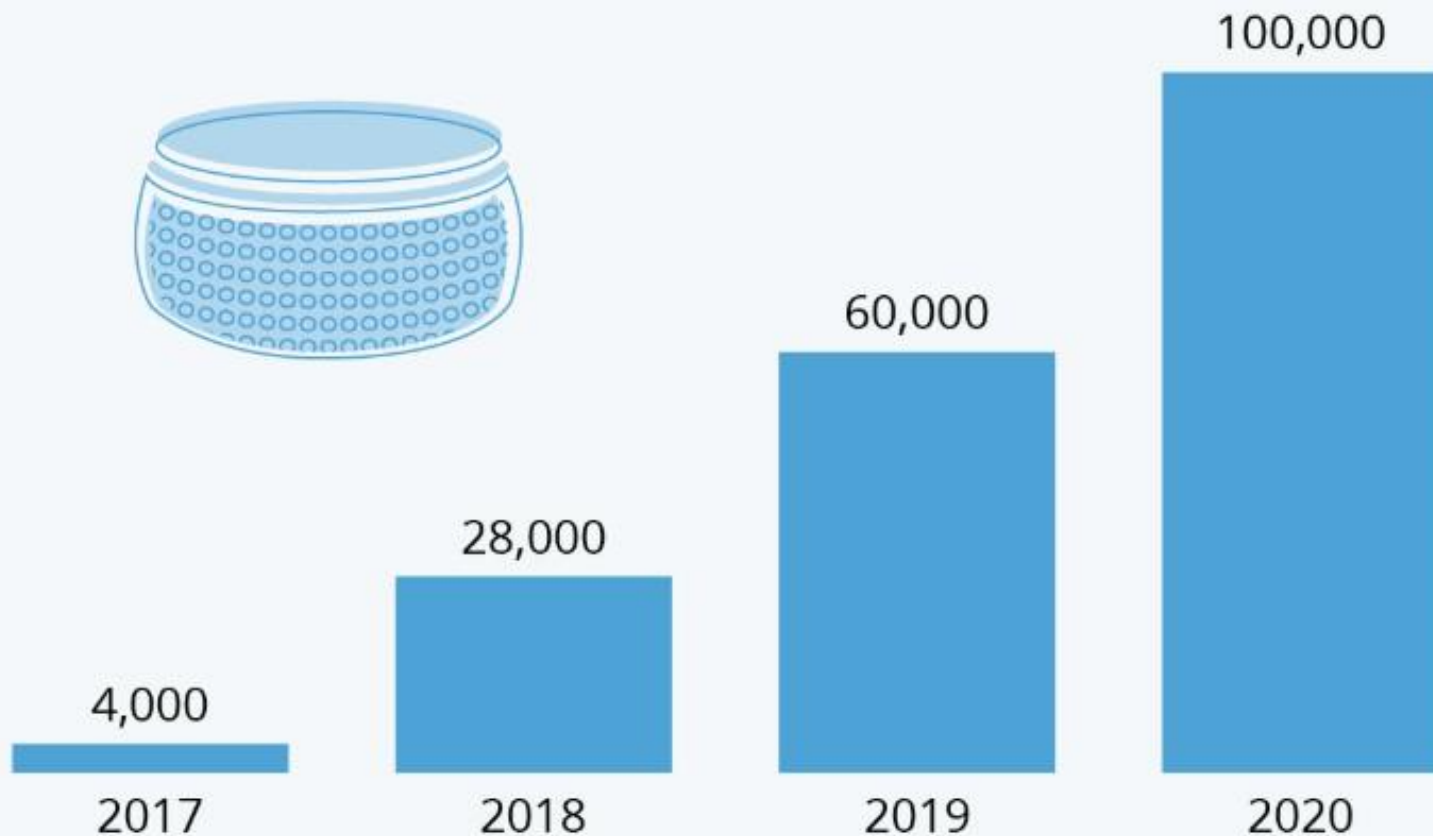


Gross domestic spending on R&D Total, % of GDP, 2009 – 2019

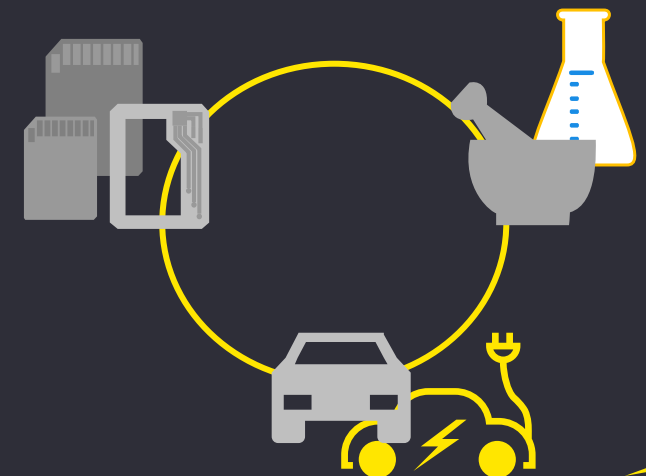


The Growing Footprint of Amazon's Alexa

Total number of smart home devices that can be controlled with Amazon's Alexa



- Amazon is the largest R&D spender in the world
- Amazon R&D and technology spend went from \$22.6bn in 2017 to **\$35.9bn** last year
- For scale: They spent just \$40bn fulfilling **all** their orders globally
- Top spenders are: **Tech**; **Pharma**; and **Vehicle** OEMs



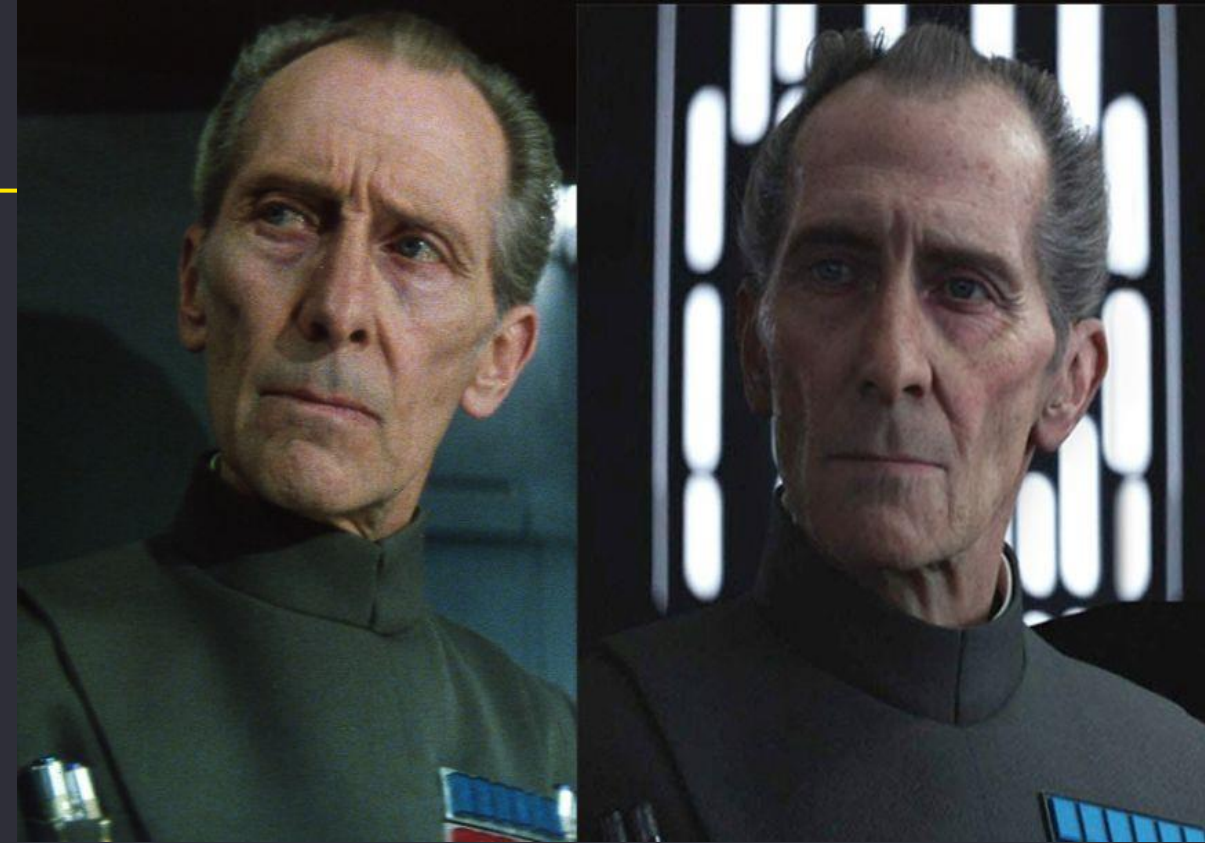
Who can you Trust?

