Energy
Transitions
Commission

ETC Webinar
Streamlining planning and permitting

July 11th, 2024

Energy Transitions Commission

Chair
Adair Turner

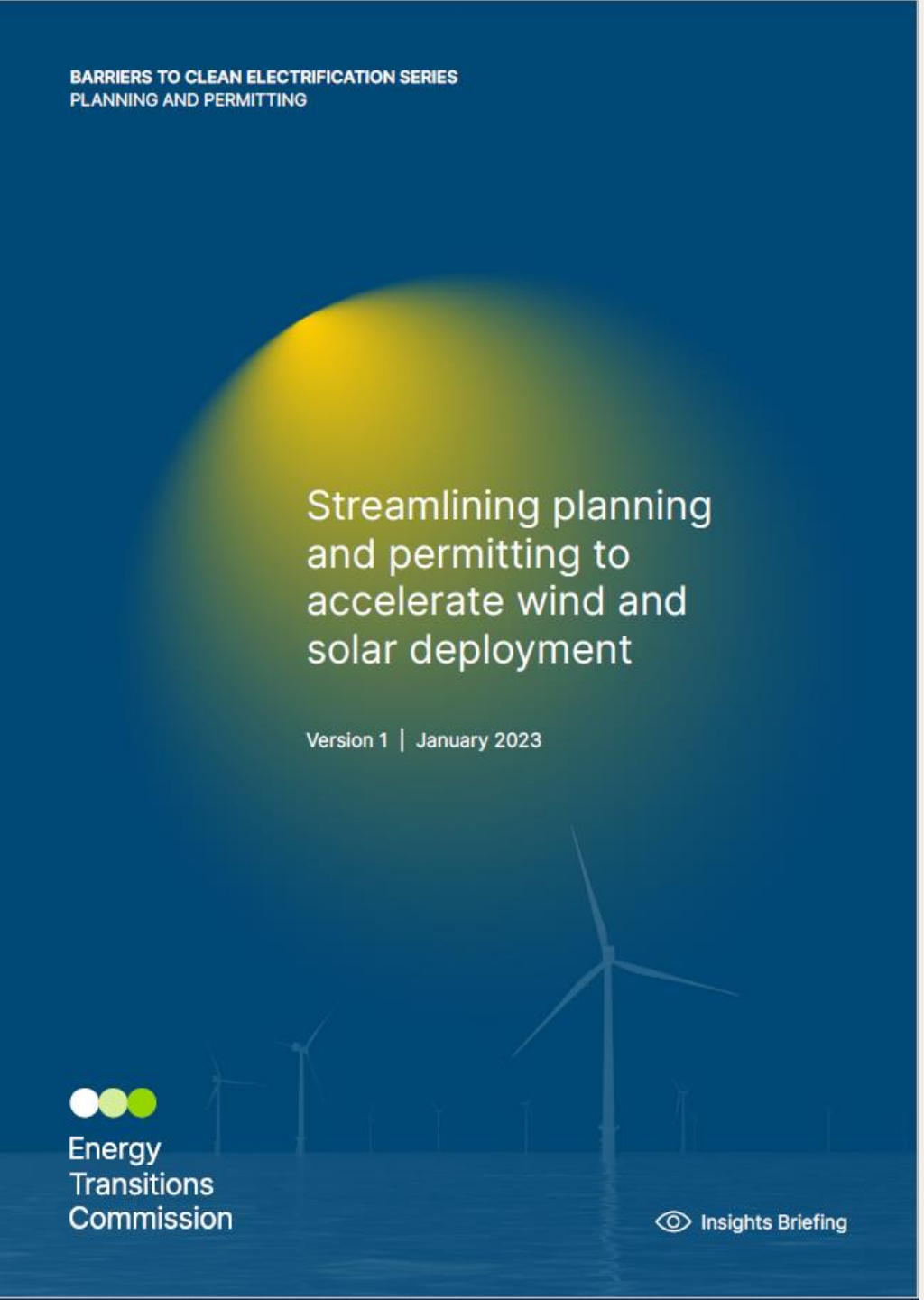
Knowledge partners

SYSTEMIQ

BloombergNEF

- Energy
- Industry
- Finance
- Civil society

ETC Publications – Timeline 2017-2024



Barriers to Clean Electrification Series

The ETC's *Barriers to Clean Electrification* series focuses on **identifying the key challenges facing the transition** to clean power systems globally and recommending a **set of key actions** to ensure the transition is not derailed in the 2020s.

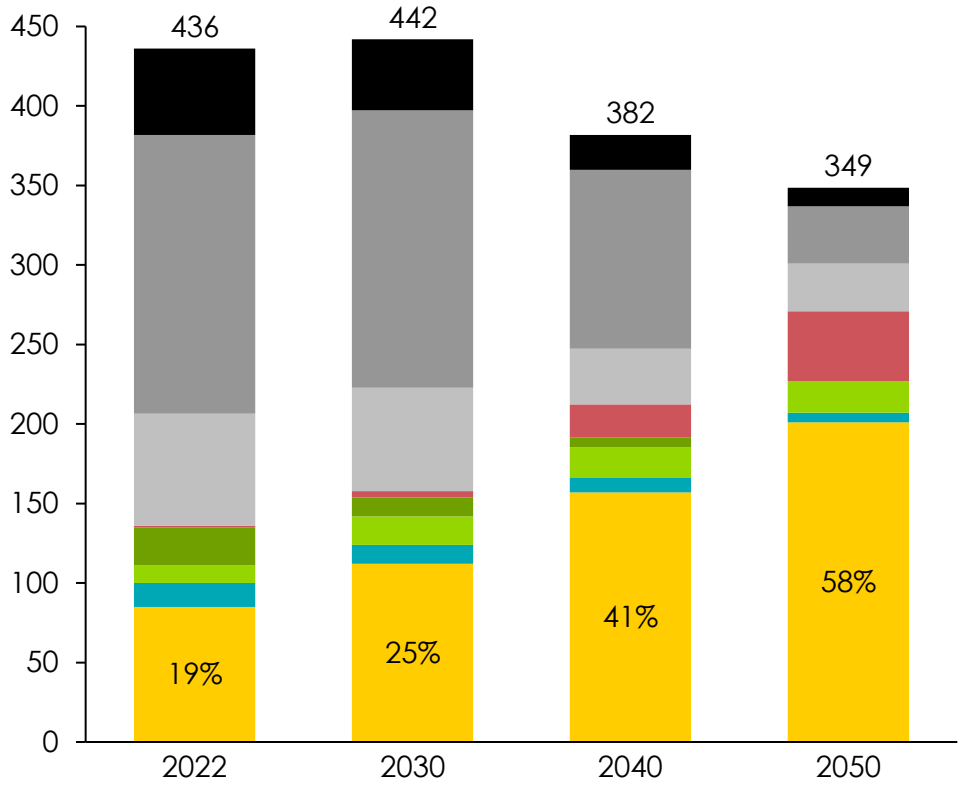
To address the barrier of slow planning and permitting for wind and solar deployment, an **Insights Briefing** has been developed, which covers the **context** and **major challenges**, and assesses the **impact of deploying key solutions**.

Three **Solution Toolkits** have also been created, which lay out a set of **key actions** that need to be taken by the most important groups of stakeholders, and outline supporting case studies.

