

Five Key Factors for the

Energy Transition and Climate Change



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SCHEDULE & TARGETS

PATHWAY

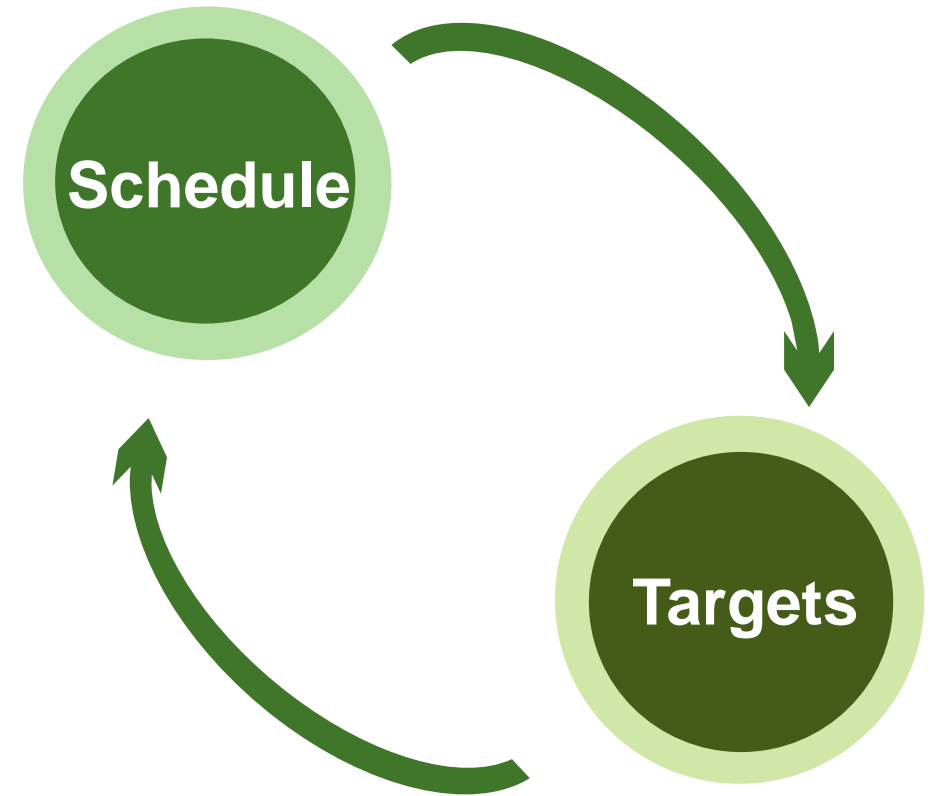
ENERGY TRANSITION

CLIMATE

DEVELOPMENT

SCHEDULE & TARGETS

01



SCHEDULE

2050- Net Zero

United States: 2025- Carbon Emission Reduction 51%

European Union : 2030-Carbon Emission Reduction 55%

2070- Net Zero

India: 2030- Carbon intensity decreased by 45%

2060- Net Zero

Rusia: 2050 - Carbon Emission Reducction 60%

China :2030 - Emission Peak

World Goal

Secure global **net zero by mid-century** and **keep 1.5 degrees** within reach.

