Climate-KIC is supported by the EIT, a body of the European Union

CLIMATE TECHNOLOGY COMPASS LAUNCH

28 November 2019

CONTEXT

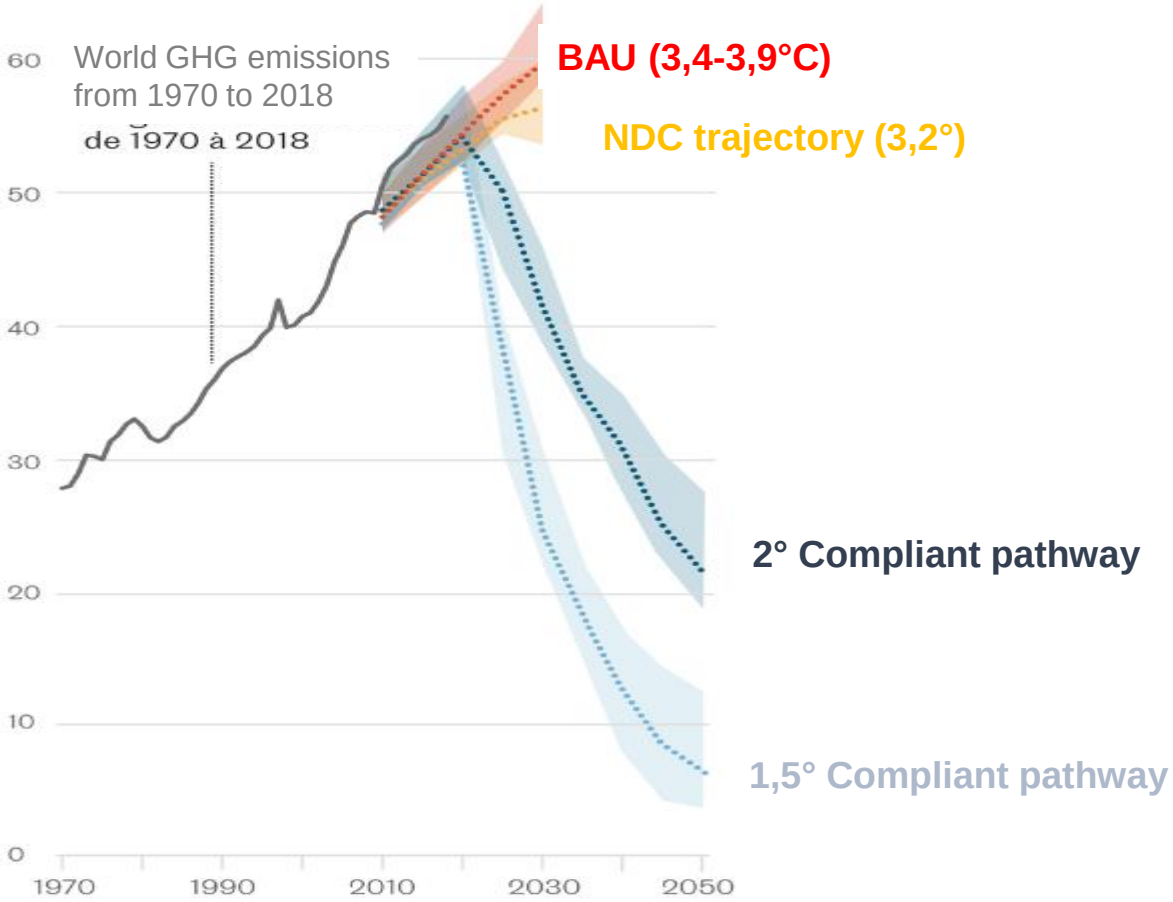
“Our collective failure to act strongly and early means that we must now implement deep and urgent cuts”

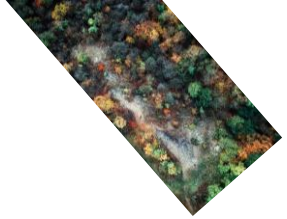
“To deliver the cuts we need, nations have to raise the ambition of their current pledges over fivefold for the 1.5°C goal when they revise their NDCs in 2020. “

Inger Andersen,

26/11/2019

Emissions Gaps Report 2019





SECTOR LEVEL DISTANCE TO TARGET ANALYSIS

An unprecedented approach to sector level climate target analysis

- Bridges bottom-up and top-down approaches to identify sectoral technology roadmaps
- Evaluation of the climate alignment of financial assets
- Guides stakeholders from integration of new risk metrics to actual investment decisions in climate performing assets or projects
- Leverages Beyond Ratings CLAIM© model and 2° Investing Initiative's bottom-up data

