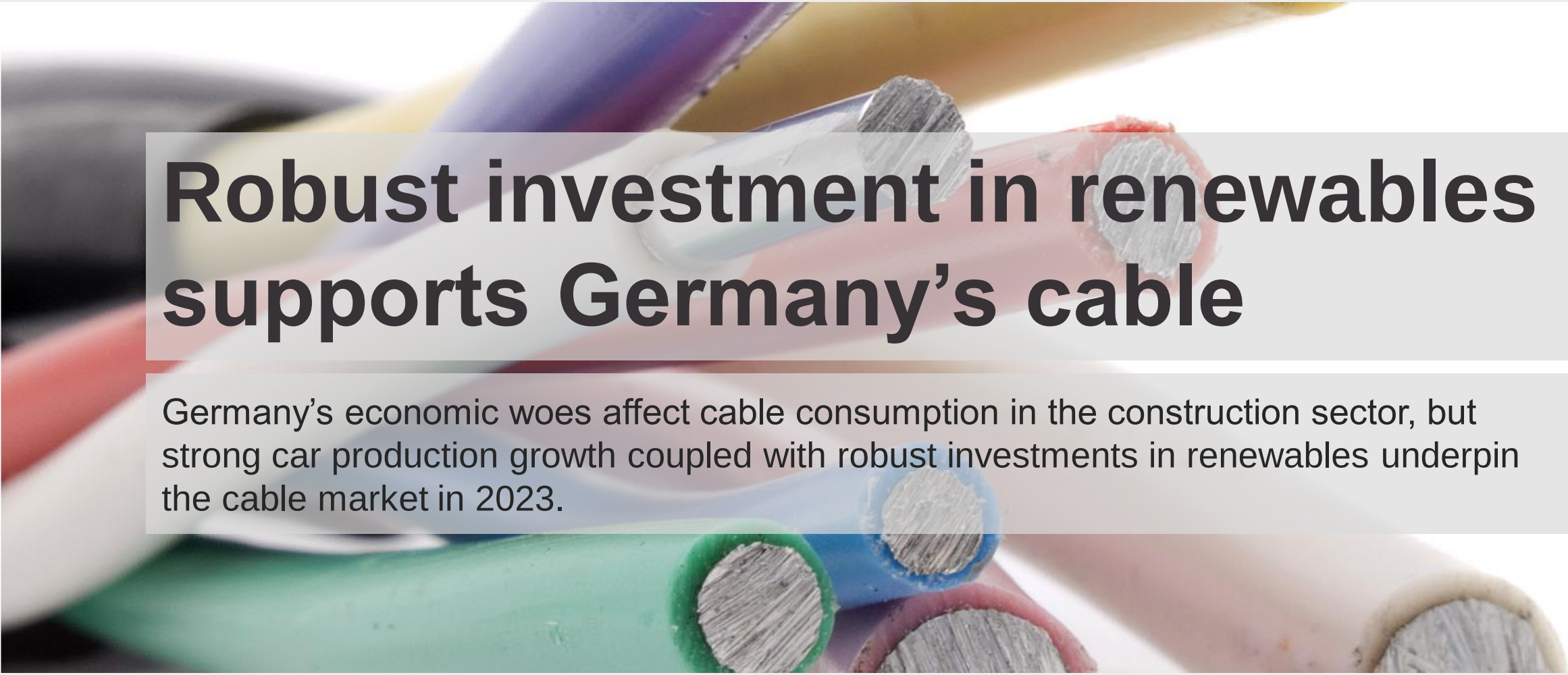
Wire and Cable Market Outlook



Robust investment in renewables supports Germany's cable

Germany's economic woes affect cable consumption in the construction sector, but strong car production growth coupled with robust investments in renewables underpin the cable market in 2023.