OpenAI's GPT-3

- ▶ 175 billion parameters
- ▶ Writes articles, answers questions, and finishes code often indistinguishable from humans

"For me, the big story about gpt3 is not that it is smart - it is dumb as a pile of rocks - but that piles of rocks can do many things we thought you needed to be smart for. Fake intelligence may be dominant over real intelligence in many domains."

Anders Sandberg, Senior Research Fellow at Oxford University



Deep Fakes – beyond bringing movie stars back from the dead, combined with AI they threaten trust in media

Synthetic Media – the next decadal threat to business trust?

SOCIAL ACCEPTANCE ISSUES

- *Is it subtle?*
- *Is it discrete?*
- *Is it unobtrusive?*
- *Is it fashionably acceptable?*

DATA PRIVACY CONCERNS

- *Can anyone gain information about me?*
- *Is the information limitless?*
- *Can anyone detect and recognise me?*

ETHICAL CONCERNS

- *How will users be affected?*
- *How will users be manipulated?*
- *How will users be persuaded?*
- *How will users be informed?*

Is Automation just for Automobiles?

- Robotics are replacing roles today, largely pre-programmed manual tasks
- BUT, human-aware robotics are evolving – making decisions in-the-moment and learning over time

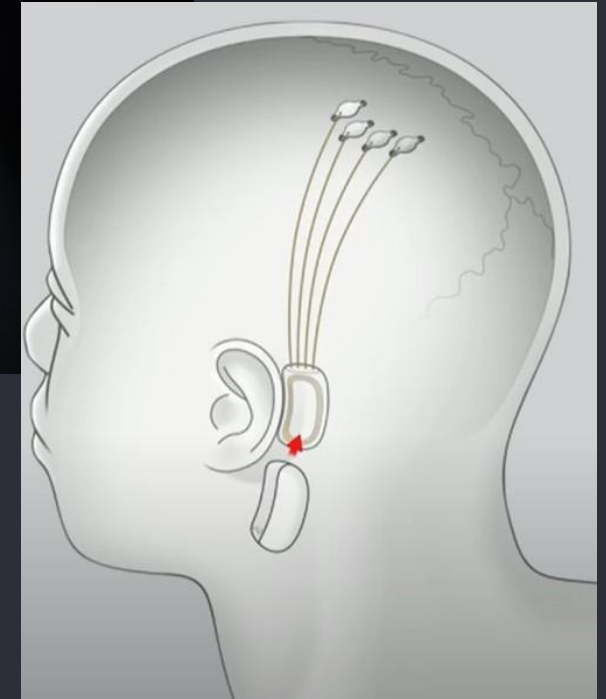
10% of
US Jobs

1.35m+
Road Deaths;
NZ 5th
highest/km



If you can't beat them, join them

- The Brain Machine Interface (BMI) offers the opportunity to go beyond biological barriers
- **Neuralink**: *Elon Musk company*
- **Paradromics**: *seeking to allow people to walk again*
- **Neurable**: *enables user to control the VR universe with your mind*
- **Kernal**: *a device that will help a person to learn faster, remember more*



“We will not be able to be smarter than a digital supercomputer, so, therefore, if you cannot beat 'em, join 'em” Elon Musk

Who we'll be and what we'll do



POLLING QUESTION TIME



“

Gen Z are more racially and ethnically diverse than any previous generation, and they are on track to be the most well-educated generation yet. They are also digital natives who have little or no memory of the world as it existed before smartphones.

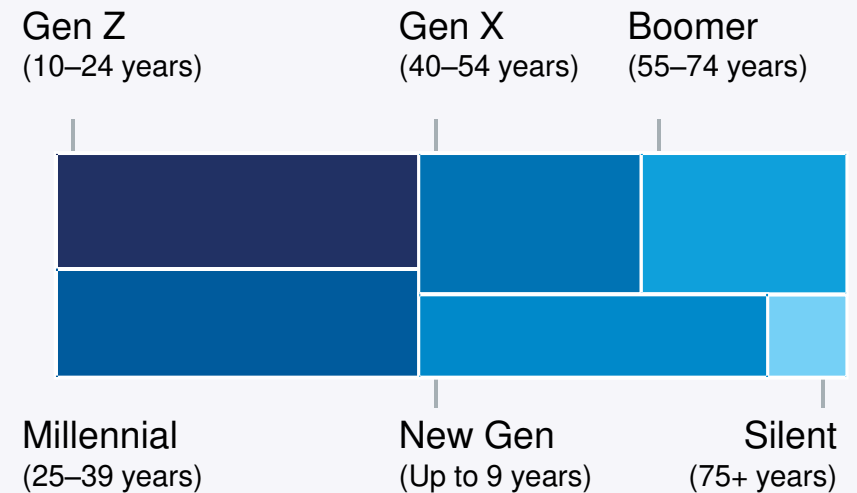
Pew Research Centre

‘What we know about Gen Z so far’ March 2020

Gen Z

- The first generation to have 100% smartphone penetration
- Purpose-driven and **sustainability-focused**
- Solution-focused, but expect more from Government than Business
- Regional differences: Emerging economies vs. old economies