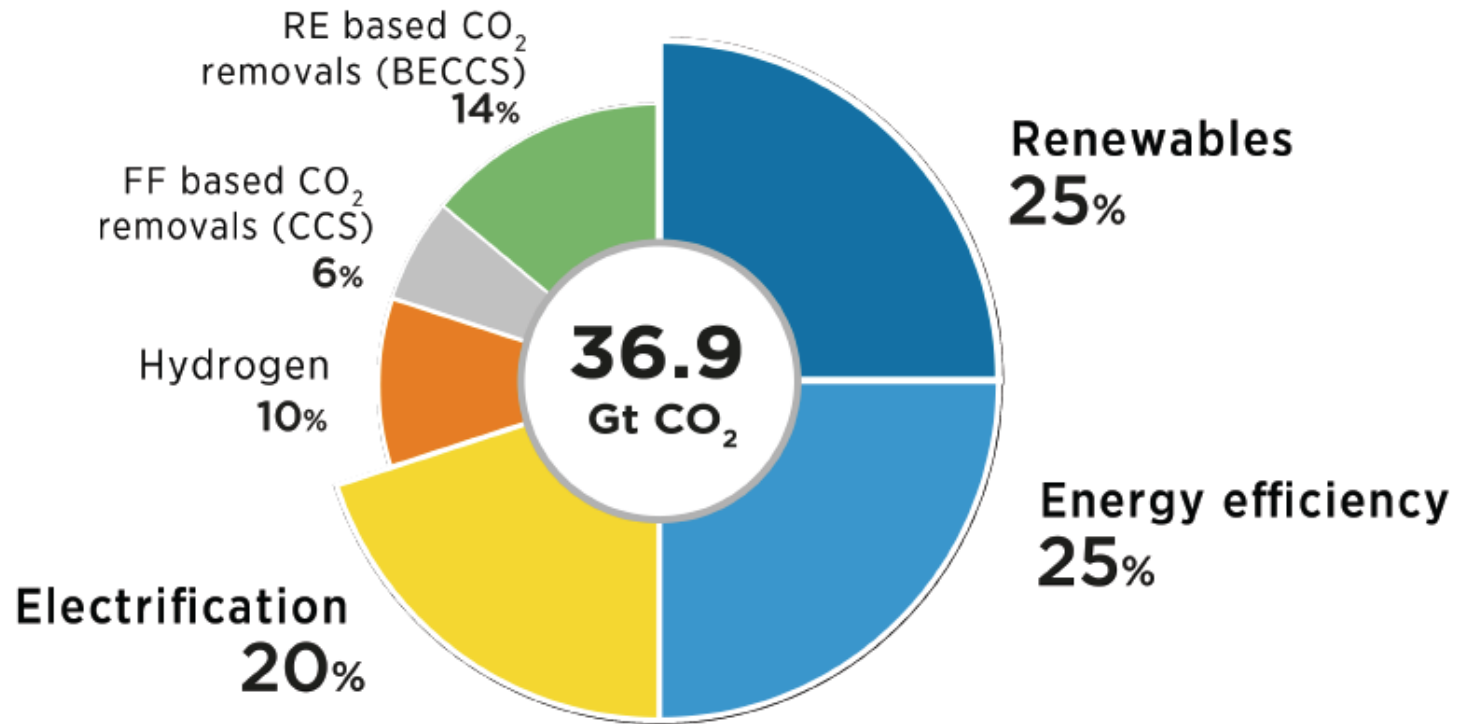
Different schedule for the goal of Net Zero in different countries based on their national condition.

TARGETS

→ NET ZERO BY 2050

IN 2050

- **90% of all decarbonisation** will involve renewable energy through direct supply of low-cost power, efficiency, electrification, bioenergy with CCS and green hydrogen.
- **Electricity** will be the main energy carrier over **50%**.
- The annual **energy intensity** improvement rate needs to rise to **2.9%**.