MAY 2023

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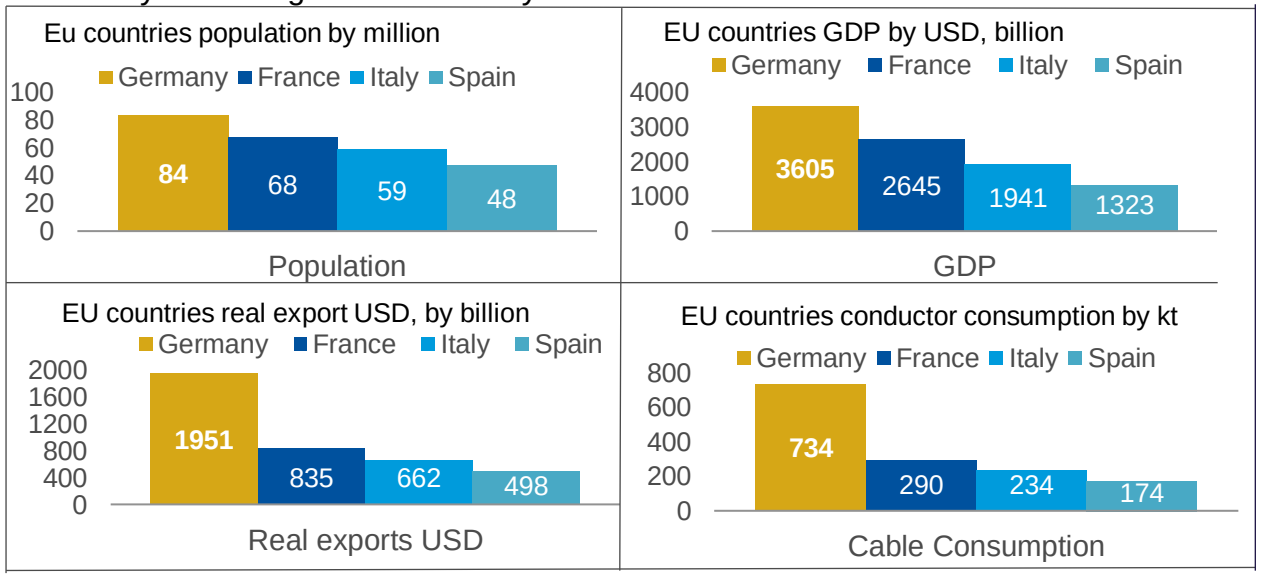
German economy contracts in the face of high interest rates

Germany is the largest EU economy and cable consumer in 2023



Germany's macroeconomic indicators are down, apart from car production

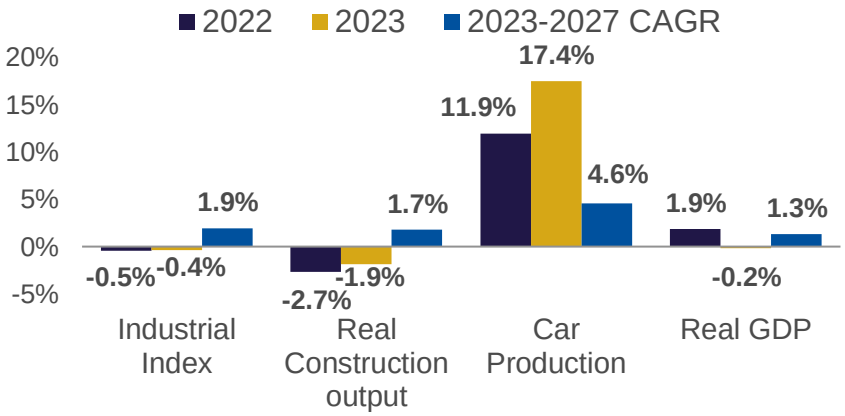
Germany and its economic performance are vital for the European cable industry, as it is the largest EU economy, with its population, GDP and real export rates surpassing other EU states. This makes Germany the largest cable consumer in the EU with about **734 kt** of conductor projected to be consumed in 2023.

Apart from car production, which is expected to grow, Germany's macroeconomic indicators are forecast to decline in 2023. Austerity measures such as high interest rates, introduced to curb inflation, have slowed economic growth particularly for construction and manufacturing – two major cable consuming sectors in Germany.

However, the medium term outlook of Germany's cable market looks brighter than the short term, as we expect lower interest rates and inflation, as well as a drop in oil and gas prices after 2022 Q4 to support growth over the next two years.