Meeting investor demands

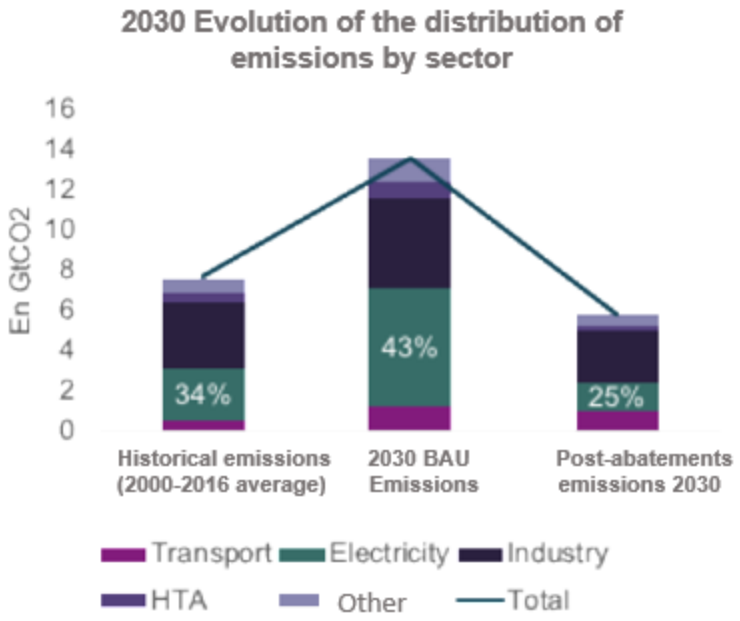
- Lack of methodology in the construction/updating of NDCs for governments
- Inconsistent company targets in relation to country trajectories
- Corporates' incorrect identification of projects aligned with a +2° (or any other temperature increase) target

NCTIP reconciles the macro & micro perspectives

DETERMINING CONSISTENT EMISSIONS BUDGETS AT SECTOR LEVEL BY COUNTRY

A 4-step process

1. +2° budget allocation per sector based on marginal abatement cost curves (MACC)
2. Creation of sector level trajectories that are consistent with country level targets
3. The trajectory takes into account the current situation of assets and projects in progress
4. Feedback loop if no solutions are identified (adjustments may be made to the initial allocation between sectors)



Source : Enerdata et Beyond Ratings

OVERVIEW OF SECTOR MODELLING : EXAMPLE OF POWER GENERATION

1. Estimation:
   - Power consumption per country

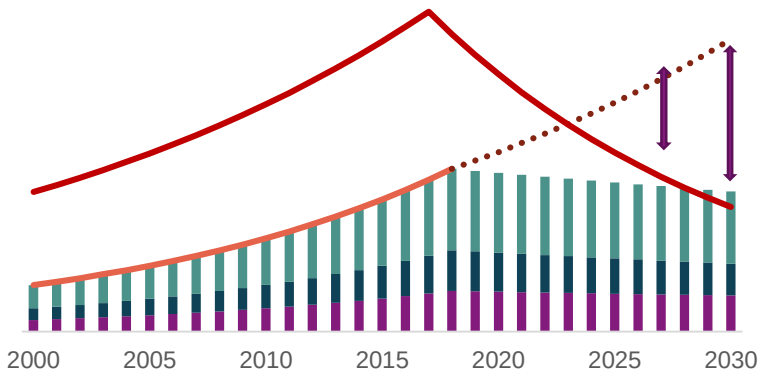
   Input :
   - GDP
   - Population

2. Minimisation of the cost of producing electricity determines future capacities

   Key constraints:
   - Annual capacity variation
   - Physical limit on hydroelectricity production
   - Choice for new nuclear

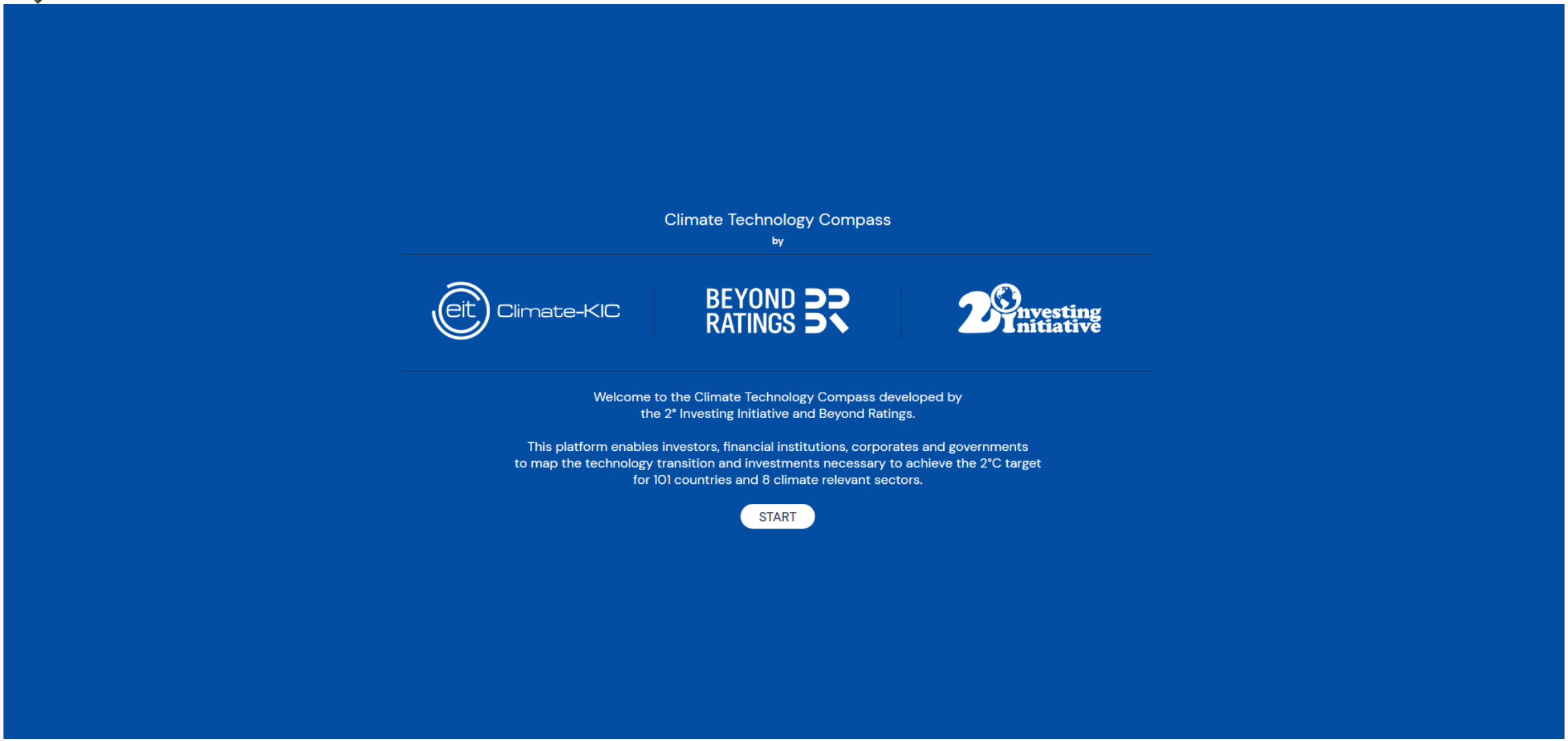
3. Outputs:
   - Future production and capacities
   - Cost of producing electricity
   - Carbon intensity of electricity production
   - Risk profile(s)

