



GREEN  
CLIMATE  
FUND

PRIVATE   
INVESTMENT  
FOR  CLIMATE  
CONFERENCE 2019



7-9 October 2019  
Grand Hyatt Incheon  
Republic of Korea  
#GPIC2019

# THE TIPPING POINT: Science and the Climate Policy Response

09:35 - 10:20 - #GPIC2019

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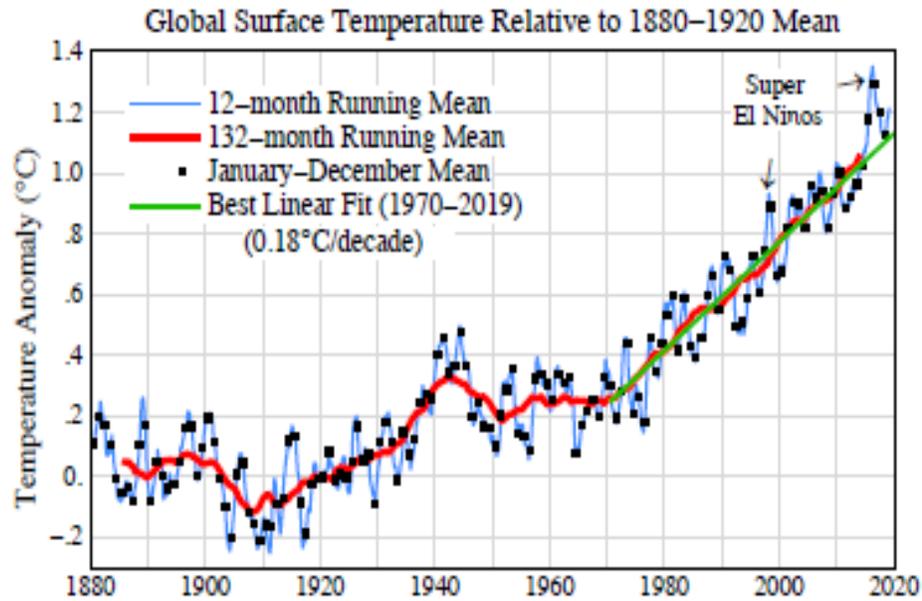
- **Michael Puma** | Unit Director, NASA Climate Systems Research
- **Michiel Schaeffer** | Director/Senior Scientist, Climate Analytics
- **Heleen de Coninck** | Coordinating Lead Author of IPCC Special Report on 1.5C & Radboud University
- **Barbara Buchner** | Executive Director of Climate Finance, Climate Policy Initiative
- **Selina Wrighter** | Senior Advisor to the ED, GCF

GREEN CLIMATE FUND

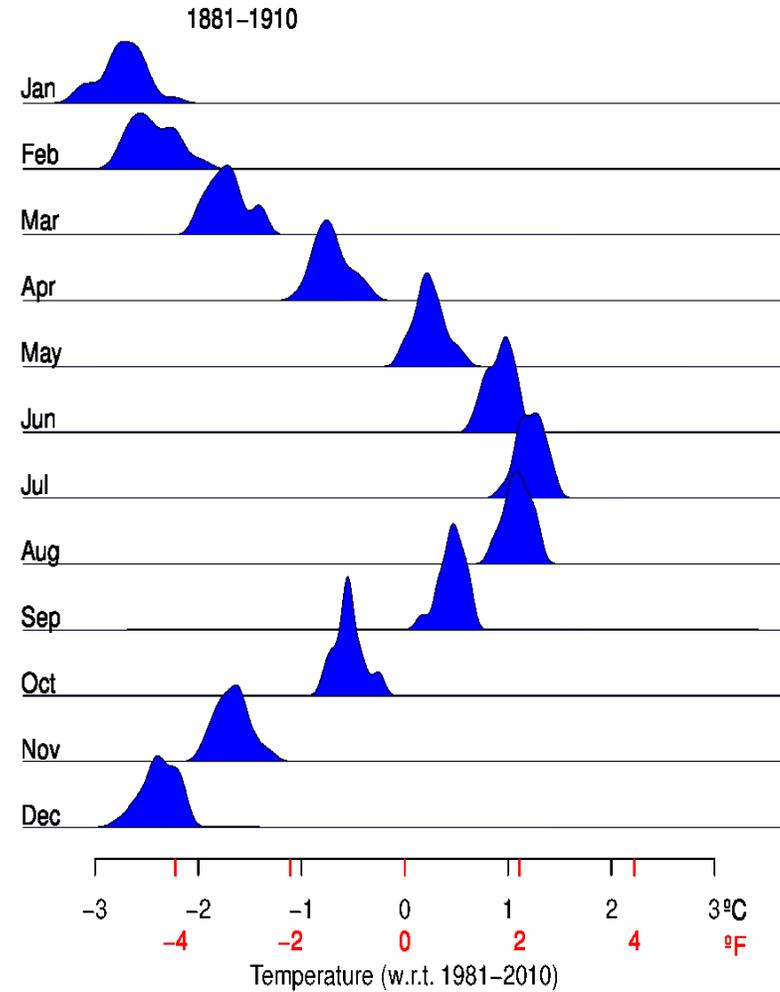
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# Warming since the late 19<sup>th</sup> century



Source: Makiko Sato,  
<http://www.columbia.edu/~mhs119/Temperature/1880-1920base.pdf> "Data through August 2019 are used for computing the means. last modified 2019/09/16, now with GHCN v4 and ERSST v5."