ETC scenarios see clean electrification going to 70% by 2050

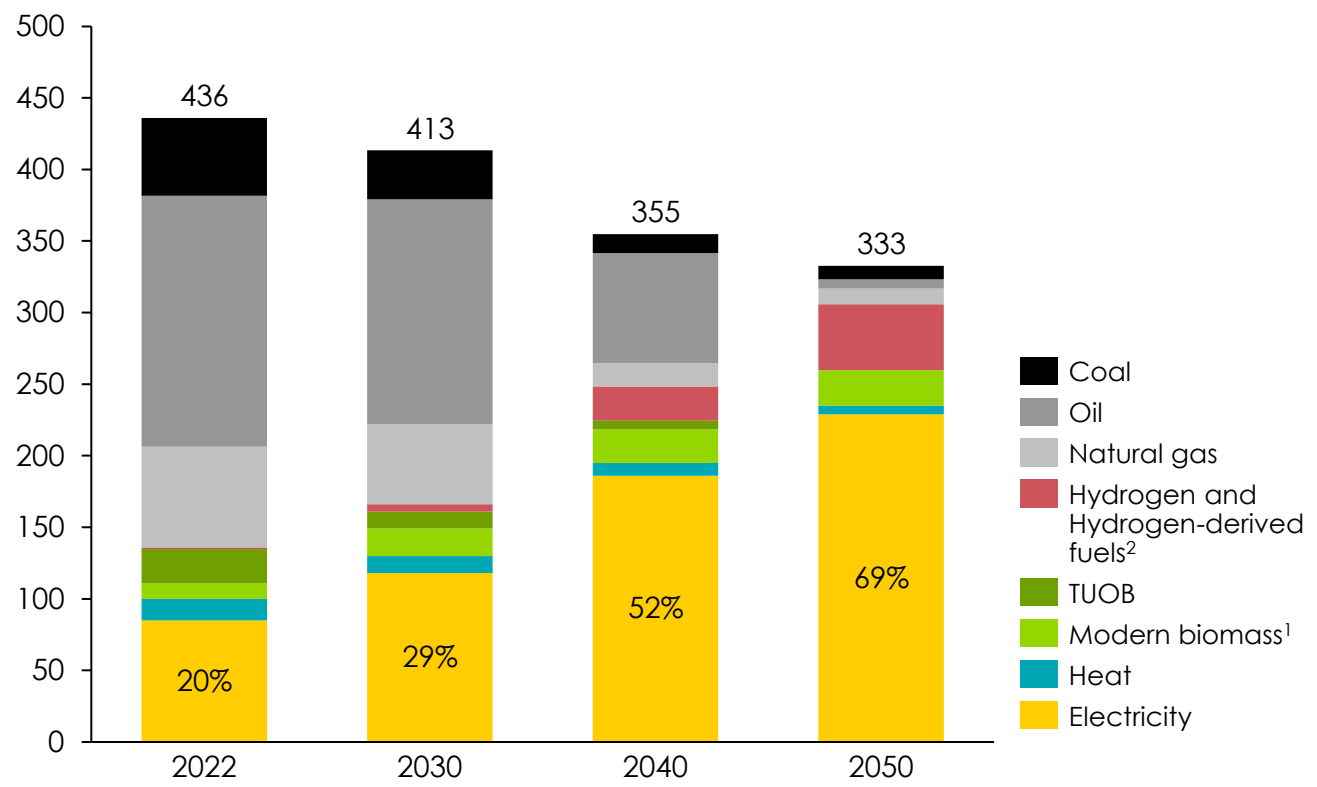
ACCELERATED BUT CLEARLY FEASIBLE

EJ/year



POSSIBLE BUT STRETCHING

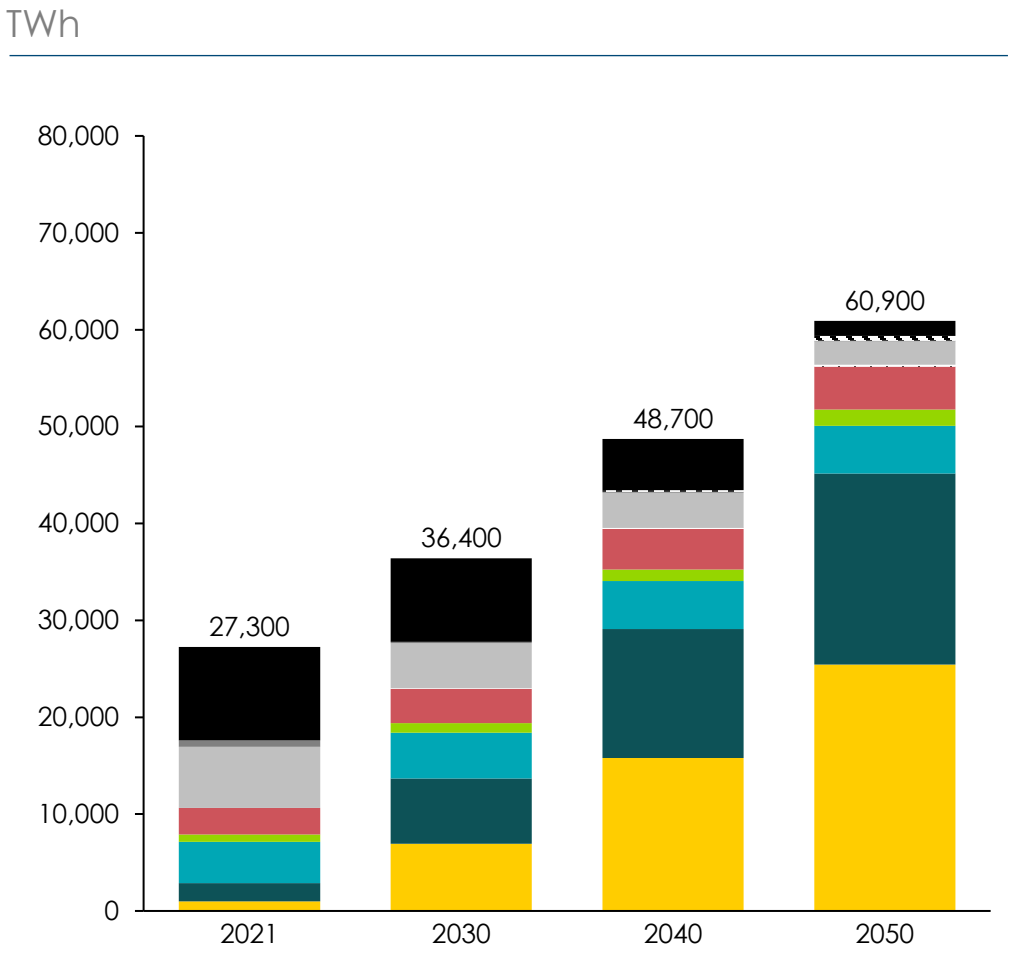
EJ/year



Note: [1]Final energy demand from Modern biomass to be finalized. Excludes wood products, pulp and paper. [2]Mainly from green sources.
Source: Systemiq analysis for the ETC (2023)

Reminder: generation to grow significantly to 2050, wind + solar ~70% by 2050

ACCELERATED BUT CLEARLY FEASIBLE



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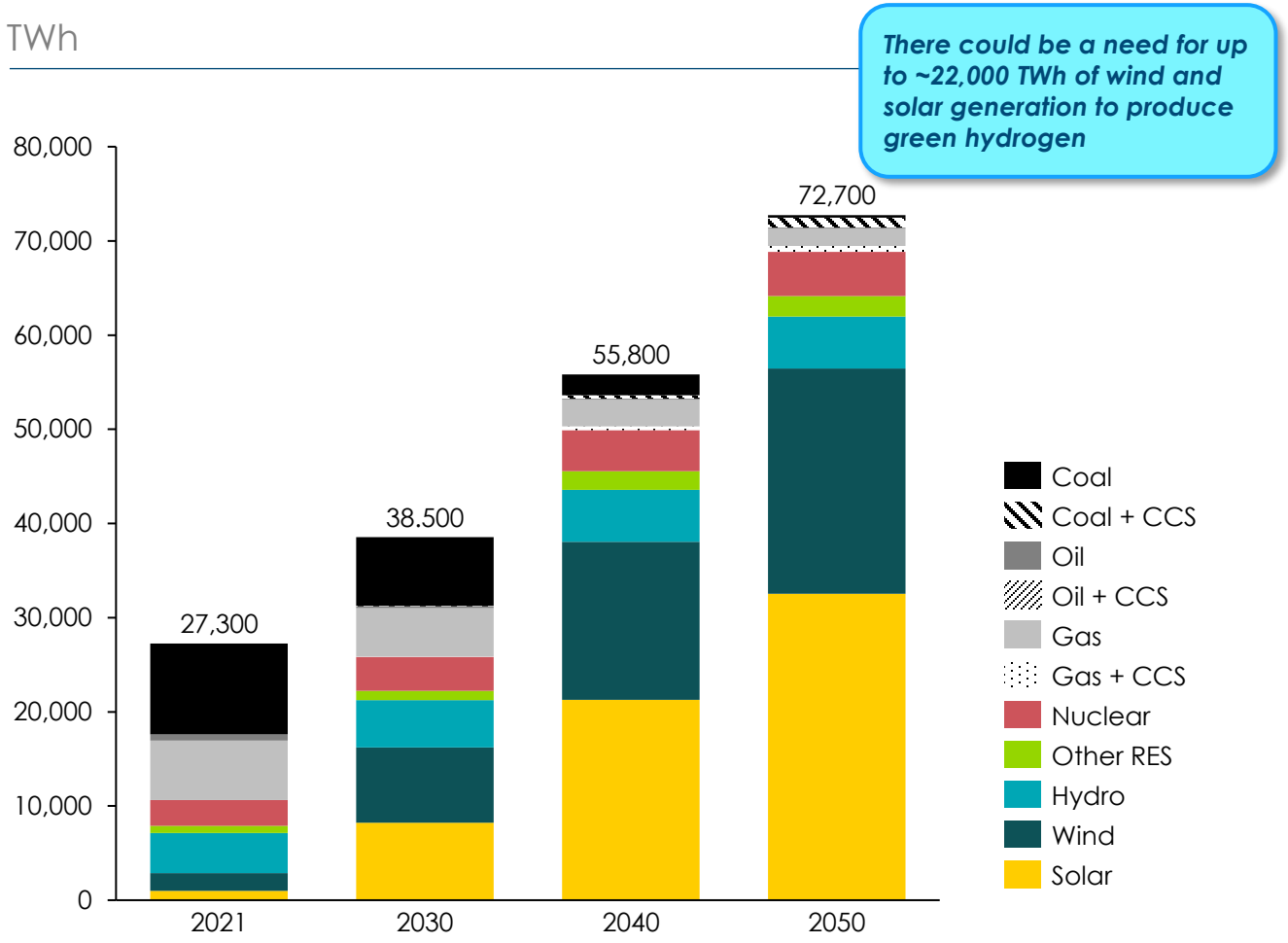
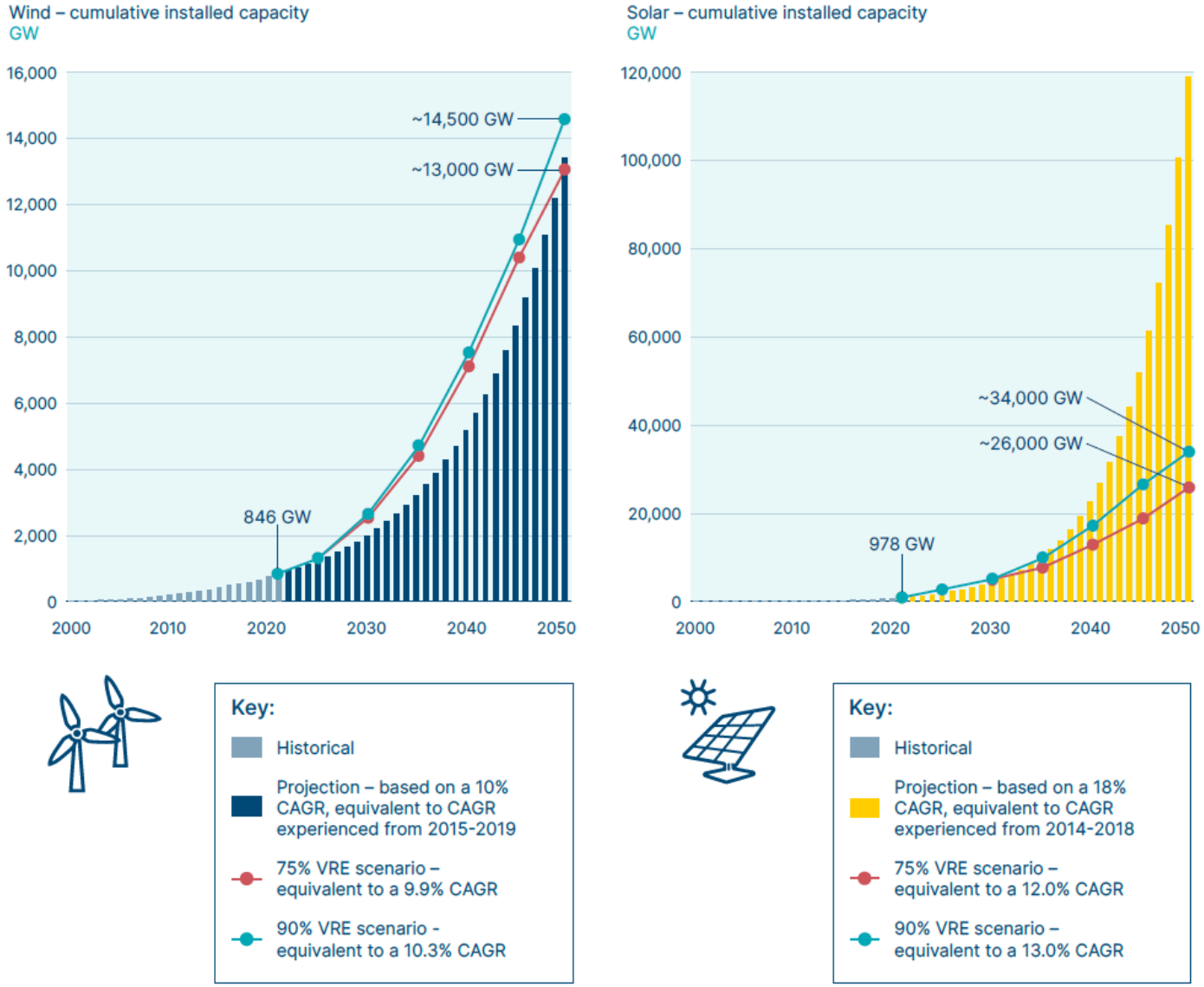


There could be a need for up to ~22,000 TWh of wind and solar generation to produce green hydrogen

Note: figures include power demand from DACCS from 2030 onwards.
Source: Systemiq analysis for the ETC (2023).

To deliver growth in clean power supply, wind and solar capacity must grow dramatically



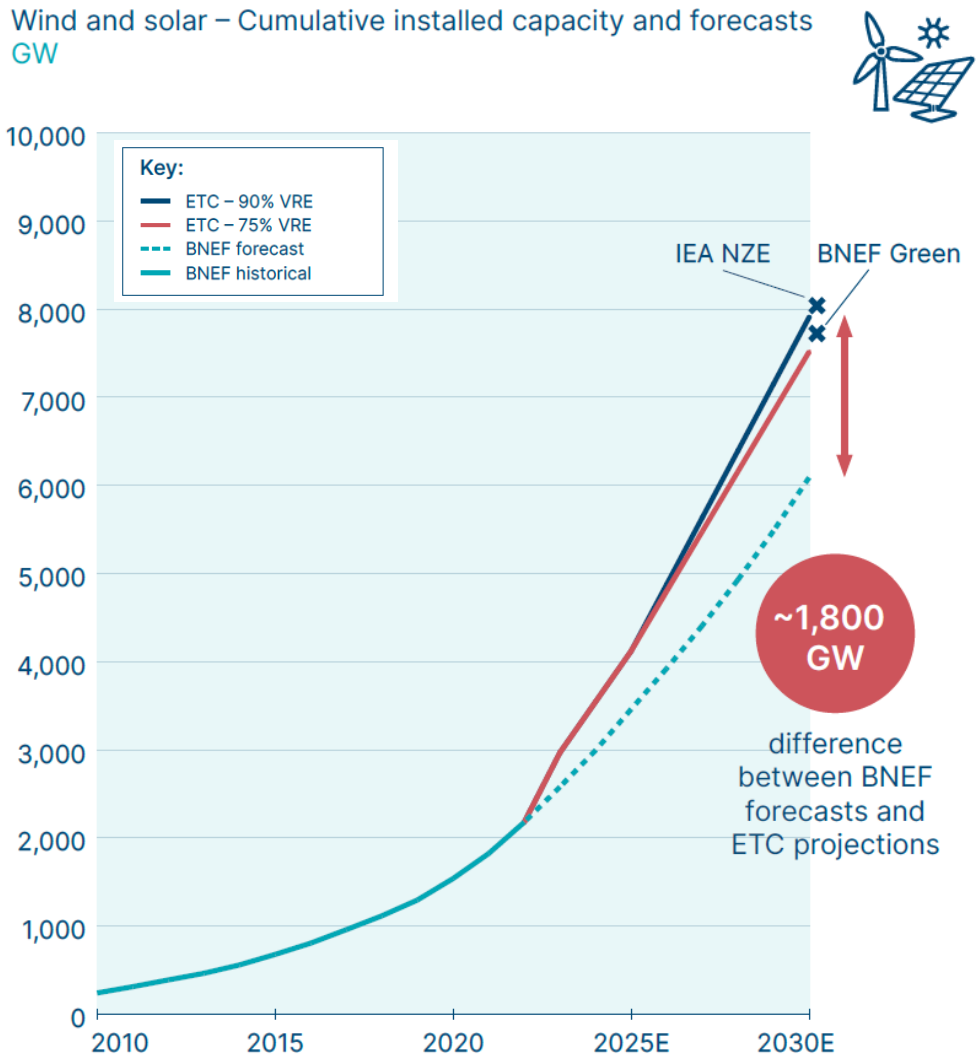
Note: CAGR = Compound Annual Growth Rate; VRE = Variable Renewable Electricity (i.e. wind and solar).

