

# Comments on presentation of Dr. Faith Birol

Highly appreciate IEA's contribution  
(WEOs, Series of Energy and climate change publications)

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# Pros and Cons of Paris Agreement

Important first step

Pros (great success for the first step)

- Transformation of Berlin Mandate (CBDR)
- All countries' participation
- From Top-down to Bottom-up (pledges)

Cons (unrealistic top-down goal)

- Top-down goal and inconsistency with pledge
- No science, no cost, no uncertainty  
(2, let alone 1.5 degree)

**Can Paris Agreement survive?**

# Why 2 degree? Break down a taboo!

- Is it feasible?

Negative emissions (feasibility and risk/risk trade off)

IEA: 2.6 °C, MIT: 3.5 °C (INDCs, if implemented)

- Not based on Science nor Economics

William Nordhaus (The climate casino), Robert Stavins (ICEF)

- Breach it almost certainly will be.

The Economist Dec. 5, 2015

- The 2 degree dream

Nature, 26, November 2015

- Climate Scientists are split on 2 degree goal

Wall Street Journal, November 30, 2015



# Uncertainty: Climate sensitivity

Median values

CO <sub>2</sub> eq Concentrations in 2100 [ppm CO <sub>2</sub> eq]	Subcategories	Change in CO <sub>2</sub> eq emissions in 2050 compared to 2010 in [%]	2100 Temperature change [°C] (relative to 1850-1900)	
			uncertainties not included	uncertainties included
450 (430-480)	Total range	- 72 ~ - 41	1.5 ~ 1.7	1.0 ~ 2.8
500 (480-530)	No Overshoot	- 57 ~ - 42	1.7 ~ 1.9	1.2 ~ 2.0
	Overshoot	- 55 ~ - 25	1.8 ~ 2.0	1.2 ~ 3.3
550 (530-580)	No Overshoot	- 49 ~ - 19	2.0 ~ 2.2	1.4 ~ 3.6
	Overshoot	- 16 ~ + 7	2.1 ~ 2.3	1.4 ~ 3.6
(580-650)	Total range	- 38 ~ + 24	2.3 ~ 2.6	1.5 ~ 4.2
(650-720)	Total range	- 11 ~ + 17	2.6 ~ 2.9	1.8 ~ 4.5
(720-1000)	Total range	+ 18 ~ + 54	3.1 ~ 3.7	2.1 ~ 5.8

3°C ECS was used in the above table, though there is no consensus

Uncertainty includes those of carbon cycle and climate system

Extract from IPCC/AR5/SG3/SPM

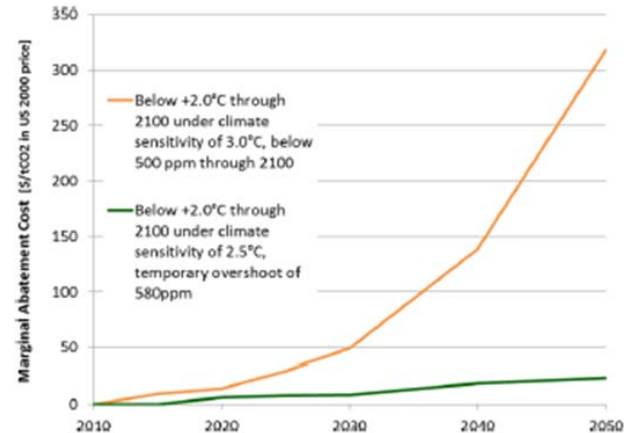
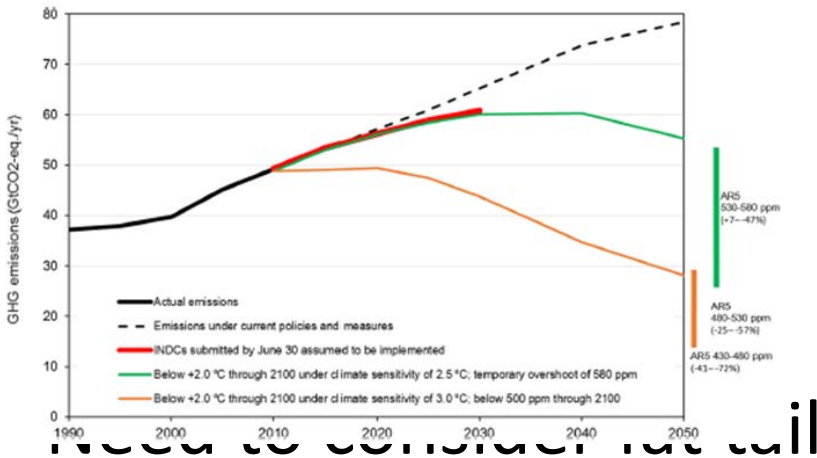
IPCC Report	Published in	Climate sensitivity	Best estimate
1 <sup>st</sup> Assessment R.	1990	1.5 – 4.5 °C	2.5 °C
2 <sup>nd</sup> Assessment R.	1995	1.5 – 4.5 °C	2.5 °C
3 <sup>rd</sup> Assessment R.	2001	1.5 – 4.5 °C	2.5 °C
4 <sup>th</sup> Assessment R.	2007	2.0 – 4.5 °C	3.0 °C
5 <sup>th</sup> Assessment R.	2014	1.5 – 4.5 °C	Not shown

Change of climate sensitivity in past IPCC reports

# Impact of climate sensitivity (ECS)

We need Risk Management Strategies

- If it were 2.5°C (Kaya, Yamaguchi and Akimoto 2015)



<i>CO<sub>2</sub>e</i> concentration (ppm)	400	450	500	550	600	650	700	750	800
Median temperature increase	1.3°C (2.3°F)	1.8°C (3.2°F)	2.2°C (4.0°F)	2.5°C (4.5°F)	2.7°C (4.9°F)	3.2°C (5.8°F)	3.4°C (6.1°F)	3.7°C (6.7°F)	3.9°C (7.0°F)
Chance of >6°C (11°F)	0.04%	0.3%	1.2%	3%	5%	8%	11%	14%	17%

Even based on ECS of 2.6°C  
IEA New Policy Scenario will reach  
700ppm in 2100 (p. 87, WEO 2014)  
(Wagner and Weitzman 2014)

# Suggestions

- Make 2°C (and 1.5°C) target as **aspirational** goal  
Better a strong weak agreement than weak strong agreement that may collapse  
Lessons learnt from VW case  
Temperature is out of control
- Alternative Strategies  
Long-term **zero** emissions goal regardless of temperature increase with transit mid-term goal of low carbon society  
International co-operations of technology innovation such as SSP, nuclear fusion are essential