Inputs:
- Emission factors
- OPEX/CAPEX
- Capacities (Coal, Oil, Gas, Nuclear, Biomass, Wind, Solar, Geothermal, Hydro, power storage)

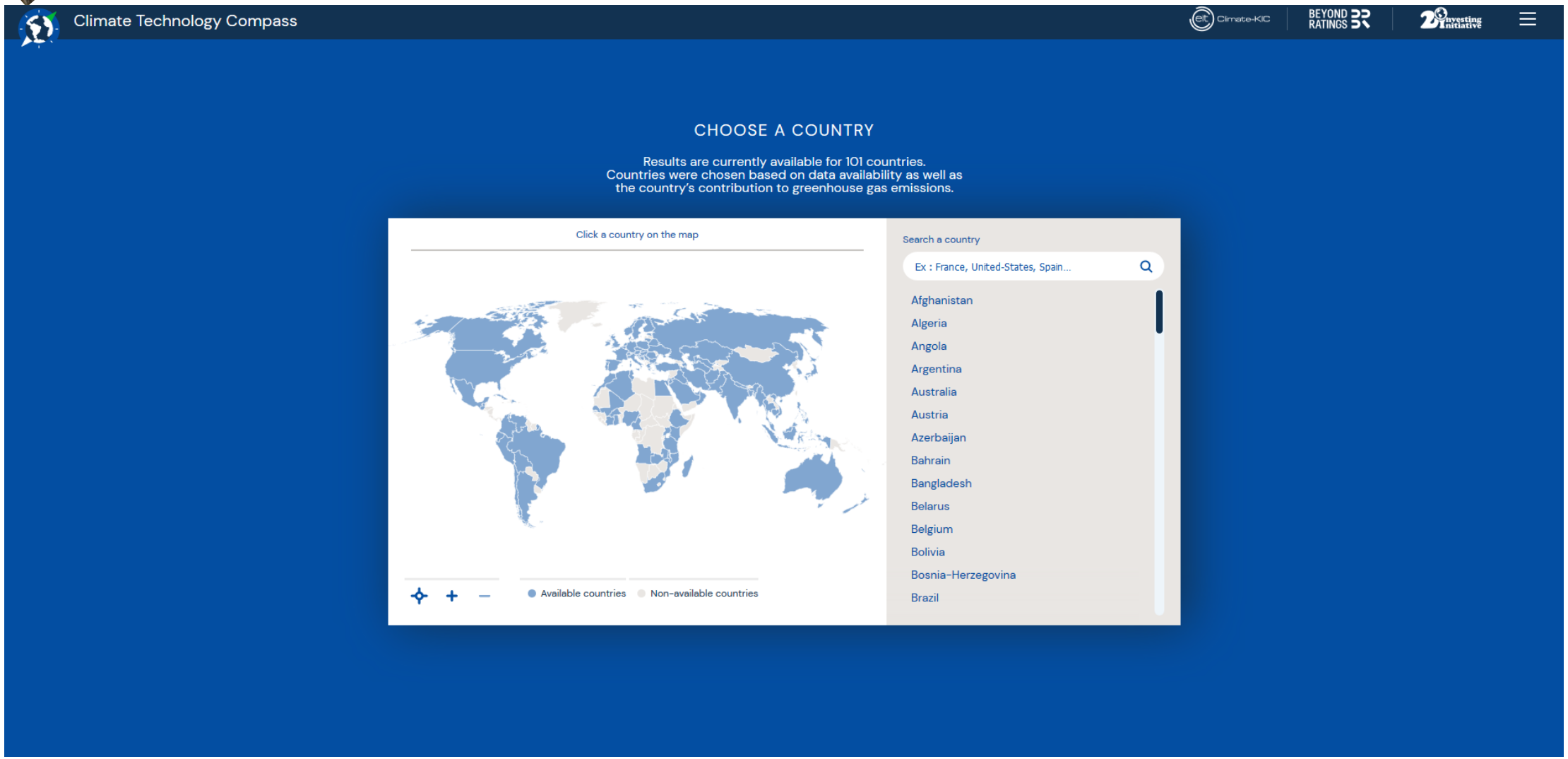


DEMO

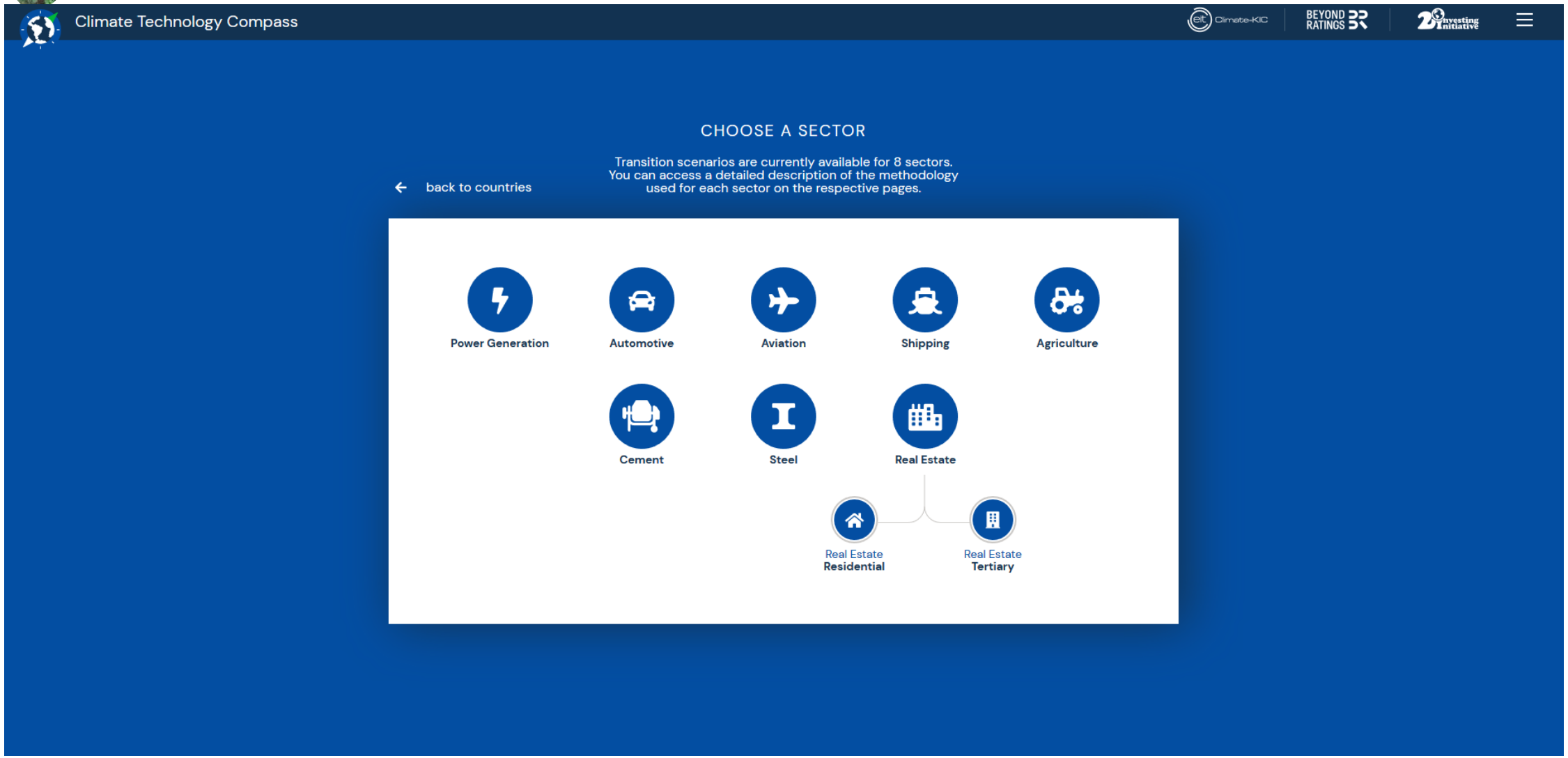
LANDING PAGE



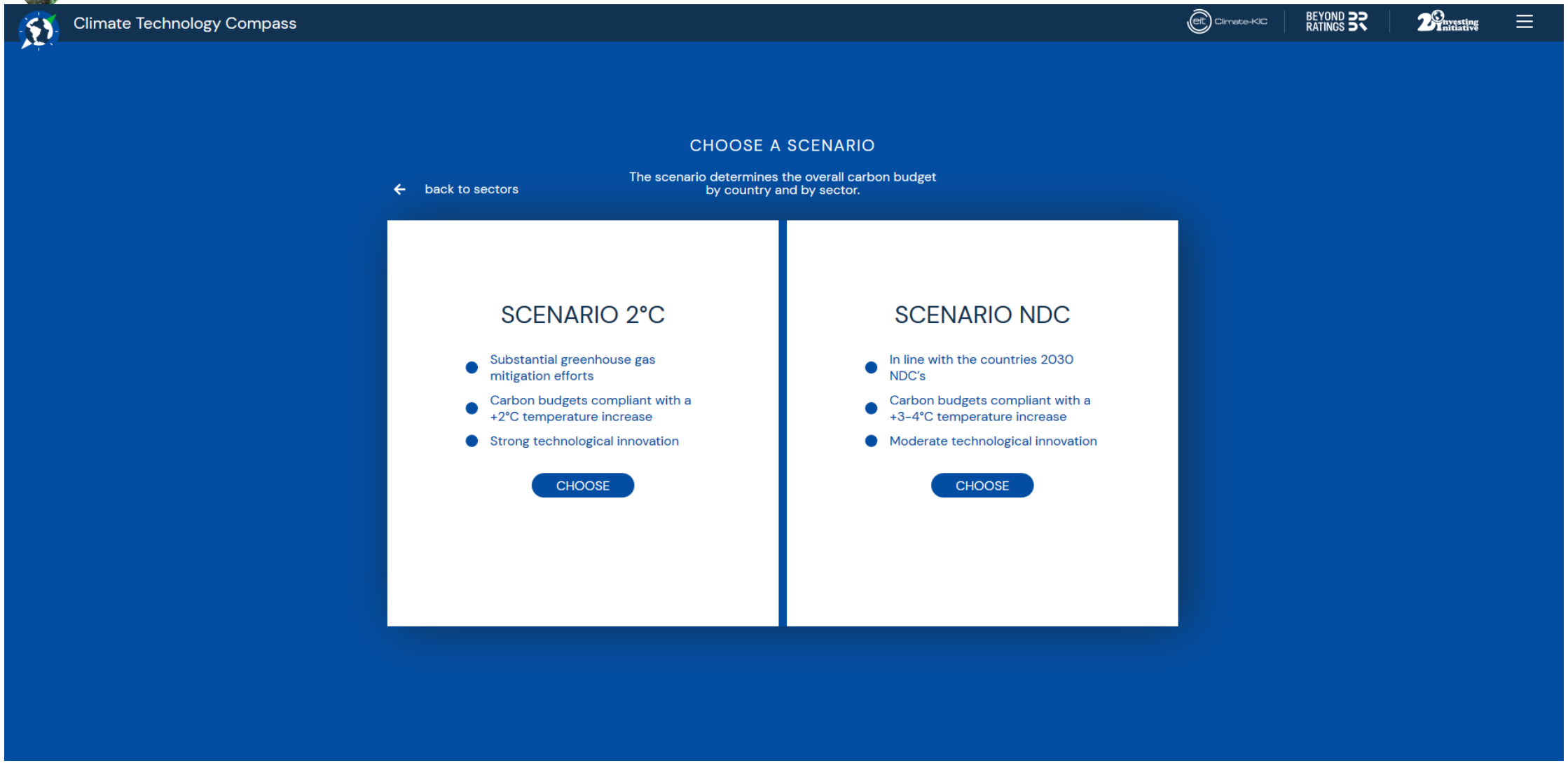
CHOSE A COUNTRY



CHOSE A SECTOR



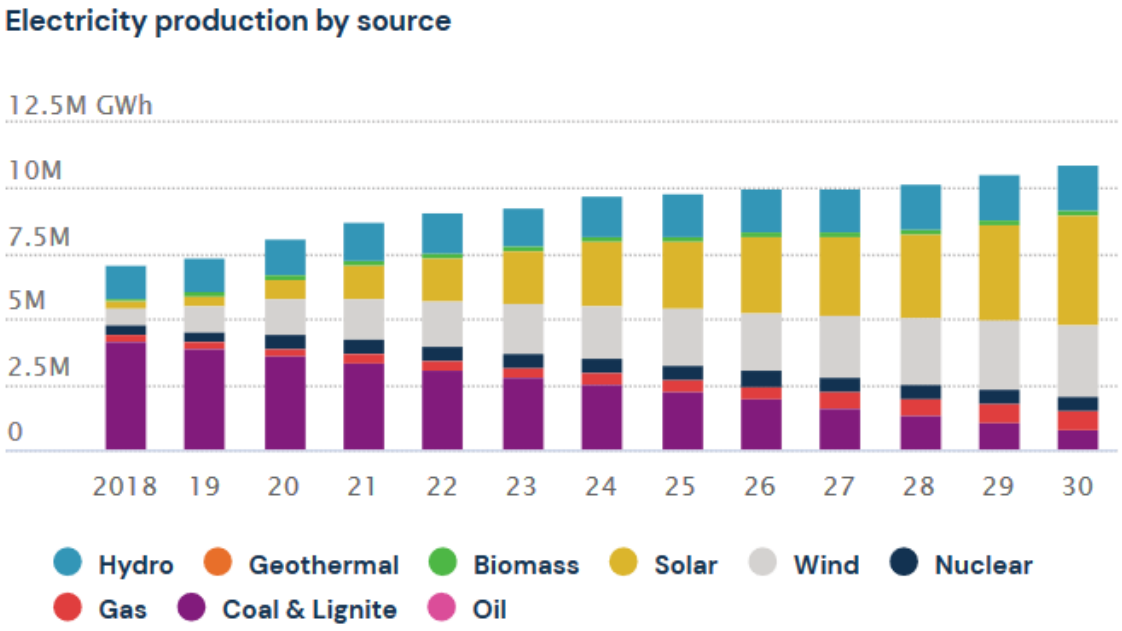
CHOSE A SCENARIO

