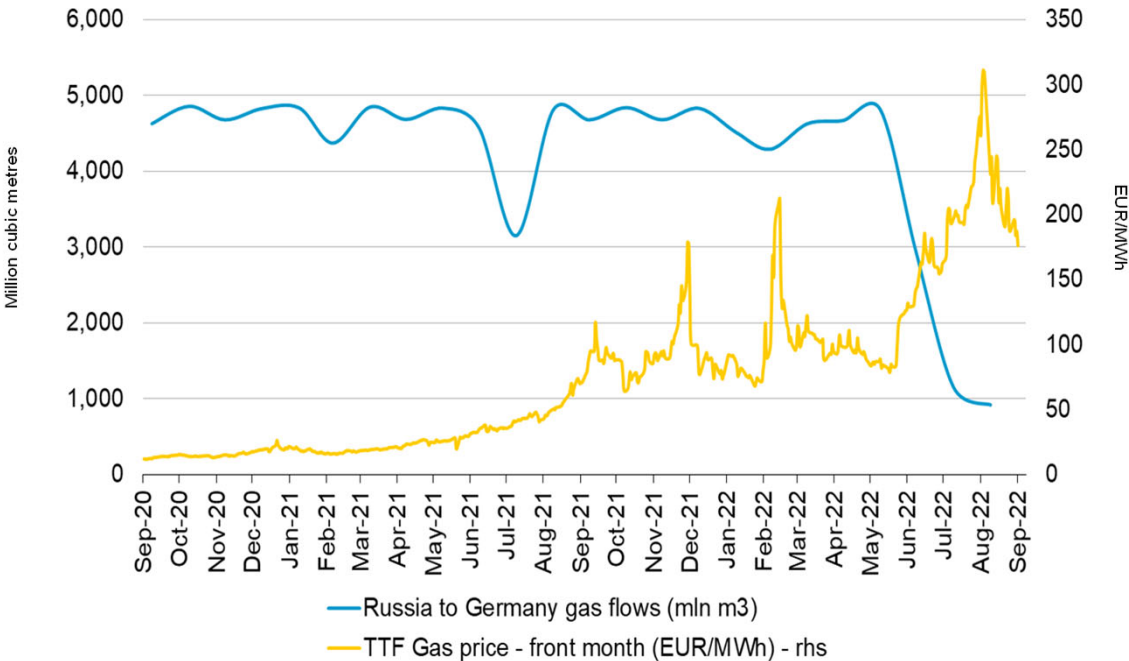


The Energy Crisis – What are the challenges in transitioning to clean energy

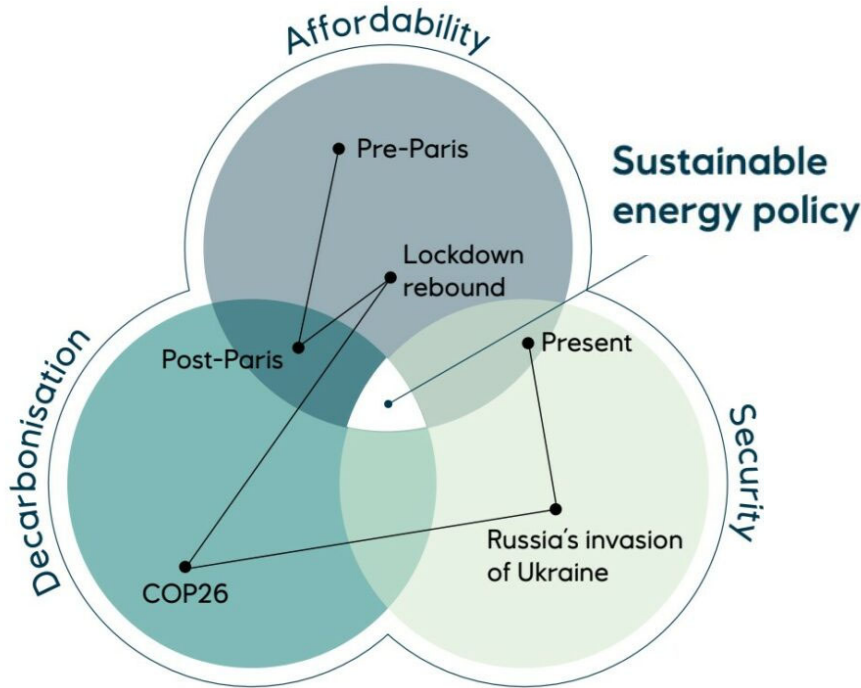
Anthony Doherty, Chief Investment Officer, NTR plc



