Climate change
Is it too late to stop Armageddon?
• Are we really facing Armageddon?
• Global Policy Response
• UK Policy
• Scottish Policy
• Non State Actors
• Is this enough? Or is it too late?
AGENDA

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a) Observed global temperature change and modeled responses to stylized anthropogenic emission and forcing pathways

Global warming relative to 1850-1900 (°C)

- Observed monthly global mean surface temperature
- Estimated anthropogenic warming to date and likely range

**Likely range of modeled responses to stylized pathways**
- Global CO₂ emissions reach net zero in 2055 while net non-CO₂ radiative forcing is reduced after 2030 (grey in b, c & d)
- Faster CO₂ reductions (blue in b & c) result in a higher probability of limiting warming to 1.5°C
- No reduction of net non-CO₂ radiative forcing (purple in d) results in a lower probability of limiting warming to 1.5°C

Source: IPCC. ‘Special Report, Global Warming of 1.5°C, Warning to Policy Makers’
IPCC key findings

- Currently at +1°C
- Time running out to limit to 1.5°C
- 10 years of emissions ‘left’ (at current rate)
- Net-zero by 2050
• Non-linear increase in risks
• Including of ‘catastrophic shocks’
• Drastic impacts on sea levels, biodiversity, human health
• Limiting to 1.5°C helps attain the Sustainable Development Goals
Source: World Resources Institute. 'Half a degree of warming makes a big difference, Explaining IPCC's 1.5°C special report'
ECOSYSTEMS
Amount of Earth’s land area where ecosystems will shift to a new biome

PERMAFROST
Amount of Arctic permafrost that will thaw

CROP YIELDS
Reduction in maize harvests in tropics

CORAL REEFS
Further decline in coral reefs

FISHERIES
Decline in marine fisheries

Source: World Resources Institute. ‘Half a degree of warming makes a big difference, Explaining IPCC’s 1.5°C special’ report
Impacts and risks associated with the Reasons for Concern (RFCs)

Source: IPCC. ‘Special Report, Global Warming of 1.5°C, Warning to Policy Makers’
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The Paris Agreement

- Well below 2 degrees
- Efforts towards 1.5 degrees
- Includes a review and ratchet system
- Net zero emissions in second half of century
- Agreed by all 195 countries - and 164 made commitments
Since the Paris Agreement

- US withdrawal announced

- **UN secretary General Action Summit September 2019**
  - 65 countries committed to ‘net zero’ by 2050
  - Russia Ratified the Paris Agreement
  - Major commitments from subnational governments and corporates
  - Climate change has shot up political agenda
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UK Climate Policy

- Climate Change Act 2008
- Legally binding carbon budgets
  - 57% by 2030 compared to 1990 levels
  - 42% achieved by 2017
- Net Zero emissions by 2050
Net Zero emissions by 2050

- Net zero involves
  i) nearly zero emissions
  ii) capturing or offsetting residual emissions
  iii) excludes aviation, shipping
  iv) offsets can be purchased internationally

- Costing £1trn (that’s according to the Treasury)
What will Net Zero take in the UK

- Complete the decarbonisation of the power sector
- Step change in rate of improving energy efficiency (Buildings, transport, industry)
- Decarbonise residential heating
- Tackle emissions from mobility
- And from land use and agriculture
• Autumn Energy White Paper postponed
• Consultations on Electricity Markets, Energy Efficiency, Heat, Industrial Transformation, Fuel Poverty, Carbon Capture and Storage, etc
• Plethora of spending announcements
• Minimum Carbon Price post- Brexit
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Scottish Climate Policy

- Net Zero Emissions by 2045
- Action on diets, agriculture, land use planning, peatlands
- Electric mobility
- Energy use in buildings
Scottish Energy Policy

- Renewables
- Hydrogen
- Marine Energy (offshore wind, Tidal, Wave)
  - A Just Transition
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There are over 220 governments in the #Under2Coalition. They represent:

- 43% of the global economy
- 1.3 billion people
- US$34 trillion GDP

Global footprint
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Electric vehicle fleet size outlooks

Source: Bloomberg NEF, organization publications. Note: Some values are BNEF estimates based on organization charts.
Global total net CO₂ emissions

Billion tonnes of CO₂/yr

In pathways limiting global warming to 1.5°C with no or limited overshoot as well as in pathways with a higher overshoot, CO₂ emissions are reduced to net zero globally around 2050.

Four illustrative model pathways

Source: IPCC. ‘Special Report, Global Warming of 1.5°C, Warning to Policy Makers’
Figure ES.2: Number of countries that have peaked or are committed to peaking their emissions, by decade (aggregate) and percentage of global emissions covered (aggregate)

Number of countries that have peaked:
- By 1990: 19
- By 2000: 33
- By 2010: 49
- By 2020: 53
- By 2030: 57

Percentage of global emissions covered by these countries:
- By 1990: 21%
- By 2000: 18%
- By 2010: 36%
- By 2020: 40%
- By 2030: 60%

Source: Levin and Rich (2017)
Source: UNEP 2018 Emissions Report
NO – BUT IT SOON COULD BE
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