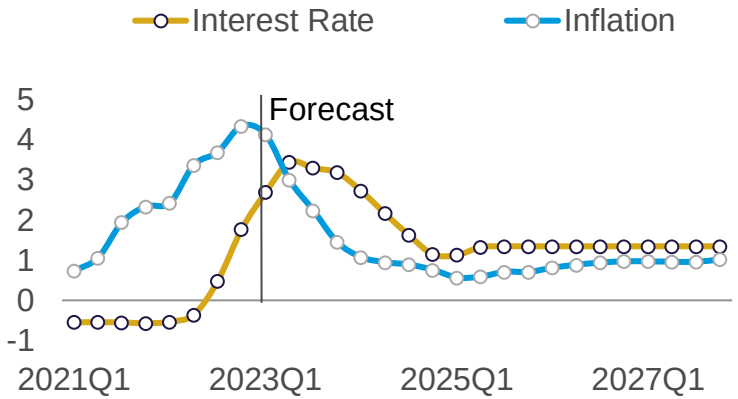
Most of Germany's 2023 macroeconomic indicators down

Germany macroeconomic indicators, y/y growth %



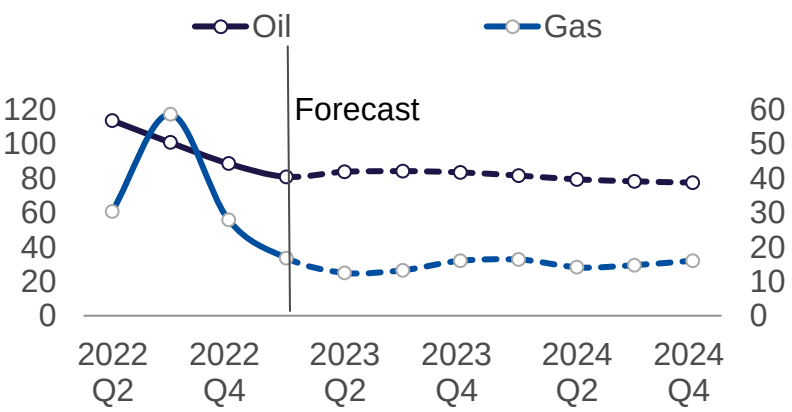
Higher interest and inflation rates

LHS: interest rate and RHS: % inflation rate



Oil and natural gas prices forecast to remain stable

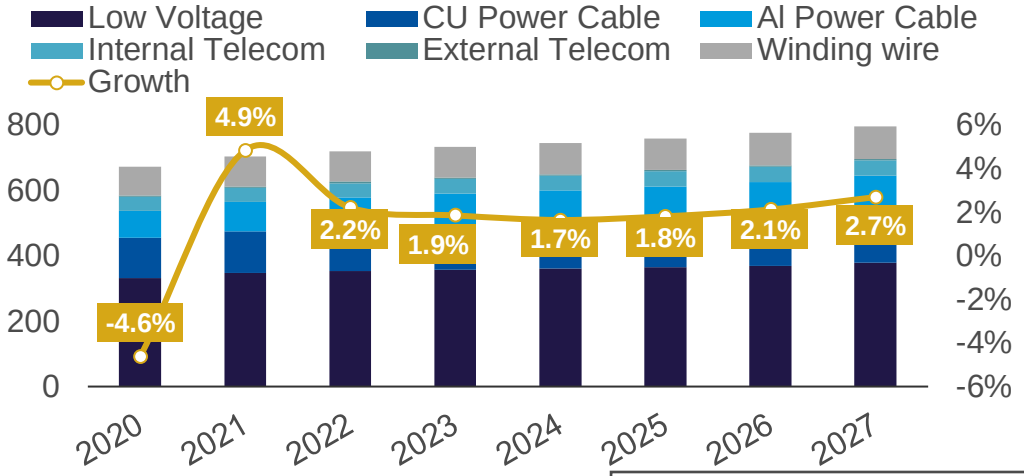
LHS: $/ Barrel and RHS: $/mmbtu



DATA: CRU

Construction, Germany's biggest cable end-use sector, contracted in 2022

German cable consumption is forecasted to grow in 2023,
RHS conductor kt, LHS % growth



Germany's cable consumption shows steady growth

Despite contracting GDP, IP and real construction rates, Germany's cable demand is still forecast to grow by **1.9% y/y** in 2023 underpinned by strong car production projections and robust investment on renewables.