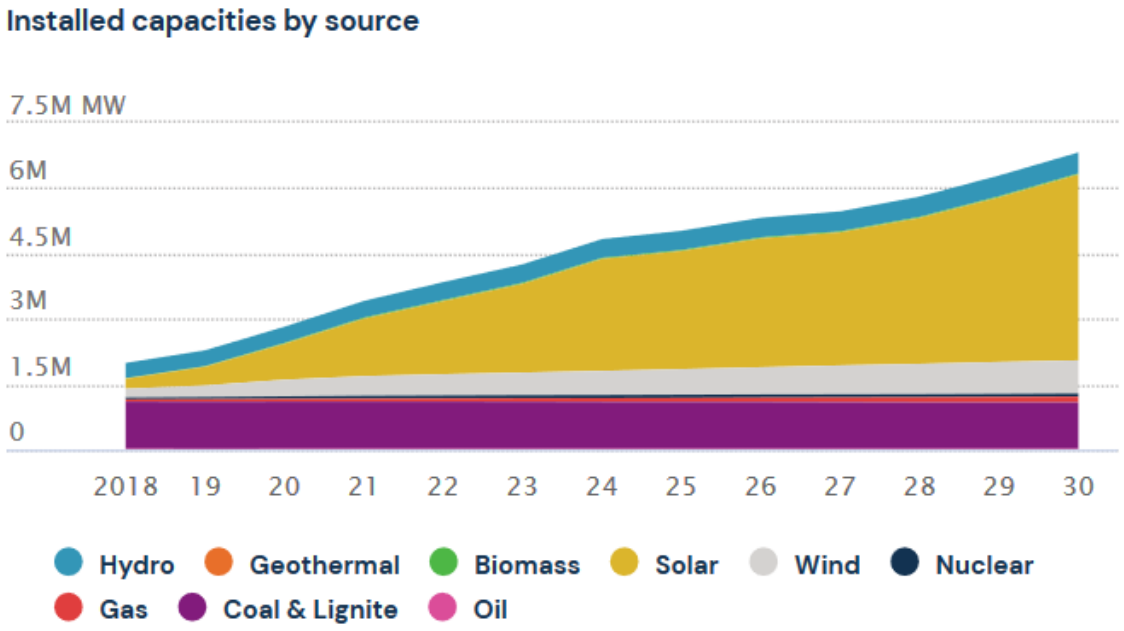


RESULT PAGE


Climate Technology Compass
Climate-KIC
BEYOND RATINGS
Investing Initiative
CHANGE SCENARIO
Scenario 2°C
Scenario NDC
CHANGE SECTOR
Power Generation
Automotive
Aviation
Shipping
Agriculture
Cement
Steel
Real Estate
Residential
Tertiary
CHANGE COUNTRY
China
POWER GENERATION
Methodology (.pdf)
Source
Using bottom-up data database as well as emission and production constraints from the selected scenario, this model outputs transition pathways for power generation in terms of technology mix, emissions and investment needs.
Power Generation Data for China
Production
Emissions
Electricity production by source
12.5M GWh
10M
7.5M
5M
2.5M
0
2018 19 20 21 22 23 24 25 26 27 28 29 30
Hydro Geothermal Biomass Solar Wind Nuclear Gas Coal & Lignite Oil
Capacity
Investment needs
Installed capacities by source
7.5M MW
6M
4.5M
3M
1.5M
0
2018 19 20 21 22 23 24 25 26 27 28 29 30
Hydro Geothermal Biomass Solar Wind Nuclear Gas Coal & Lignite Oil
Country comparison
Production/cap
Production/GDP
Carbon intensity
Investment needs/GDP
Electricity production per capita
8k KWh per capita
7k
6k
5k
4k
3k
2018 19 20 21 22 23 24 25 26 27 28 29 30
China
World