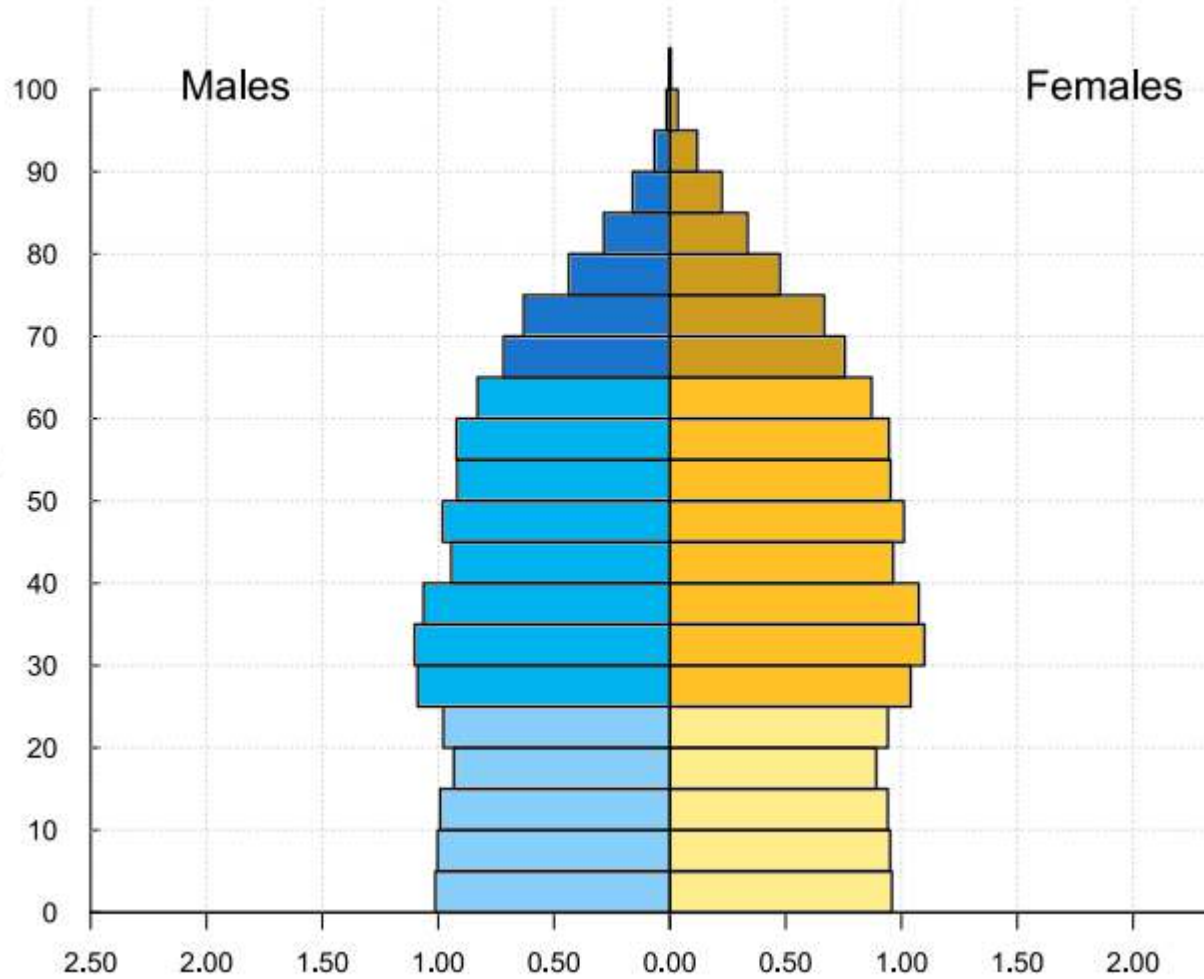
The next decade will be shaped by the maturation of Gen Z, the largest generational cohort in history



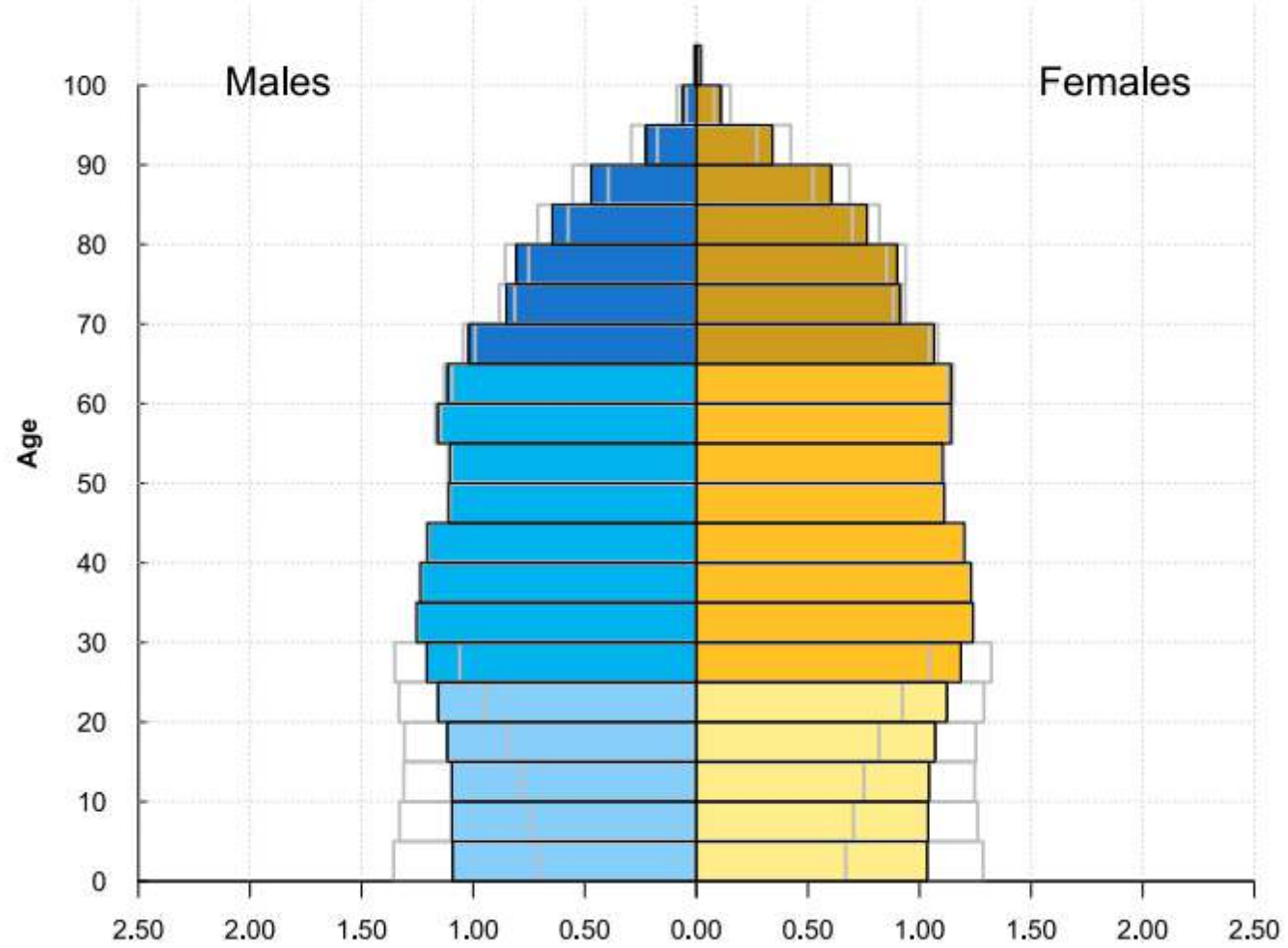
Source: EY analysis of World Bank Population Projections and Estimates data for 2020; age ranges adapted from Pew Research for globally consistent data.

