



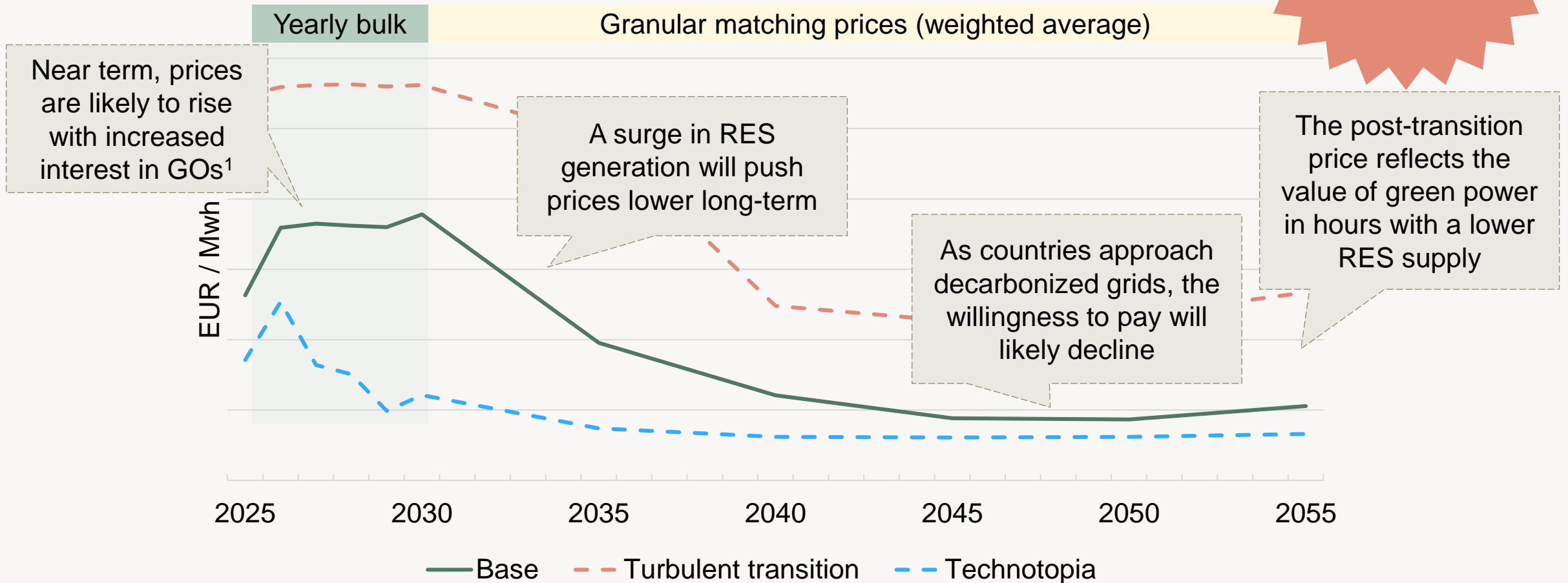
# The price effects of a granular Guarantees of Origin market