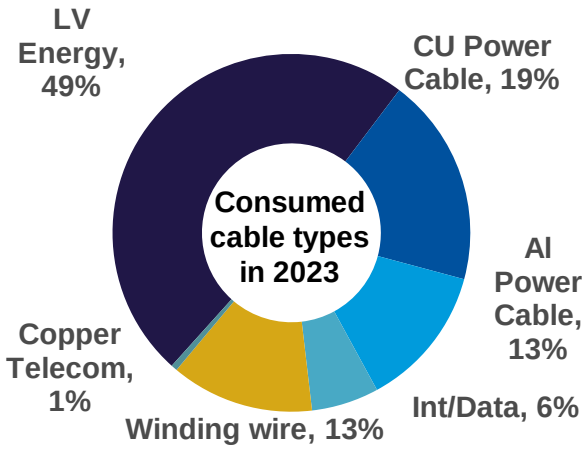
In 2023 nearly **49%** of all conductor to be consumed in Germany will be for LV energy cables. This cable type is primarily utilised in the construction and automobile industries, where for the latter, it is mainly turned into automotive-harnesses.

German construction industry suffered in 2022 due to high energy prices and interest rates

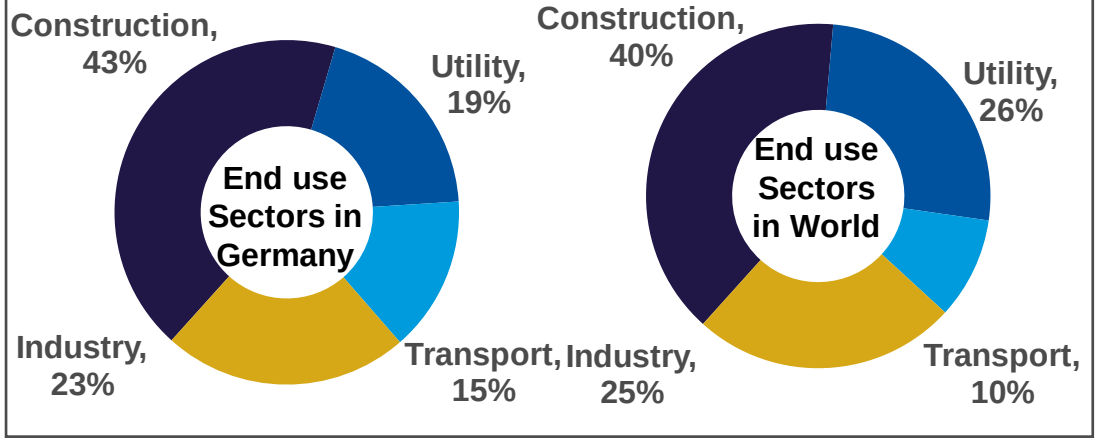
Construction constitutes the biggest end-use sector for cable consumption followed by Industry (manufacturing), Utility (grid investment) and Transport (car manufacturing) in Germany. This trend is similar globally, with the only difference being that Transportation has a larger share of German consumption due to the size of the country's automotive industry.

Germany's construction industry suffered massively in 2022 according to the German Federal Statistics Office with both residential and commercial construction seeing a -3.9% and -1.0% y/y decline respectively. This is primarily caused by an increase in construction material costs, high interest rates and volatile energy prices.