AUS/NZ UN 2019 World Population predictions

Population in 2020



Population in 2050



Work and life becomes unbounded

- Imagine a world without weekends, colleges replaced by lifelong learning, and 30-year-old pre-retirees and 70-year-old workers

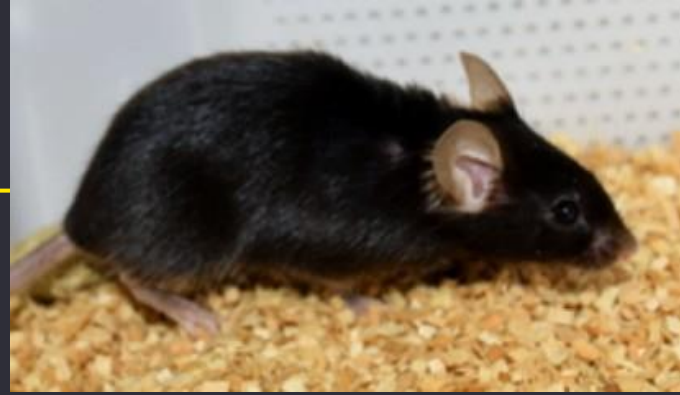
Social infrastructure pressured as 'tax paying class' shrinks, costs rise, and people live longer

Technology and Innovation replaces need for work

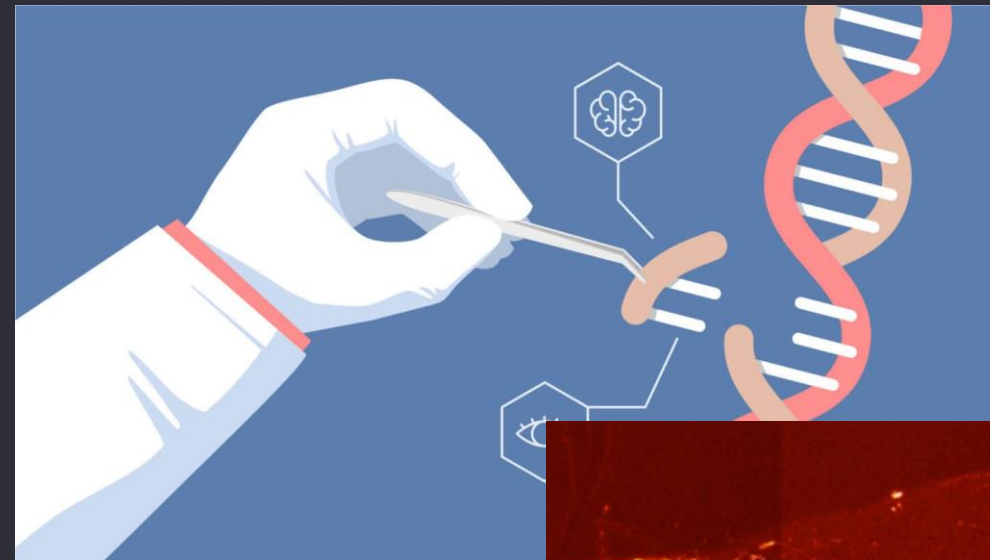
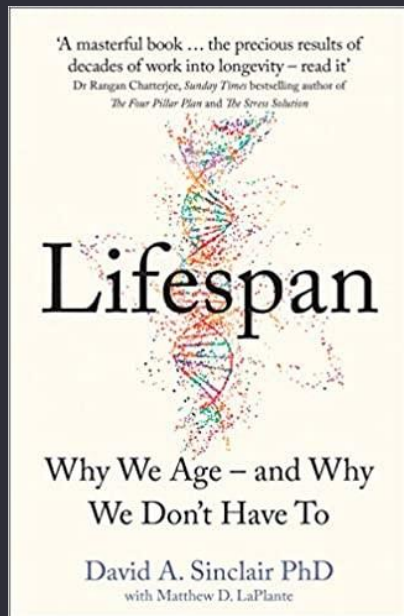
New Economic Structures emerge, and human purpose is re-defined

Unless we can 'treat' aging

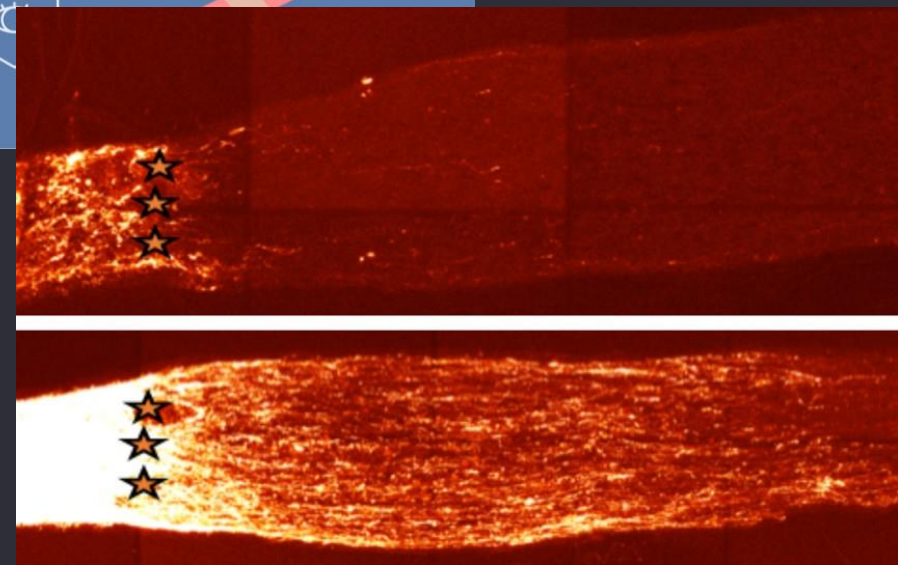
- Much of what ages us appears to be pre-determined in our genetics
- Could we 'treat' aging as a disease?



David Sinclair c/o Harvard Medical School



- Does CRISPR offer new insights into our ability to modify our genes?



