

ECRAN Climate Module 4 LEAP training  
Albania, Tirana, 20 - 22 April 2016

## Assessment results of the aggregated impacts of INDCs and relevant climate impacts



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## Agenda Points

1. Why 2°C?
2. What should we do to achieve 2°C?
3. What do the INDC pledges add up to?
4. What benefits could these pledges have?
5. What more needs to be done?
6. Key messages



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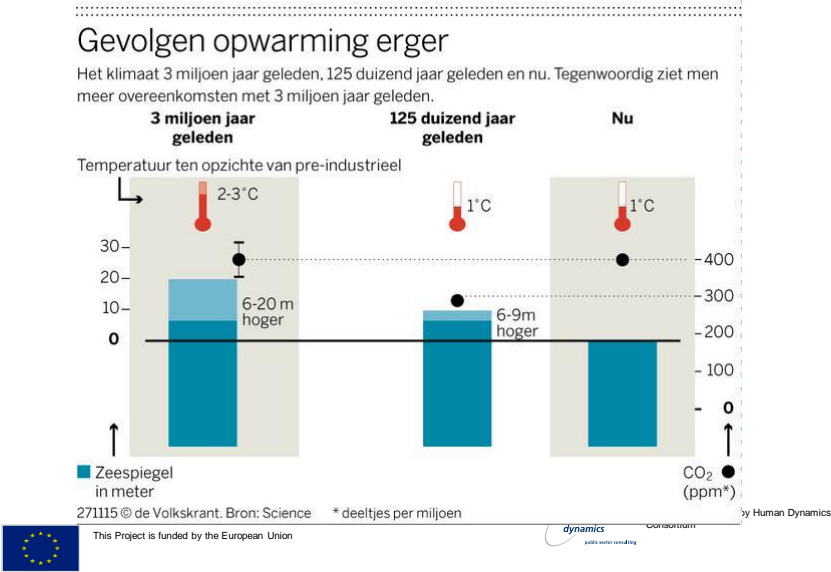


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Environment and Climate  
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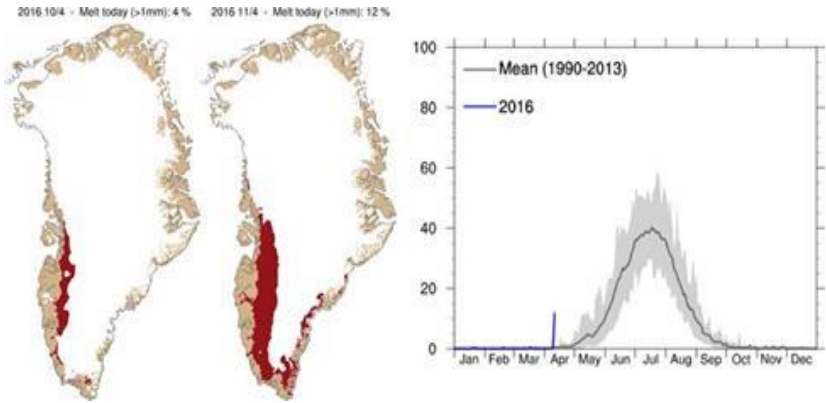
# The need to keep temperatures well below 2C



[PBS.TWIMG.COM/MEDIA/CE2TBVCW](https://pbs.twimg.com/media/CE2TBVCW)

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## Impact of current emissions ?



2 billion people  
with increased  
water scarcity

10-12 billion  
people/year  
exposed to  
heatwaves



70-90 million  
people/year  
affected by river  
flooding

Cooling  
demands 2x



50% of plant  
species lose >  
half habitat

60% of cropland  
less suitable for  
agriculture



Source: AVOID 2



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## Some global benefits

- Some water-stressed people may have more water
- Some flood-prone people could be flooded less frequently
- Some cropland would see an improvement in suitability for agriculture
- Higher CO<sub>2</sub> concentrations could improve the productivity of some crops