LV Energy cables consumed the most
Cable Consumption by cable types, % of total



German and global cable consumption by end use sector in 2022
Share of total %

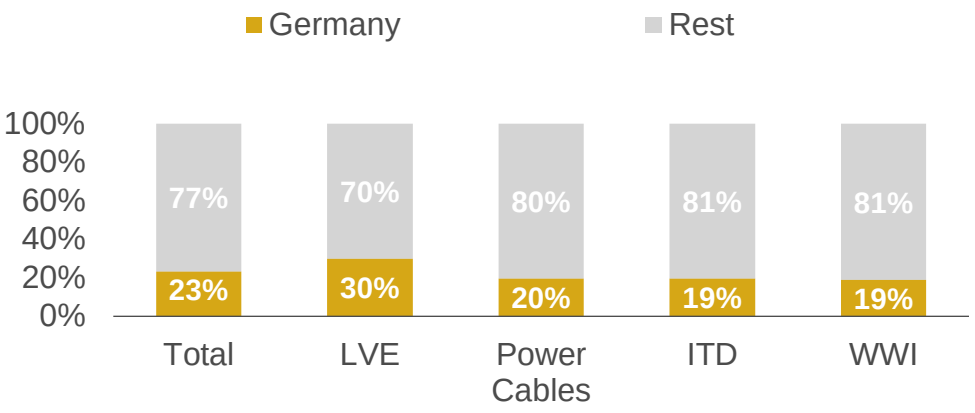


Construction sector in Germany slowed down after the start of the war in Ukraine
y/y change % by Euro

DATA: CRU, Statistiches Bundesamt

Germany’s robust car manufacturing industry supports LV Energy cable consumption

Germany has a 23% share of European cable consumption in 2022
Germany's share in total European cable consumption by cable types, total %



German car manufacturing industry is expected to grow in 2023

Germany has a **30%** share of all European LV energy cable consumption, and a **23%** share of total insulated cable consumption. The primary reason for a larger share of LV energy consumption is that Germany is by far the biggest car manufacturer in Europe. Germany produced 78% more car units than Spain, the second largest automotive producing country in Europe in 2022.

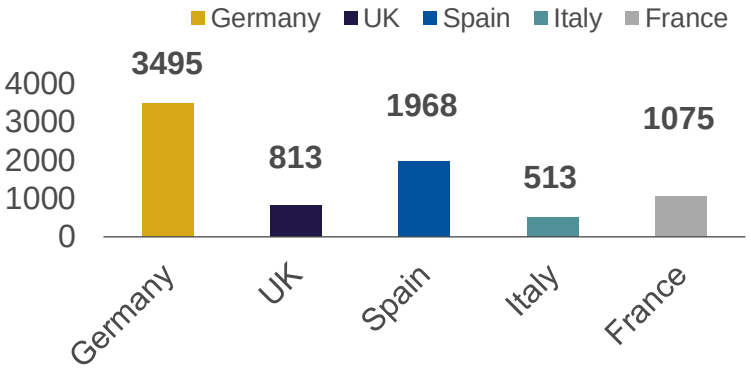
Germany is also the biggest consumer of all other cable types in Europe, with a 19%-20% share of power cables, data cables and winding wire.

Germany is a net cable importer, with most of this imports being LV energy cable

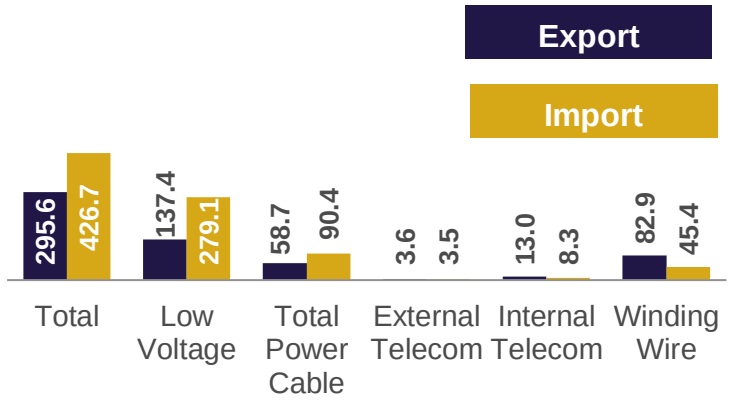
In one of our previous reports we explained that since EU countries trade with each other extensively, many can be seen as both cable exporters and importers. Germany is no exception, with 48% of its cable production exported and 58% of its cable demand met by imports. Germany is a net cable importer with 131.1 kt of conductor net imported.