Ethics and Environment – changing how and what we eat



First cultured hamburger, before being cooked. World Economic Forum,



The Race to Zero



POLLING QUESTION TIME

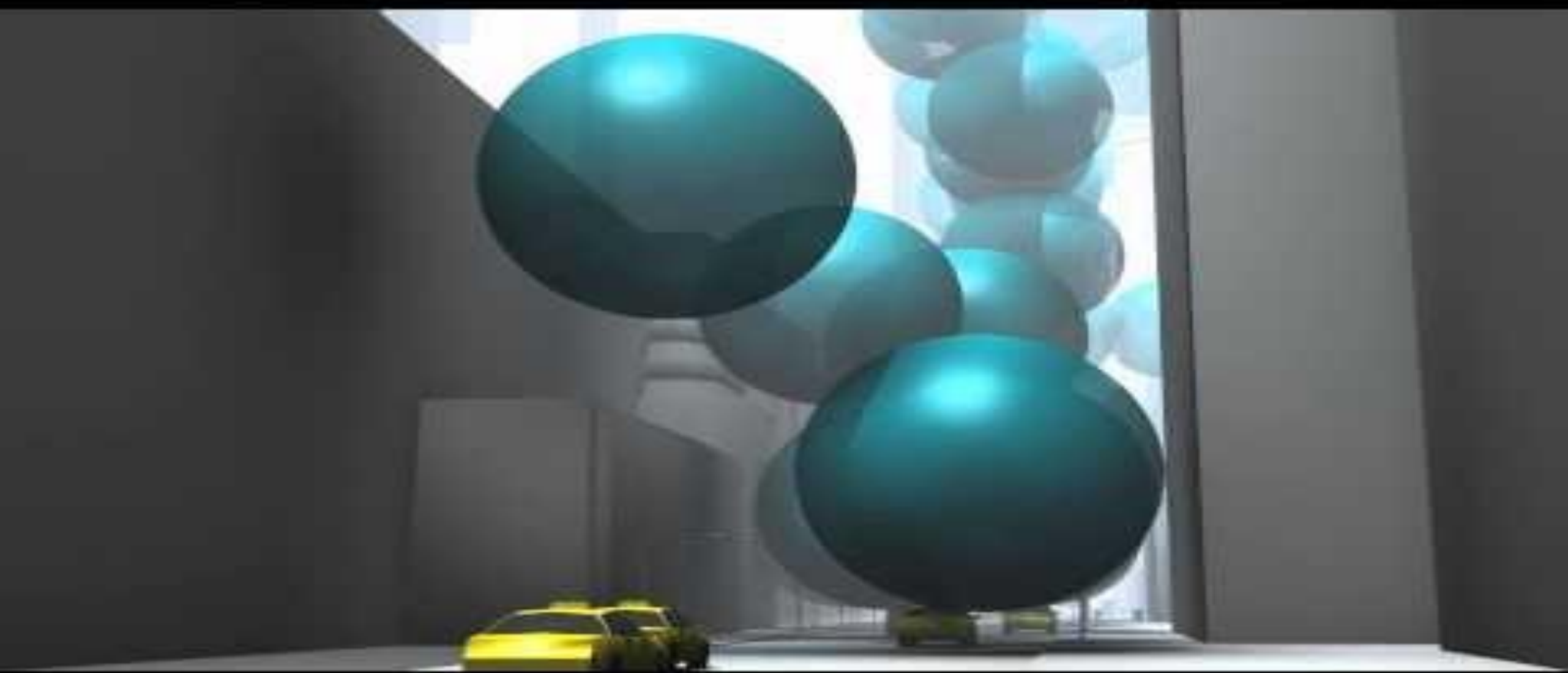


“

At first when I heard about climate change, I was a climate denier. I didn't think it was happening. Because if there really was an existential crisis like that, that would threaten our civilisation, we wouldn't be focusing on anything else.

Greta Thunberg

Climate Activist



Climate change is a priority for investors, businesses, governments and local communities

The New York Times

DealBook Business & Policy

DEALBOOK

BlackRock C.E.O. Larry Fink: Climate Crisis Will Reshape Finance

In his influential annual letter to chief executives, Mr. Fink said his firm would avoid investments in companies that “present a high sustainability-related risk.”

Aviva Investors demands greater climate change disclosure

UK fund house to vote against companies that do not reveal their global warming risks

Financial Times

Energy groups to be sued over climate change

Activists hope oil and gas producers will be forced to make settlements similar to those of tobacco industry

Weather warning



The Economist Today Weekly edition Menu

Heathrow third runway ruled illegal over climate change

Appeal court says decision to give go-ahead not consistent with Paris agreement



Asia Jan 2nd 2020 edition >

Australia's bushfires intensify its debate about climate change

The government that scrapped a carbon tax has no plans to bring it back

Netherlands climate lawsuit goes to court of appeals

Published on 28/05/2018, 5:02am


Urgenda and 900 citizens successfully sued in 2015 for stronger Dutch climate policy but the government is challenging the court's right to rule on policy details

The New York Times

States Sue to Block Trump From Weakening Fuel Economy Rules

At stake in the lawsuit is the single biggest effort by the United States to fight the climate crisis.

The Economist Today Weekly edition Menu



Leaders May 21st 2020 edition >

Countries should seize the moment to flatten the climate curve

A new opportunity to tackle climate change

Besieged by the rising tides of climate change, Kiribati buys land in Fiji

Nation finalises purchase of land on Vanua Levu, 2,000km away, but it may be just the first of many seeking refuge

https://www.ey.com/en_gl/assurance/how-can-climate-change-disclosures-protect-reputation-and-value
https://www.ey.com/en_gl/assurance/how-can-climate-change-disclosures-protect-reputation-and-value

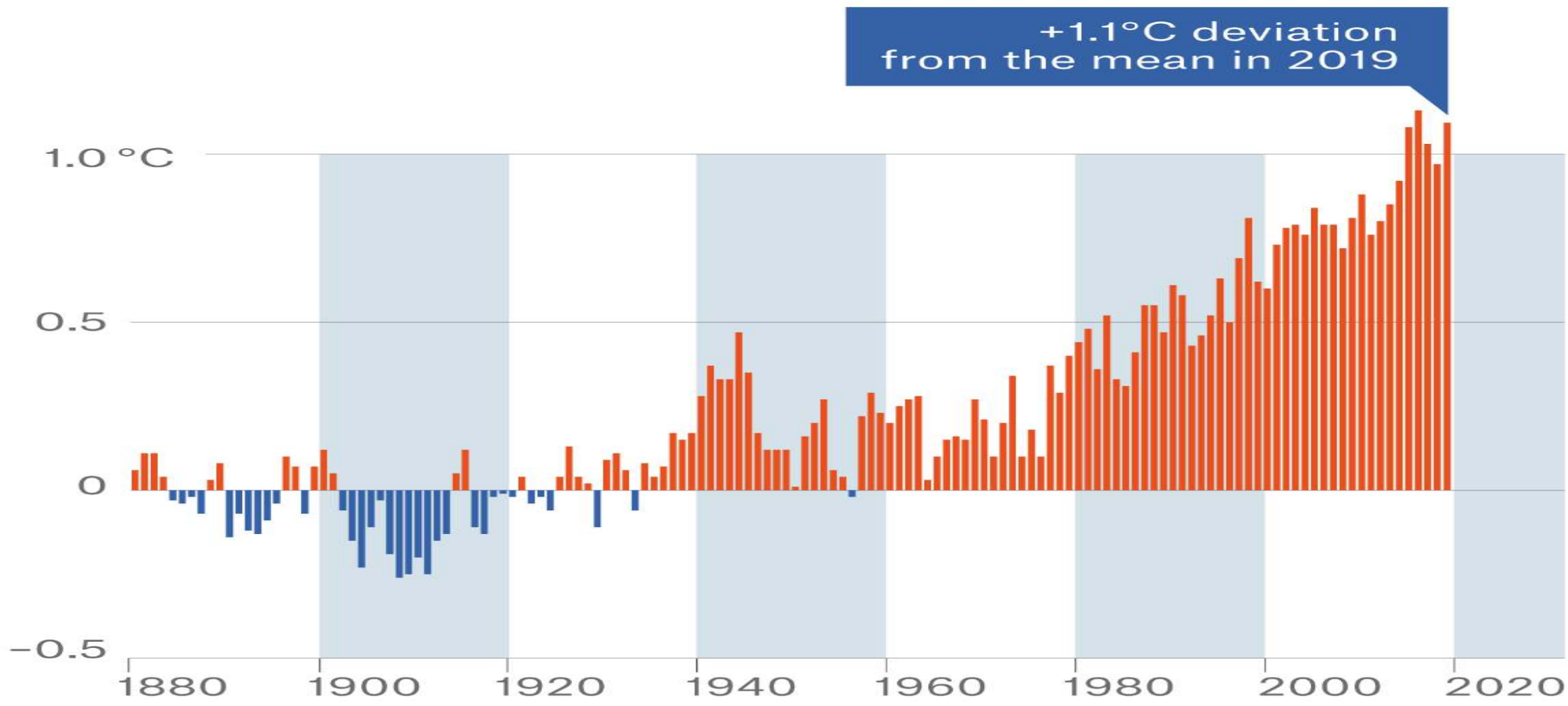
Source: The Economist, New York Time, The Guardian, Financial Times, Climate Change News, 2018 -2020

