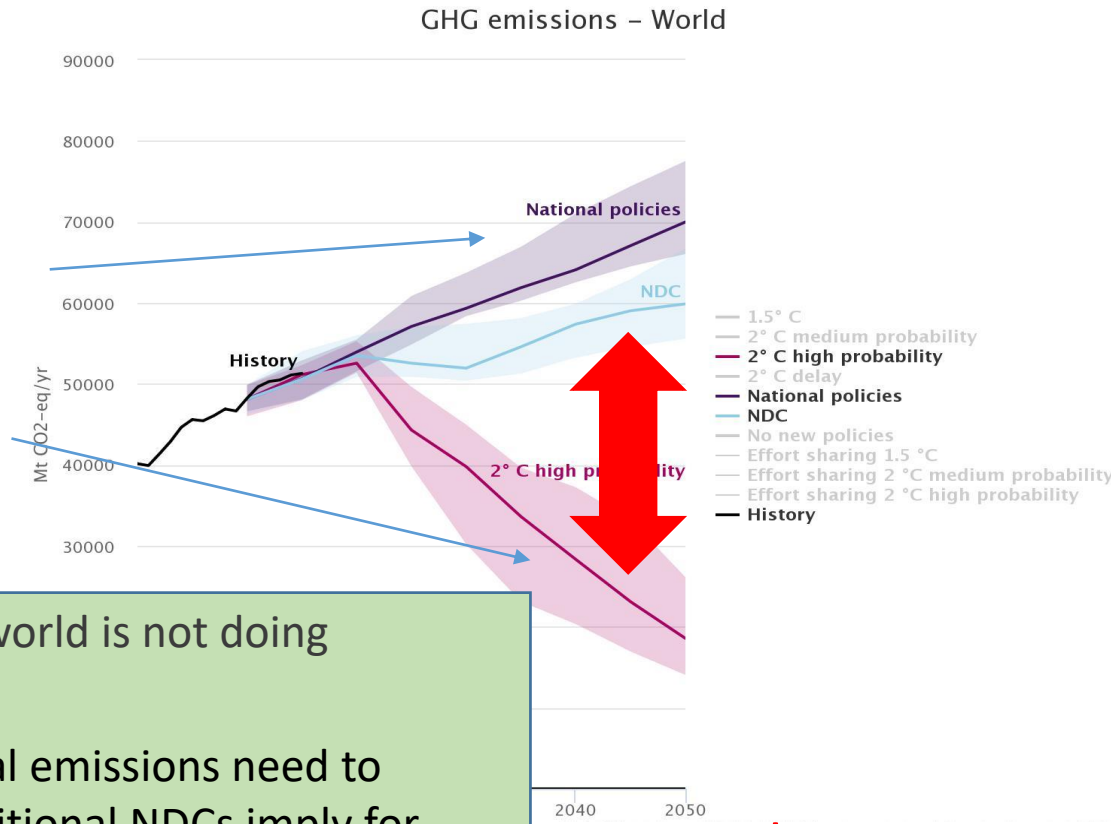
Robustness and legitimacy of evidence on emissions gap: Robustness/future work

Emission gap

- The gap in 2030 between:
  - *Where do we go?* expected impact of current policies and the NDCs
  - *Where do we want to be?* Emission trajectory consistent with Paris Agreement (well below 2ºC or 1.5ºC)



UN environment programme

Each year, the report has found that the world is not doing enough.

The emissions gap is large. In 2030, annual emissions need to be 15 GtCO2e lower than current unconditional NDCs imply for the 2°C goal, and 32 GtCO2e lower for the 1.5°C goal.

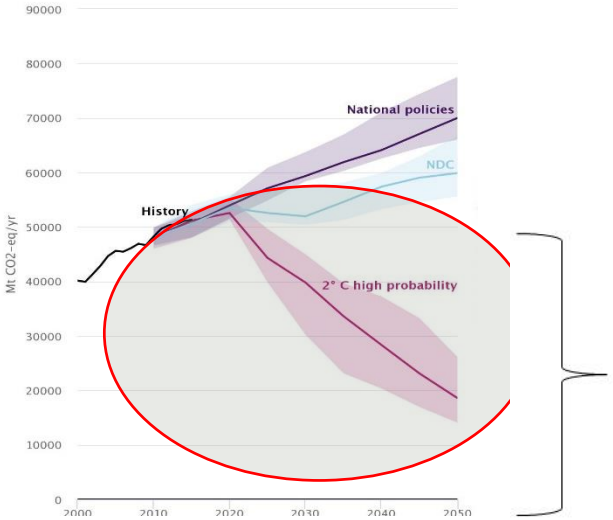
Here, based on a public policy database and a multi-model scenario analysis, we show that implementation of current policies leaves a median emission gap of 22.4 to 28.2 GtCO2eq by 2030 with the optimal pathways to implement the well below 2°C and 1.5°C Paris goals