Source: BNEF (Accessed October 2022), *Global Installed Capacity*; Systemiq analysis for the Energy Transitions Commission (2022).

To be on track for a power system built on 75% - 90% renewables by 2050:

- Installed **wind** capacity needs to grow three-fold from around **850 GW in 2021** to **~2,600 GW in 2030**
- Installed **solar** capacity needs to grow almost five-fold from around **1,000 GW in 2021** to **~4,900 GW in 2030**

Despite growth in wind and solar capacity, late 2022 forecasts lagged behind ETC's vision for 2030



- Strong growth in wind and solar capacity in recent years (>25% increase in GW installed in 2022 compared with 2021) is expected to continue
- However current forecasts show that we are set to be **~1,800 GW behind** the ETCs 7,500 GW target in 2030 (24% behind target)
- This would lead to the world missing out on up to **3,500 TWh of clean electricity generation** from wind and solar by 2030 (an over **20% shortfall** in generation vs ETC targets)
- This is equivalent to lost emissions savings of around **2.2 GtCO2 per annum in 2030*** (a cumulative 9.5 GtCO2 from 2023–2030)

Notes: BNEF forecast is the base case to this analysis. *Assumes new wind and solar deployments directly replace electricity generated through gas and coal from power generation in equal measure at emissions factors of 0.40 kgCO2/kWh and 0.85 kgCO2/kWh respectively.
Sources: ETC (2021), Making Clean Electrification Possible; BNEF (2022), Global Installed Capacity; BNEF (2021), New Energy Outlook ('Green' scenario); IEA (2021), Net Zero by 2050 (NZE scenario).

Several types of barriers contribute to slowing deployment rates

Regulatory

- Lack of strategic vision
- Lack of dedicated land
- Complex regulation
- Inflexible permits
- Adverse legal system
- Land ownership issues

Administrative

- Multiple authorities in charge of permitting
- Lack of capability and resources
- Lack of digital permitting infrastructure
- Lack of data aggregation

Societal support

- Understanding scale up challenge
- Protecting biodiversity
- Local socio-economic concerns

Network availability

- Network system capacity
- Queues to connect to grid
- Lack of strategic infrastructure planning

(Network availability will be the focus of a forthcoming briefing)

Four key project stages are mostly affected by permitting barriers

Site mapping and selection, where local opposition and planning regulations can severely restrict sites available for development.

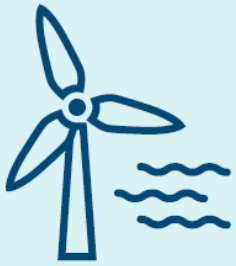
Environmental Impact Assessments, (based on a number of environmental surveys) which - while necessary to protect biodiversity - have tended to grow in length and complexity, placing an extra burden on those charged with preparing and reviewing them. These frequently require over 10,000 pages.

Permit applications and examinations, largely due to administrative issues associated with processing permit examinations such as lack of resourcing and use of paper-based systems

Legal challenges, as excessive challenges can often be made (e.g., each permit can generally be challenged in a court of law multiple times), and in some instances, the window where legal challenges can be made can stretch across the entire project development cycle, adding uncertainty and further delay.

Streamlining planning and permitting can reduce project development times by more than half for wind and solar projects

Offshore wind ÷2

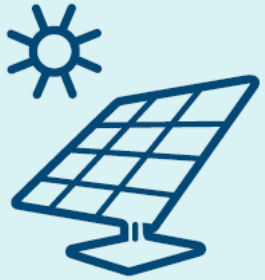


From a 12 year indicative timeline to a 5.5 year expedited timeline.

Onshore wind ÷2

From a 10 year indicative timeline to a 4.5 year expedited timeline.

Solar ÷4



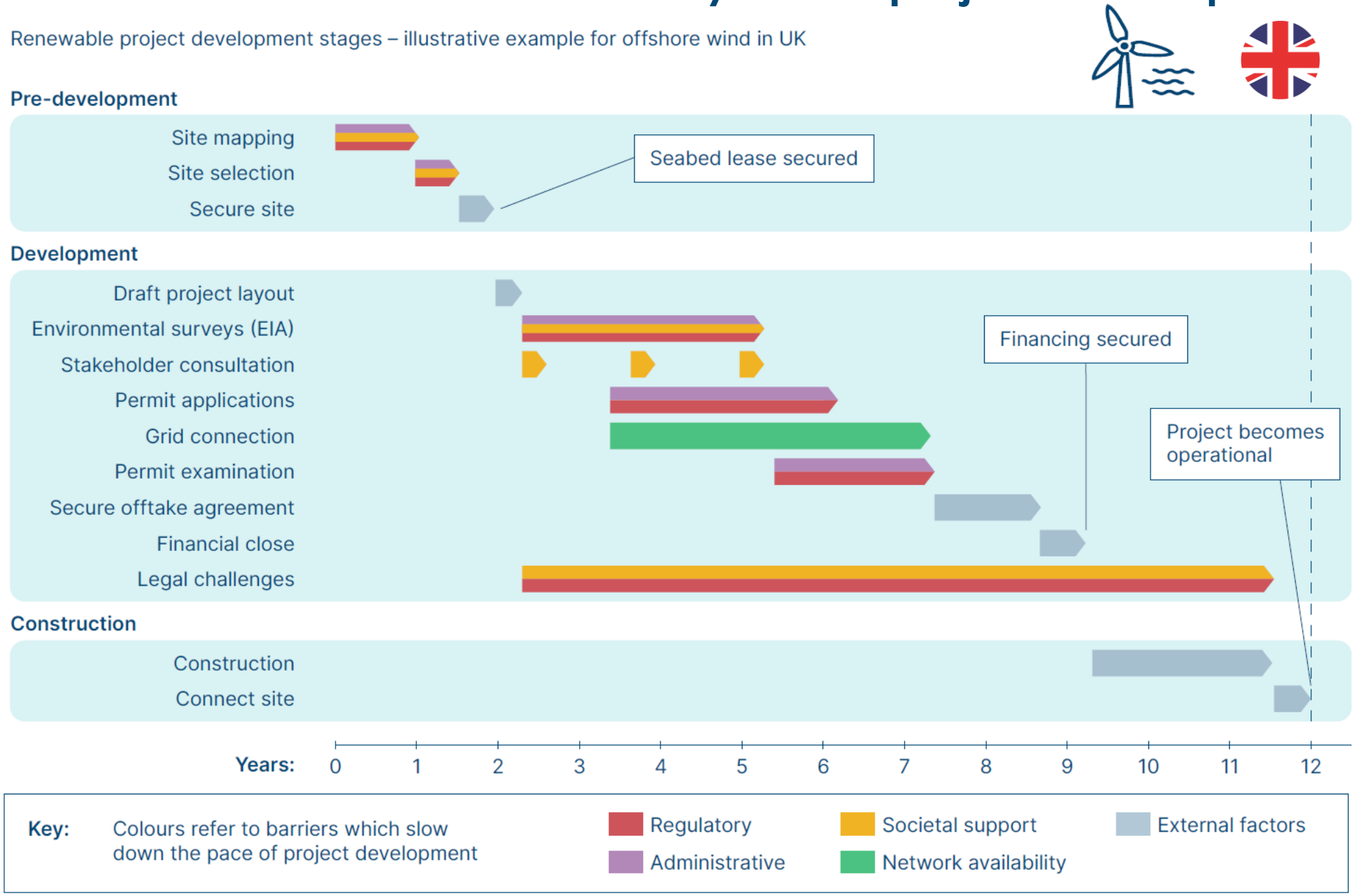
From a 4 year indicative timeline to a 1 year expedited timeline.

- Expedited timelines assume that **social and environmental standards** for projects are **either maintained or strengthened.**
- To achieve maximum project time savings, it is likely that the **entire set of proposed solutions** would need to be implemented where these are not currently utilised in respective countries, and **more stages of project development** would need to be **conducted in parallel**.

Note: Project development time savings are illustrative examples for countries with strong democratic processes. Illustrative examples of good practice project development timelines have been indexed against: UK for offshore wind, Spain for onshore wind, France for utility-scale solar.