Russian gas shutoff has exposed dangers of dependence



Source: Bloomberg as at September 2022

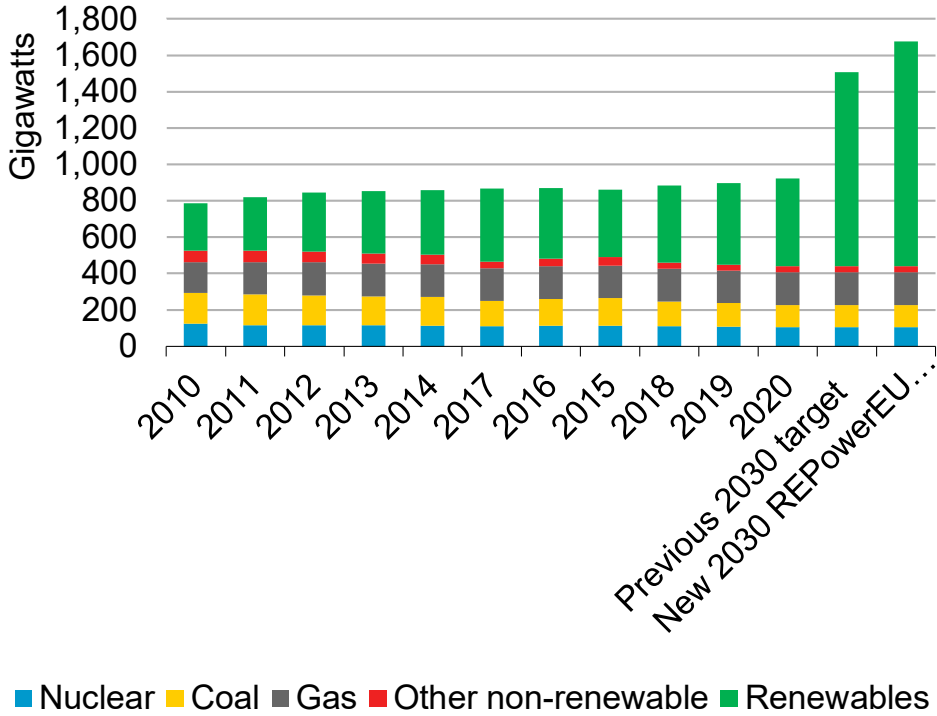


Source: Equinor September 2022

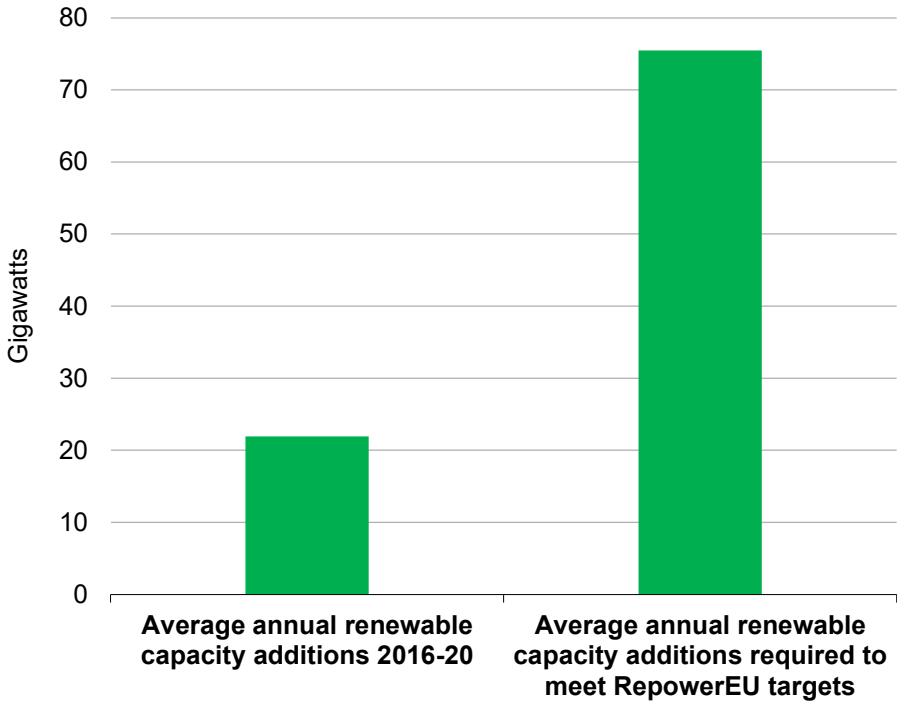
NTR Replacing fossil fuels with zero carbon and low emission alternatives still critical

