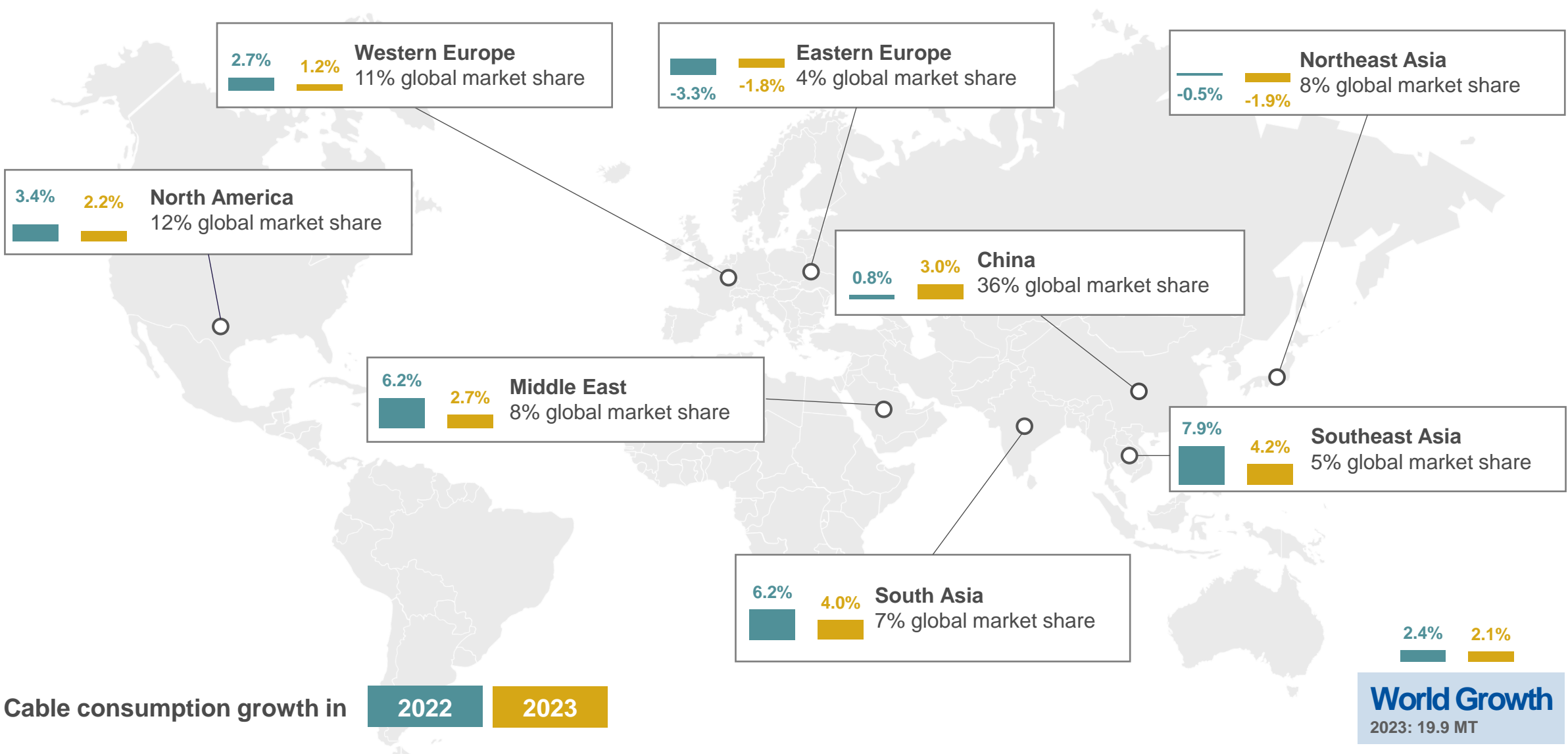


A close-up photograph of several electrical wires of different colors (purple, yellow, white, red, blue, green) with their ends cut, showing the internal copper strands. The wires are arranged in a slightly overlapping, diagonal pattern.