Offshore wind in the UK can take around 12 years of project development…

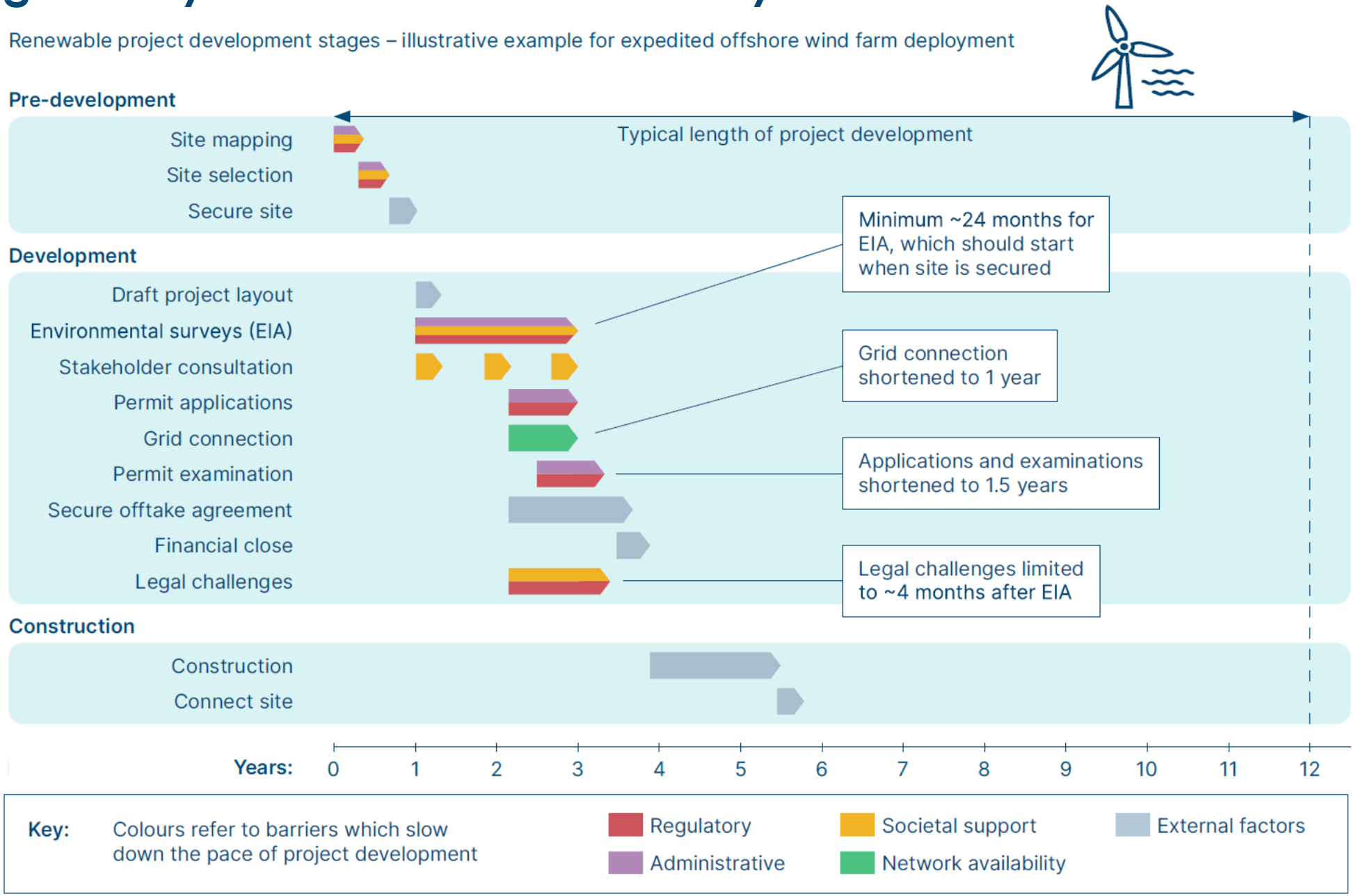
Offshore



… Mitigating the key barriers can save over 6 years

Offshore

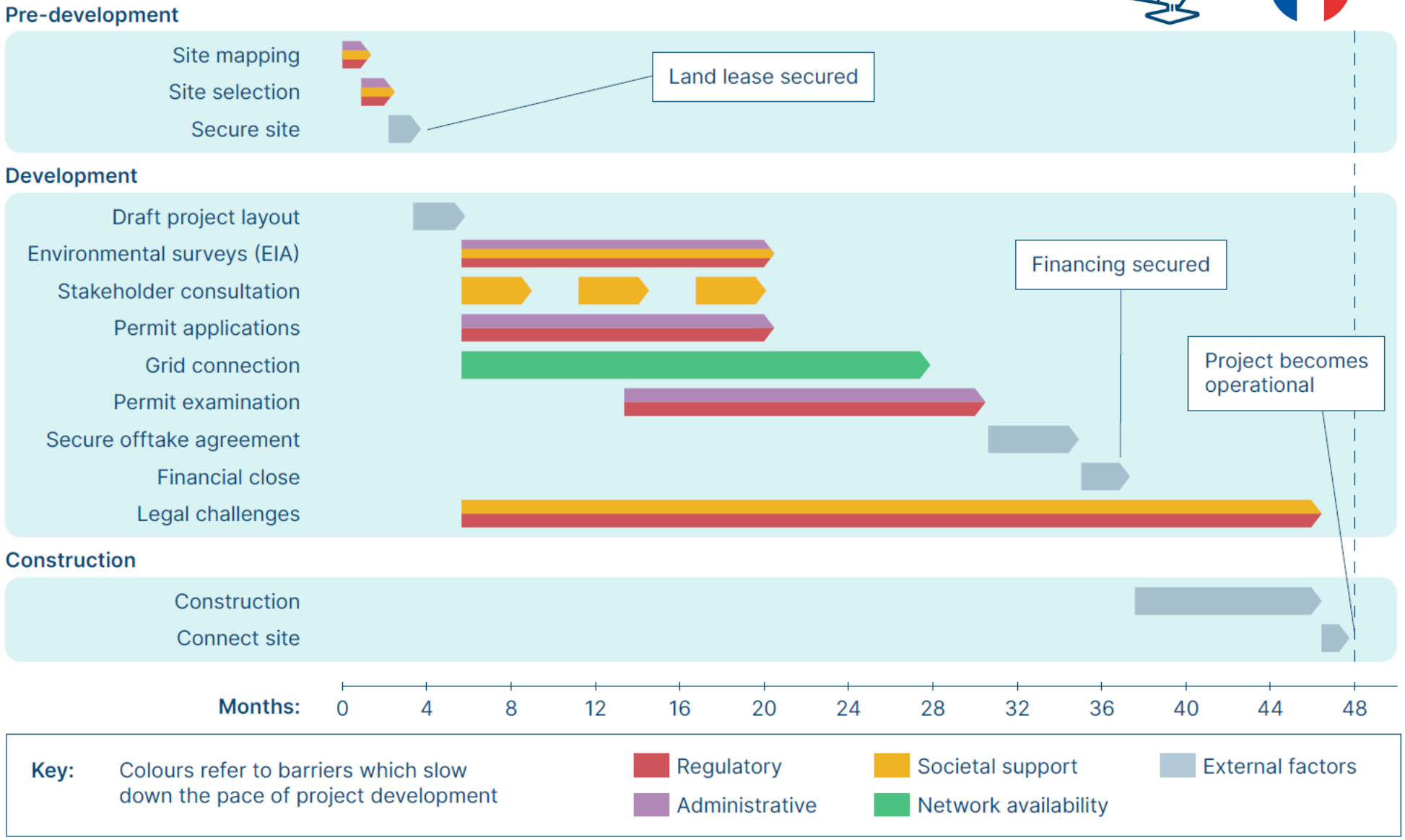
Renewable project development stages – illustrative example for expedited offshore wind farm deployment



Utility-Scale solar in France can take around 4 years of project development…

Solar

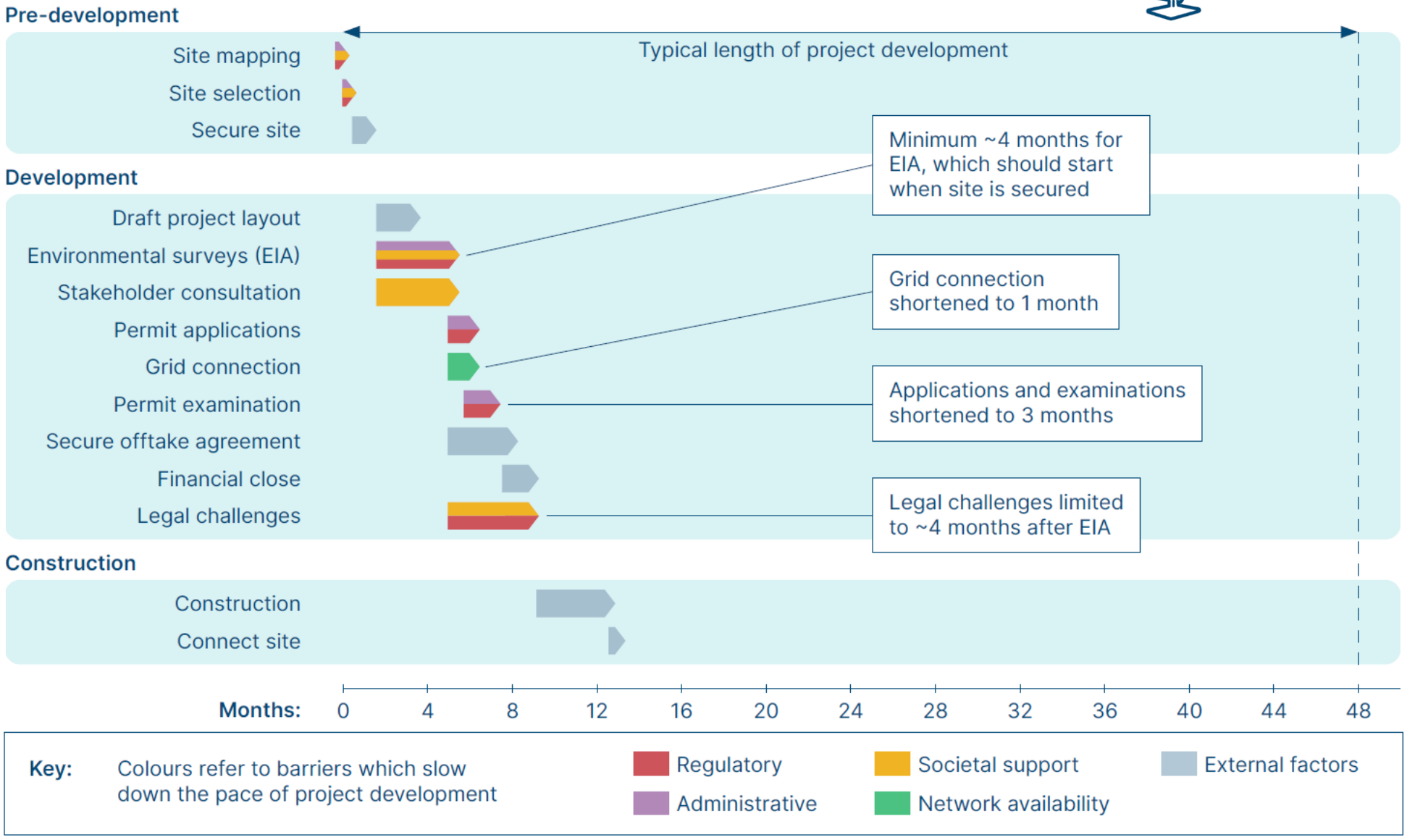
Renewable project development stages – illustrative example for 5 MW utility-scale solar in France



…Mitigating the key barriers can reduce project timelines by three quarters

Solar

Renewable project development stages – illustrative example for expedited 5 MW utility-scale solar deployment



There are a number of key actions to overcome regulatory barriers

Solution group	*Key actions*	
1 **Strategic vision**	➢ **Create** a strategic vision of the power system with medium-term targets	
2 **Ensure renewables are appropriately prioritised in law and land use**	➢ **Assign** priority status to renewable energy projects	➢ **Dedicate** sufficient land to renewable projects (1)
3 **Reduce the time taken in permitting stages**	➢ **Set** streamlined permitting targets	➢ **Enforce** permitting targets (2)
4 **Increase the flexibility of permits**	➢ **Streamline** repowering processes	➢ **Utilise** 'box permits' which enable some permit flexibility
5 **Streamline and clarify the legal process**	➢ **Limit** the number and extent of legal challenges	
6 **Establish legal ownership**	➢ **Assign** property rights where these are limited	

Key actor

National/regional governments and policymakers

Dedicate sufficient land to renewable projects – Assigning land area

Context

- Countries must ensure that there is a sufficient amount of land available for clean power generation and transmission to facilitate the massive scale up in clean electricity.

To ensure sufficient land for renewables, governments should:

- **Assign** an appropriate area of land for renewables development.
- **Designate** "Renewable Energy Zones" based on detailed spatial planning, to create areas where renewable energy development takes priority and there is streamlined permitting.
- **Increase** the land available for renewable developments outside of Renewable Energy Zones, by reducing limiting factors such as turbine set-back distances, i.e. the distance between turbines and specified landmarks (e.g., roads, buildings).