EU push to accelerate renewable capacity additions

Power generation capacity in Europe



REPowerEU implies exponential increase in capacity additions



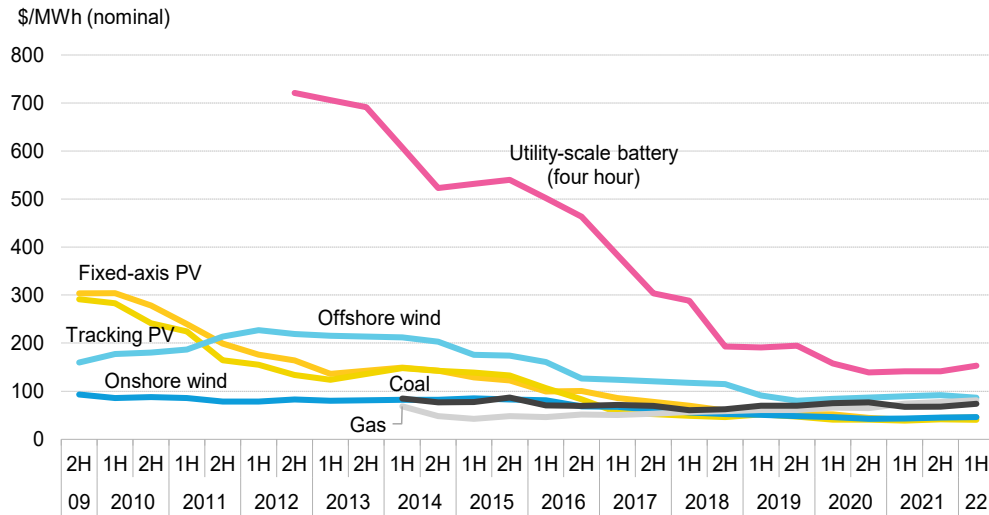
Source: EU Commission, Bloomberg New Energy Finance, NTR research as at October 2022.



Goal is to cut European gas use by more than half by 2030. High gas prices may favour coal.

While clean energy is now competitive, there are challenges

Levelized Cost of Energy (LCOE) global benchmarks



- Onshore wind & solar (\$40-46/MWh) are more competitive than Gas / CCGT (\$81/MWh) and Coal (\$74/MWh).
- Offshore wind (\$86/MWh), Battery storage (\$153/MWh) have increasing role to play in transition to clean energy.

Source: Bloomberg New Energy Finance (July 2022)

McKinsey forecast twofold increase in capital spending in 2021-2050, compared to today. There are challenges though

(1) Reinventing the energy grid

- Smart meters, EV charging
- Interconnection

(2) Building infrastructure

- Grid networks / connections
- Enabling infrastructure (e.g. ports for offshore)