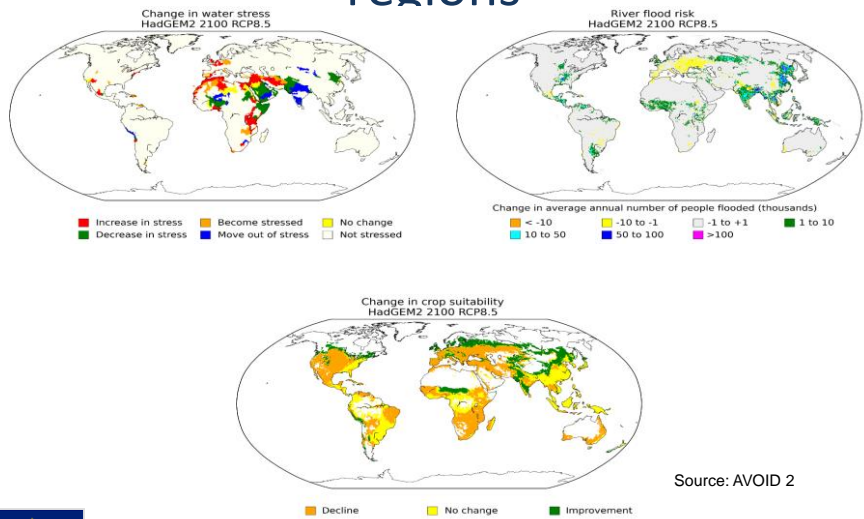


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....But impacts vary between regions

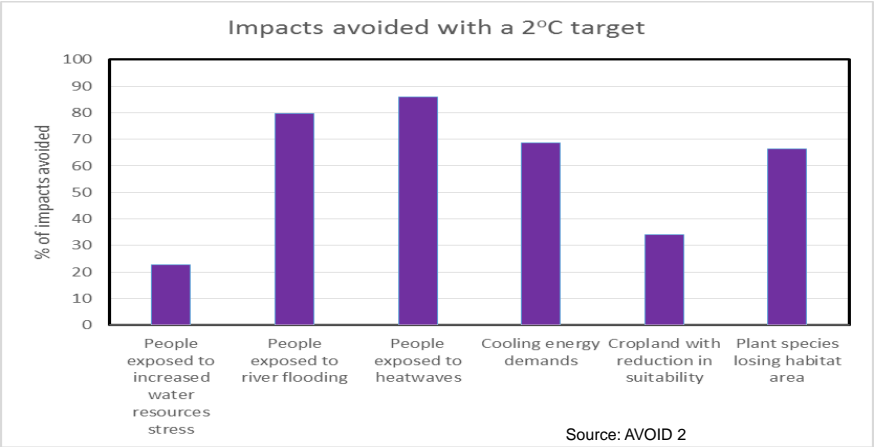


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impacts we avoid if we achieve 2°C



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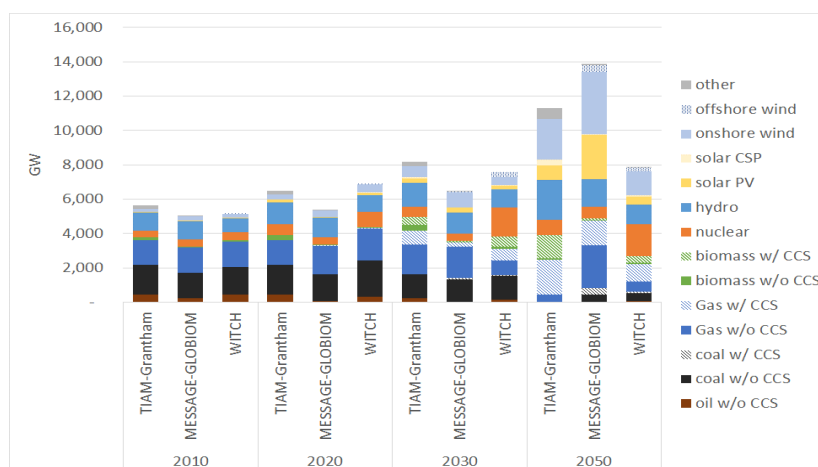


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In a plus 2 degree C scenario, electricity is highly decarbonised by 2050