Pathway

02

Different Focus & Pathway



Different Conditions

Pathway

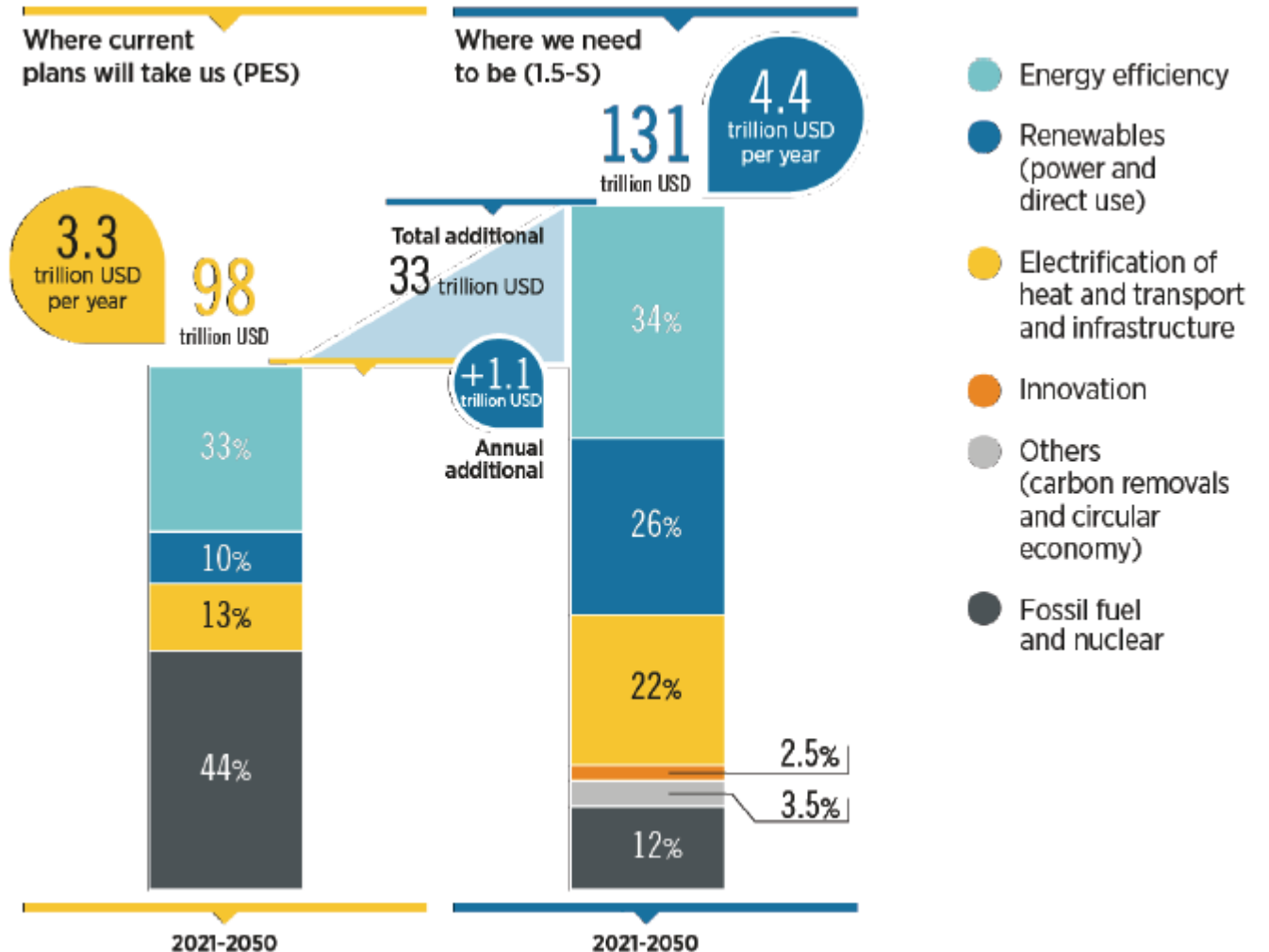
Investment

USD 131 trillion - Total

USD 98 trillion – Government

USD 1.7 trillion per year for clean energy

The additional capital would be largely covered by the private sector, while public resources would continue to be key to lower the risk perception for investors and ensure a just and inclusive energy transition.