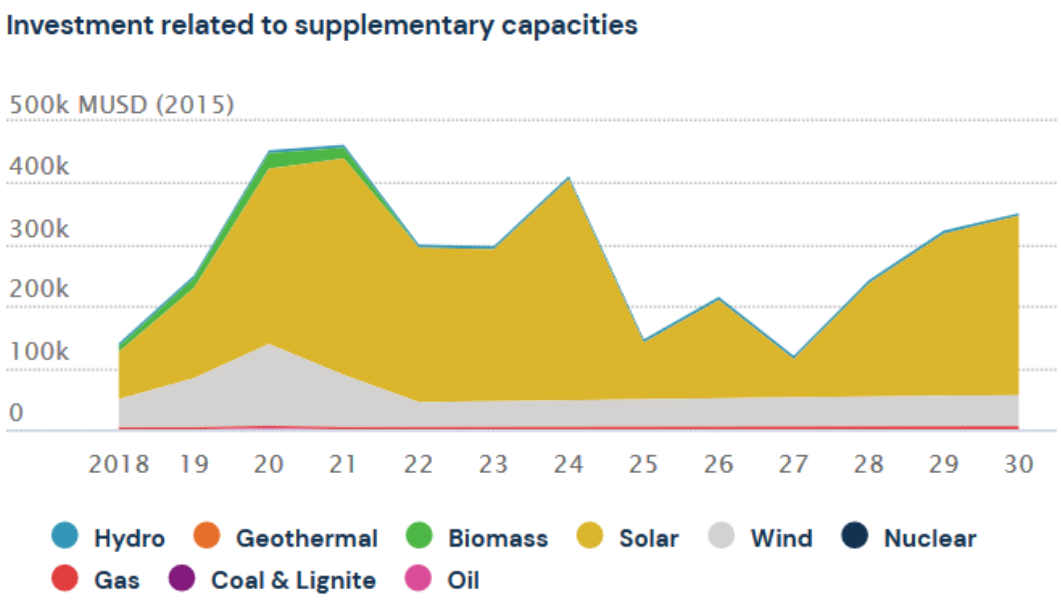
POWER GENERATION SECTOR IN CHINA: 2°C SCENARIO





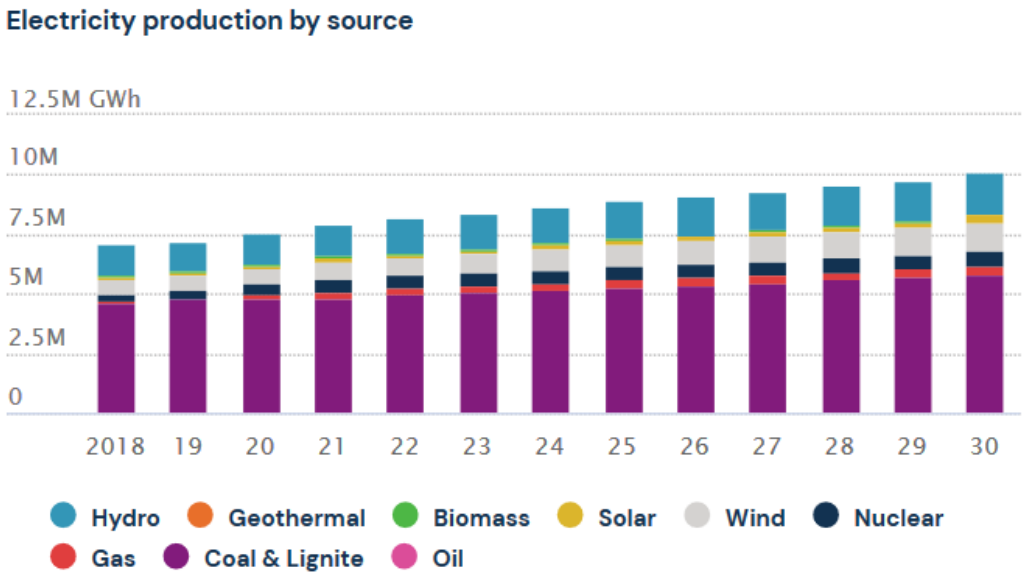
A large part for renewables

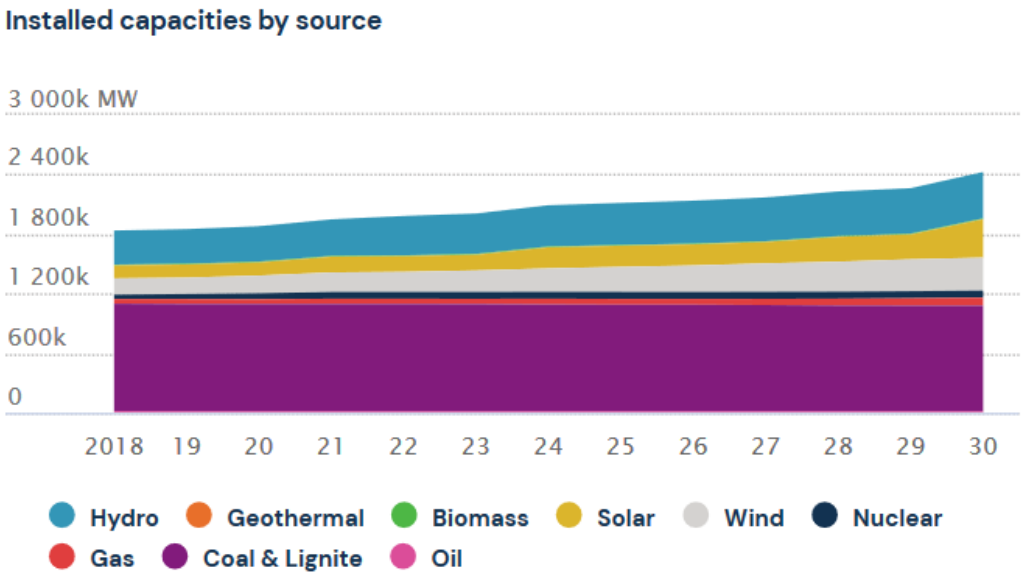
POWER GENERATION SECTOR IN CHINA: 2°C SCENARIO