*Is a long-term decline inevitable?*

***Strommarkttreffen, 18.10.2024***

# GO price outlook: A bearish long-term case

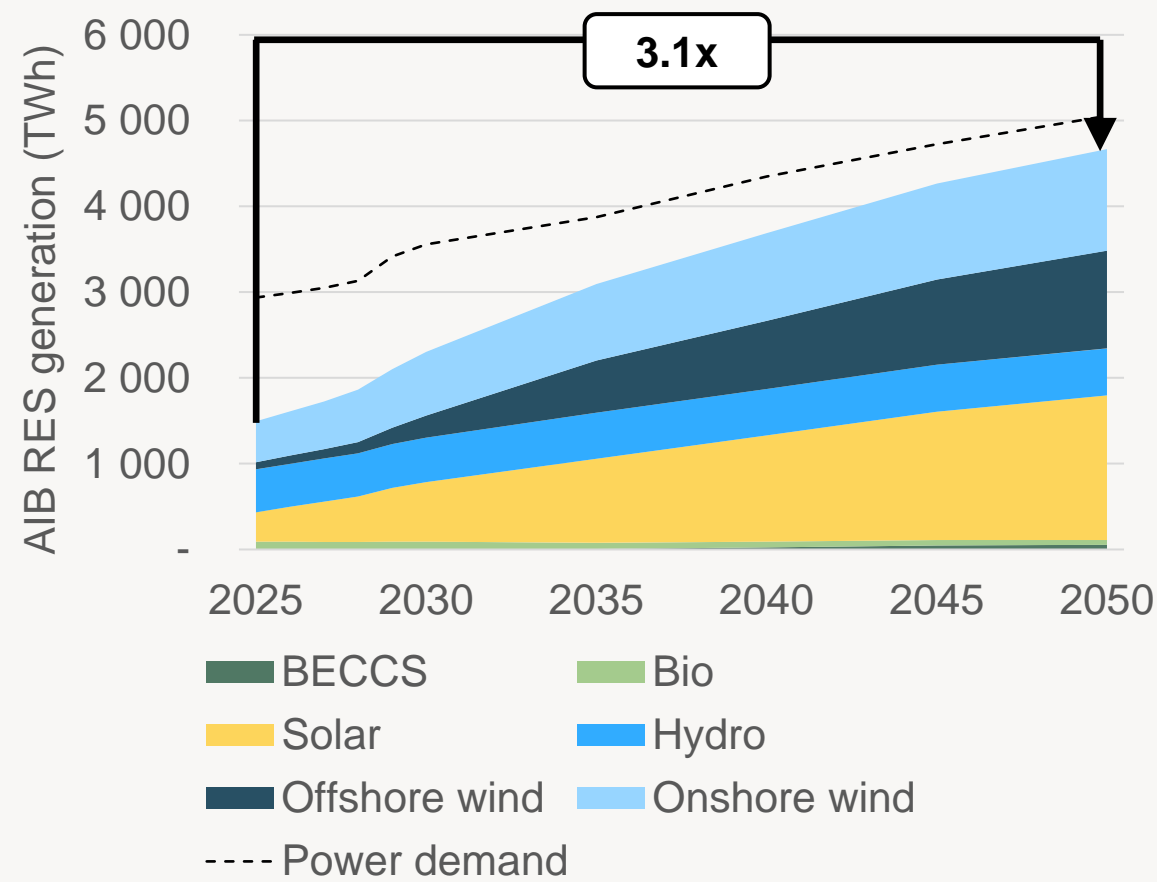
We expect GO prices to increase towards 2030 and then revert to historic lows