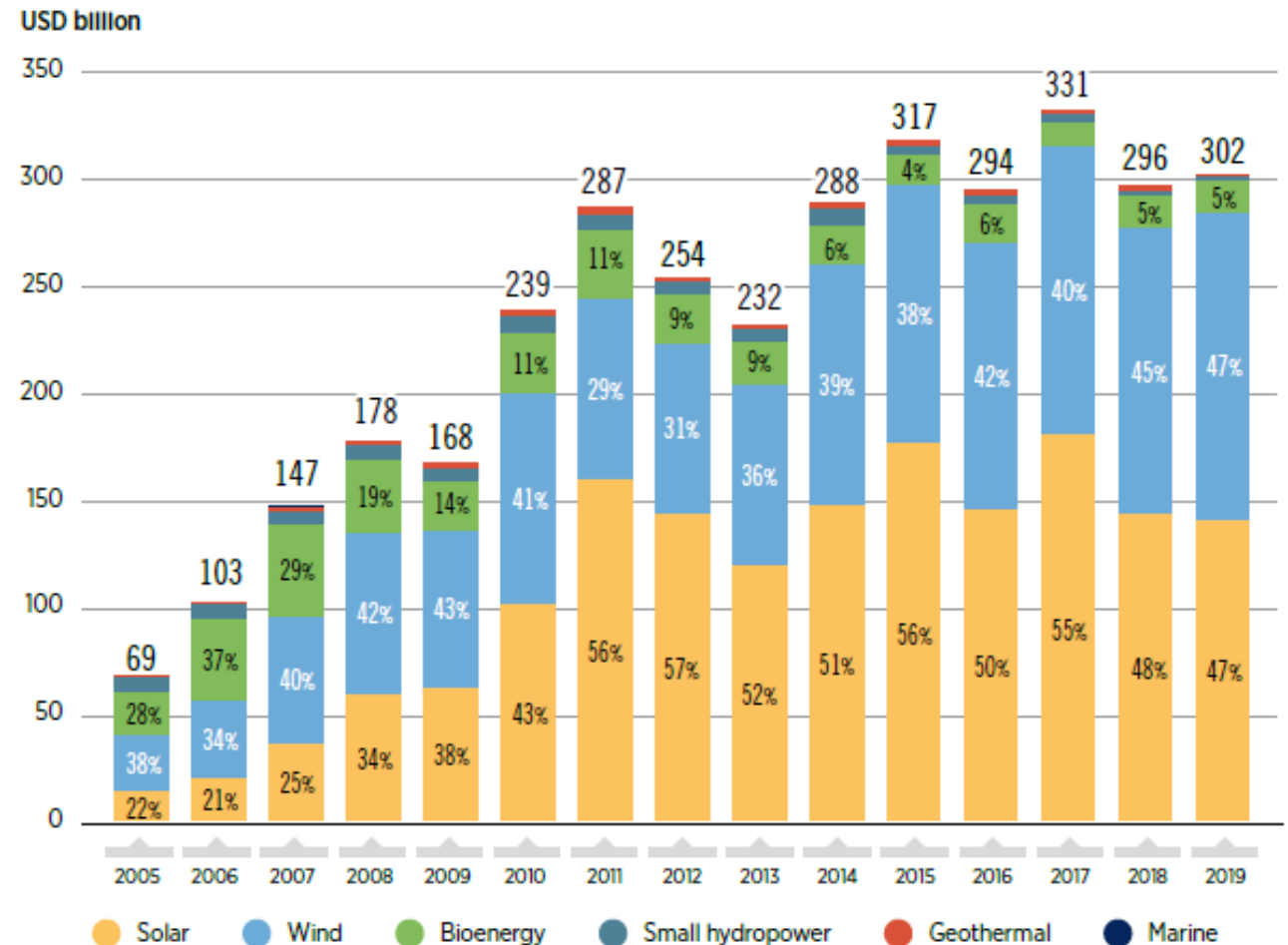
Pathway

Solar & Wind Dominate Renewable

Global annual renewable energy investments increased almost five fold between 2005 and 2020, with solar and wind technologies recently accounting for about 90% annually.

China, regularly attracts the largest share of renewable energy investments (on average, 55% during 2005-2019). Europe and the United States follow, with average shares of 20% and 16%, respectively, during 2005-2019.

Global annual renewable energy investments by technology, 2005-2019



Pathway

Energy Structure

Due to the characteristic of heavy industry of China

Coal share in primary energy consumption in 2019:

China : 57%

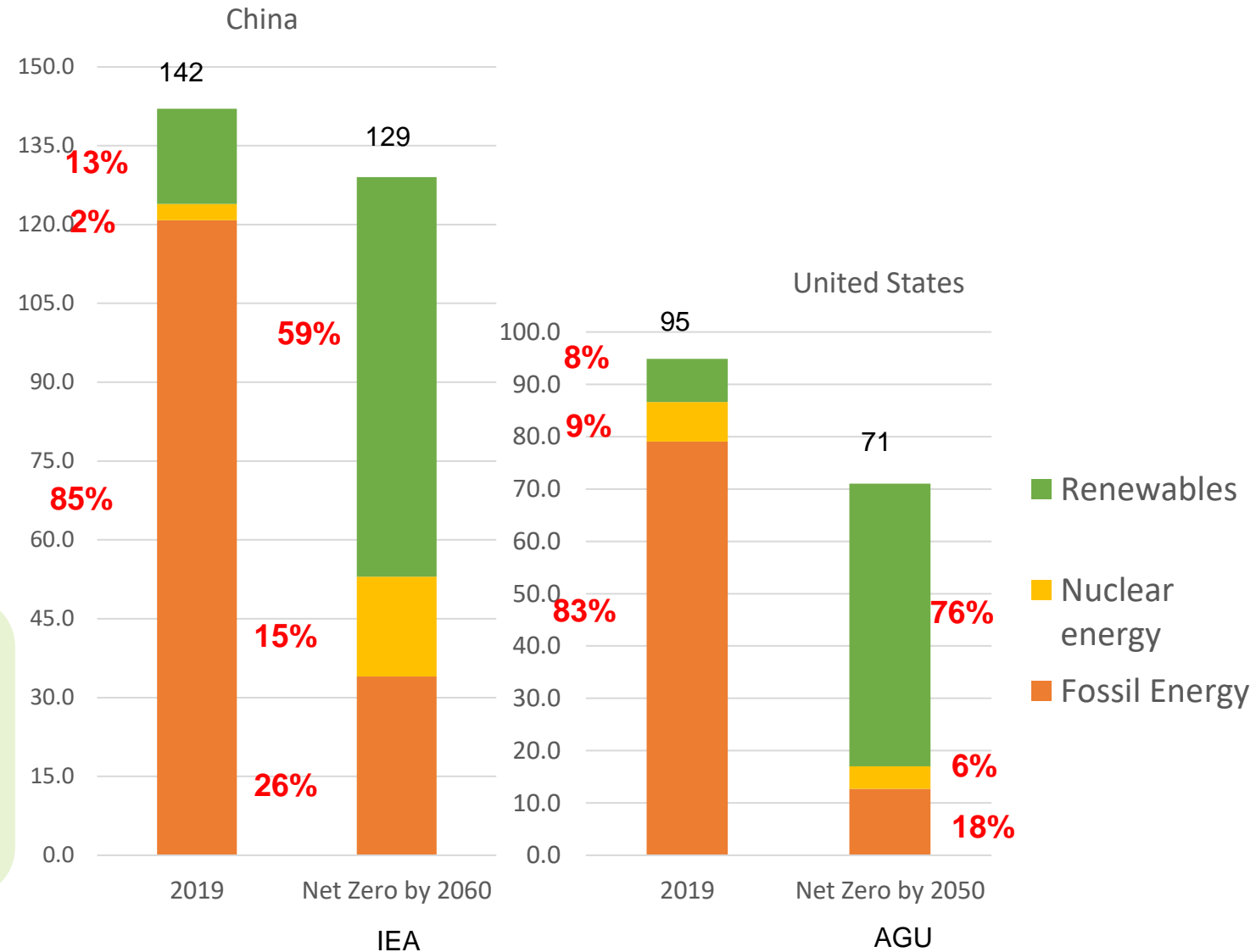
United States: 12%

Net Zero

China: in 2060 the share coal - 7%

United States: in 2050 the share coal 0%

Primary Energy Consumption of Selected Countries between 2019 and Net Zero (Ej)



Pathway

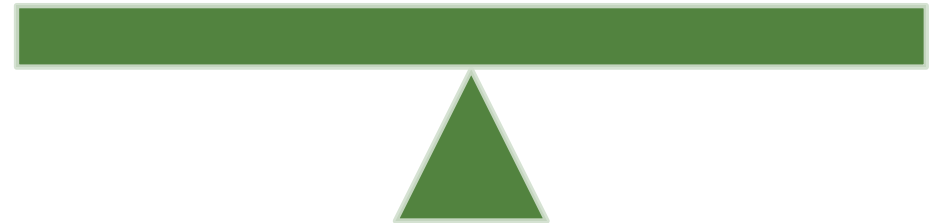
| | China (Net Zero 2060) | United States (Net Zero 2050) |
|--------------------------|--|---|
| Energy Efficiency | Primary energy intensity – energy consumption per GDP – falls by 75% between 2020 and 2060 | Energy intensity falls by 2/3 between 2020 - 2050 ,in 2050 the energy efficiency =130 GJ/Person |
| Electricity | Final energy demand 50%, Wind & Solar 80% | Final energy demand 50%, wind & solar 90% |
| CCUS | 2600 million tonnes CO2 per year | 780 million tonnes CO2 per year |
| Electrification | The largest share of CO2 reductions to 2060 (45%) from electrification | 58% of final energy |