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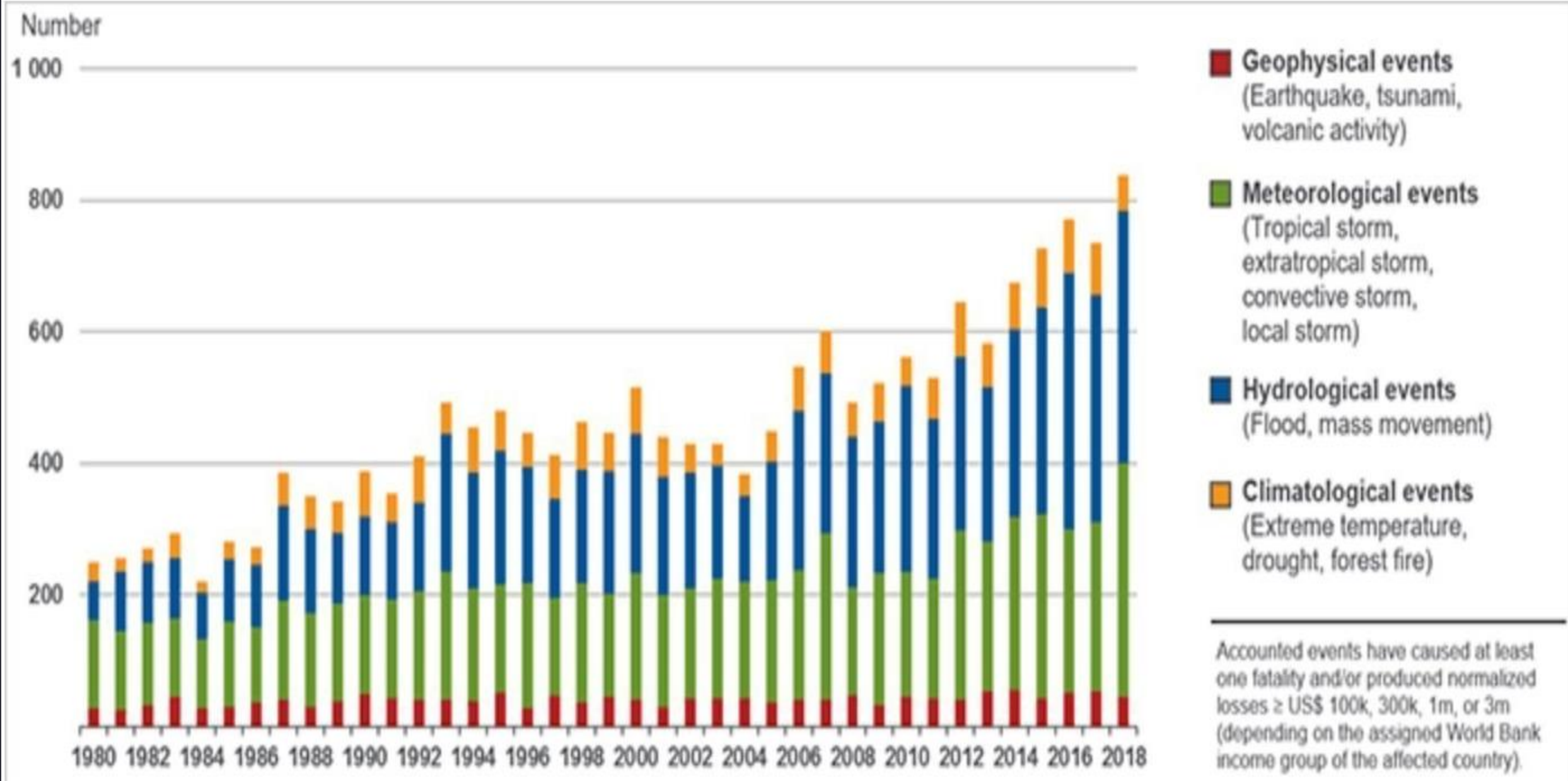
19 of the 20 warmest years in the period 2001–2019

Deviation from the 1880–1900 average

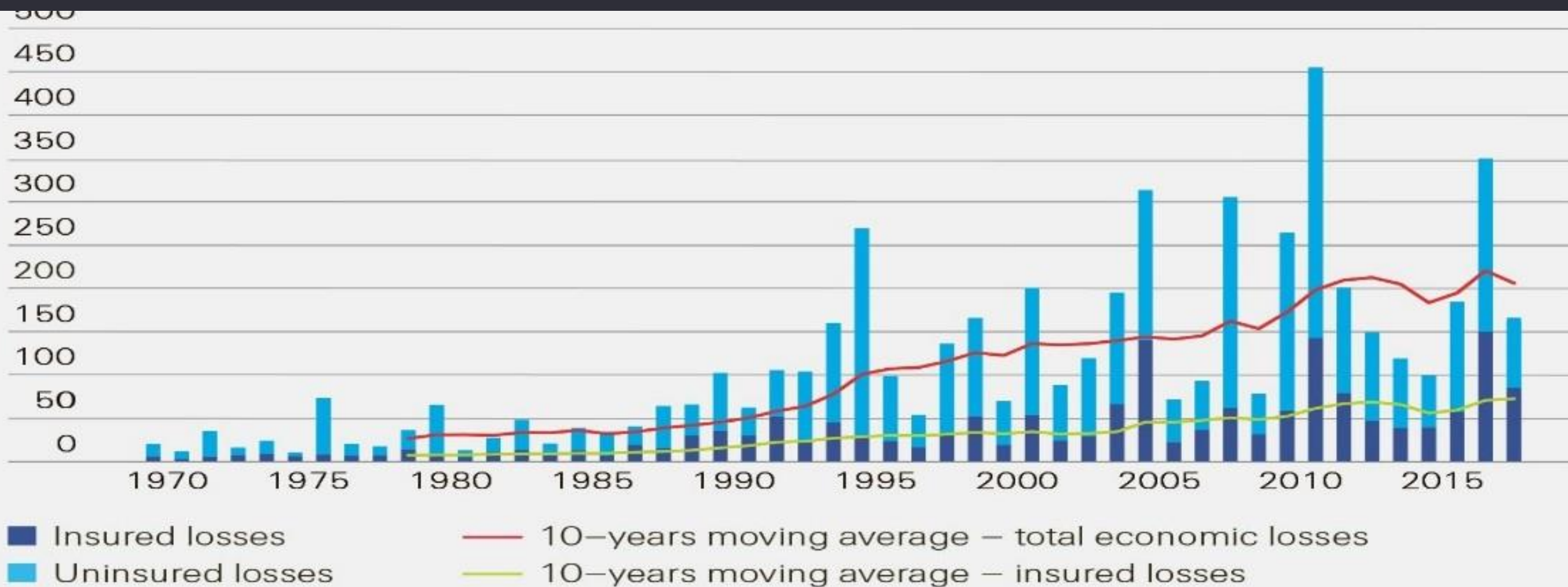


Source: NOAA/WMO





Uninsured losses borne by society



Economic losses = insured + uninsured losses

Source: Swiss Re Institute

What do we mean by Climate Change Risk or “Climate Risk”?