Powering the energy transition: Cable demand from renewables

Aisling Hubert

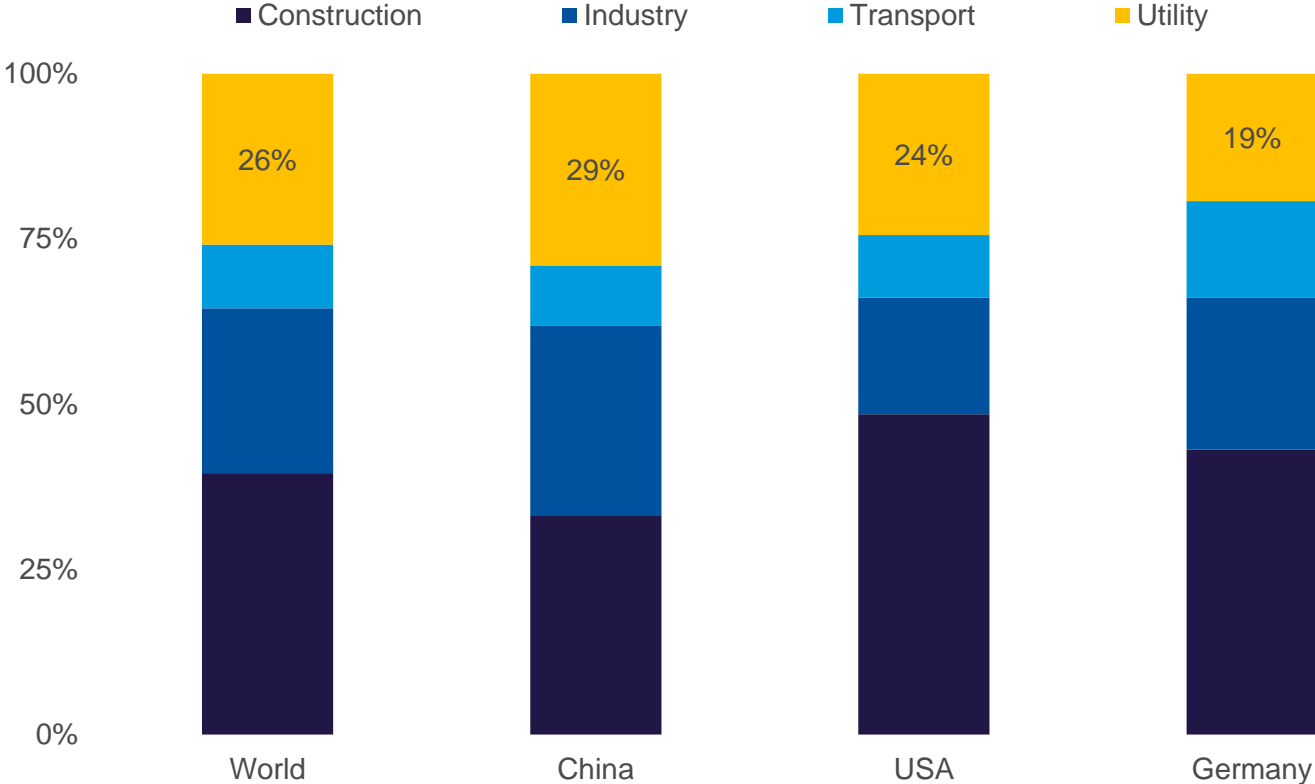
World cable consumption will grow by 2.1% y/y in 2023



Utility applications have proven resilient as construction and industry struggle

Utility applications account for just over a quarter of global cable demand

Share of cable end use by major market segment, 2022



Construction dominates cable use, though utility is gaining pace

Once per year CRU analyse the previous year's cable demand sectors.

The utility segment is a broad term which includes renewables, transmission and distribution, and telecoms.

In 2022:

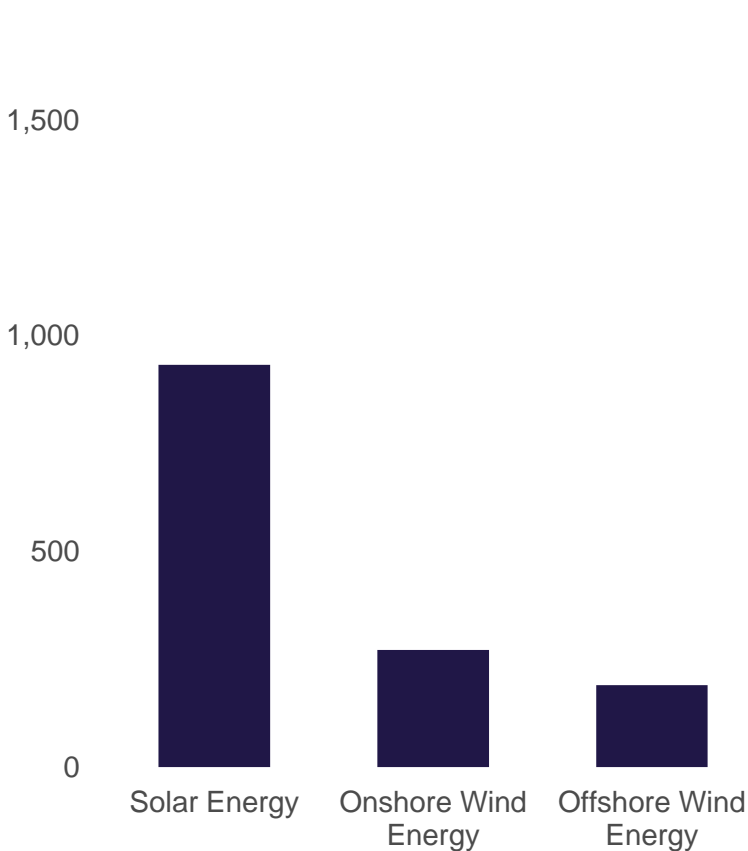
- Cable demand for construction applications continued to dominate accounting for roughly 40% of global cable demand.
- Utility applications have proven resilient during the recent economic downturns which are impacting construction and industry in many regions.
- National spending has helped to support utility investment in most countries as the energy transition and energy security is prioritised.

DATA: CRU

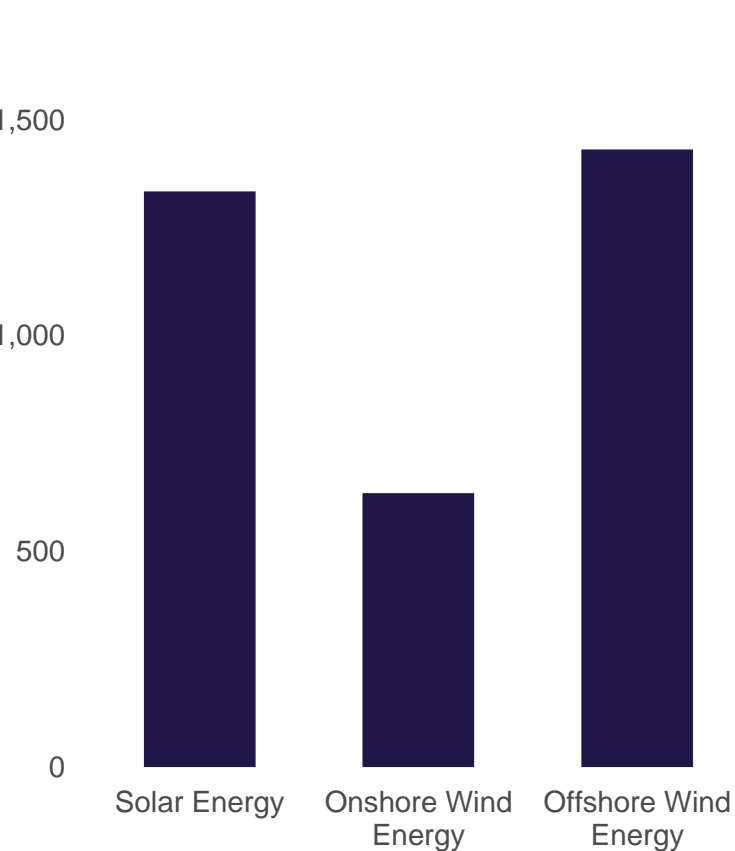
Many variables impact long-run cable demand but offshore wind to grow rapidly in all cases

Solar PV cable demand dominates in '23 Offshore wind demand to rise rapidly

Cable demand by renewable energy type, 2023
kt conductor



Cable demand by renewable energy type, 2050
kt conductor



In 2023 renewables require 1,250 kt conductors, ~6% of global demand.