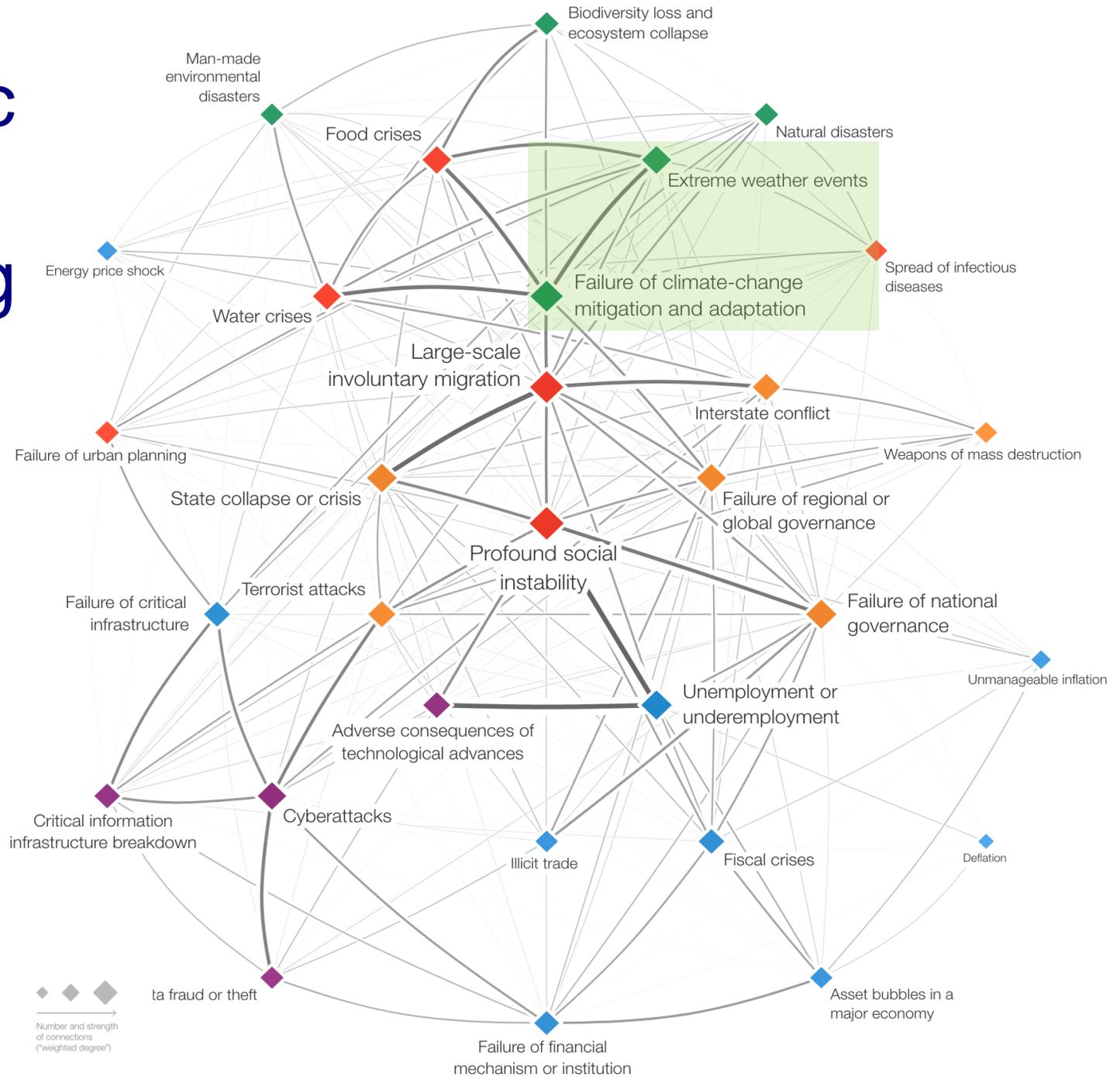


Source: Gavin Schmidt, NASA GISS Temp.

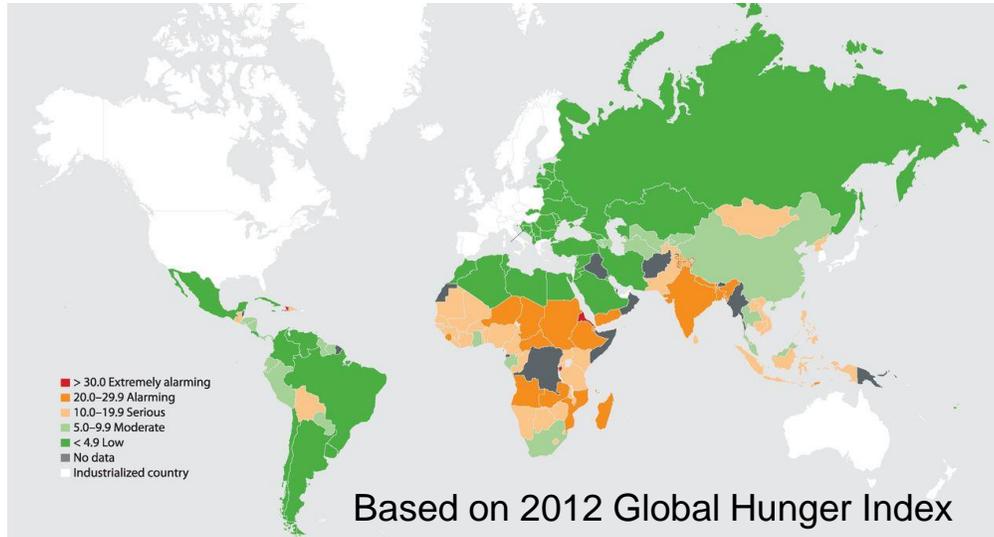


# Systemic risk of a changing climate

Source: World Economic Forum Global Risks Perception Survey 2017–2018. The Global Risks Report 2018 13th Edition