Energy Transition

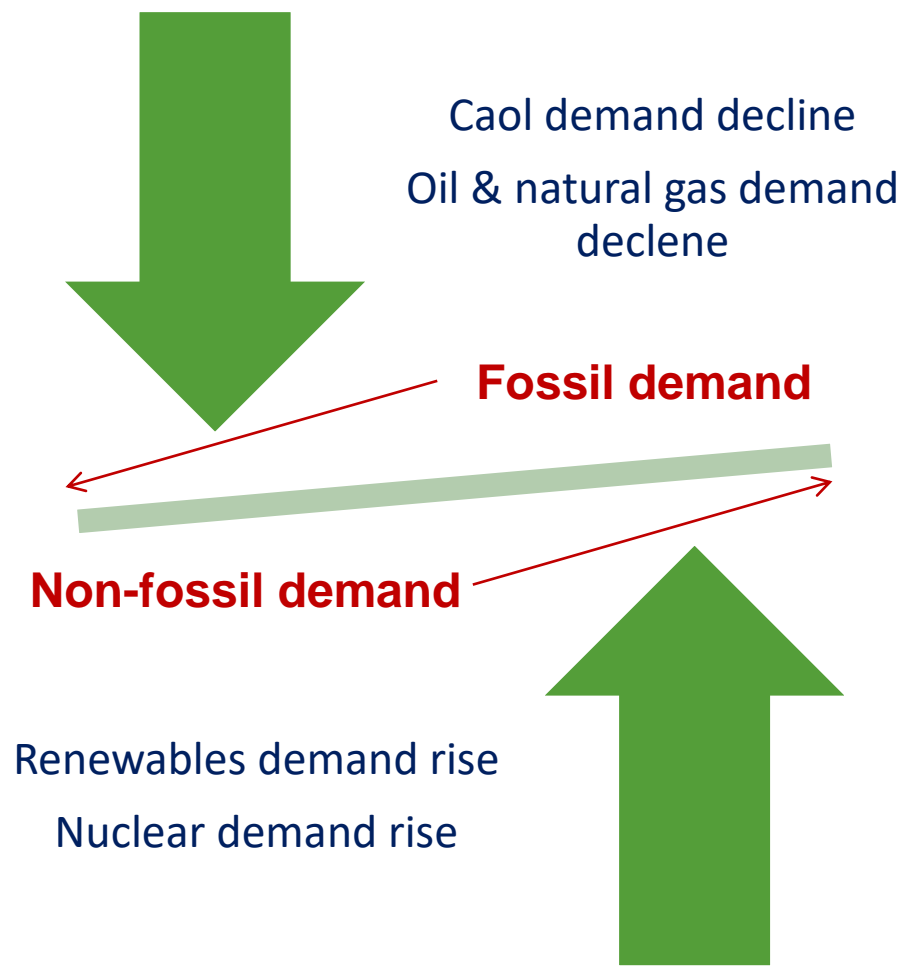
03

Fossil
Energy

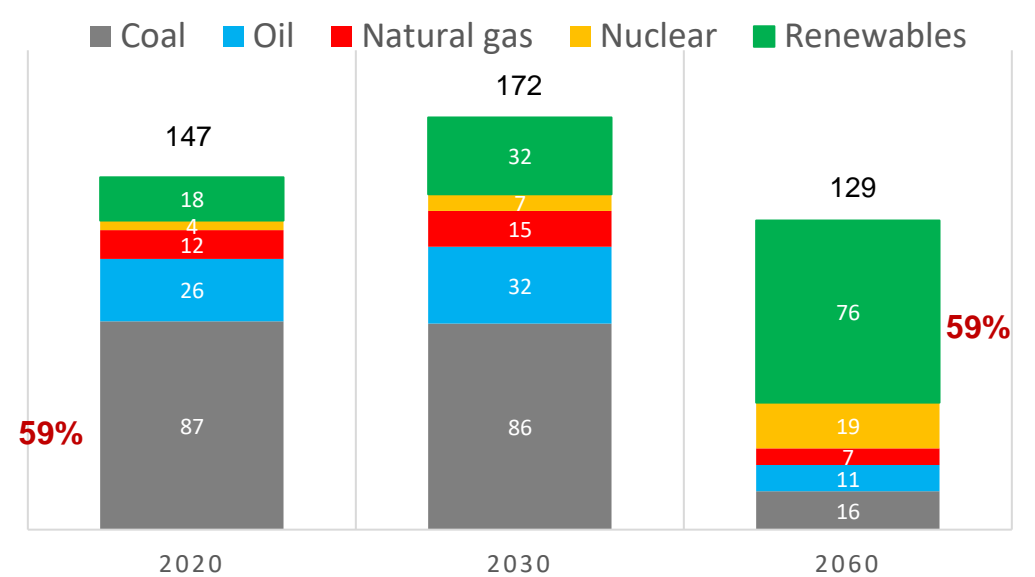
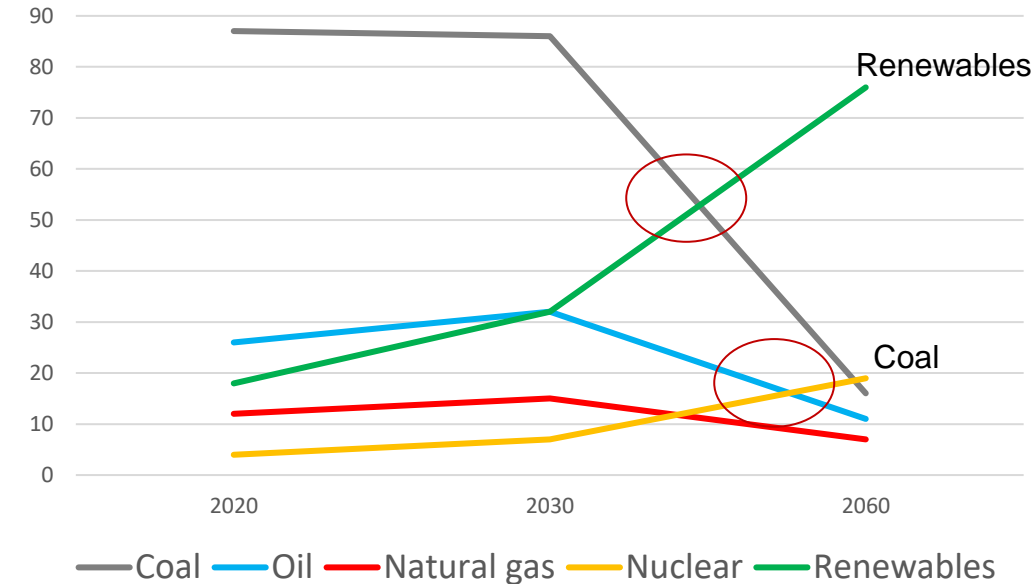
Non-fossil
Energy



