TRICKY TRADE-OFFS

EU PLANS FOR ENERGY & EMISSIONS

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European Green Deal

World’s First Climate Neutral Continent!

Key Drivers: Policy, Integration, Innovation
Designing a set of deeply transformative policies

- Promoting clean energy
- Protecting nature
- From farm to fork
- Leading the green change globally
- Making homes energy efficient
- Financing green projects
- Investing in smarter, more sustainable transport
- Striving for greener industry
- Eliminating pollution
- Ensuring a just transition for all
- Clime pact and climate law
- The European Green Deal
Clean Energy Transition

Decarbonize EU’s energy system (75% emissions)

Invest in H₂, Renewables, EVs, Batteries

Prioritize:
- Power sector, renewables
- Energy efficiency
- Integrated, interconnected, digitised market

2030 Target: 55% less GHG from 1990 levels
“Fit for 55”
What does the World use Today?

Global Consumption – total energy use

- **Renewables**
- **Hydroelectricity**
- **Nuclear energy**
- **Coal**
- **Natural gas**
- **Oil**

![Graph showing global energy consumption from 1995 to 2020](image)

**World consumption Exajoules**

- **Renewables**
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- **Natural gas**
- **Oil**

**What does the World use Today?**

- Oil remains the dominant fuel in Africa, Europe and the Americas, while natural gas dominates in the CIS and the Middle East, accounting for more than half of the energy mix in both regions.
- Coal is the dominant fuel in the Asia Pacific region.
- In 2020, coal's share of primary energy fell to its lowest level in our data series in North America and Europe to 12% and 9%, respectively.
- Oil continues to hold the largest share of the energy mix (31.2%).
- Coal is the second largest fuel in 2020, accounting for 27.2% of total primary energy consumption, a slight increase from 27.1% in the previous year.
- The share of both natural gas and renewables rose to record highs of 24.7% and 5.7% respectively.
- Renewables has now overtaken nuclear which makes up only 4.3% of the energy mix.
- Hydro's share of energy increased by 0.4 percentage points last year to 6.9%, the first increase since 2014.

**Primary energy consumption decreased by 4.5% last year, the first decline in energy consumption since 2009. The decline was driven largely by oil (-9.7%), which accounted for almost three quarters of the decrease. Consumption for all fuels decreased, apart from renewables (+9.7%) and hydro (+1.0%).**

**Consumption fell across all the regions, with the largest declines in North America (-8.0%) and Europe (-7.8%). The lowest decrease was in Asia-Pacific (-1.6%) due to the growth in China (+2.1%), the only major country where energy consumption increased in 2020. In the other regions, the decline in consumption ranged between -7.8% in South and Central America to -3.1% in the Middle East.**
What does the EU use (electricity)?

Electricity production by source, Europe

- 37.5% Renewables
- 61.2% Non-Carbon

- Coal: 21.5%
- Gas: 19.6%
- Oil: 1.3%
- Nuclear: 23.7%
- Hydropower: 16.1%
- Wind: 11.8%
- Solar: 4.0%
- Other renewables: 5.6%
What is it used for?

Consumption By Sector
Electricity production by source, France

- Nuclear: 70.6%
- Non-Carbon: 90.5%
- Oil: 6.0%
- Gas: 10.1%
- Coal: 2.2%
- Other renewables: 1.6%
The German Case

Electricity production by source, Germany

40.6% Renewables

53.0% Non-C
Got Coal?

Green
No coal, or commitment to phase-out coal

Blue
Phase-out being actively discussed

Orange
Phase-out yet to be decided

GW is the gigawatts coal capacity currently operational
Last lump of coal from German black coal mine, Prosper-Haniel, Dec. 21, 2018. Lignite takes over
Nordstream 2

ist Kompliziert...

- Nuclear to close 2022
- How to replace lost power?
- Coal/Mining Unions powerful
- Need to control emissions
- Gas half the emissions of coal
The Finland Case

FORESTS: "OUR LARGEST NATURAL RESOURCE"
Electricity in Finland

Non-carbon = 84% of Total
Wood-based fuels & Nuclear

Plans to be:
1st fossil-free in EU
Carbon-neutral by 2035
Finland will be first country to open a nuclear waste repository, in 2023.
GREEN DEAL COMPLEXITIES TO CONSIDER

• Conflict with Nat’l Energy Policies
  What counts as “green”?
  Countries have different needs, resour., politics

• Import Dependence
  Energy Tech (solar, nuclear?)
  Critical Raw Materials (e.g. China)

• Geopolitics - Russia, M. East, US?

• Realism vs Ideology
HE CAN’T HELP
THANK YOU FOR LISTENING!

QUESTIONS?
Extra Slide - EU electricity sources

The 19 countries displayed account for > 97% of EU-27 electricity consumption.