Climate change financial risks are material, foreseeable and actionable*

Physical risk

- ▶ Changing climate conditions
- ▶ Extreme weather events



Direct damage to assets or property

- ▶ Lower asset values
- ▶ Increased insurance claims
- ▶ Supply chain disruption

Transition risk

- ▶ Policy changes
- ▶ Technology innovation
- ▶ Social adaptation



Disruption from adjustment to low carbon economy

- ▶ Impacts on pricing and demand
- ▶ Stranded assets
- ▶ Defaults on loans

Liability risk

- ▶ Stakeholder litigation and regulatory enforcement

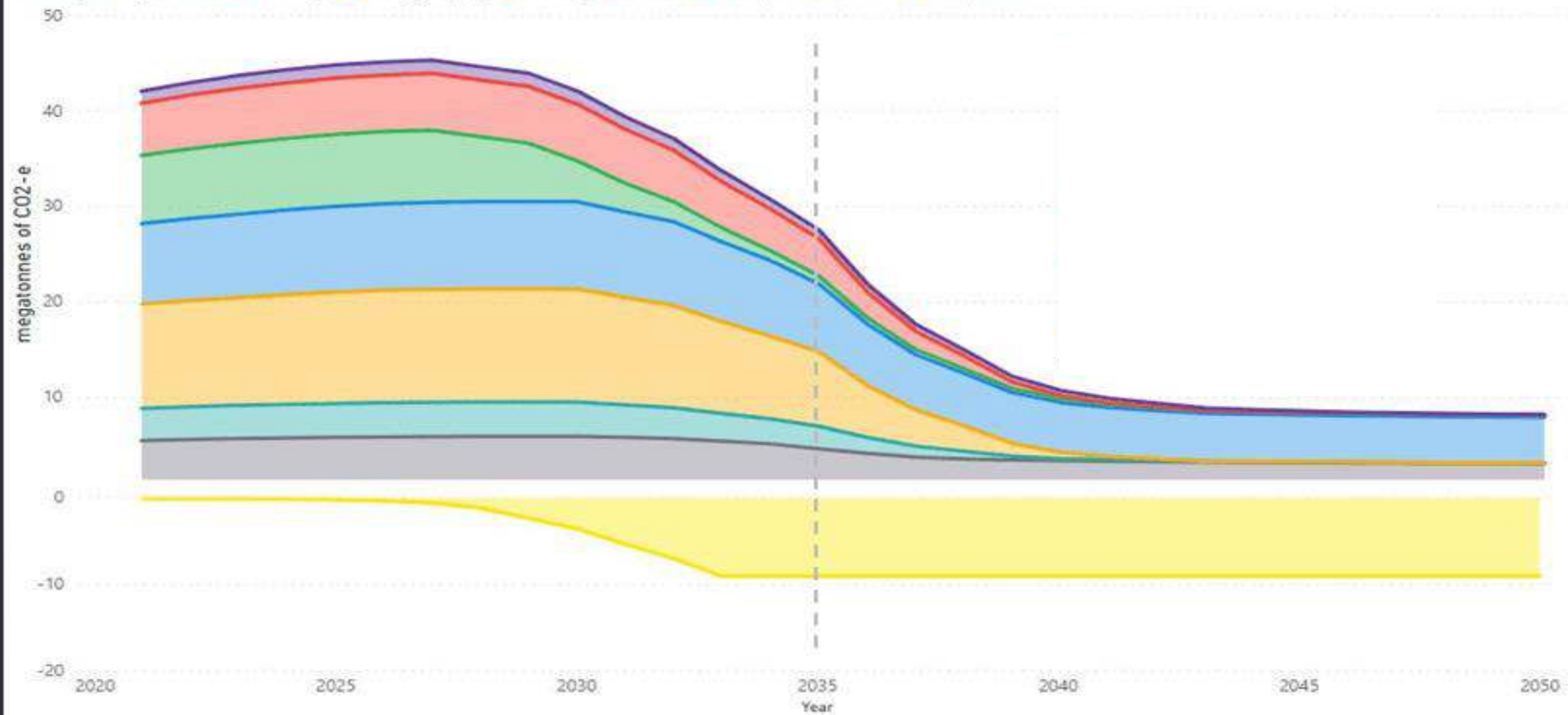


Not considering or responding to the impacts of climate change

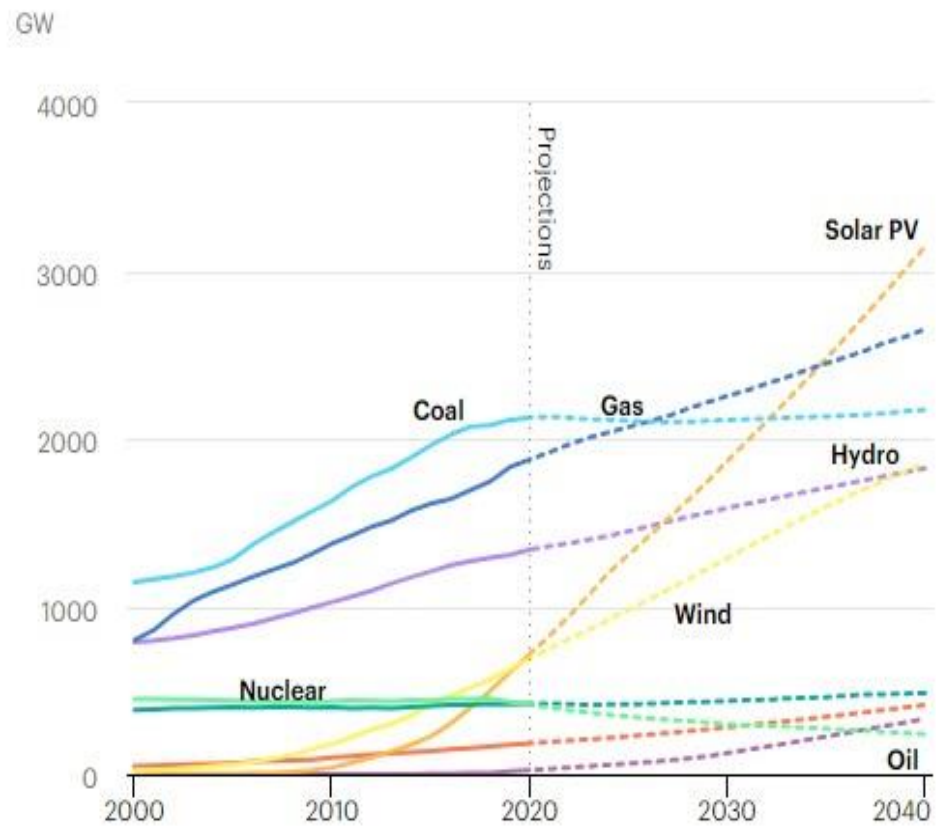
- ▶ Business disruption resulting from litigation
- ▶ Penalties resulting from litigation

Future modelled emissions by industry and required sequestration for 1.5 degree scenario

Industry ● Agriculture ● Buildings ● Energy Supply ● Industry ● LULUCF ● Transport ● Waste ● + Sequestration