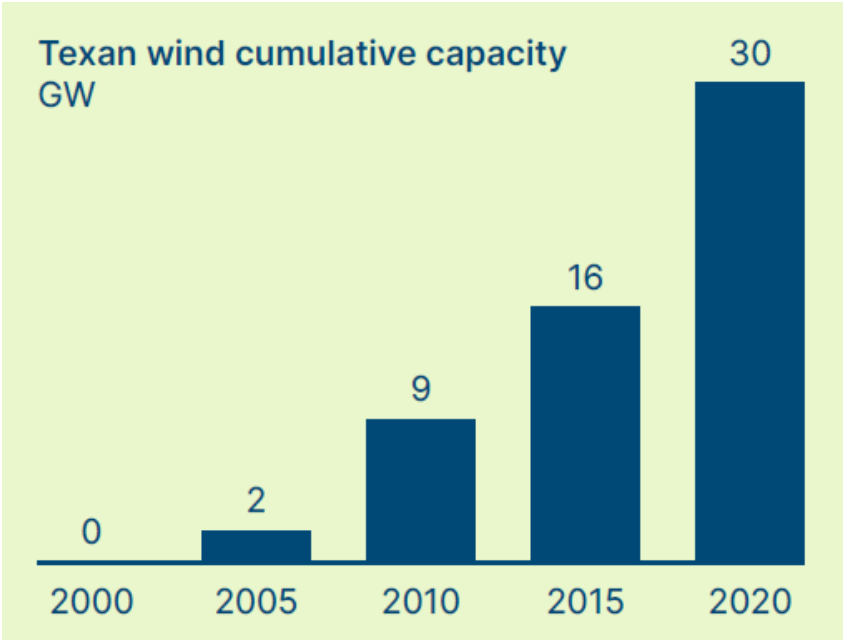
German legislation to devote 2% of country's surface area for wind turbines

On 15 June 2022, the German Cabinet approved the Onshore Wind Energy Act which aims to support renewable deployment targets by dedicating 2% of national land area to be used for onshore wind power generation by 2032. The legislation breaks down the target by federal states.

Dedicate sufficient land to renewable projects – Renewable Energy Zones

Two types of area must be mapped out for Renewable Energy Zones:

1. **Primary priority areas** should be indicated as no regrets areas of development with low biodiversity and social issues.
2. **Secondary priority areas** – outside of immediate priority areas more land must be made available through identifying high-quality areas with suitable topography, and sufficiently compensating landowners for access/purchase of the land.



Texas Competitive Renewable Energy Zones (CREZs)

Context:
West Texas has lots of wind potential and the region is sparsely populated, whilst East Texas has high energy demand but network capacity and congestion issues.

Solution:
The Texan government passed a bill in 2005 to establish a series of CREZs where renewable deployment and transmission infrastructure was given permitting priority.

Outcome:
The project was operational by 2013, and enabled deployment to well surpass the initial 18.5 GW target to over 30 GW today, with curtailment dropping from 17% in 2009 to 0.5% by 2014.

Enforce permitting targets – most countries miss key permitting targets

Context

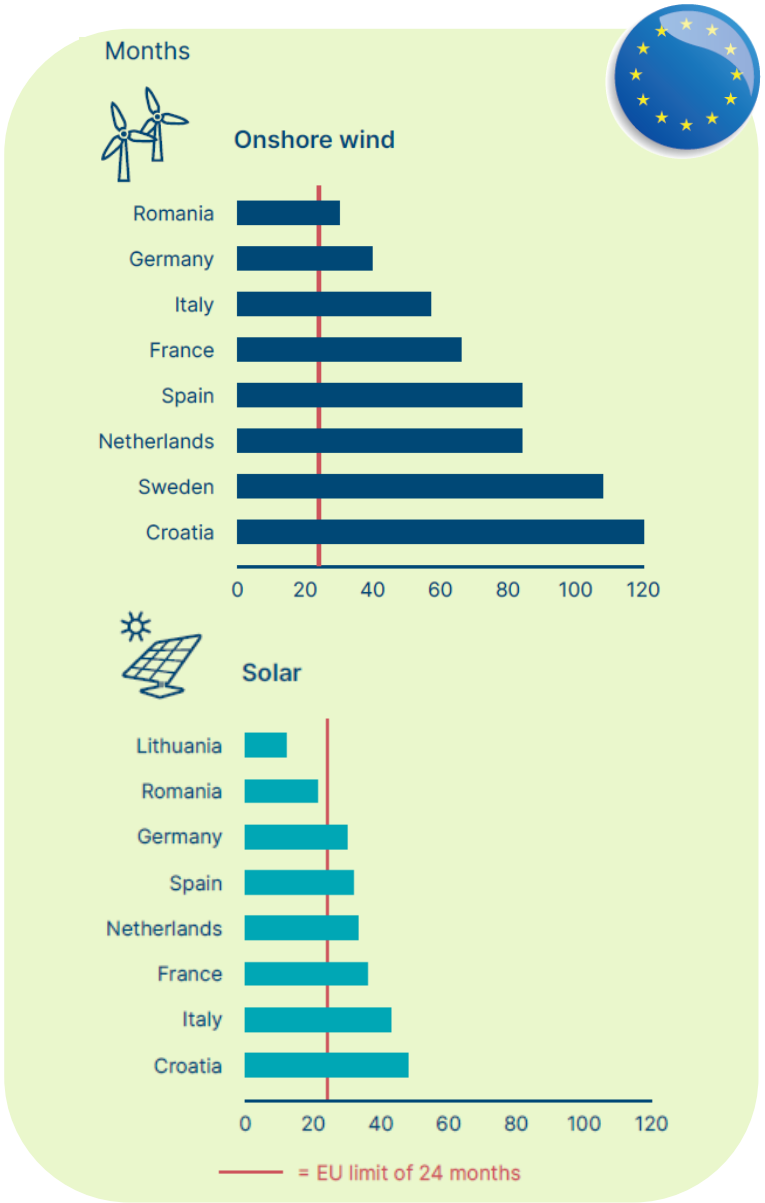
- Countries must set and enforce clear permitting targets in order to accelerate the time taken for government departments to process permitting applications.
- Enforcement of permitting targets is a widespread challenge, and most countries' targets are not met.

Governments should:

- **Set** clear permitting targets to provide frameworks for permitting departments and clarity to developers.
- **Explore** methods to enforce permitting targets, including via the use of the "rule of positive silence", and potentially through using fines where appropriate.

Permitting times in selected EU countries

In the EU, most countries are behind on solar permitting targets, and all countries are behind on onshore wind. There are over 80GW of wind projects stuck in permitting procedures across Europe as of the end of 2022.



Enforce permitting targets – the "rule of positive silence"

Spain's use of the "rule of positive silence" to speed environmental permitting

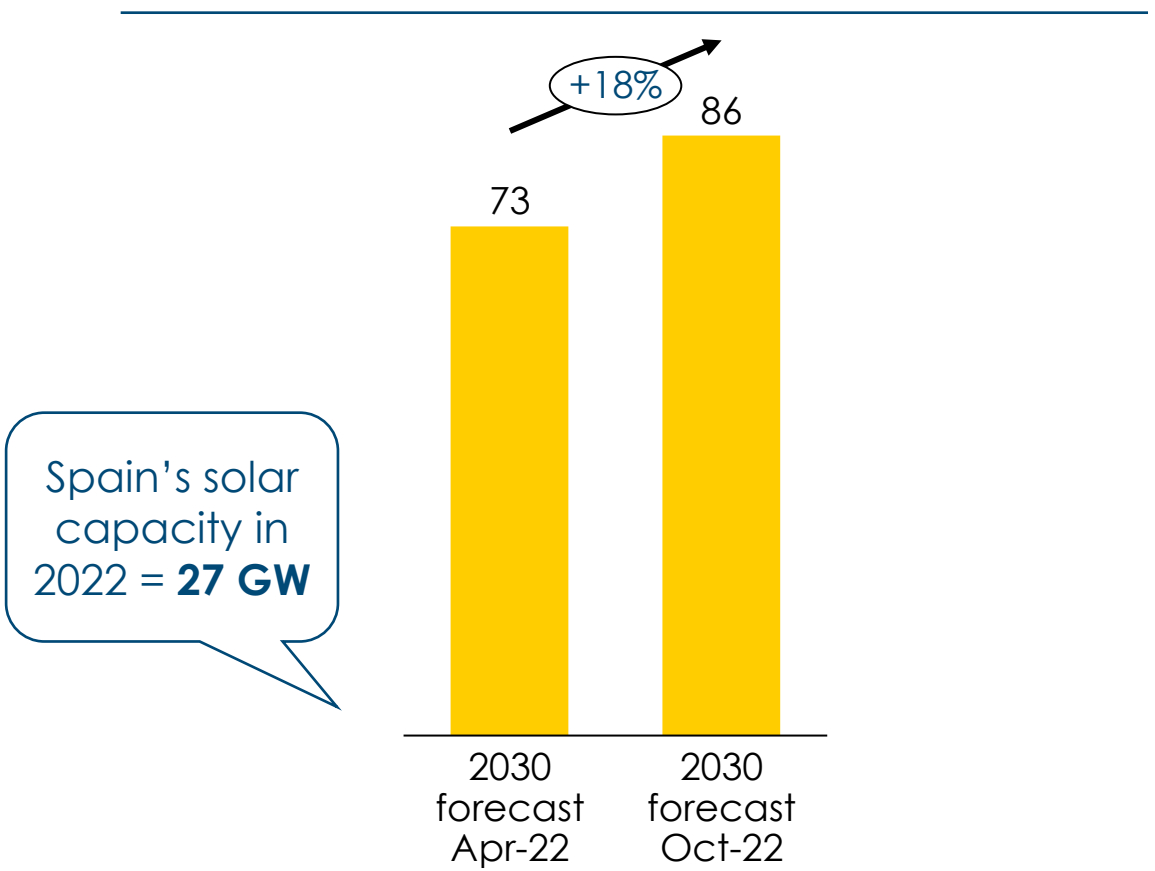
Context:

- The importance of the speed and scale of the clean power transition has been magnified by the 2022 energy crisis, with countries exploring ways to rapidly accelerate permitting to substitute away from expensive fossil fuels.

Solution:

- The Spanish Government decreed that solar PV projects under 150 MW and wind farms under 75 MW could bypass the country's lengthy environmental impact assessment criteria provided that:
  - Projects are in low or moderate environmentally sensitive areas.
  - Authorities do not object to planning applications within 2 months (a form of the rule of positive silence).
  - Their aerial grid connection lines do not exceed 15 km in length and 220 kV in voltage.

BNEF forecast for installed solar capacity in Spain by 2030



There are several other key actions to overcome administrative barriers

Solution group	*Key actions*		
1 Speed permitting applications and examination	➢ **Create** one-stop-shops for permitting	➢ **Sufficiently** staff permit roles	➢ **Digitalise** permitting process and **record/monitor** records
2 Create better environmental mapping tools	➢ **Better** government environmental data banks	➢ **Digital** mapping tools to aid deployment planning	

Key actors

- **National/regional governments and policymakers**
- **Wind and solar developers**

There are also various key actions to increase societal support

Solution group	*Key actions*	
1 Stakeholder engagement	➢ **Ensure** effective stakeholder engagement	
2 Responding to local concerns and benefits-sharing	➢ **Ensure** benefits sharing with local communities (3)	➢ **Improve** aesthetic design of renewable technology
3 Biodiversity conscious development	➢ **Implement** biodiversity-conscious approaches to siting and construction	➢ **Implement** company-level biodiversity positive strategies (4)
4 Community awareness	➢ **Maximise** community-readiness for the energy transition	
5 Tender processes which recognise non-price factors	➢ **Recognise** biodiversity and social effects in auction tender processes	

Key actors

- **Wind and solar developers**
- **Local authorities and civil society**

Ensure benefits sharing with local communities

Context

- For local communities to be vested in the long-term sizeable presence and success of wind and solar projects, they need to see tangible and authentic benefit sharing.
- As there is no single one-size-fits all approach to local benefit-sharing, the identification of appropriate measures should flow from engagement between the developer and community.

Developers could:

- **Create** opportunities for community ownership of renewable projects wherever possible.
- **Contribute** financially to local communities through existing fiscal contributions (such as taxes) and if necessary, providing direct payments to citizens or funding local social services (e.g., nurseries, health services) or infrastructure.
- **Employ** local skilled labour and invest in workforce training programmes to create a pipeline of skilled renewable energy workers.

Benefits to local communities from wind farms in the United States

In rural parts of O'Neill, Nebraska, landowners collectively earn $2 million per year for the use of their land for 400 MW of turbines. The project pays another $2 million in local property taxes each year and has created 25 permanent jobs for technicians.

Building community infrastructure in Kenya

Lake Turkana Wind Power established the foundation Winds of Change to undertake sustainable community development projects, including building a 200 km road which transformed the transportation network in the area, significantly increasing local communities access to markets, health care and education.