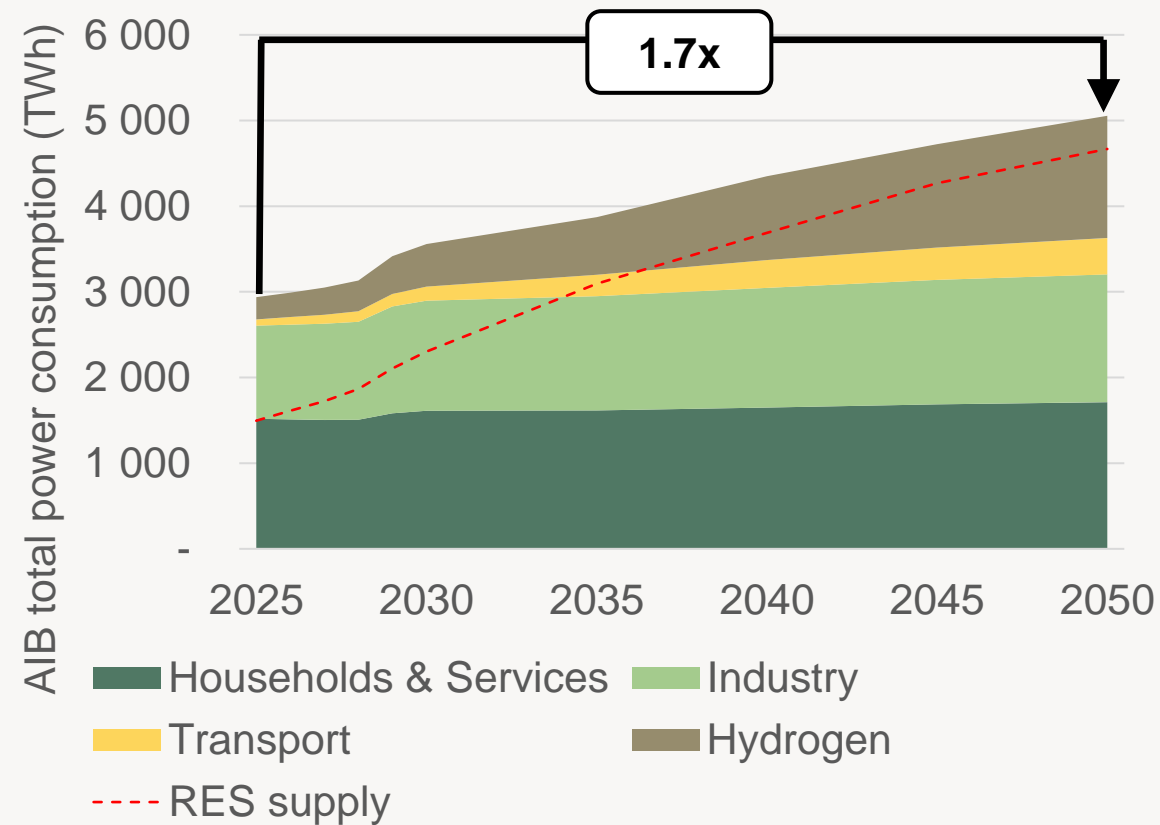
<sup>1</sup>Rapid increase in estimated willingness to pay

# Long run developments: RES generation will cover a larger share of total power demand towards 2050

Massive RES supply growth



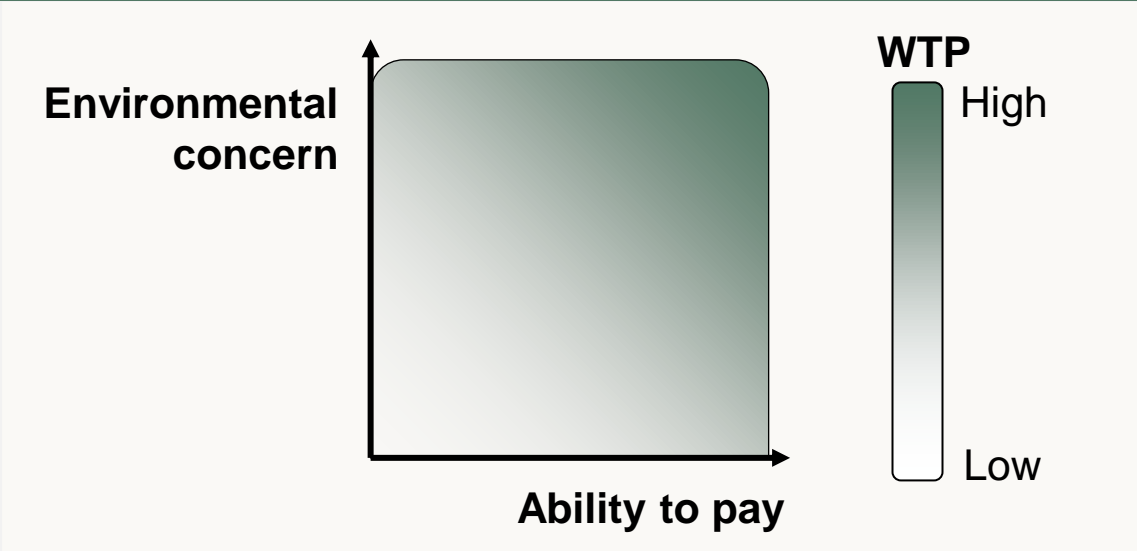
Comparably slower pace of power demand growth