LV cable makes up 65.4% of all Germany's imports, most of which consist of LV automotive cable and wiring harnesses for Germany's automotive industry. In 2022, these wiring harnesses mainly came from countries like Romania, Tunisia and the Czech Republic, supplied by companies such as Leoni, Dräxlmaier, Sumitomo (SEBN), Yazaki Europe, Kromberg & Schubert, Nexans Automotive and Coficab.

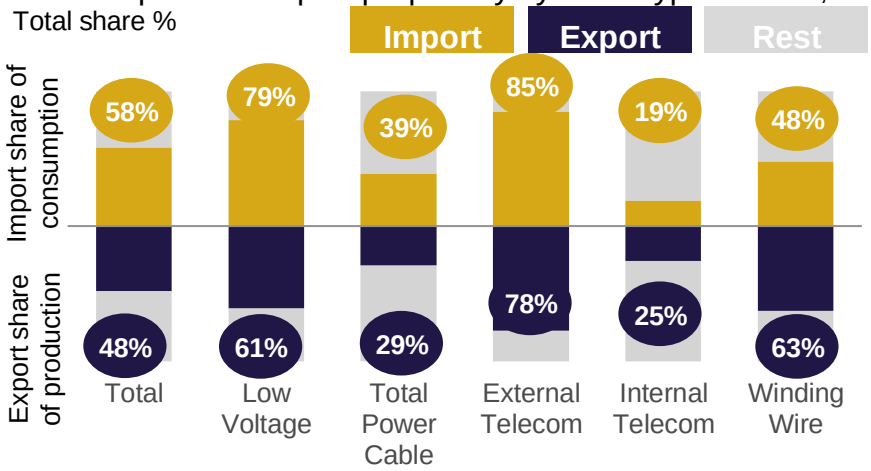
Germany is the biggest auto producer in Europe
European car manufacturing in 2023 by country,000s car produced