(3) Innovation

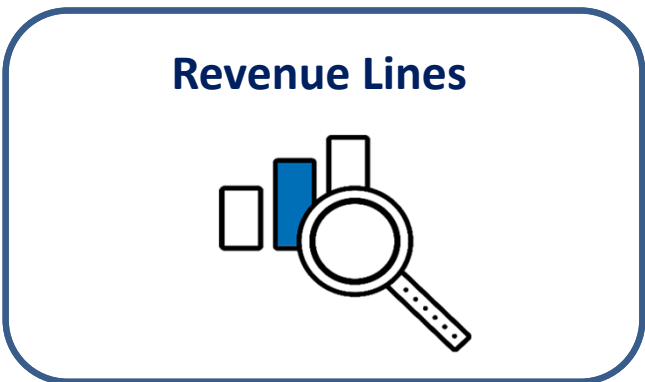
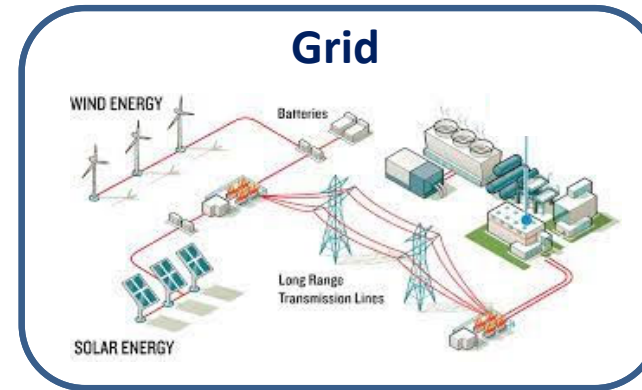
- System balancing, demand response
- Battery technologies

(4) Investment!!



European clean energy needs €1 trillion by 2030. Internationally, the figure is even higher

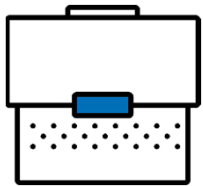
Accelerating the clean energy transition – what's needed?



The EU has launched initiatives to put frameworks in place to address some of the needs

Challenges & opportunities for investors in clean energy transition

Yield



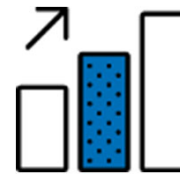
- Increasing options
- 10 (+2) year v Hold for life
- Managed account

Diversification



- Technology
- Geography
- Revenue line
- Asset stage

Inflation



- Indexed revenues
- Power price linkage
- Zero “fuel” cost
- Resilient, secure?

Liquidity



- Long dated assets
- Public v private investments

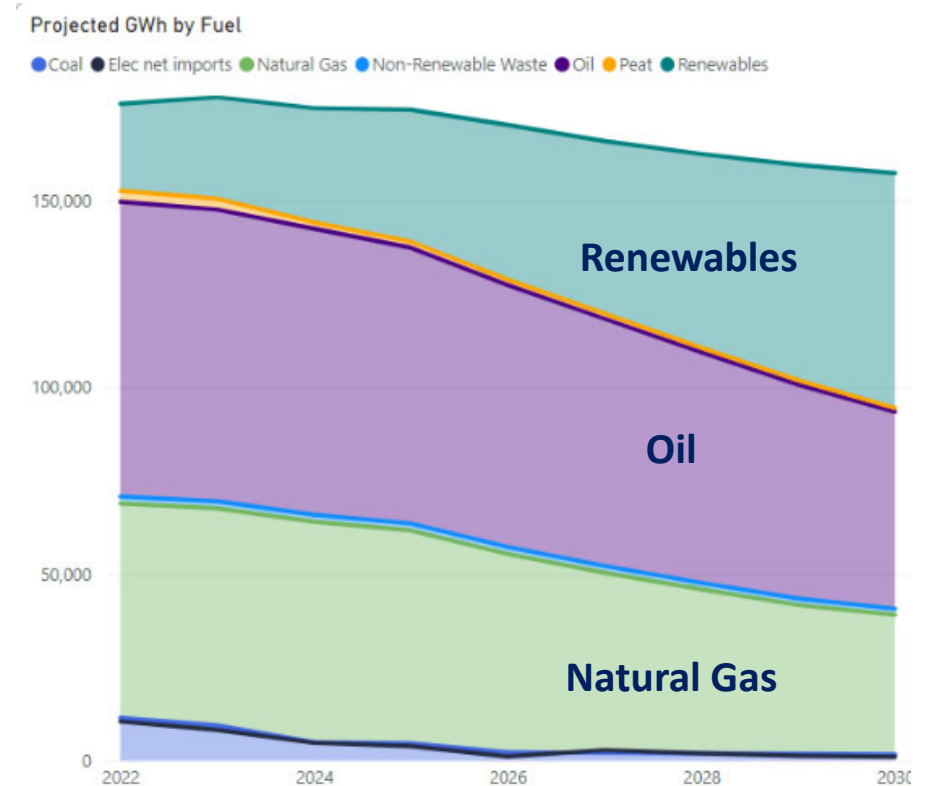


Existing & new capital looking at a slowly expanding pool of assets so pressure ↑ on valuations

Where is Ireland in terms of transition to clean energy?