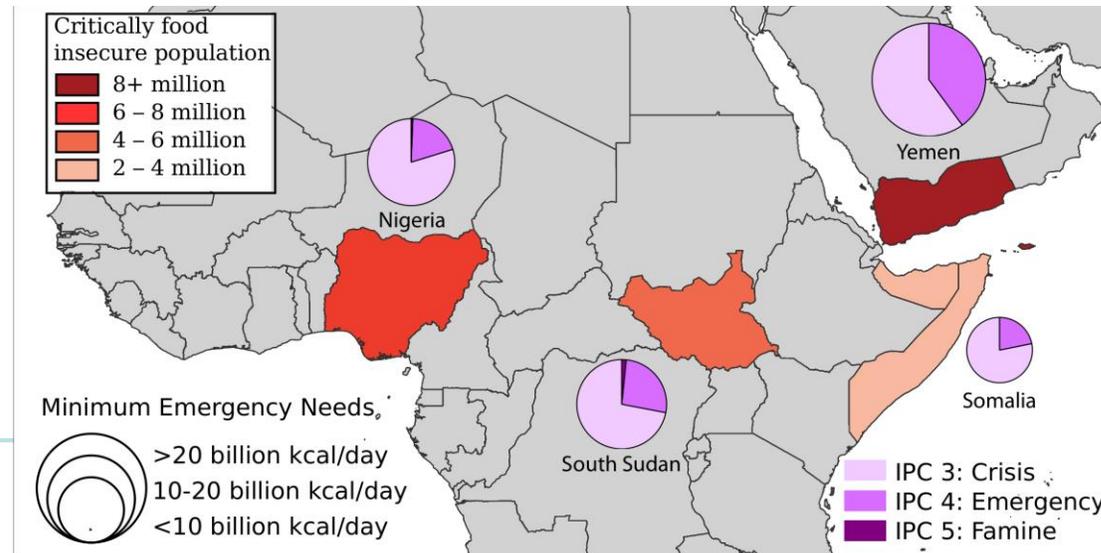


# Fragile food systems

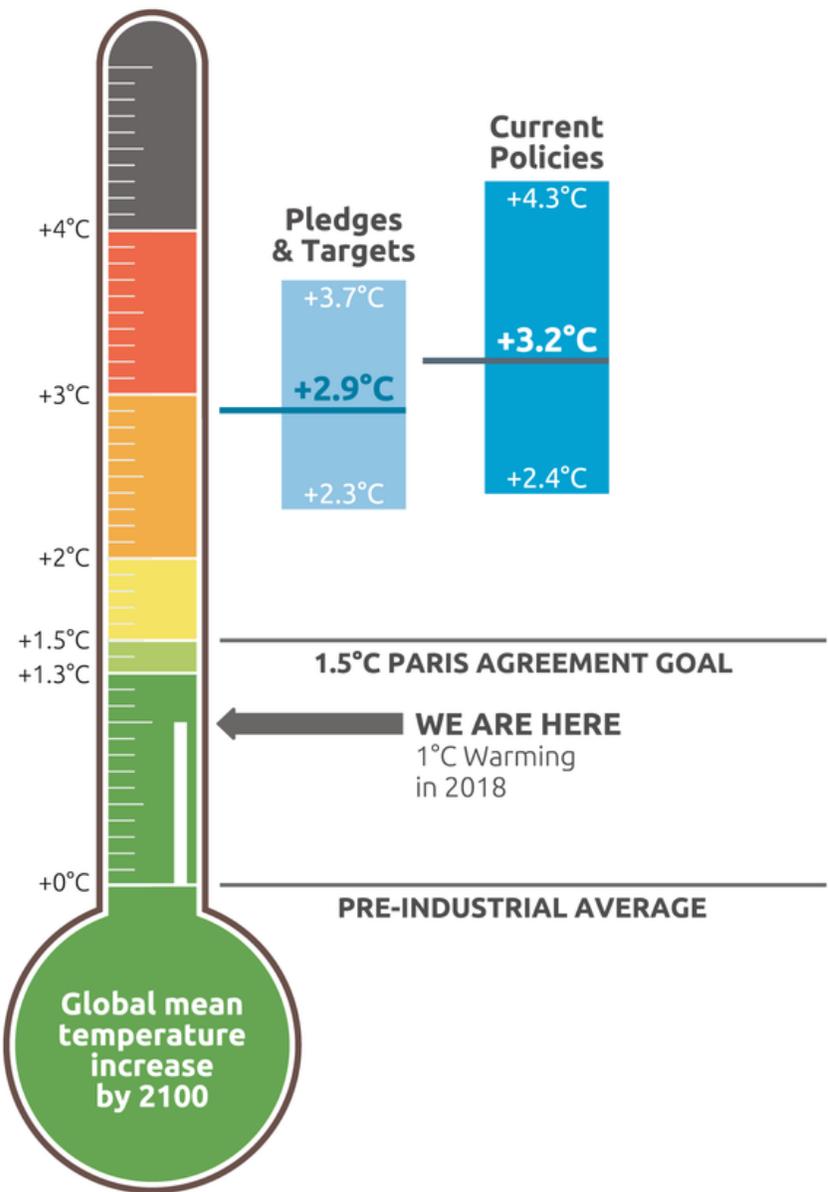


... especially in developing countries

Sources: Wheeler & von Braun (2013, *Science*); Puma et al. *Nature Sustainability*