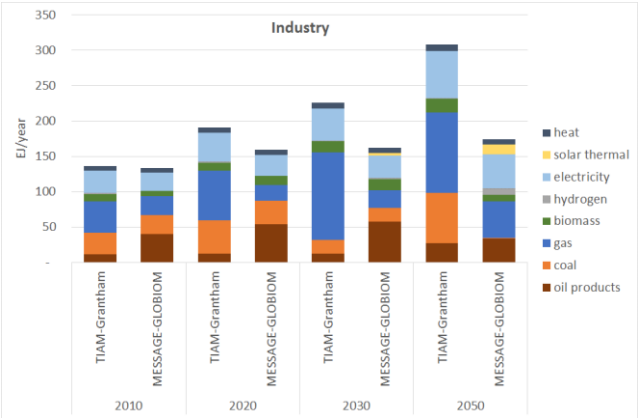


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In a 2 °C Scenario, the fuel mix in end-use sectors shifts to electricity and other low carbon fuels



- **Industry** sees increasing:
  - electrification
  - gas replacing coal
  - CCS (not shown)
- **Transport** sees oil replaced by:
  - biofuels
  - electricity (electric vehicles, plug-in hybrids)
  - hydrogen (fuel cell vehicles)
- **Buildings** see increased:
  - electrification (heat pumps)
  - less coal and oil for heating

Sources: IIASA and Grantham Institute

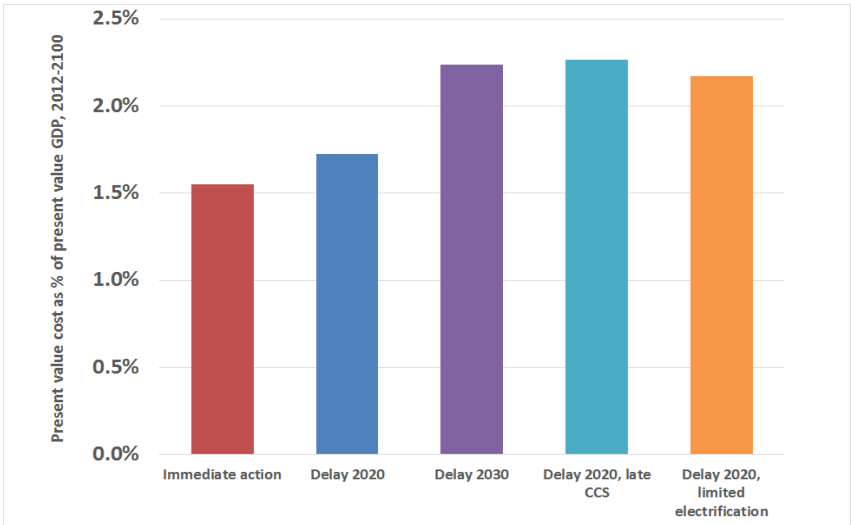


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2 °C costs in the order of 2% of GDP



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## Synthesis – Summary of outcomes for 2030

- UNFCCC synthesis report (30 October 2015)
  - As at 1<sup>st</sup> October, 148 Parties' INDCs submitted, covering 87% of global population, 94% of global GDP, 80% of global emissions
  - 2030 median estimate is 57 GtCO<sub>2</sub>e (range 53-59 GtCO<sub>2</sub>e)
  - 2.8 GtCO<sub>2</sub>e below pre-INDC level of 2030 emissions
- Climate Action Tracker
  - INDCs lead to a 53-55 GtCO<sub>2</sub>e level of 2030 emissions
- AVOID 2:
  - INDCs lead to a 54 GtCO<sub>2</sub>e level of 2030 emissions
- Differences and uncertainties result from:
  - LULCUF accounting,
  - Estimates of future GDP growth
  - Estimates of future Business-as-Usual emissions
  - Conditionality of estimates