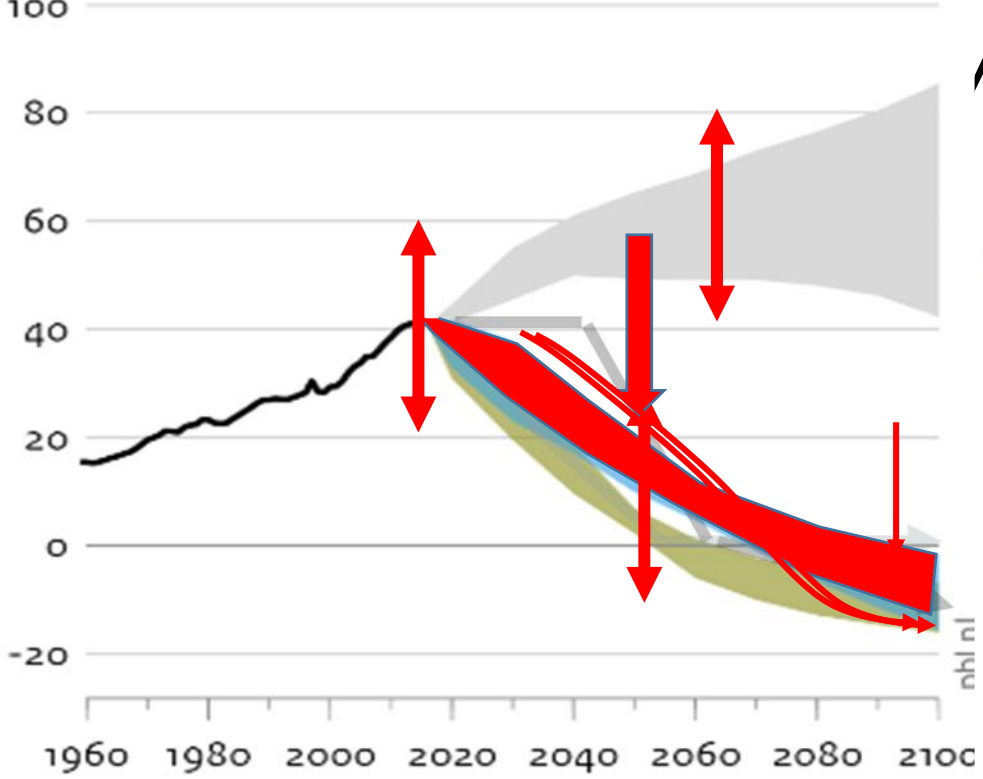
How robust are these conclusions?

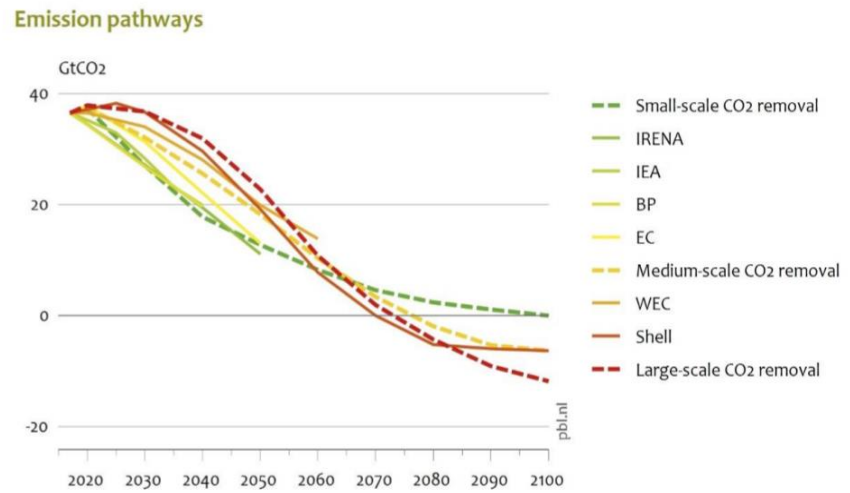
How can we improve our estimates?