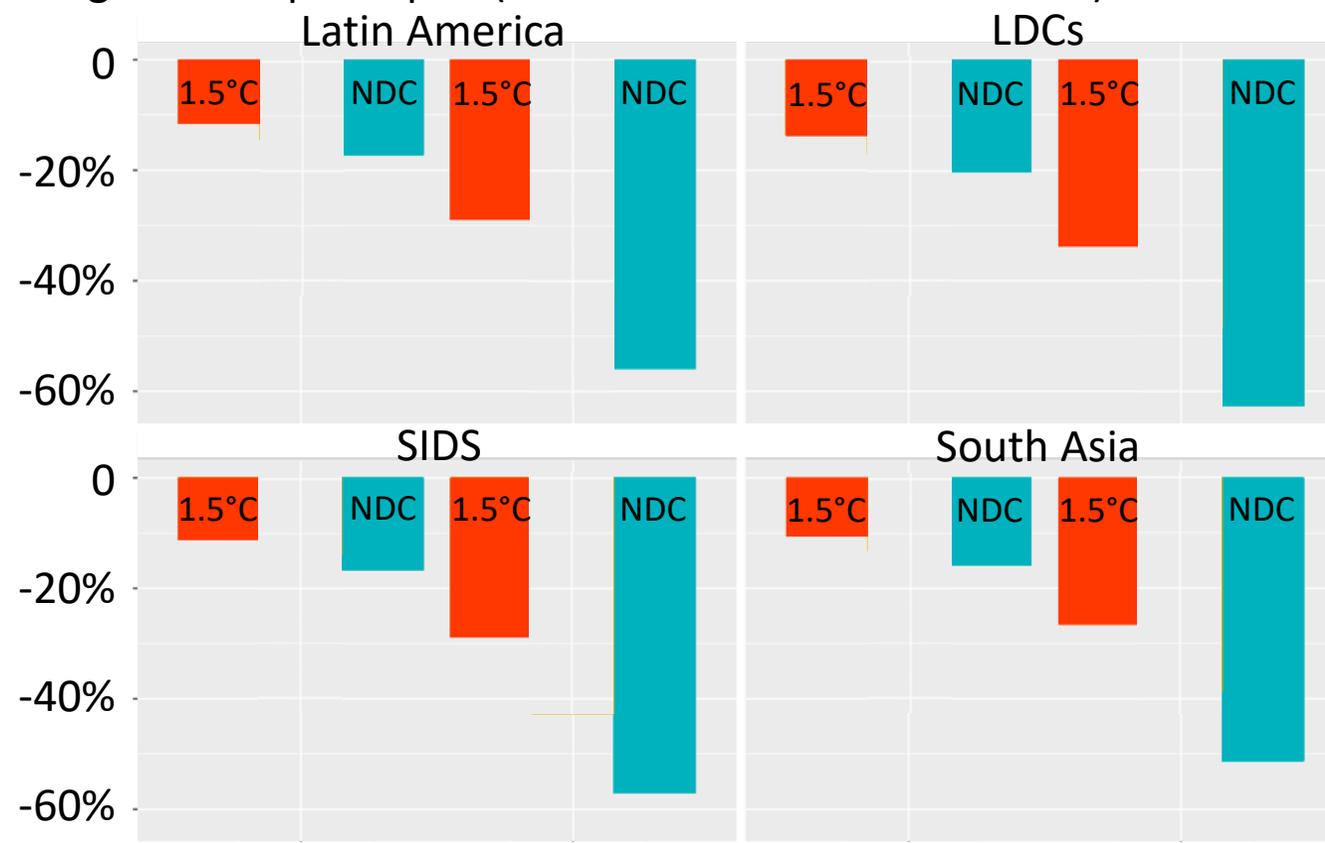
# Current policies not sufficient to achieve NDCs – Both far from PA global goal, which implies risk of extreme CC damages and adaptation challenges