Germany’s cable trade by cable types in 2022,
kt conductor

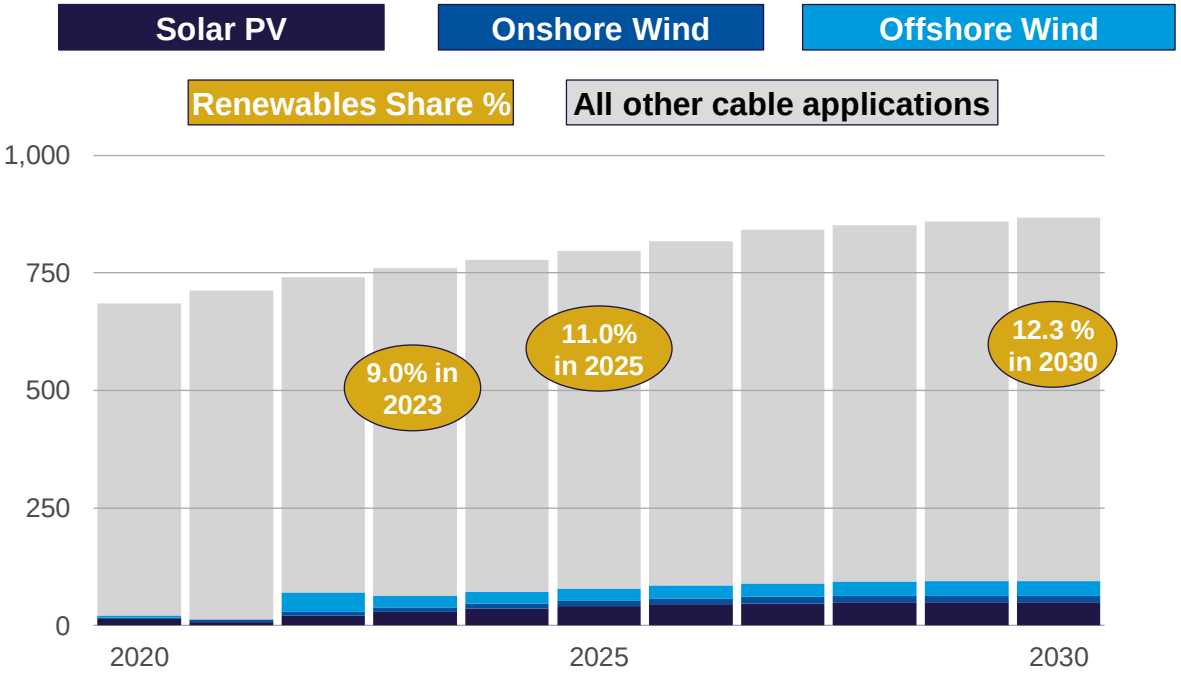


Cable import and export propensity by cable type in 2022,
Total share %



Renewables remain a bright spot for short and long term cable demand

Germany' cable consumption by renewable energy applications is rising,
kt conductors and share %



Cable types in renewable energy installations in Germany

Cable intensity and Cable types by cable consumed within a technology per GW installed, kt and %

Cable Type	Solar	Onshore	Offshore
Total Cable Intensity	2.87 kt/GW	2.98 kt/GW	12.83 kt/GW
Energy Cables	77.3%	68.5%	91.9%
of which in turbines	-	32.9%	7.5%
Internal Data Cables	1.3%	1.2%	0.2%
Winding Wire	21.4%	30.3%	7.8%

Renewable installations in Germany are forecast to see robust growth

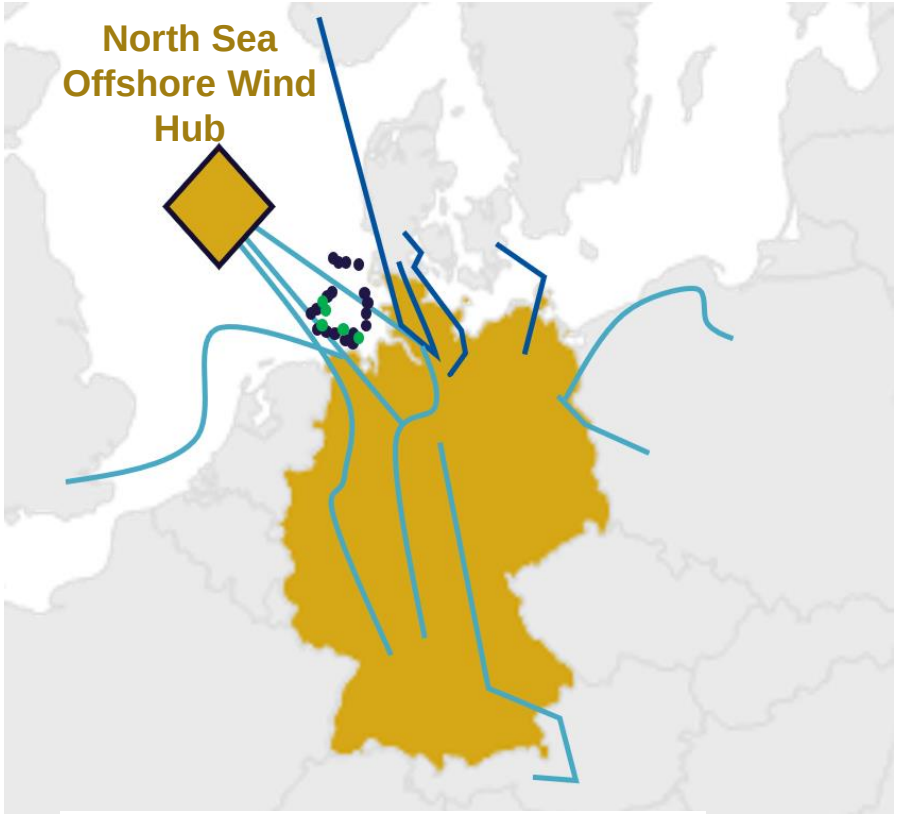
Renewables are one of the biggest cable consuming sectors in Germany. This is set to continue, as the government is targeting 30 GW of offshore wind capacity, 215 GW of solar and 115 GW of onshore wind by 2030. Overall renewables are projected to constitute 9.0% of total cable consumption in 2023. This share is projected to rise to 11.0% in 2025 and then rise again to 12.3% in 2030.