We predict cable demand from renewables will almost double by 2050. Though long-term predictions are dependent on:

Intensity of cable use

- Size of wind turbines
- Distance of wind farms from coast
- Floating offshore deployment
- Metal substitution
- Technological advances

Renewable installations

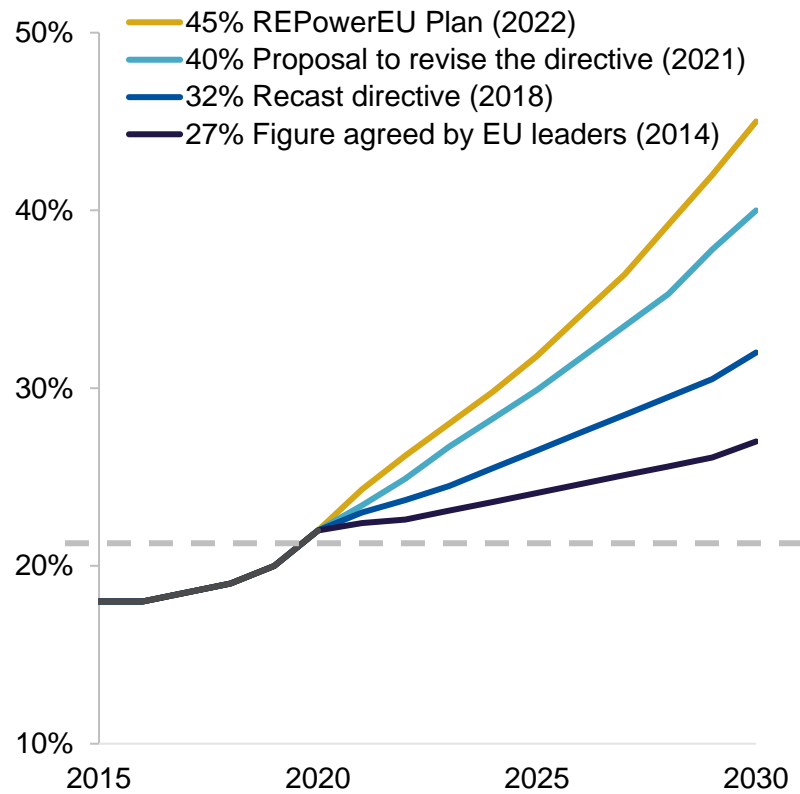
- Delays (supply chain bottlenecks/licencing challenges/social challenges)
- Future renewable stimulus measures

DATA: CRU

Forecasting renewable rollouts – a moving target

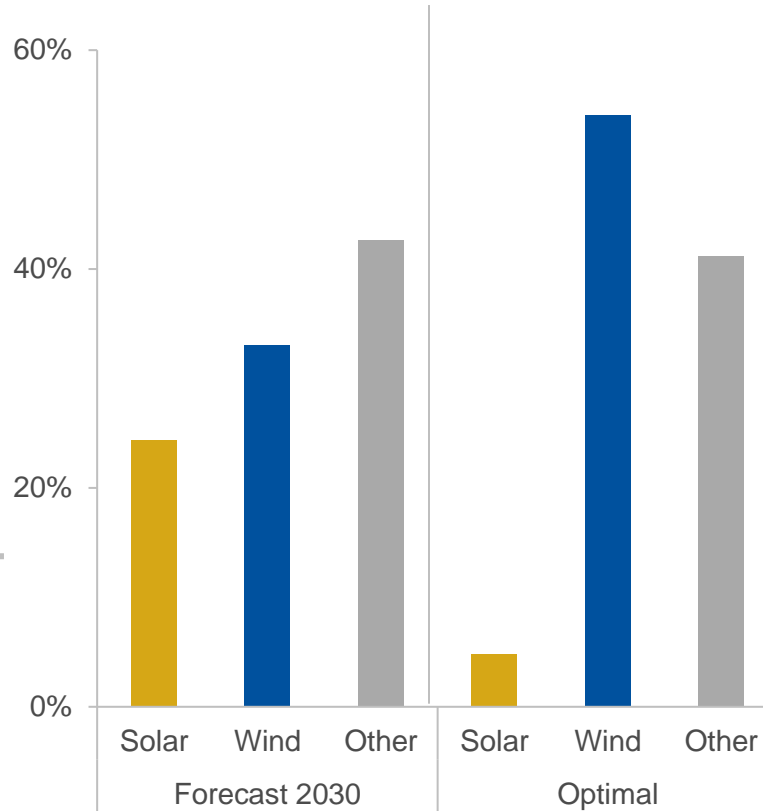
Changing EU renewable targets

Evolution of Europe's 2030 renewable energy targets
% renewables in European energy mix