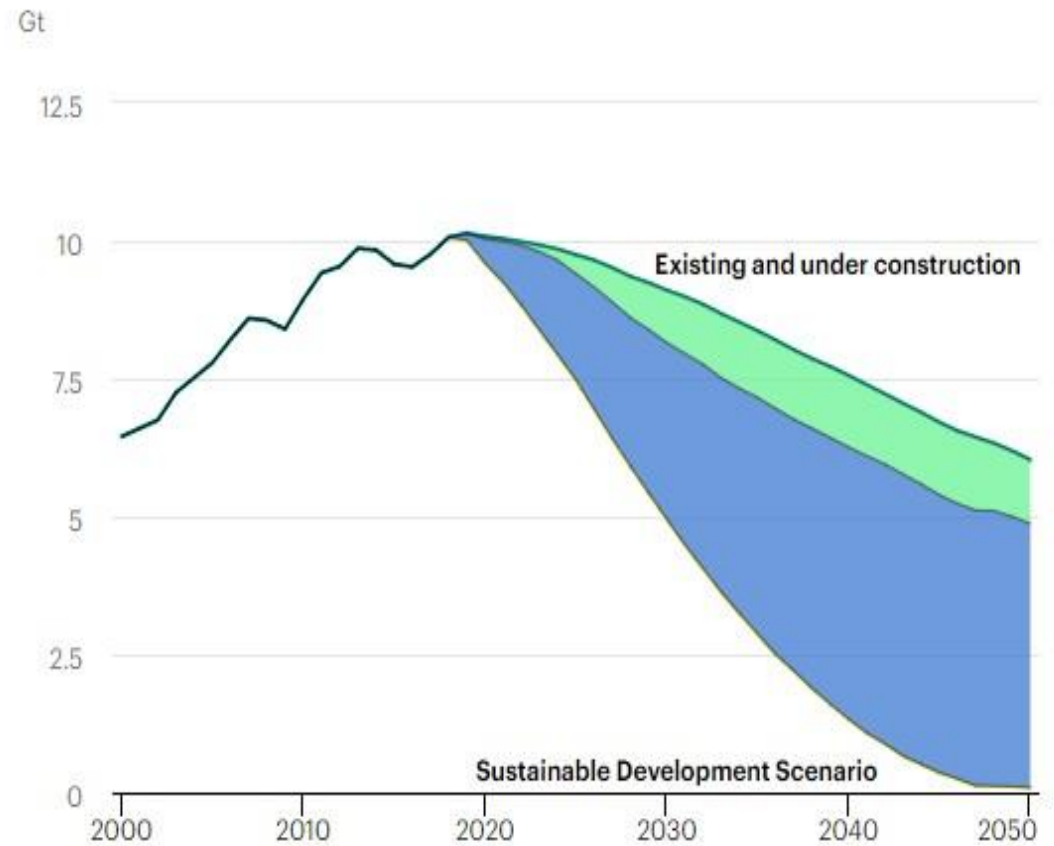


Installed power generation capacity by source in the Stated Policies Scenario, 2000-2040



- Coal
- Gas
- Oil
- Nuclear
- Wind
- Solar PV
- Other renewables
- Hydro
- Battery storage

Annual CO2 emissions from coal-fired power plants, 2000-2050

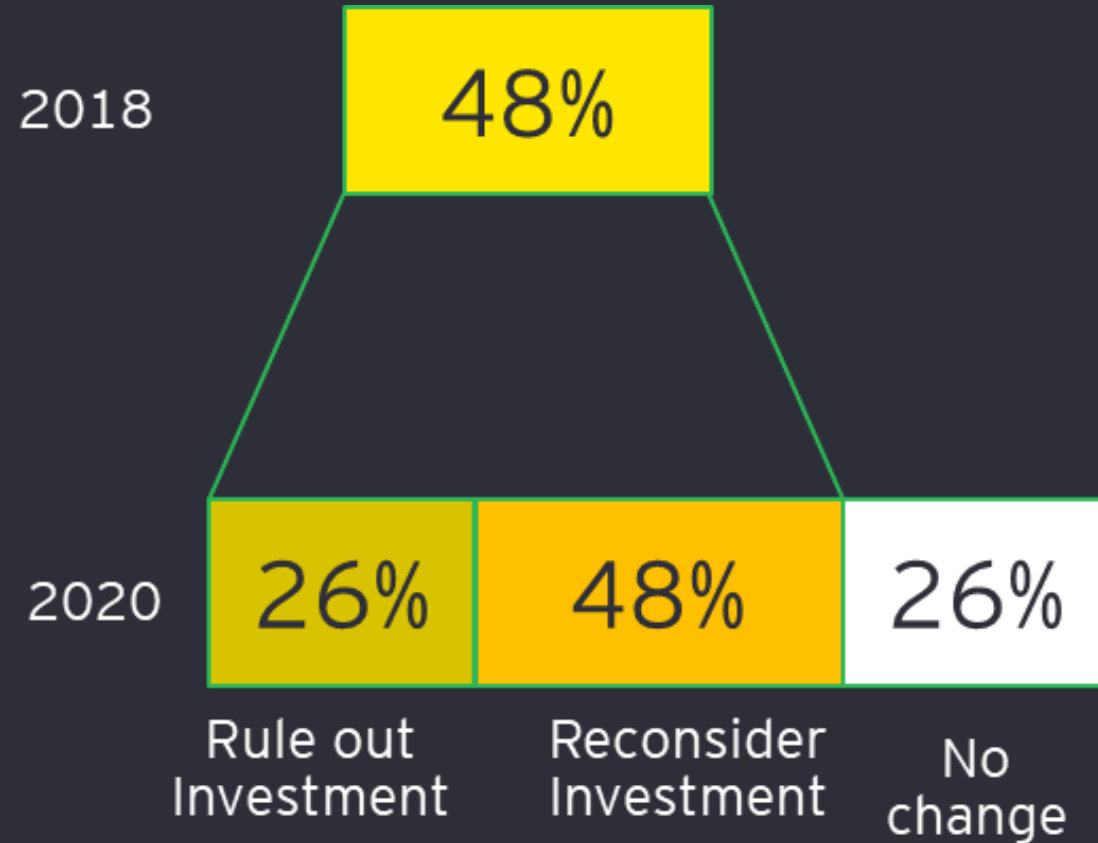


- CCUS retrofits or repurposing
- Early retirements
- Existing and under construction
- Sustainable Development Scenario

How would the Risk of Climate Change of a prospective investment affect the investment decision?

2020 Investor Survey Question:

Considering the following disclosures about a prospective investment, please say how the following would affect your investment decision?



What will be the investible future?

- Economic growth is enabled in all sectors, even resources
- Changes in crop and farm, and value deemed from land management
- Carbon removal moves from ‘mitigation’ to being financially incentivised – ‘negative emissions’
- Engineered solutions include direct air capture, conversion of waste gases and sequestration in the built environment.
- Natural solutions include soil sequestration, reforestation and afforestation.



OCCUPATION	GROWTH RATE, 2016-26	2018 MEDIAN PAY
Solar photovoltaic installers	105%	\$42,680 per year
Wind turbine service technicians	96%	\$54,370 per year
Home health aides	47%	\$24,200 per year
Personal care aides	39%	\$24,020 per year
Physician assistants	37%	\$108,610 per year
Nurse practitioners	36%	\$107,030 per year
Statisticians	34%	\$87,780 per year
Physical therapist assistants	31%	\$58,040 per year
Software developers, applications	31%	\$103,620 per year
Mathematicians	30%	\$101,900 per year

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