Energy Transition



Primary energy demand by fuel in China for the 2060 carbon neutrality pledge (EJ)

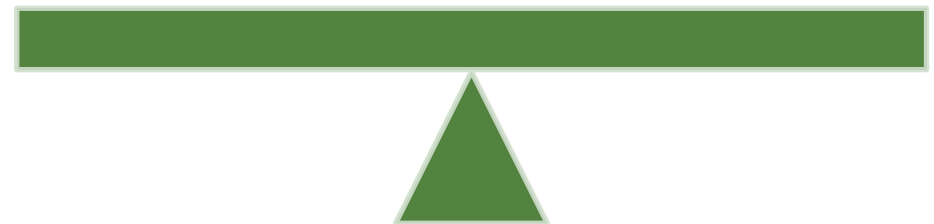


04

Climate

Climate
Change

Energy
Transition



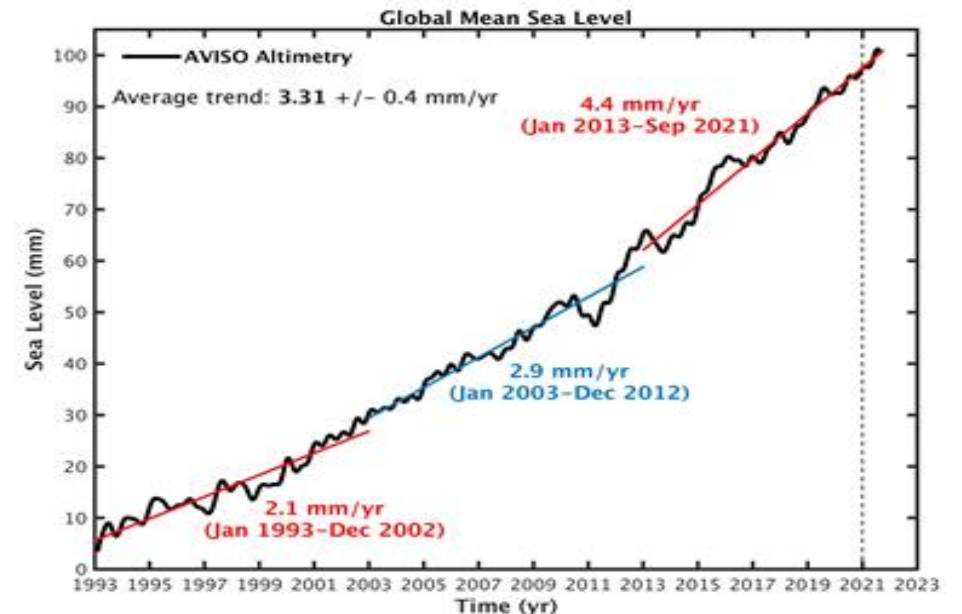
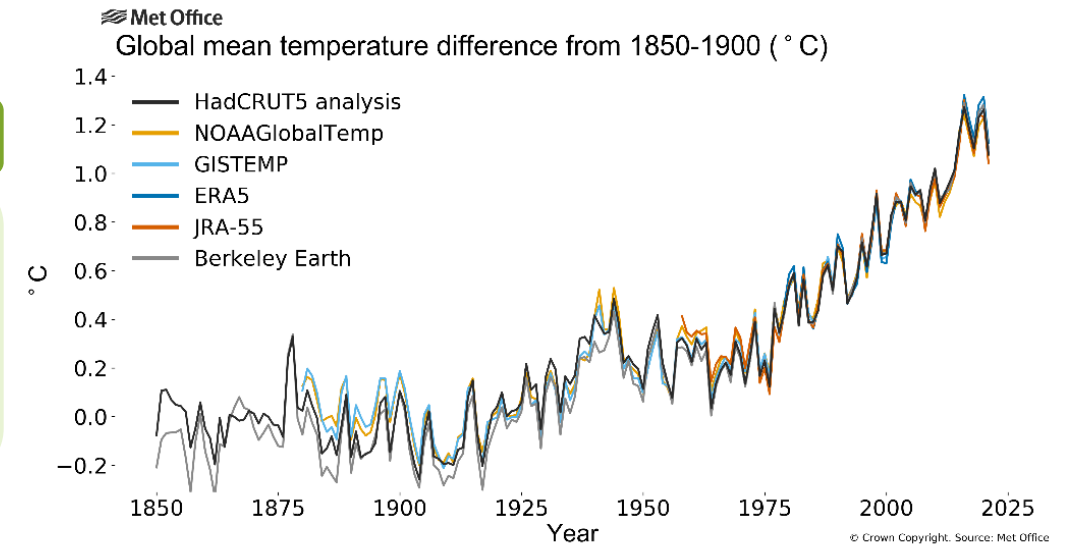
Climate are **CHANGING**