Source: THEMA Power Market Outlook, February 2024 release

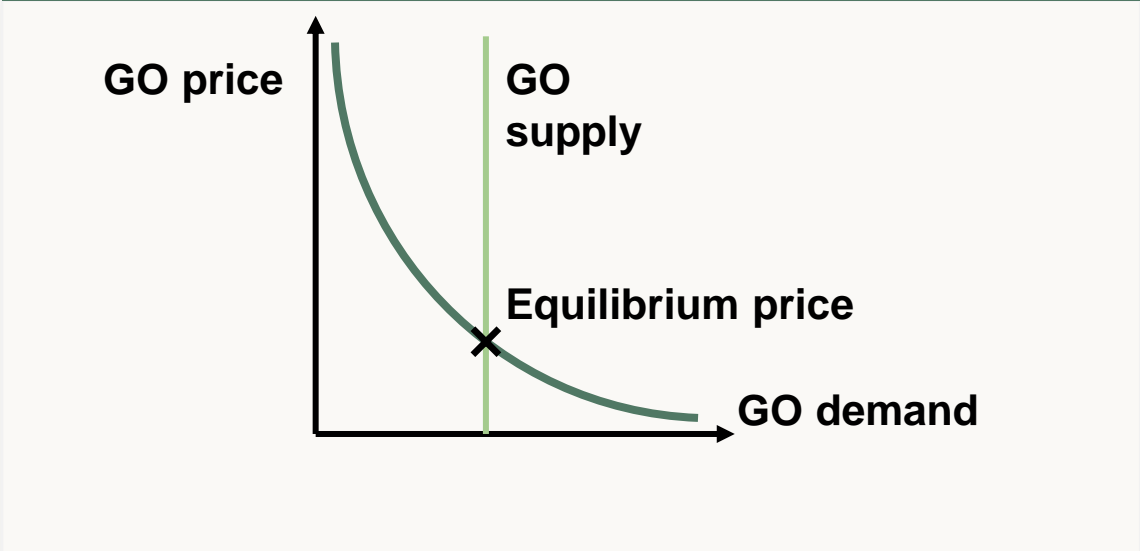
THEMA's price outlook on GOs is based on changing consumer preferences and our future expectations on renewable energy supply

Wealth and environmental concerns differentiators in the Willingness to Pay (WTP)



Following Wimmers & Madlener (2024), we estimate WTP as a function of their **environmental concern** and **ability to pay**. Environmental concern assumptions are based on **emission intensity** and the alternative costs to using clean electricity