Implement company-level biodiversity positive strategies

Context

- Wind and solar developers should aim to have a net-positive impact on biodiversity at a developer level – both by contributing positively to biodiversity when deploying new wind and solar sites and through additional restoration projects.

Developers should:

- **Set** net-positive biodiversity targets, with the goal of maintaining or improving biodiversity compared to the status quo
- **Deploy** wind and solar assets in a biodiversity positive manner, protecting existing species and where possible introducing new flora and fauna appropriate for local ecosystems
- **Restore** biodiversity in areas which have been negatively affected by man-made developments and climate change

Biodiversity positive deployment in Spain

Iberdrola have installed 162 beehives at its Andévalo solar PV plant in Andalusia's Huelva province, with the aim of preserving biodiversity in the surroundings and demonstrating that introducing pollinators at renewable installations situated close to agricultural land can improve crop performance.

Biodiversity restoration in England

Ørsted have committed to restore biodiversity around the Humber, a large tidal estuary on the east coast of Northern England. The pioneering initiative will invest more than £2.5 million to restore seagrass and salt marsh and introduce half a million native oysters to improve the health and resilience of the estuary's ecosytems.

Regional considerations: challenges vary across countries

Regional groups	Extent of planning and permitting challenges
 **Centrally-led countries** e.g., China, Vietnam, UAE	• Less scope for legal challenges, so less of an obligation to conduct extensive stakeholder consultation and environmental surveys. • Generally results in **less severe planning and permitting barriers.**
 **Countries with strong democratic processes** e.g., Europe, United States	• Regulatory and administrative challenges lead to **long drawn-out processes**, often delaying deployment by many years. • Organised local opposition and rigid legal systems can further exacerbate planning and permitting challenges.
 **Highly land-restricted countries** e.g., Japan, South Korea	• Land restrictions on top of planning and permitting challenges leads to an **accumulation of disadvantages**, often further delaying deployment. • **May require more severe actions** to allocate sufficient land and sea space.
 **Infrastructure-constrained countries** e.g., South Sudan, Burundi, Niger	• Generally **bigger issues than planning and permitting** when it comes to the deployment of renewables. • If there is not a sufficient grid in place and land ownership is disputed, it is much harder to deploy renewables at scale.

Action required in the short term, with a critical role for governments

- **National/regional governments and policymakers bear the largest responsibility for driving progress** given that they can unlock most regulatory and administrative barriers. They must take bold action by:
  - setting a strategic vision for the power system;
  - improving permitting processes and enforcement;
  - enabling better information and systems.

- In the short term, governments should prioritise solutions such as:
  - giving priority status to land available for wind and solar projects;
  - applying the "rule of positive silence" which automatically grants permit applications after a period of time has elapsed,
  - encouraging solar panel installations on all suitable public buildings,
  - and ensuring sufficient staffing within permitting departments.

- **Wind and solar developers** should use best-practice to deliver projects that minimise environmental and social impacts and work for local communities.

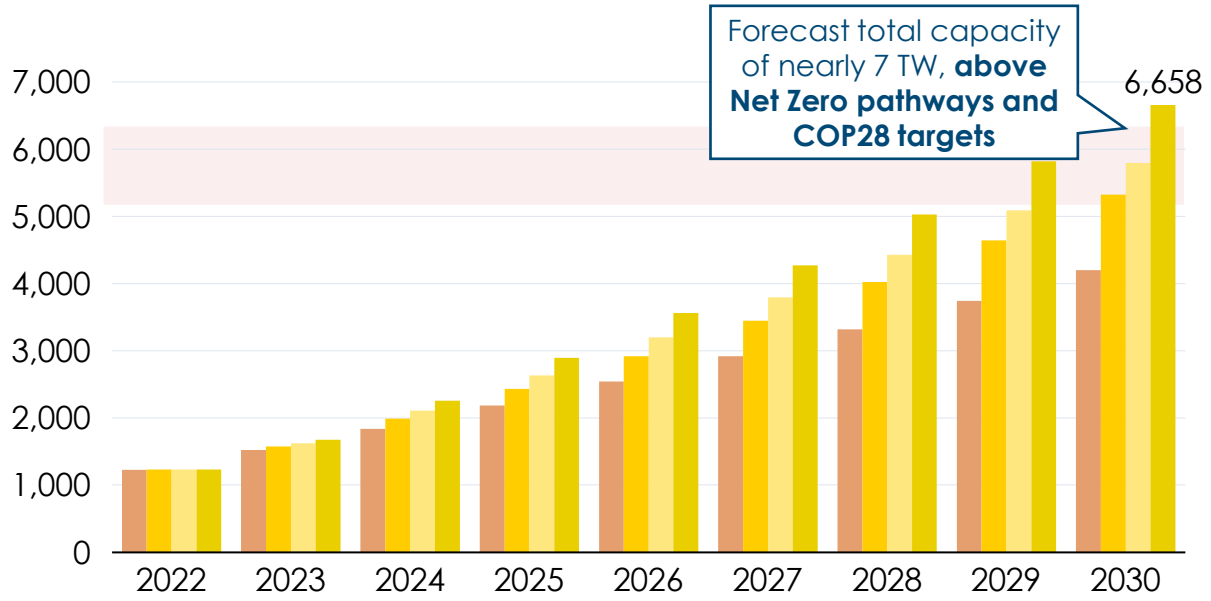
- **Local authorities and civil society** should increase community awareness of the energy transition and contribute to effective stakeholder engagement.

What has happened recently?

Solar forecasts are powering past pathway for 1.5C, thanks to enhanced manufacturing, while wind energy, hampered by restricted growth outside China, lags

Recent solar forecasts are now aligned to ETC 2030 milestones

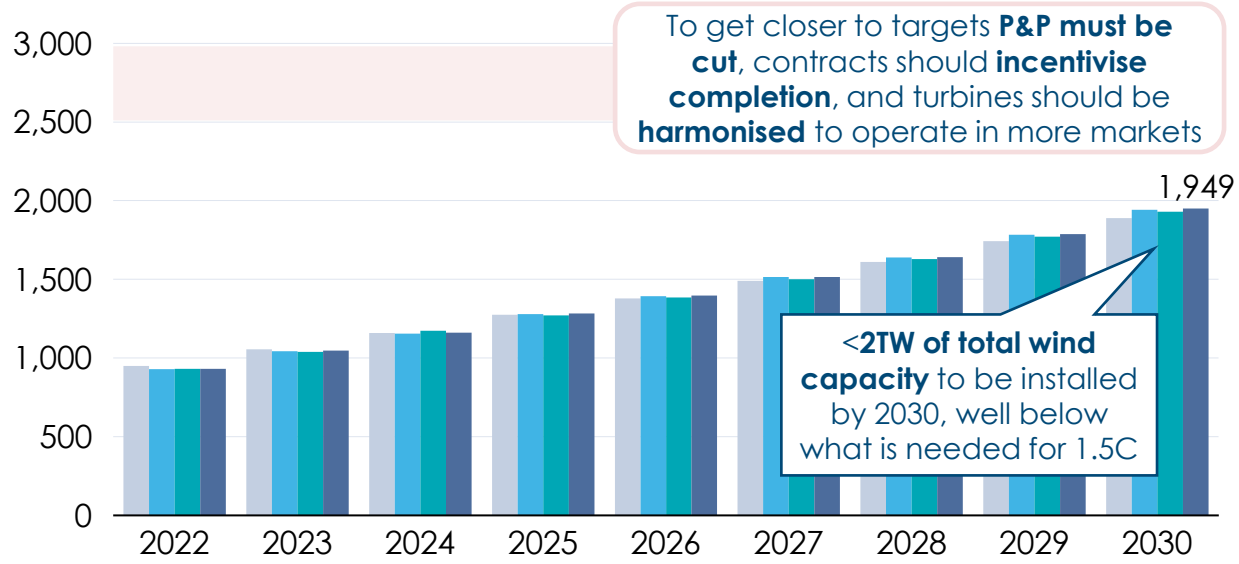
GW total capacity installed



October 2022 forecast
October 2023 forecast
June 2023 forecast
June 2024 forecast
Range for 1.5C Net Zero Pathways and COP28 Targets[1]

Recent wind forecasts still fall behind ETC 2030 milestones

GW total capacity installed



October 2022 forecast
October 2023 forecast
June 2023 forecast
June 2024 forecast

Solar forecasts keep accelerating due to manufacturing capacity buildup and the modularity of panels

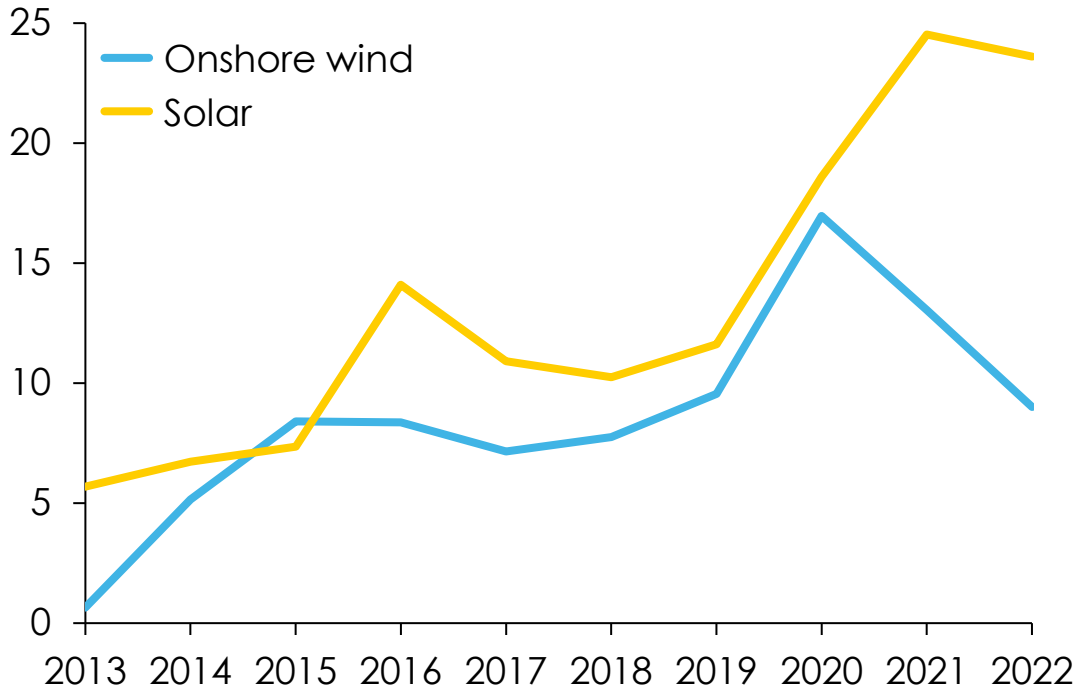
Continued slow growth for wind ex-China, where barriers are higher (e.g. supply chain, land allocation, permitting)

Note: [1] The COP28 presidency has a target to treble renewables (incl. solar, wind, hydropower, bioenergy, geothermal) by 2030. This would involve a roughly 5x increase in solar PV and 3x increase in wind from 2022.
Source: Systemiq analysis for the ETC; BNEF (2022/23/24) *Global Installed Capacity*