Temperature

2021 will be about 1.09 degrees Celsius higher than that between the 5th and 7th warmest year on record and that 2015 to 2021 will be **the seven warmest years on record**.

New Record of Sea level

Measured since the early 1990s by high precision altimeter satellites, the mean global sea level rise was 2.1 mm per year between 1993 and 2002 and **4.4 mm per year between 2013 and 2021**, an increase by a factor of 2 between the periods



Climate are **CHANGING**

Blizzard

At the beginning of this year, the blizzard and low temperature weather affected the entire **United States, especially the southwestern state of Texas**. Many people were killed and millions of homes and businesses were out of power.

High Temperature

From June to July this year, high temperatures of more than **40 degrees Celsius** occurred in western North America and the Mediterranean, and the highest temperature in some areas exceeded **50 degrees Celsius**. Extreme high temperatures have caused major **forest fires** in California, Turkey and Greece.

Torrential Rain

In March, the east coast of Australia continued to rain, and New South Wales suffered a **50-year flood**. In July, extreme rains also hit many countries in Western Europe, causing floods. The city of Zhengzhou received 201.9 mm of rainfall in one hour, **382 mm in 6 hours**, and 720 mm for the event as a whole year, more than its annual average.

Drought & Sand Dust

In May, the **United States, Brazil, Paraguay, Argentina** and other countries all encountered severe droughts.

Sand dust

In March, Mongolia suffered successive severe **sandstorms** and snowstorms, which also affected many parts of northern of China.

05

Development



**SUSTAINABLE
DEVELOPMENT AND
ERADICATION OF
POVERTY**

Development

Paris Agreement

Responses and impacts have with equitable access to sustainable development and eradication of poverty

Sustainable Development Goals 7

Ensure access to affordable, reliable, sustainable and modern energy

Electricity Access

2019, the population without access to electricity is still more **than 750 million**, accounting for about **10%** of the global population

Clean Cooking

At present, about **2.6 billion** people in the world do not have access to clean cooking

Region

3/4 of the world's population without access to electricity are located in sub-Saharan Africa

Covid 19

The impact of the COVID 19 has left more than **30 million** people unable to afford basic electricity services

Development

COP26 in Glasgow

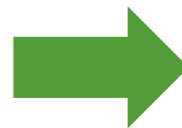
Hard to reach the goal

- COP26 keeps the 1.5 degree goal **alive**
- Humans have **consumed 86%** of the carbon budget

Reaches

- **China and the United States** issue a joint declaration
- Comprehensive agreement to protect approximately **85% of the world's forests**
- More than 100 countries agree to reduce **methane by 2030**
- More than 100 national governments, cities, states and major companies committed:
by 2035, the sale of internal combustion engine vehicles in major markets around the world will **cease**.
- “Phase out” – “Phase down” **coal**

Plan



Action

A close-up photograph of a hand holding a white envelope. The envelope is held in a way that the word 'THANKS' is written across its surface. The word is split by a vertical line: the left half, 'THA', is in white text on a dark green background, and the right half, 'NKS', is in dark green text on the white envelope. The background on the left is a blurred green, and the background on the right is a blurred grey.

THANKS