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human  
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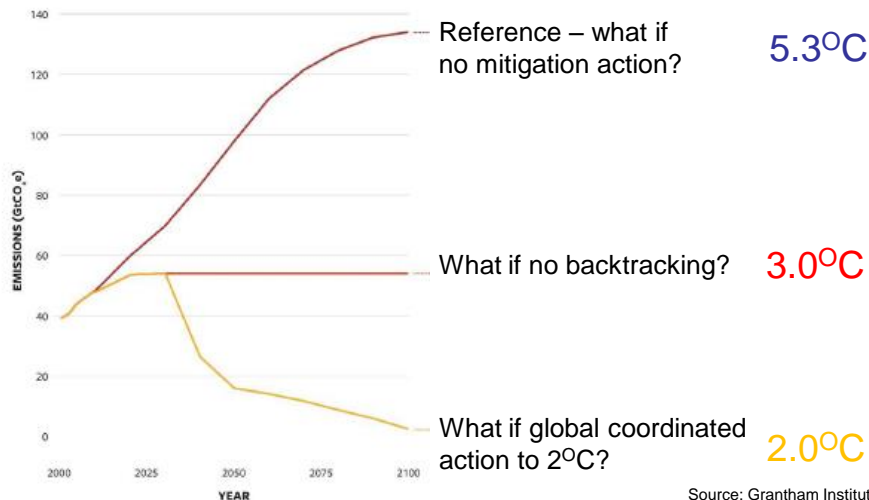
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# Synthesis – Summary of INDC outcomes for 2100



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Source: Grantham Institute  
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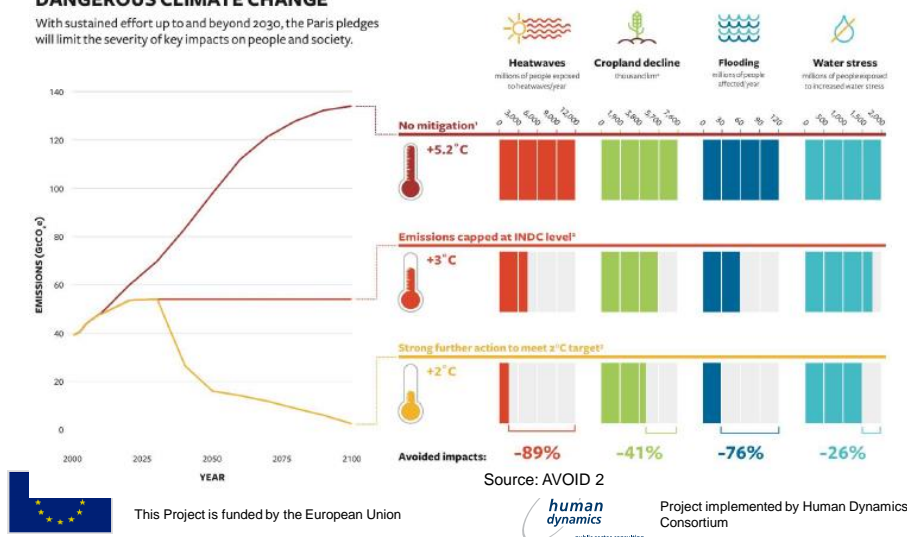


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## AVOIDING THE IMPACTS OF DANGEROUS CLIMATE CHANGE

With sustained effort up to and beyond 2030, the Paris pledges will limit the severity of key impacts on people and society.

### SELECTED GLOBAL CLIMATE IMPACTS IN 2100<sup>4</sup>



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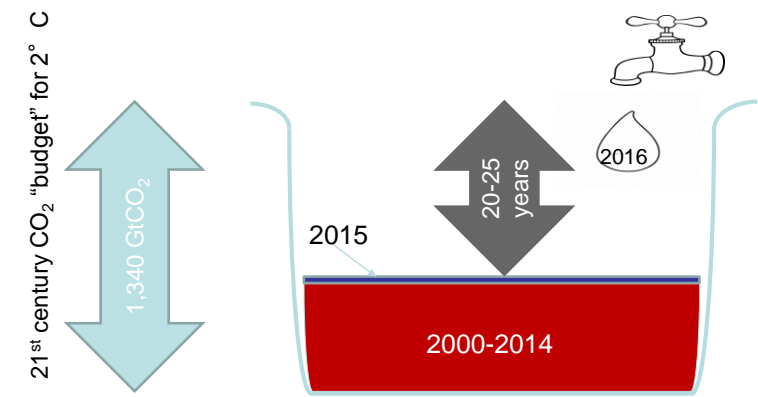