Grid expansion is not keeping pace with renewable deployment

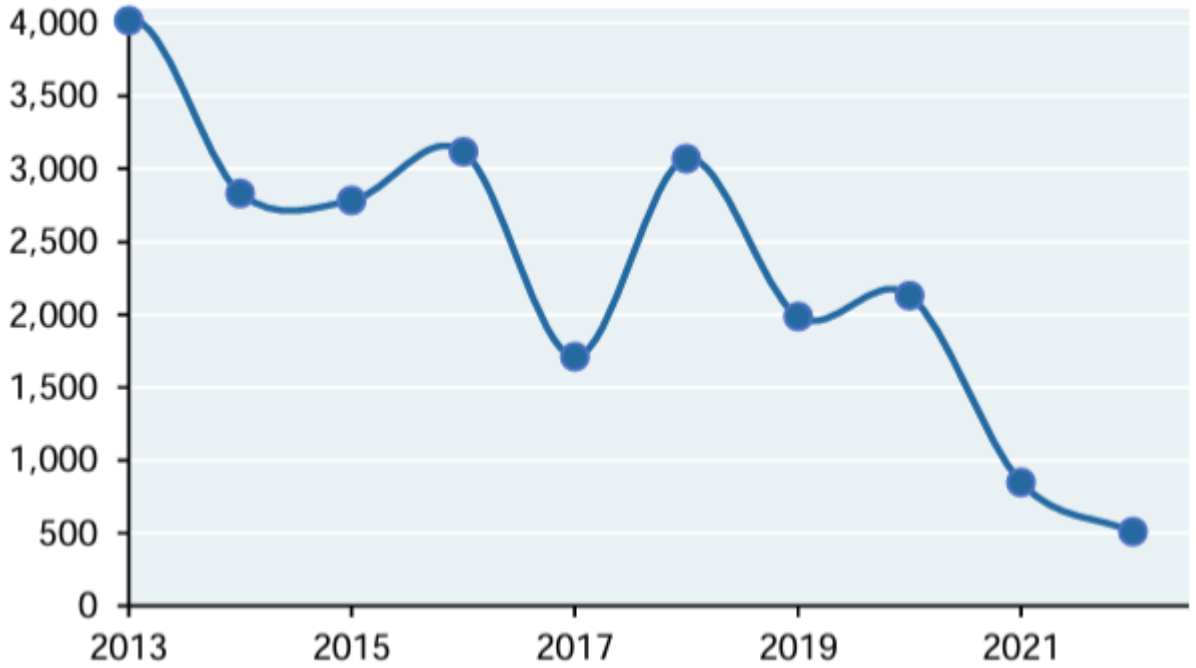
US wind and solar capacity growth

New build Installed capacity (GW/year)



US transmission line growth

Miles added per year (Transmission lines > 100kV)

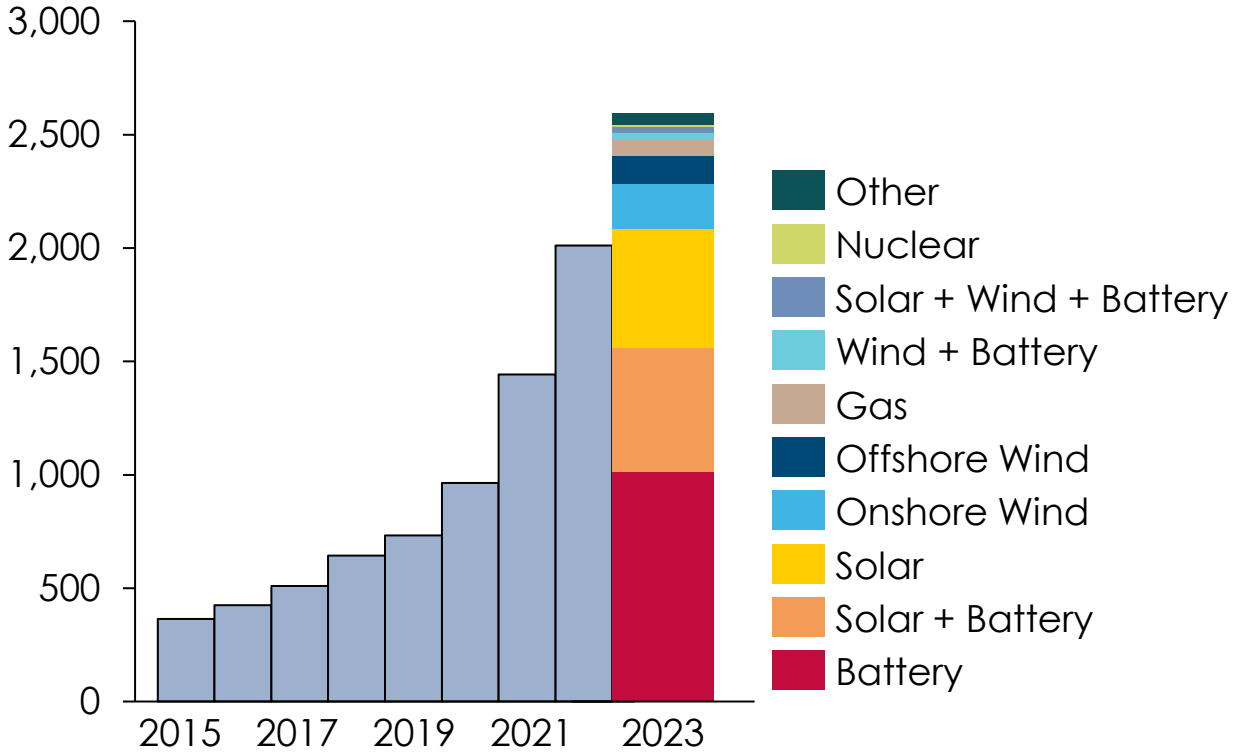


Source: S&P Global (2024*), JPMAM;* BNEF (2024), *Capacity & Generation*

Lack of grid build is already leading to substantial connection queues, which are growing each year

US Grid connection queue sizes (2015-2023)

GW



Projects in queues are growing, in **2023 the US had 1450 GW** of wind and solar capacity in queue (equal to 50% current global wind and solar capacity).

WindEurope

EU Grid Action Plan will help renewables, but urgent action needed on excessive connection queues

The Telegraph

Crackdown on 'phantom' net zero energy projects fails

Social Europe

Grids risk holding back Europe's energy transition

The Herald

Offshore wind fears of 'further delays' on grid connection

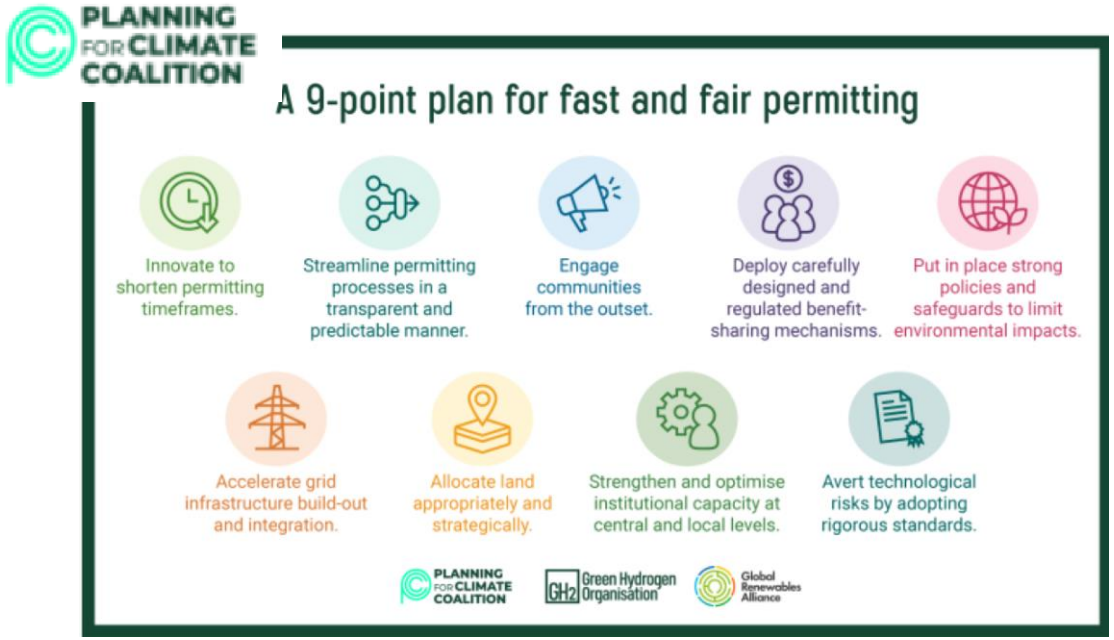
Source: Berkeley Lab (2024) *Queued Up: Characteristics of Power Plants Seeking Transmission Interconnection*

Since publication: ETC have been discussing analysis of P&P with policymakers, developers and NGOs

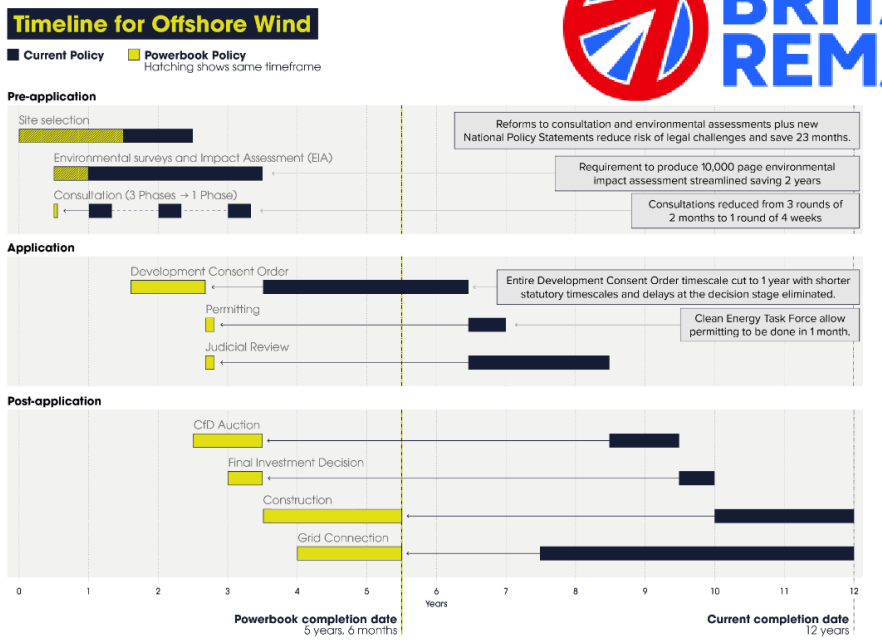
ETC in Brussels meeting EU Commission officials from DG CLIMA, ENER and ENV

ETC roundtable with policymakers at the London Climate Innovation Forum

Since publication: ETC has worked with external bodies to maximise advocacy efforts



ETC worked with Planning for Climate Coalition to establish a 9-point plan for permitting



ETC briefed Britain Remade to engage in effective advocacy in the UK

EU update: European Green Deal and emergency regulations align with ETC recommendations, but implementation challenge remains

Included in recent EU measures (X)

ETC key recommendations for policymakers

Solution group	Key actions		
1 Strategic vision	➢ **Create** a strategic vision of the power system with medium-term targets (1)		
2 Ensure renewables are appropriately prioritised in law and land use	➢ **Assign** priority status to renewable energy projects (2)	➢ **Dedicate** sufficient land to renewable projects (3)	
3 Reduce the time taken in permitting stages	➢ **Set** streamlined permitting targets (4)	➢ **Enforce** permitting targets	
4 Increase the flexibility of permits	➢ **Streamline** repowering processes (4)	➢ **Utilise** 'box permits' which enable some permit flexibility	
5 Streamline and clarify the legal process	➢ **Limit** the number and extent of legal challenges (2)		
1 Speed permitting applications and examination	➢ **Create** one-stop-shops for permitting	➢ **Sufficiently** staff permit roles	➢ **Digitalise** permitting process and **record/monitor** records
2 Create better environmental mapping tools	➢ **Better** government environmental data banks	➢ **Digital** mapping tools to aid deployment planning	
5 Tender processes which recognise non-price factors	➢ **Recognise** biodiversity and social effects in auction tender processes		

EU emergency measure provisions are aligned:

(1) At least **42.5% share of energy from renewable sources in 2030** in the Union's gross final consumption

(2) Renewable energy defined as of '**overriding public interest**', which should **limit the grounds of legal objection**

(3) **Dedicated renewable acceleration areas** to be implemented by member states

(4) New ambitious **permitting targets** set:
- **Repowered wind** = 6 months, including EIA and grid permits; 3 months if capacity increase <15%
- **Solar** = 3 months on 'artificial surfaces'; 1 month on projects smaller than 50kW

Source: European Council (December 2022), *Council Regulation (EU) 2022/2577 of 22 December 2022 laying down a framework to accelerate the deployment of renewable energy;* European Commission (March 2023), *European Green Deal: EU agrees stronger legislation to accelerate the rollout of renewable energy*

Many key permitting issues are still on the table in EU policy debates

Key regulations yet to be agreed:

- **Priority status to renewable projects**
  - What happens to the 'overriding public interest' status post 18 months?
- **Dedicate sufficient land**
  - How to allocate more land inside and outside of 'Renewable Energy Zones'
- **Set streamlined permitting targets**
  - Wind, solar, repowered assets
- **Enforce permitting targets**
  - 'Rule of positive silence'? Fines?