- **Renewable energy key** to Irish climate action (doubling of electricity demand by 2030).
- In 2020, 42% renewable electricity (36% wind).
- “80 by 30” target based on Climate Action Plan will see **renewable capacity grow from 4.5 – 15GW** (2GW solar + 5GW offshore wind).
- On primary energy basis (i.e. including transport) we have a lot to do!
- **Planning and grid** are key challenges.

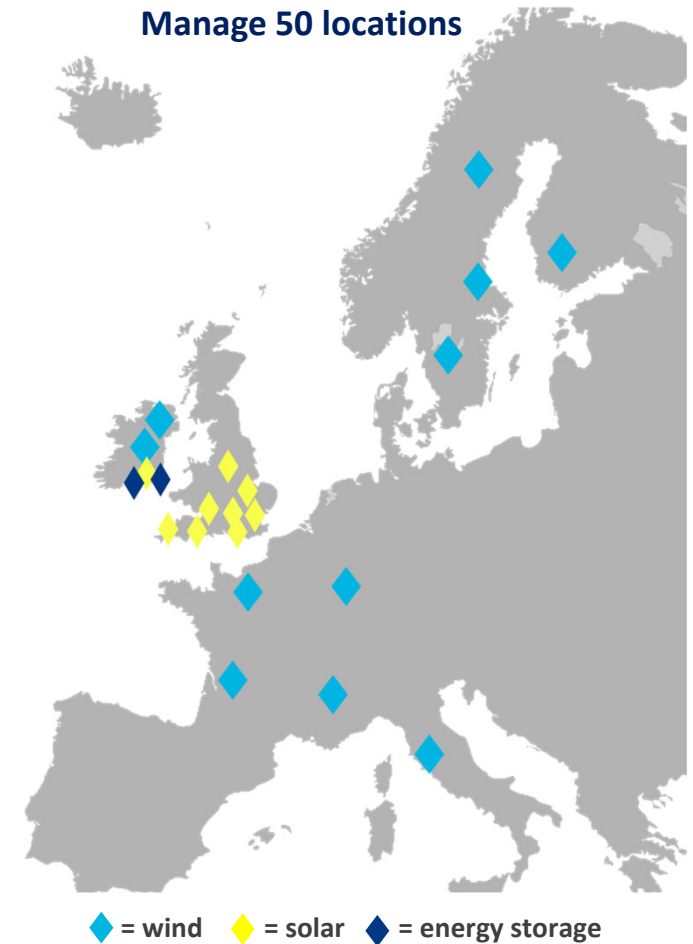
SEAI Primary Energy Supply Projection (2022 – 2030)



 **NTR** Urgent action needed if Ireland to meet 2030 energy targets

NTR's path in the transition to clean energy

- Founded in 1978 to develop and operate Ireland's first toll bridge.
- NTR plc has diversified throughout the last three decades to become a **renewable energy investor** and **asset manager**.
- **>3,000 MW** wind & solar projects over 3 investment cycles.
- Since 2015, c.**€1.1 billion** total capital invested (incl. debt) in 2 investment funds with c.715MW of wind, solar & energy storage.
- 14 European institutional investors invested in NTR's first 2 funds (insurance, pension, foundations, fund of funds).
- Partnership with **Legal & General Investment Managers** ("LGIM") to address the climate emergency.



Concluding thoughts

- For the world to decarbonize, **all sectors of the economy will have to change**, resulting in winners and losers.
- Achieving a net-zero world by 2050 may well prove to be the **largest reallocation of capital in history**, leading to an increase in investment of \$1 - 3.5 trillion p.a. more than today.
- While the war in Ukraine is complicating the path in the short term, it may **accelerate progress** in the long term.
- Mark Carney called the transition to net zero the “***greatest commercial opportunity of our age***”. Clean energy is a fundamental part of this transition.

While challenges exist, there has been a turning point for institutional investor appetite in this crucial asset class.