Perfectly inelastic supply decides the price formation along the demand curve

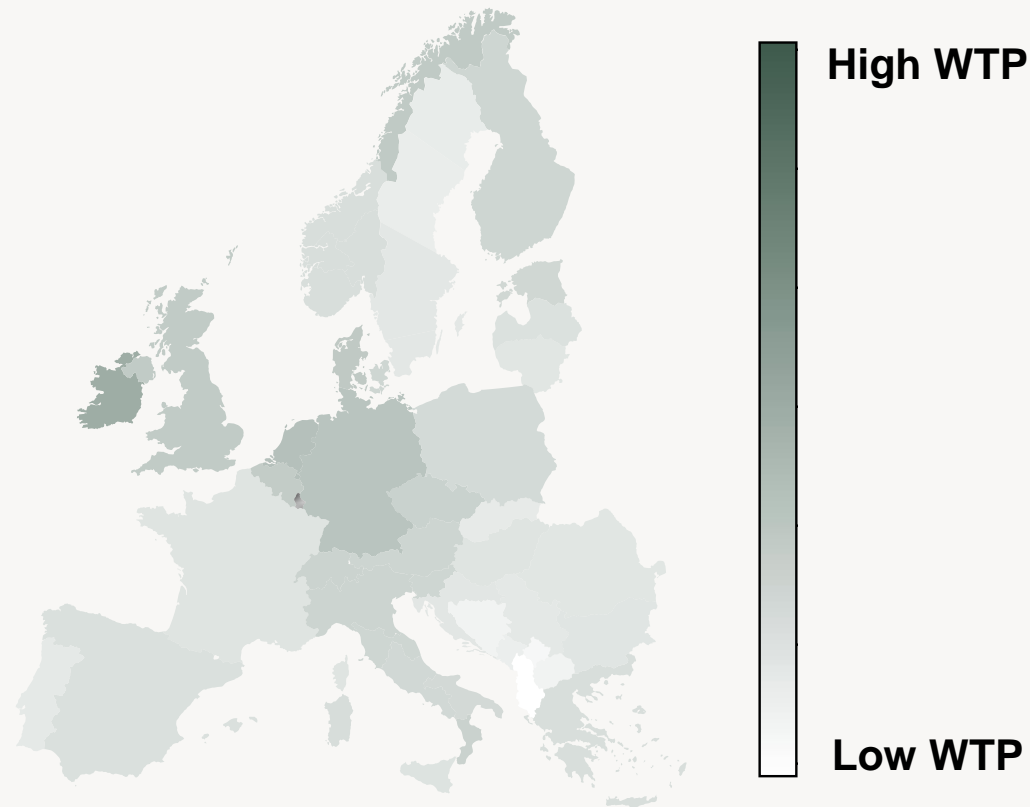


We project future GO supply with our expectations on **renewable generation** from AIB members, changes in **issuance policies** and the inclusion of **new member countries**.



We model Ireland, Netherlands and Germany with the highest WTP in 2025

**WTP is led by zones with high generation emissions and a high GDP per capita**





# The transition to a more granular GO market is on the horizon

Hourly matching and geographic constraints are discussed for the future GO market

1yr+

Today, GOs are valid for trading up to 12 months after production

24/7

Large consumers and TSOs push for 24/7 matching with RES generation to make green claims