Key remaining administrative challenges:

- **One-stop-shops** & permitting roadmaps
- **Staffing** of permitting departments
- **Digitisation** of processes
- **Recording** & **monitoring** of projects in permitting
- **Creating** better mapping tools

Further big questions remain:

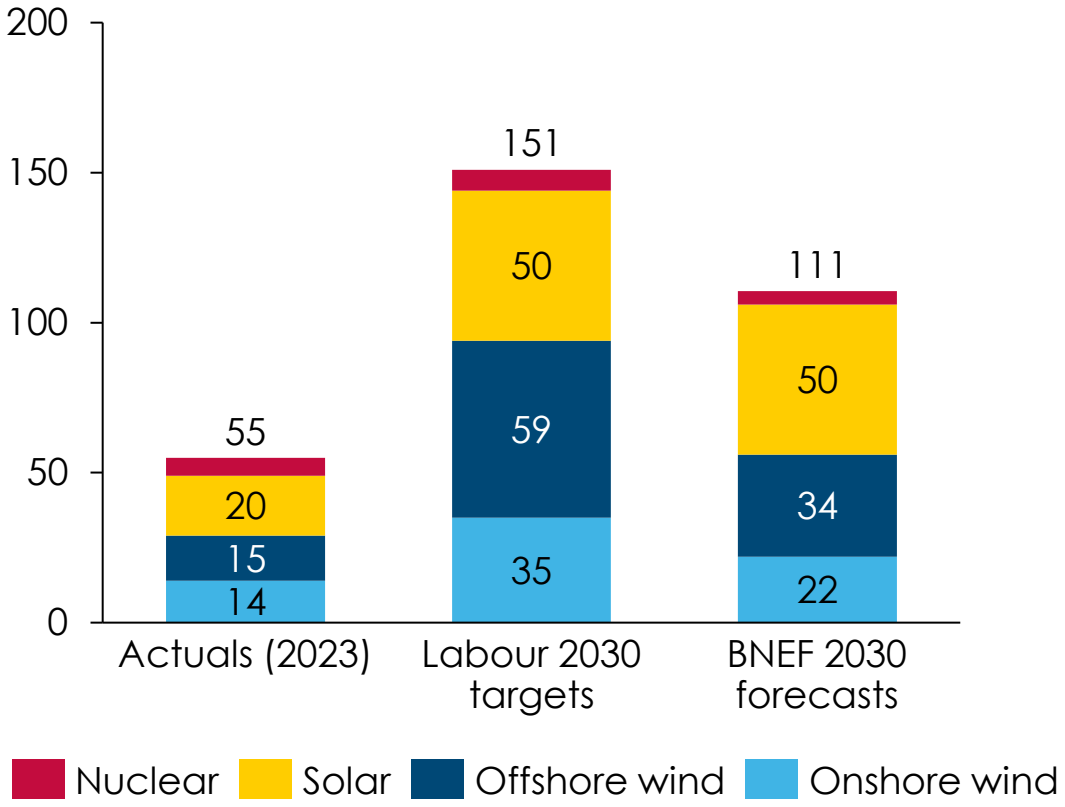
1) **Implementation** – how do *member states* put in place mechanisms to enact EU policy?
2) **Enforcement** – how does *the EU* monitor and enforce its policies?
3) **Biodiversity and social effects** – What safeguards can be put in place to ensure these are maintained or enhanced?

Source: European Council (December 2022). *REPowerEU: Council agrees on accelerated permitting rules for renewables;* Edie (January 2023), EU planning 'Net-Zero Industry Act' under updated industrial plan, von der Leyen confirms

UK update: Good start towards ambitious targets but more reform required

UK clean power capacity and 2030 targets

Total installed capacity, GW



Labour **restore 2030 deadline for ending sales of new ICE vehicles** in the UK

Labour **lifts the ban on onshore wind** farms in England

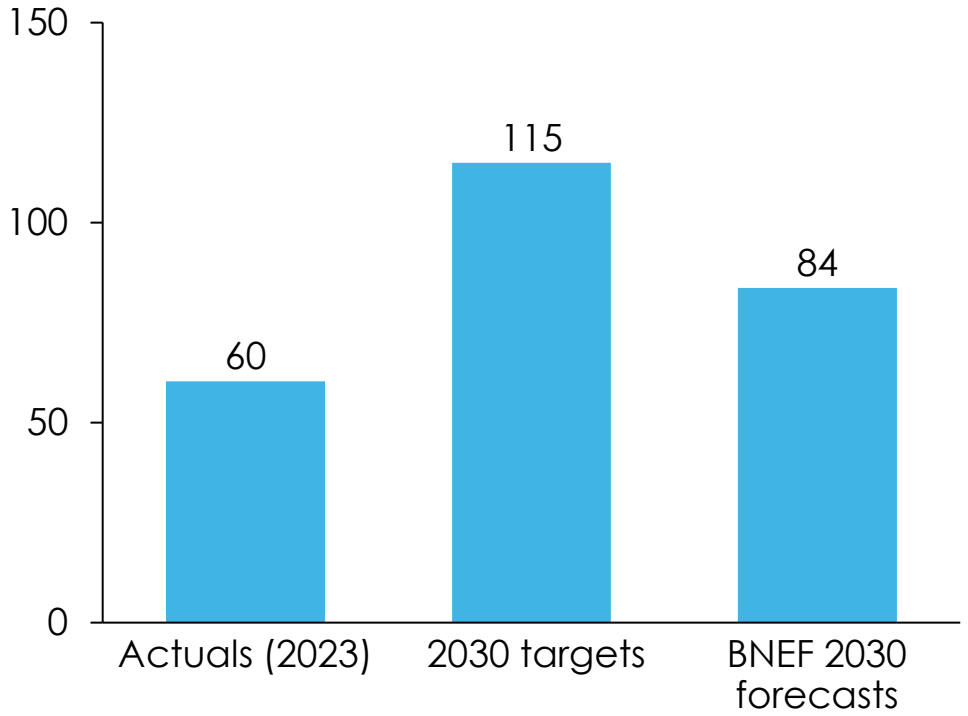
Labour to **consult on designating wind farms as nationally significant infrastructure projects**

Source: BNEF (2024), *UK Elections: Going Overboard on Green Goals*; The Guardian (2024), *Labour lifts Tories' 'absurd' ban on onshore windfarms*

Germany update: good progress at accelerating permitting not yet sufficient to hit onshore wind targets

German onshore wind capacity and 2030 targets

Total installed capacity, GW



Germany has **dedicated 2% of Federal land** to onshore wind by 2032

Germany to **fast-track approvals for 40 GW** of onshore wind

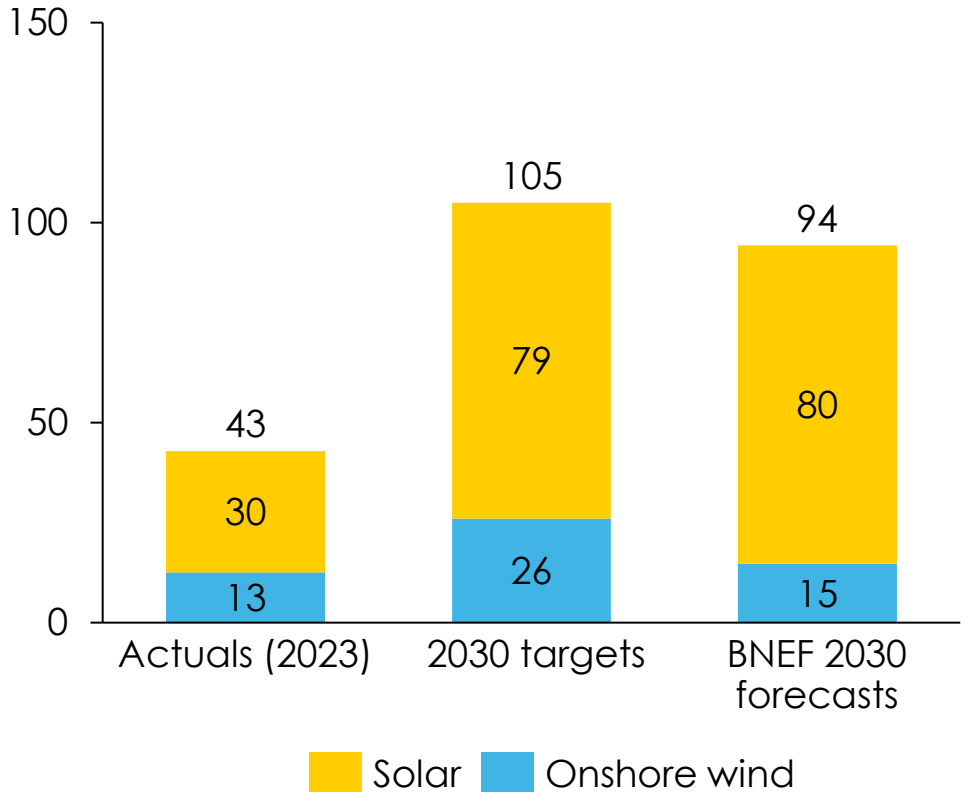
German **onshore auction participation at 7-year high**

Source: BNEF (2024), *Global Installed Capacity;* BNEF (2024), *German Onshore Wind Auction Saw Participation at 7-Year High*;Clean Energy Wire (2024), *Two percent of German land area for onshore wind by 2032;*

Italy update: slow auction uptake could be bolstered by new subsidy scheme to a limited extent

German onshore wind capacity and 2030 targets

Total installed capacity, GW



Italy has **introduced new subsidy programme** valuing wind and solar highly

Last 13 auctions held over 2020-23 **only awarded 5.9 GW** to wind and solar projects

Source: BNEF (2024), *Global Installed Capacity;* BNEF (2024), *Italy's New Power Auctions: High Returns fora Lucky Few*

Mixed progress is being made around the rest of the world

pv magazine Australia

Renewable energy projects to enjoy faster approval in Victoria

Premier Jacinta Allan today announced that the Victorian government will accelerate planning approvals for renewable energy projects.

14 Mar 2024

Daily Energy Insider

U.S. House passes energy bill with permitting reform

The U.S. House of Representatives passed energy legislation on Thursday that included provisions to reform the federal permitting process to speed up...

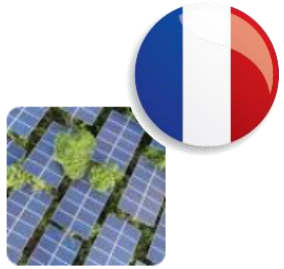
15 Apr 2024

McDermott Will & Emery

France's Renewable Energy Acceleration Bill Removes Barriers to Project Development

On February 8, 2023, the French Senate voted for the adoption of the Renewable Energy Acceleration Bill (Projet de loi relatif à...

8 Feb 2023



Riviera Maritime Media

South Korean offshore wind projects 'stuck in bureaucratic nightmare'

Developers are keen to build offshore windfarms, but cumbersome regulation is slowing the build out of projects.

9 Aug 2023

Q & A

Remaining ETC Webinars for the end of 2024 (UK Time)

12 September 2024	13.00-14.30	**ETC Webinar - Better, Faster, Cleaner: Securing clean energy technology supply chains**
07 November 2024	13.00-14.30	**ETC Webinar - Fossil Fuels in Transition: Committing to the phase-down of all fossil fuels**