CAT warming projections  
**Global temperature increase by 2100**

September 2019 Update

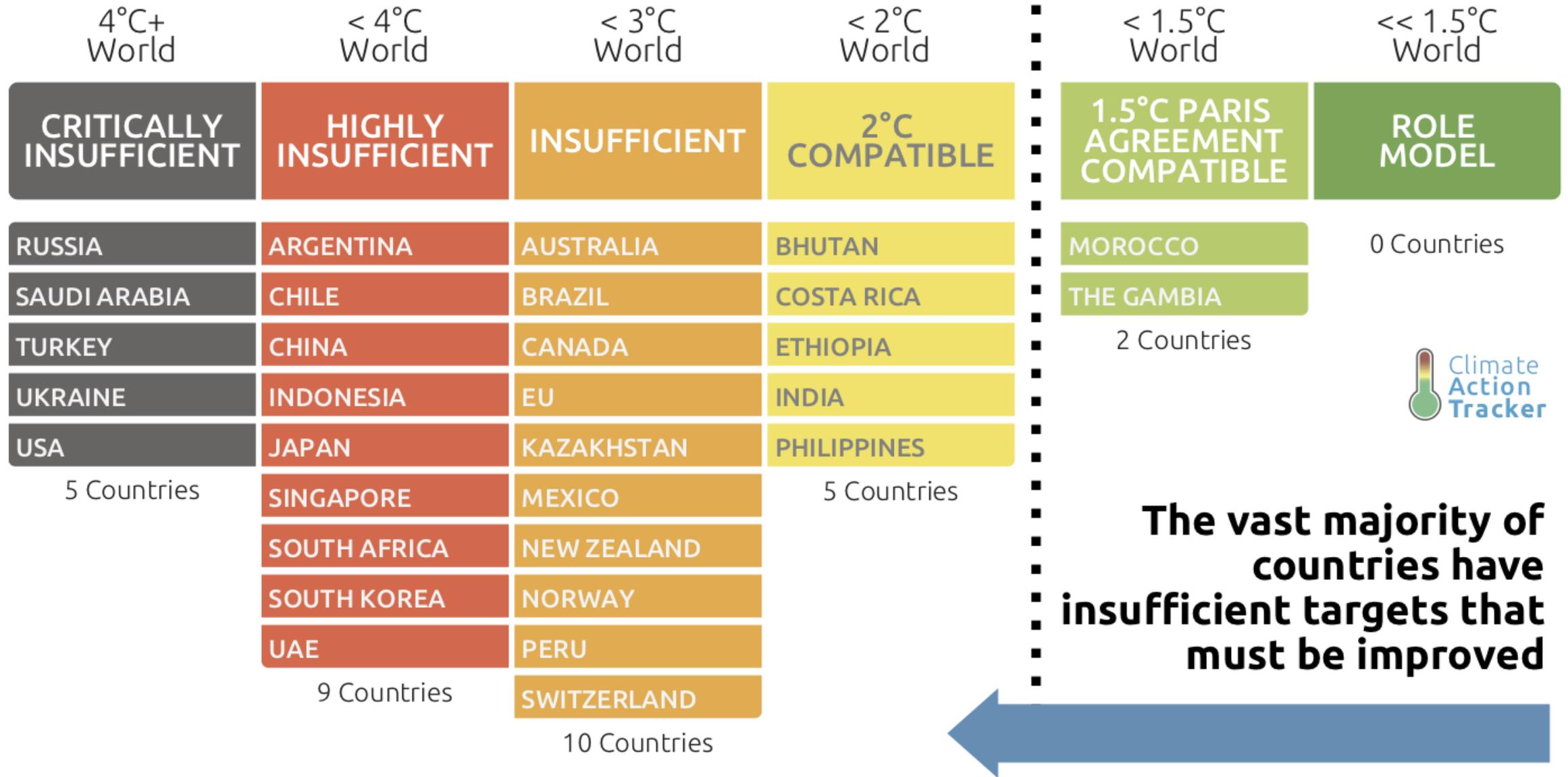
Change in GDP per capita (below GDP reference scenario)



Global warming projections  
■ ~1.5°C ■ NDC

Source: Geiges et al (2019)