/here do we want to be?

Where do we go?







A number of **key uncertainties**:

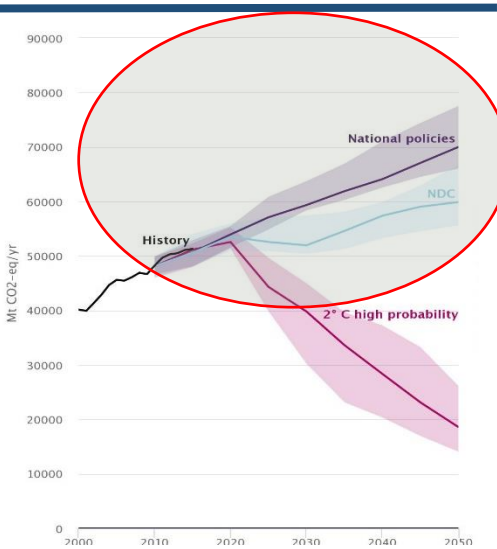
- GHG emission/concentration levels consistent with Paris Agreement targets
- Underlying trends in socio-economic drivers (population, income, lifestyle…)
- Uncertainties of current emissions inventories
- Assessment of mitigation costs
- Assumption of cost-optimality
- Assessment of negative emission technologies
- Assessment of rate of short-term emission reduction; inertia due to infrastructure development, political interest or habits
- Distribution of effort across countries

Range of emissions

More research

Policy choices

Methods: Current policy / NDC assessments



- Evaluation of measures against exogenous baseline (e.g., IEA WEO)
  - Static baseline
  - Simple method (e.g., reduction compared to base year)
  - High regional resolution (country-by-country)
- National Energy Systems and Integrated Assessment Models
  - Dynamic baseline
  - Detailed representation of policies
  - Interaction of different policies
  - Experts often work with government institutions (legitimacy)
- Global Integrated Assessment Models
  - Dynamic baseline
  - Interaction of different policies
  - Interaction between policies/measures in different economies (e.g., availability of permits)
  - Trade effects (e.g., global commodity prices)
  - Limited regional resolution (~10-30 countries/regions)

Evaluating robustness of assessment

- Comparing different methods
- Different studies use alternative indicators (e.g., CO_2 only vs. Kyoto GHGs, incl./excl. AFOLU)
- Combined assessment improves confidence and legitimacy

China's emissions based on 7 global and 6 national studies

Example: China

	Current Policies 2030 emissions				NDC 2030 emissions			
	CO_2 only [GtCO2] median (min - max)		Kyoto GHGs [GtCO2-eq] median (min - max)		CO_2 only [GtCO2] median (min - max)		Kyoto GHGs [GtCO2-eq] median (min - max)	
	incl. AFOLU	excl. AFOLU	incl. AFOLU	excl. AFOLU	incl. AFOLU	excl. AFOLU	incl. AFOLU	excl. AFOLU
Global (7)		12	14 (14 - 15)	16 (14 - 18)			15 (14 - 17)	15 (14 - 18)
National (6)		9.2 (9.2 - 13)	13			11 (10 - 11)	15 (14 - 15)	

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 821124.

Ranges from national and globally comprehensive studies consistent

Questions: 2 Polls on sli.do

- Is it useful to use cost-optimal scenarios as a reference for the gap analysis?
- Which other key factors should be included in assessment of PA 2030 levels?
- Which factors are most important for the legitimacy of current policy/NDC estimates?
- Which uncertainties need to be taken into account explicitly when assessing emissions outcomes of NDCs?
- Does the current COVID19 crisis require re-evaluating emissions estimates of current policies and NDCs?
- If so, what needs to be adjusted to update existing estimates and/or make estimates more robust against future developments of this kind?

Two possibilities to join sli.do polls:

- Go to https://www.sli.do/ and enter event codes (#65585 and #65586)
- Follow direct link posted in Zoom chat