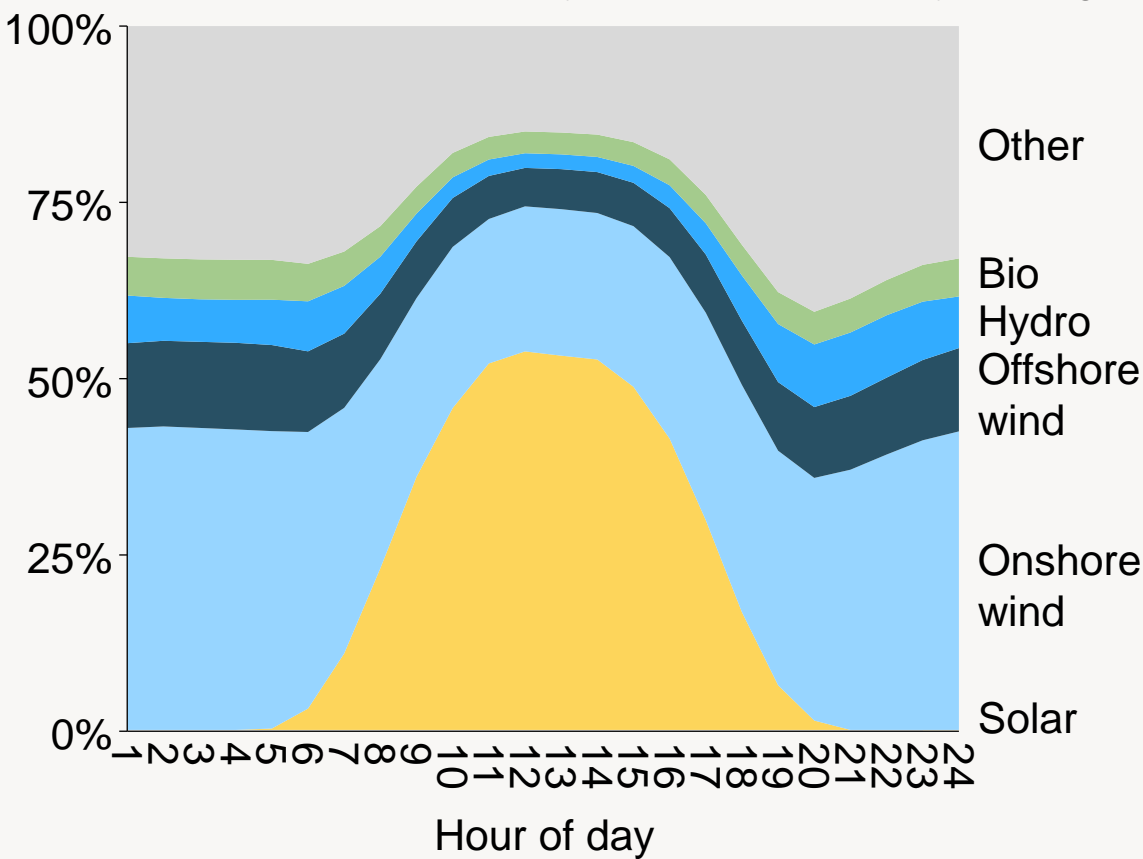


AIB introduced a roadmap for granular certificates, aligning with RED III and the Delegated Act on RFNBOs. IT infrastructure is one of the main challenges.

# Hourly matching will induce premiums on GOs produced in low-RES hours

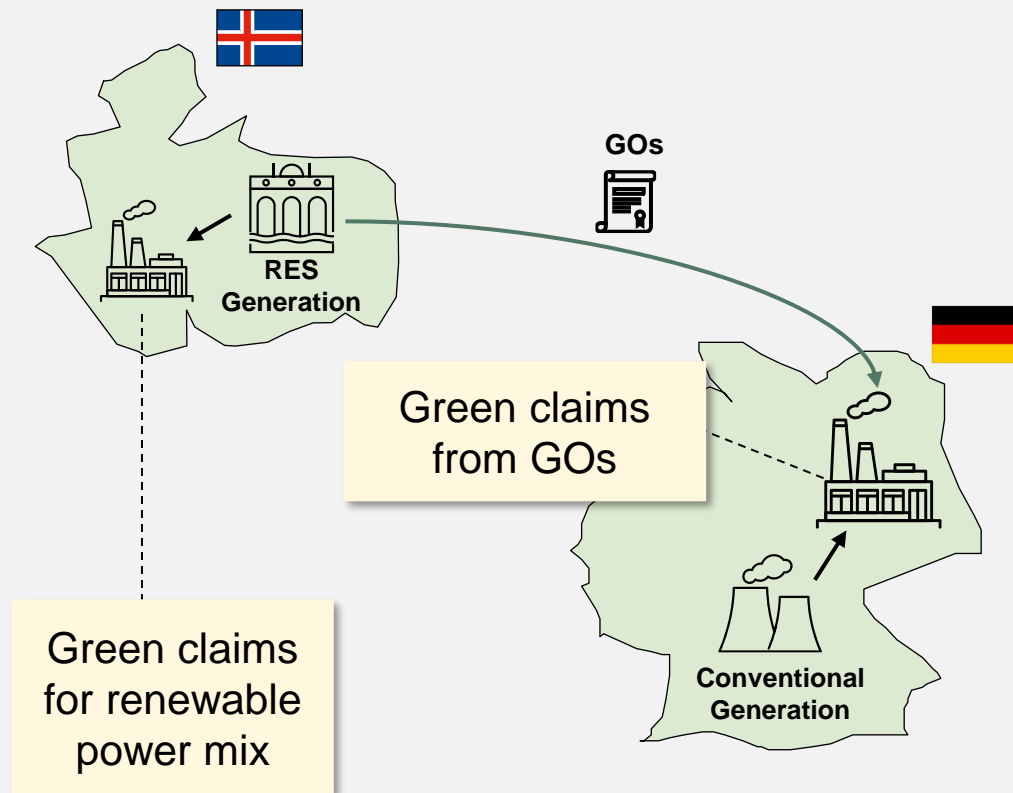
Renewable resources will be most scarce in the evening

Generation shares in Germany (2030 Base, hourly average)



# Increased focus on geographical correlation and physical realities

Icelandic GOs first banned due to possible double counting – then reinstated shortly



AIB accused Iceland of double-claiming and imposed a **one-month export ban** during spring 2023.