# NDCs of vast majority of countries not in line with Paris Agreement



# 1.5°C transformation requires action in all sectors (IPCC SR1.5)

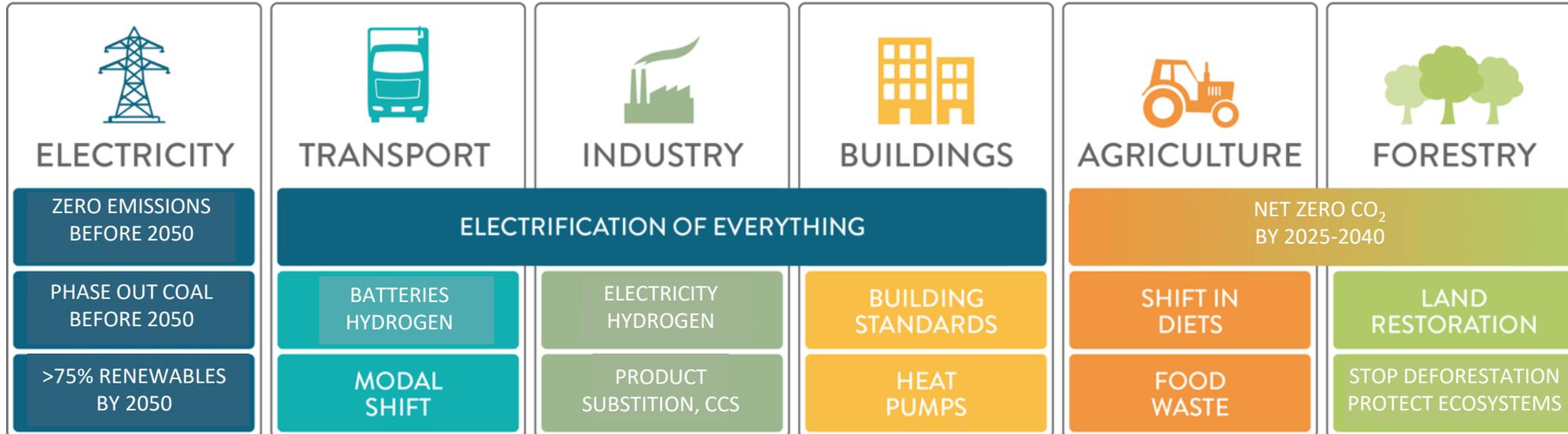
## KEY MILESTONES ON THE PATH TO



## THE PARIS AGREEMENT 1.5°C TEMPERATURE GOAL

ENERGY EFFICIENCY

INVESTMENT SHIFT TO LOW-CARBON TECHNOLOGIES

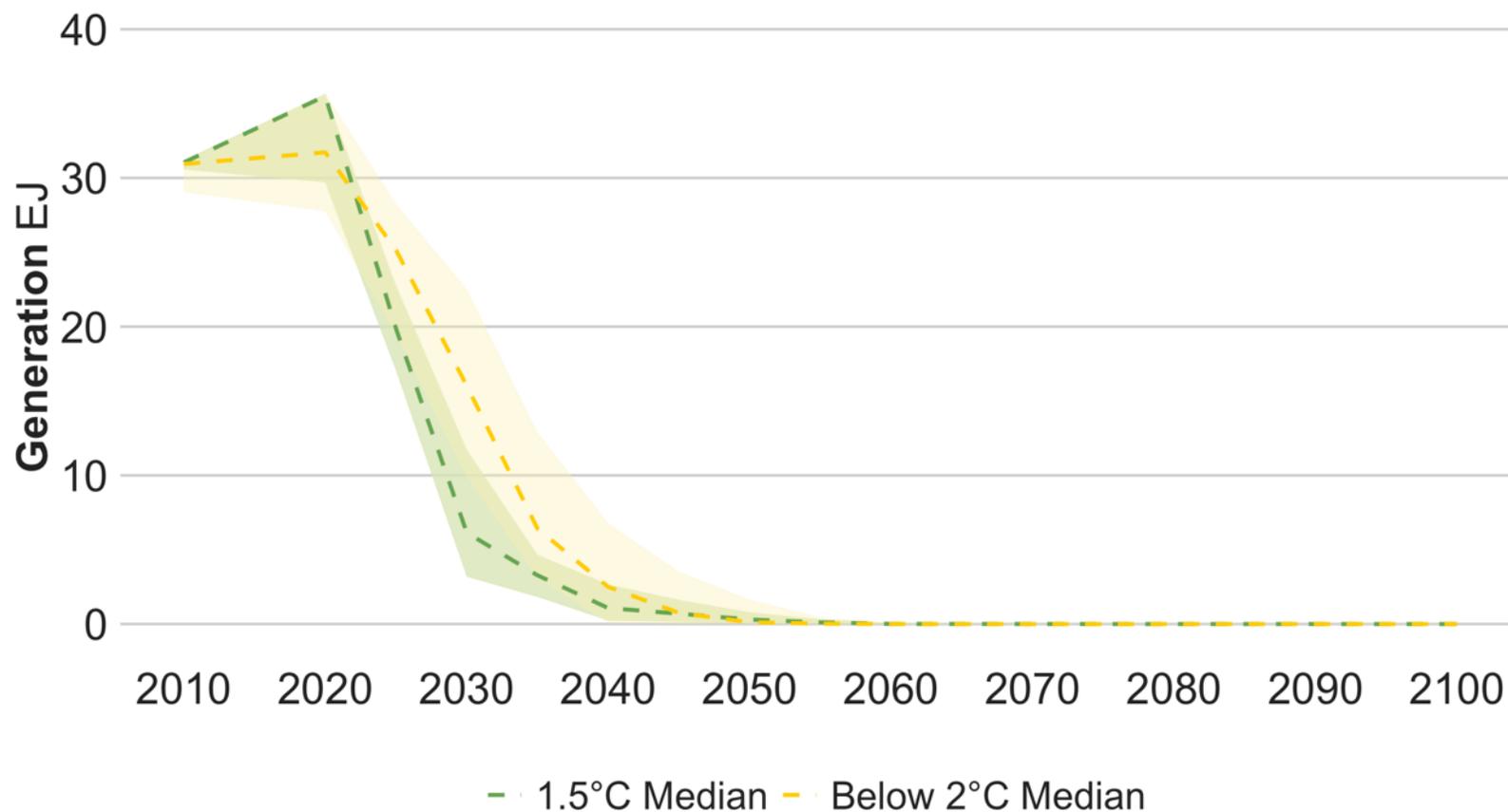


Source:  
Climate Analytics (2019)  
IPCC (2018)

- With full transformation of energy-related sectors still strong push needed in land sectors
- **Investment** in low-carbon energy technologies and energy efficiency needs to be **increased by factor 6** by 2050
  - Global annual investments in low-carbon energy technologies **overtake fossil investments already by around 2025**