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# We should start early significant reduction of emissions



We should be significantly reducing emissions by 2030

Source: AVOID 2

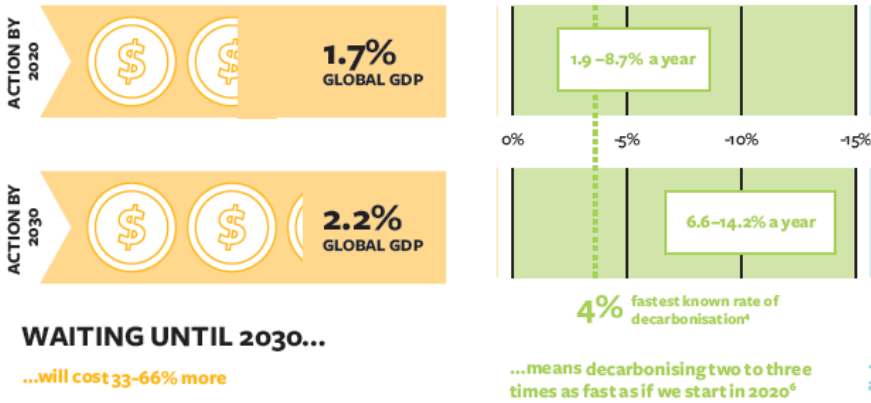


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# We should start early significant reduction of emissions



Source: AVOID 2



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# Earlier action means less aggressive technology deployment



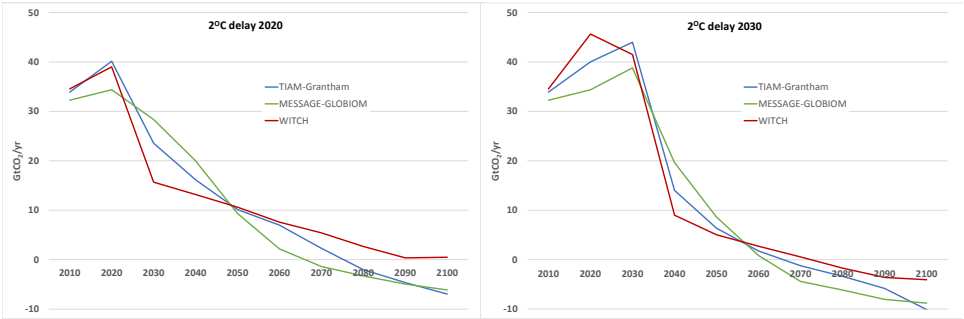
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Source: AVOID 2

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# Earlier action means less negative emissions



Delaying action 10 years (i.e. to 2030) means three times as much negative emissions in the 21<sup>st</sup> century



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Source: AVOID 2

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## What are the key techniques

1. Bio-energy with CCS (BECCS) to achieve negative emissions with delayed action, but this has many uncertain side effects
  - If bioenergy from existing forests, it could result in net positive emissions and reduction biodiversity
2. Massive decentralised sun, water and wind with storage may be the key....
3. Behavioural change – Increase Energy Efficiency, Reduce CO2 footprint/capita through changing current life patterns (flying, driving, feeding, passive houses, etc.)



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### 6. Key messages



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## Key messages

- **2°C or less** is a goal which would avoid significant adverse climate impacts
- This requires a **transition to much lower fossil** fuel electricity, industry, transport and buildings
- The INDCs add up to about **54GtCO<sub>2</sub>e in 2030** according to AVOID 2
- Long-term temperature implications of INDCs in the range **2.6-3°C by 2100**, *assuming that policies and actions increase after 2030*
- This cuts emissions from a **reference scenario of closer to 70GtCO<sub>2</sub>e in 2030**, which could avoid significant climate impacts, depending on the post-2030 emission pathway
- **Mitigation costs**, reliance on unproven negative emissions technologies, and ultimately the risk of **not achieving the 2°C goal, all increase** with delay
- So the INDCs are the start, and Paris began a process of increasing ambition so as to keep the 2°C goal (or lower) within reach – a “ratchet” mechanism is key to this.



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## Thank you



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