If the AIB, or the EU, decides to impose further measures to combat double-claiming, **Norway, the biggest exporter, will likely be directly affected.**

Regardless of the regulatory implications, the discussion accelerates a **demand shift towards local production.**

# From 2030, we model the GO market with **granular restrictions**

## *Demand input*



Hourly power demand



WTP distribution



GO demand curve

## *Supply input*



Hourly RES generation



GO issuance policies



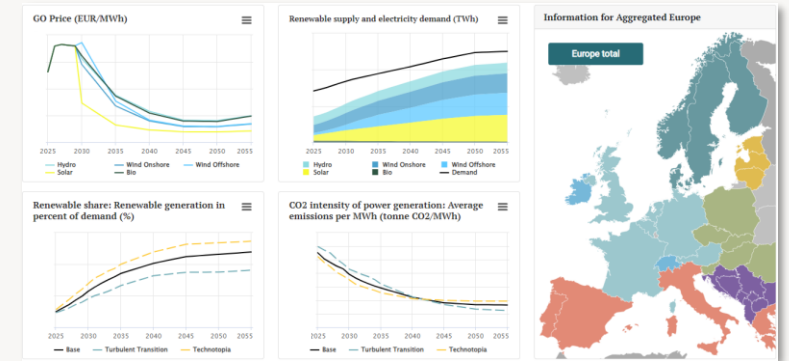
Hourly GO supply

**Hourly market clearing**  
in the THEMA Power Market Model



*Physical trade restrictions*

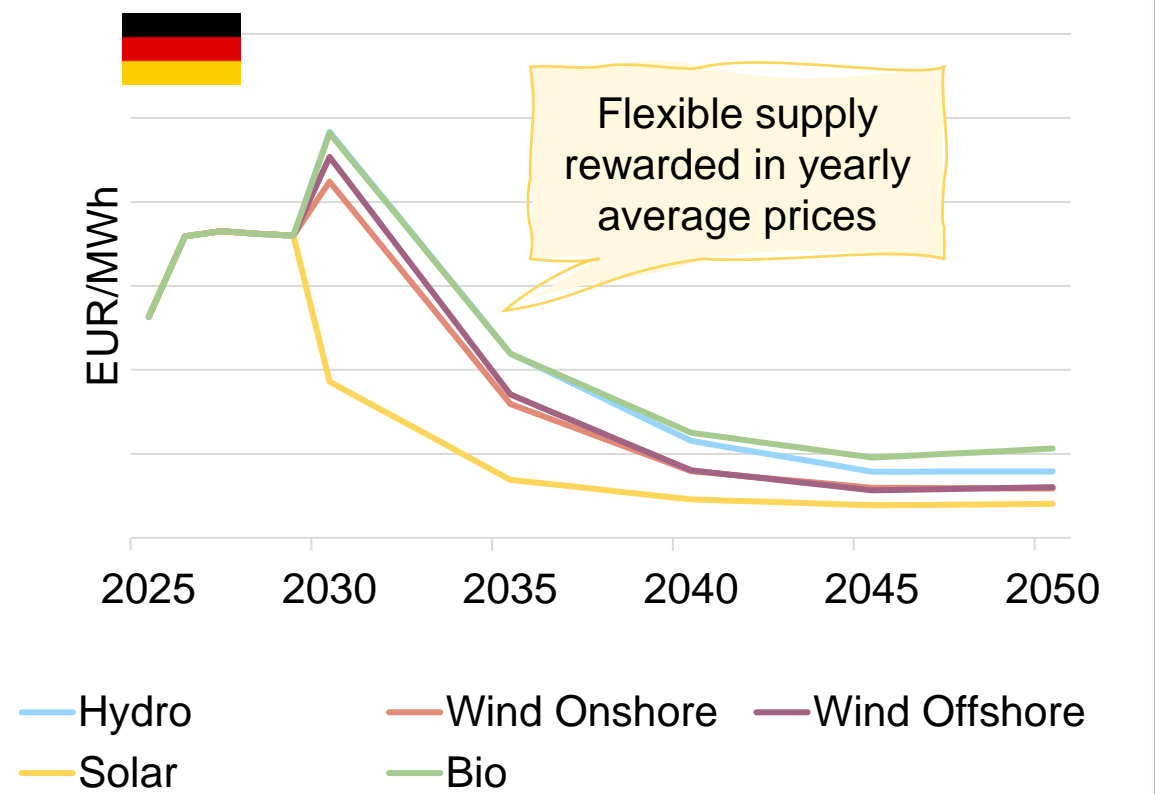
## **Results from our GO portal** **(February 2024)**