# Economy-wide decarbonization must build on zero emissions power sector – but coal remains very large risk

Global Electricity Generation from Coal (w/o CCS) in IPCC SR1.5 scenarios

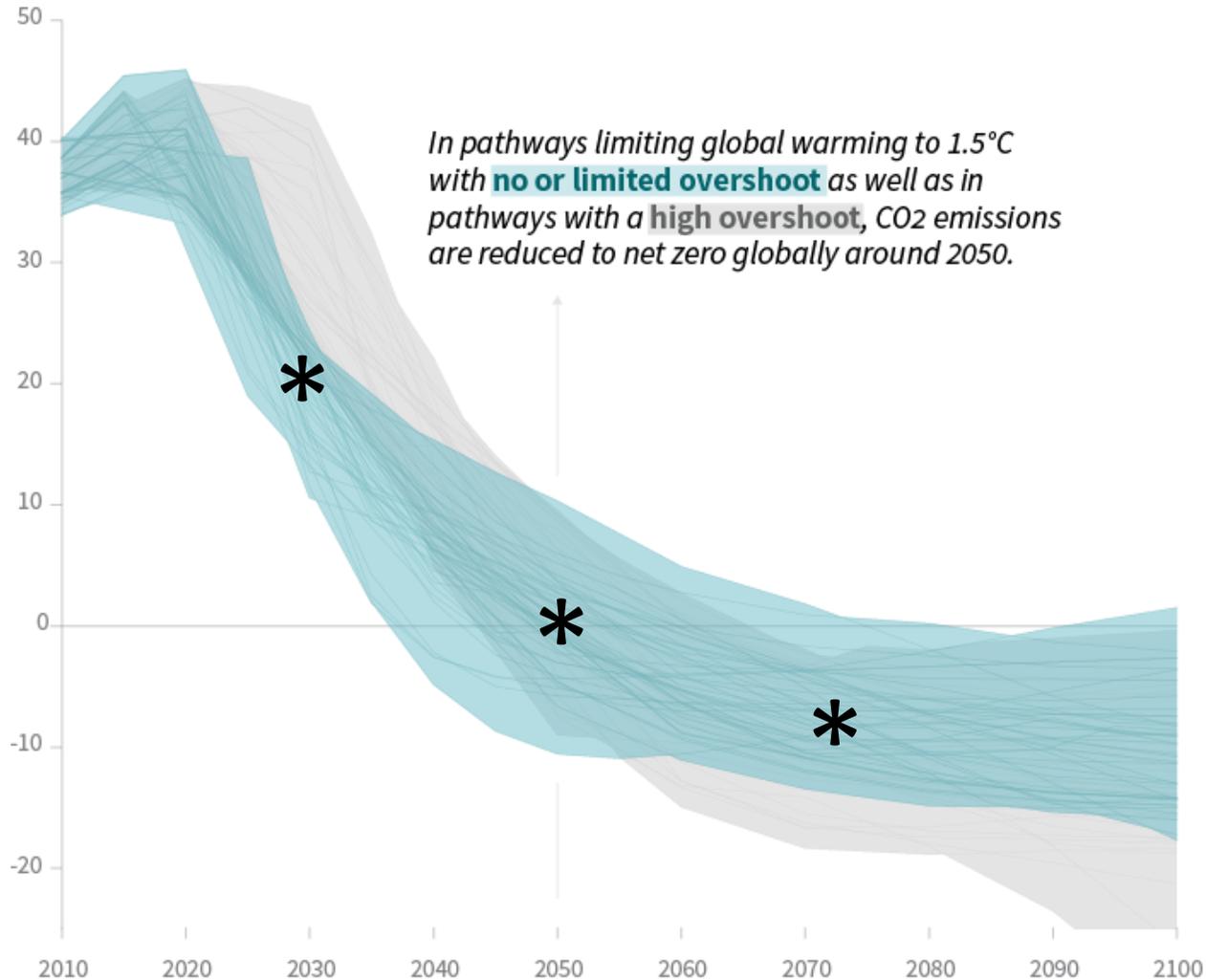


Source: Pathways from Huppmann et al.(2019) filtered with sustainability criteria

Country	Sum of Total current	Sum of Total planned	Expansion (%)
China	1,108,709	74,229	7%
Turkey	19,673	28,045	143%
Vietnam	27,237	11,670	43%
Indonesia	42,084	11,610	28%
South Africa	46,205	7,180	16%
Mongolia	1,666	6,930	416%
Russia	47,833	4,525	9%
Philippines	11,165	4,504	40%
Japan	54,226	4,412	8%
Bosnia & Herzegovina	2,073	4,080	197%
Poland	33,240	3,600	11%
Zimbabwe	1,620	3,590	222%
Brazil	3,149	2,268	72%
Serbia	4,405	2,100	48%
South Korea	42,760	2,100	5%
Cambodia	655	2,000	305%
Botswana	732	1,950	266%
Colombia	1,643	1,575	96%
Thailand	6,226	1,255	20%
Zambia	330	940	285%

# Global total net CO<sub>2</sub> emissions

Billion tonnes of CO<sub>2</sub>/yr



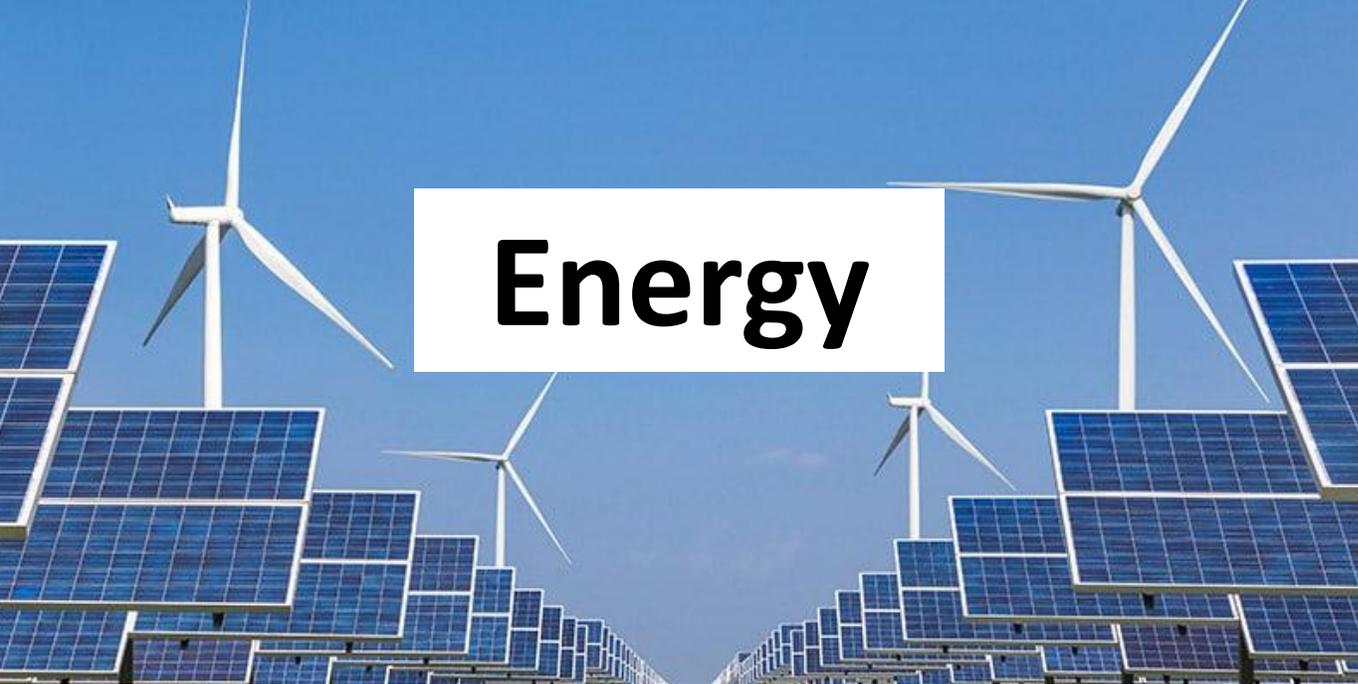
Halving CO<sub>2</sub> in 2030

Net zero CO<sub>2</sub> in 2050

Carbon dioxide removal

Timing of net zero CO<sub>2</sub>  
Line widths depict the 5-95th percentile and the 25-75th percentile of scenarios