Most investments are in the solar sector

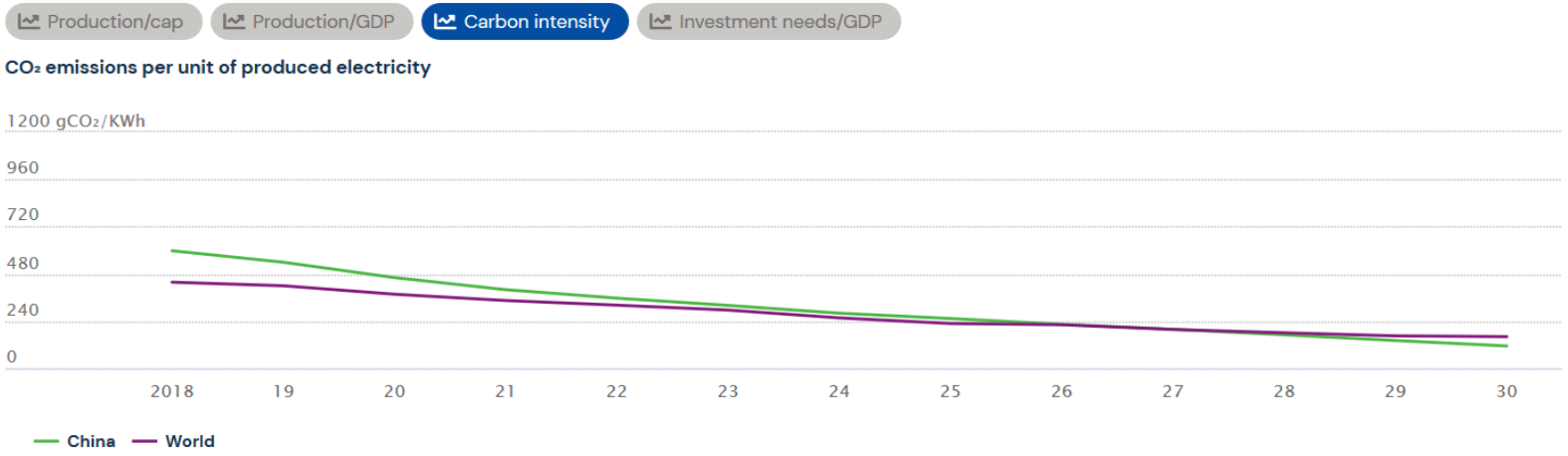
POWER GENERATION SECTOR IN CHINA : 2°C VS NDC

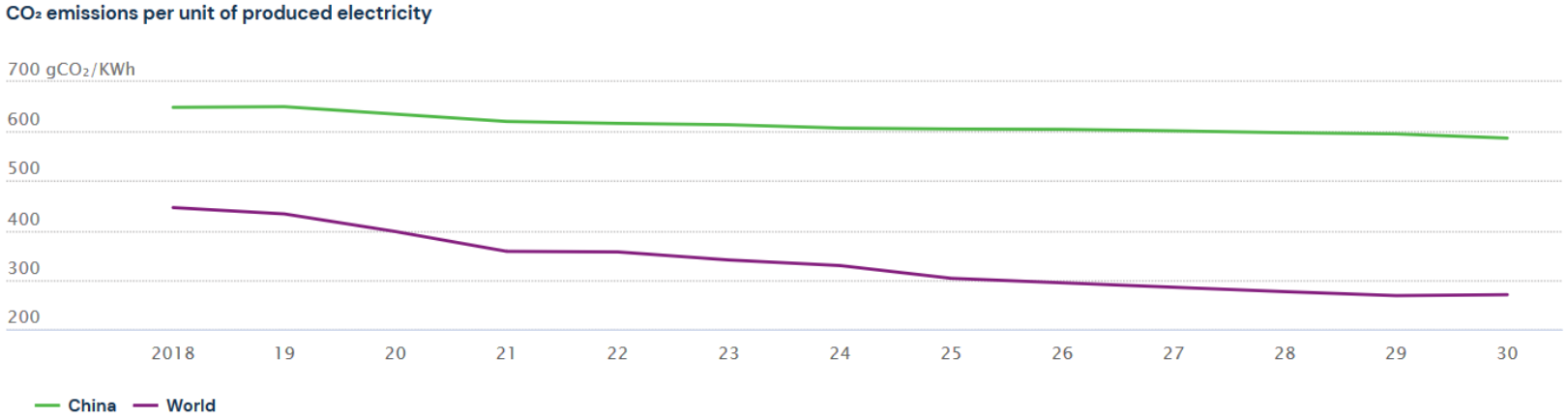




Coal is still a major part of the Chinese electricity production mix in a NDC scenario

POWER GENERATION SECTOR IN CHINA : 2°C VS NDC





Small effort on the carbon intensity in a NDC scenario

THANK YOU !

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- Emmeline Stein, project manager: emmeline@2degrees-investing.org