Wind, more cost effective but less accessible

Forecast grid mix vs most cost-effective renewable mix
for Europe, 2030
% share of electricity generation



Forecasting grid mix is challenging as targets and costs diverge

Renewable targets are very changeable, but the cost of renewables is also a big factor in deployment.

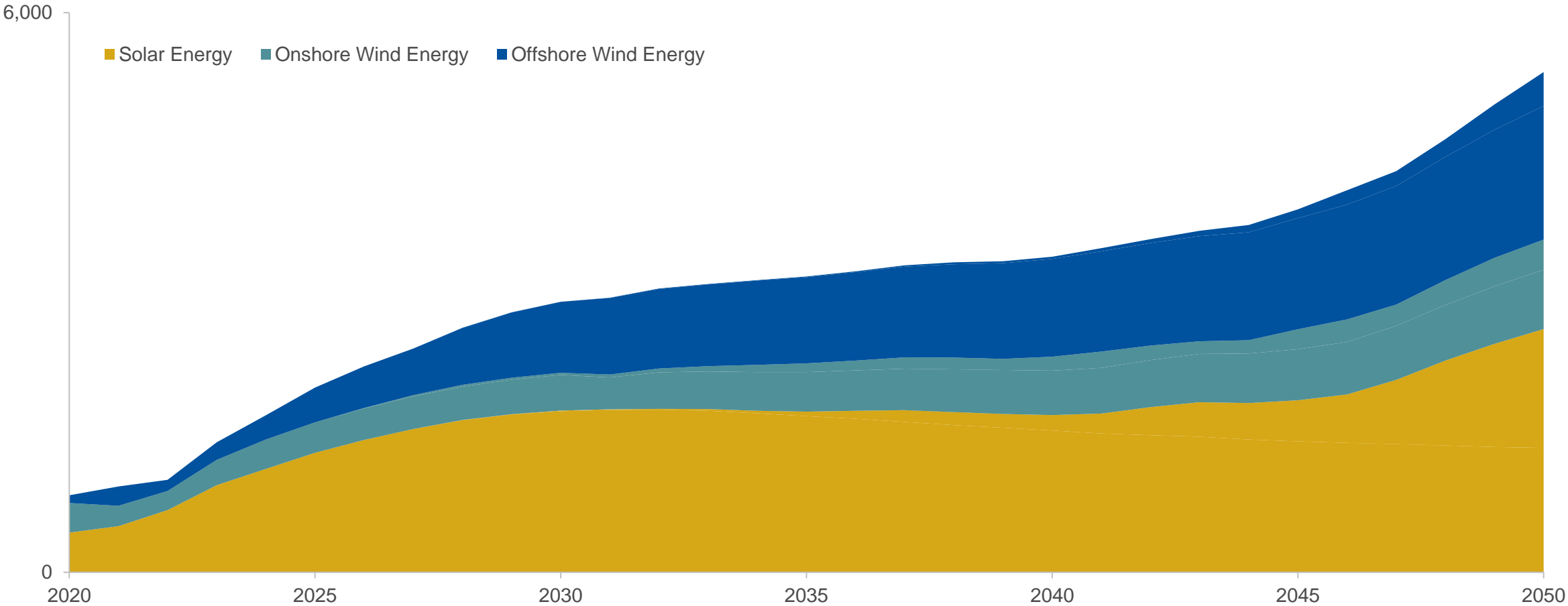
Recent levelised cost of electricity studies by CRU have calculated the 'optimum grid mix' in regions, accounting for hourly electricity demand, hourly solar radiation, and hourly wind patterns.

These studies have shown that Europe requires more wind energy to achieve the lowest cost renewable mix.