**Energy**



**Land**



**Urban &  
Infrastructure**



**Industry**

**Multilevel  
Governance**

**Institutional  
Capacities**

**Behavioural  
Change**

**Technological  
Innovation**

**Policy  
Instruments**

**Finance**

# What does limiting warming to 1.5°C mean for finance?

**Avoided physical risks** for assets in coastal areas and sectors such as energy, agriculture, fisheries and infrastructure

## **Transition risks and opportunities**

- In 2050, annual investments in renewable energy and energy efficiency are 4-10 times greater than in 2015
- Redirection from fossil to low-emission investments

## **Total investments increase**

- Additional 2.5% of GFCF total incremental investment for energy, transport and other infrastructure (annual average 2016-2035)

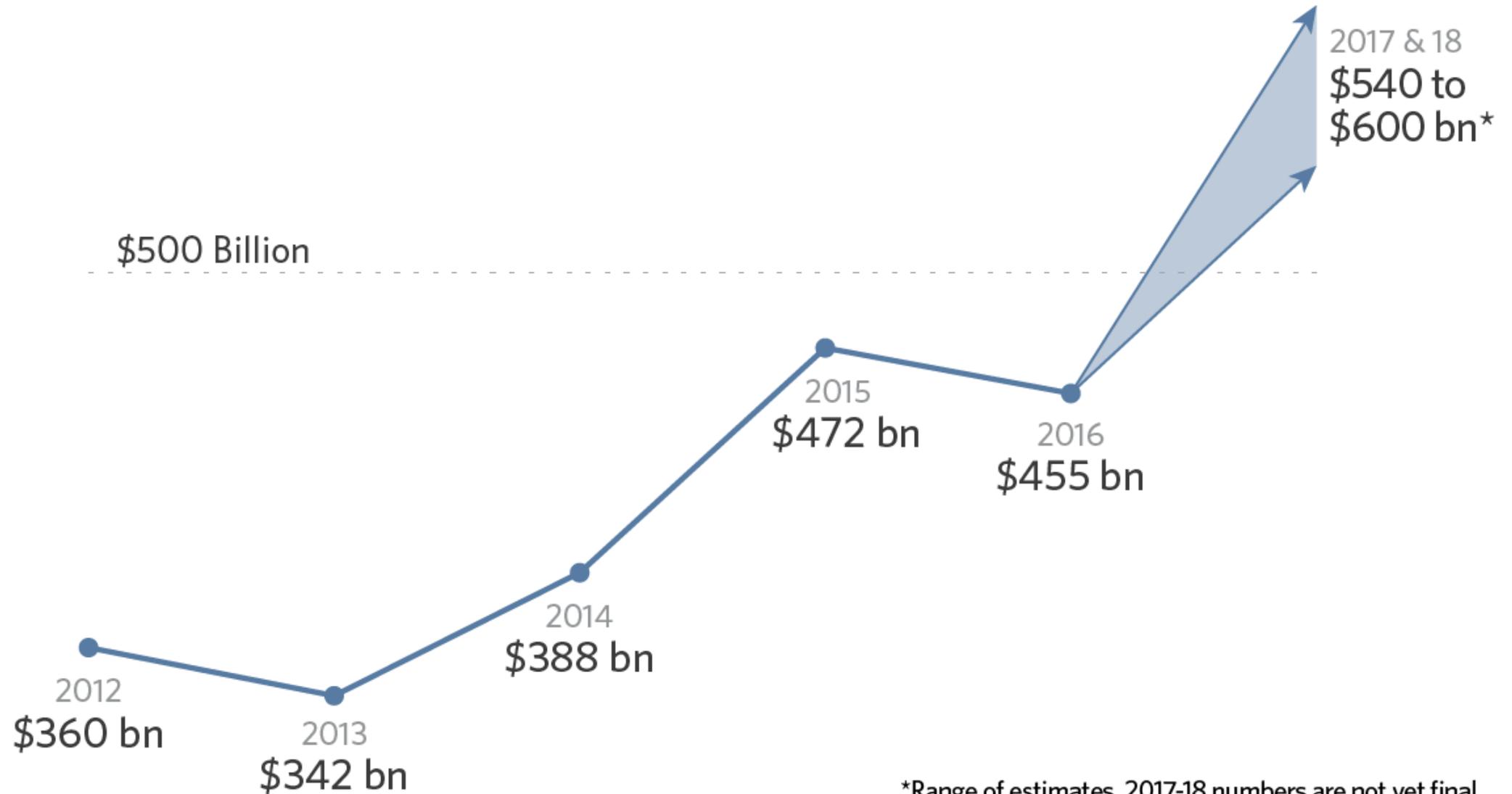
**No comprehensive study on 1.5°C available**

# Acting on climate change

A science-based  
call to financial  
decision-makers

December 2019

## Climate investment is steadily increasing...



\*Range of estimates, 2017-18 numbers are not yet final

# ...but is nowhere near enough.