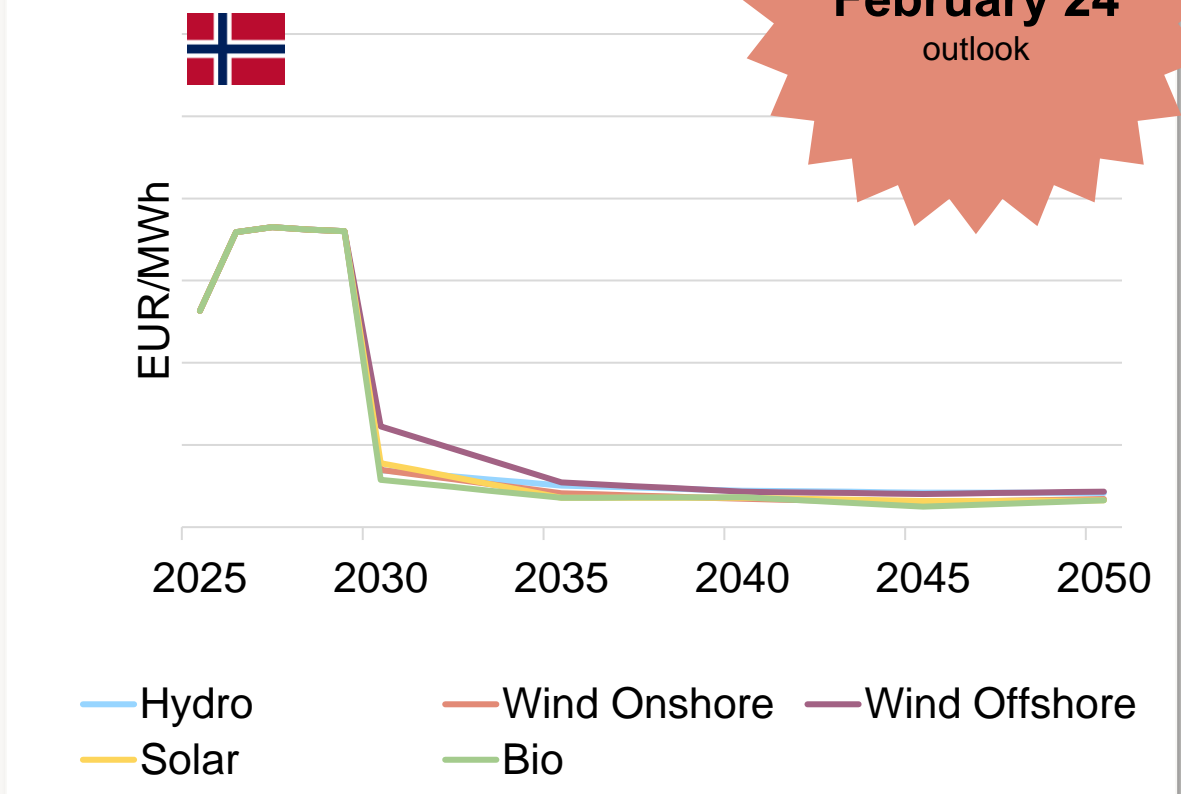


Model results show **significant price spreads** in a granular market, with a **declining price trend** across member states after 2030

GOs trading at premiums in Germany ...



... with prices plummeting in Norway



Results from past **February'24** outlook



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