DATA:CRU

In 2030, global cable demand from renewables will equal total US demand in 2023

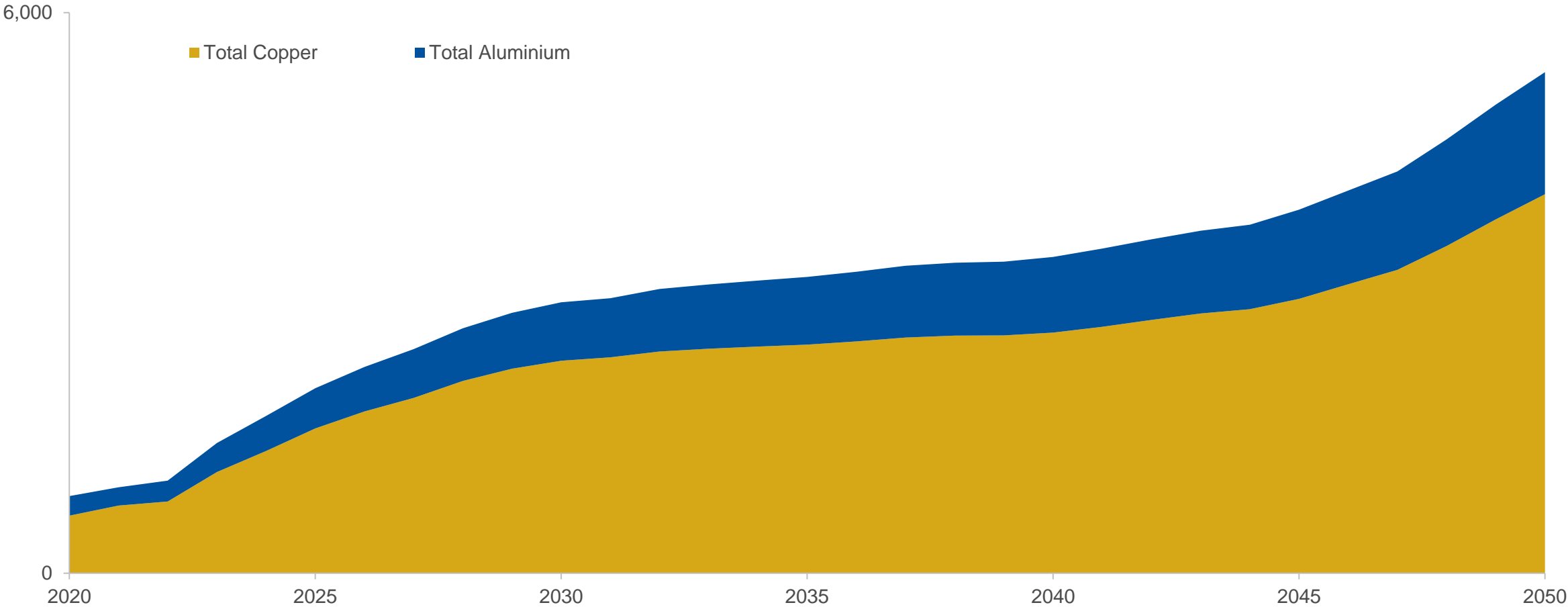
Cable demand from renewable energy over time
kt conductors



DATA: CRU

Substitution is significant but overall demand for renewables supports copper

Cable demand from renewable energy over time (capacity replacement included)
kt conductors



DATA: CRU

CRU Wire and Cable Market Outlook Team



Analyst
Aisling Hubert
+44 20 7903 2031
aisling.hubert@crugroup.com



Head of Wire and Cable
Chenfei Wang
+86 21 6379 3322
chenfei.wang@crugroup.com



Analyst
Emir Ersahin
+44 20 7903 2054
emir.ersahin@crugroup.com



Editor in Chief, Wire and Cable News
Natalie Noor-Drugan
+44 20 7903 2421
natalie.noor-drugan@crugroup.com



Principal Analyst, Copper
Robert Edwards
+44 20 7903 2119
robert.edwards@crugroup.com



Director, Copper Research and Strategy
Vanessa Davidson
+44 20 7903 2207
vanessa.davidson@crugroup.com



Head of Base Metals
Simon Morris
+44 20 7903 2248
simon.morris@crugroup.com



Copper Demand Analyst
Tianyu He
+86 21 6379 3326
tianyu.he@crugroup.com