- **Solar energy** is forecasted to be one of the most cable-consuming renewable energy types, with 47% of all cables being used in renewable energy coming from solar in 2023. By 2030 solar energy's share rises to 52%, Germany pushing to achieve their goal of 215 GW solar capacity by 2030. At the end of 2022, Germany's solar capacity stood at 66.5 GW, which means that the country has to nearly triple its existing capacity in the next eight years. Most of the consumed cables in solar are energy cables (LVE and power cables), which represent about 77.3% of all cable consumed, followed by winding wire (21.4%) and internal data cable (1.3%).
- **Onshore wind** is expected to be the least cable consuming renewable energy type in 2023, as it will only constitute 16% of all cables being used in renewable energy. This is primarily because of low installation rates as onshore wind has a comparable intensity of cable use per gigawatt to solar energy at 2.98 kt/GW (vs. 2.87 kt/GW in solar PV). Energy cables make up 68.5% of total cable consumption, of which 32.9% comes from LV energy cables inside the turbine. Winding wire and internal data cables comprise another 30.3% and 1.2% of cable consumption, respectively.
- **Offshore wind** in Germany is the world third largest offshore wind market by cumulative capacity installations. Although it does not quite reach the levels of solar energy or onshore wind in terms of annual installations by GW, its higher cable intensity of 12.83 kt/GW will make it the second largest cable-consuming renewable energy type in 2023 and will be the biggest cable consuming renewable technology by 2035. Most of the cables consumed are energy cables, which represent 91.9% of the total cable consumption, of which 7.5% comes from LV energy cables inside the turbines. This is followed by winding wire (7.8%) and internal data cable (0.2%).

DATA: CRU

Offshore wind and interconnectors projects are developing rapidly in Germany

Germany interconnector and offshore windfarm map



Germany's offshore wind and intra- and interconnector market is going strong

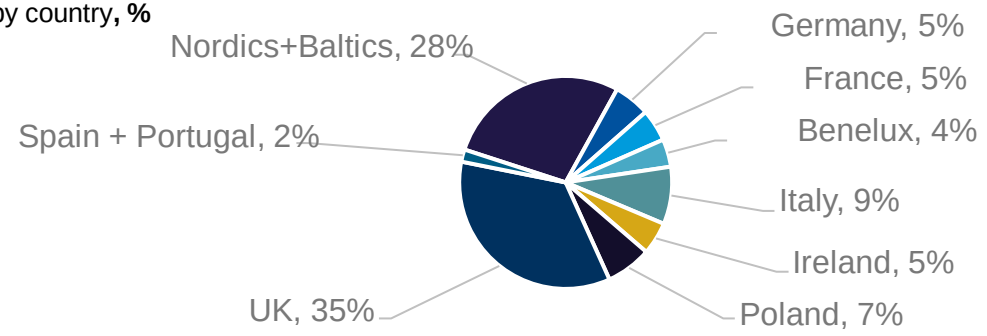
Germany has been one of the biggest **offshore wind** installers so far, with a target to install a total of **30 GW** by 2030. However OWF projects announced so far only make up 5% of total European offshore wind export and array cable consumption between 2022 and 2029. This is because:

- Multiple German offshore wind farm projects faced delay due to permitting and funding issues.
- Lack of offshore wind farms announcements with completion dates beyond 2026.
- Close proximity of some German offshore wind farms to the coast.
- Planned North Sea Offshore Wind Hub that could replace export cables of individual offshore wind projects with subsea interconnectors.

Demand for High and Extra High Voltage cables is projected to be strong in the medium term, as the country has a number of major i**nterconnectors** that are listed as a Project of Common Interest **(PCI).** PCIs are aimed at bringing European grid systems together to allow a united EU energy policy to be established. Germany not only has subsea interconnector projects between itself and the UK and North Sea Offshore Wind Hub, but also land interconnectors between Germany and Austria and Poland. Beside these projects that aim at interconnectivity between European countries, there are also projects such as SuedLink (1200 km), A-Nord (640 km) and SuedOstLink (550km), which are aimed at increasing Germany's internal energy connectivity. As a result of these various subsea and underground cable projects, there have been some very large cable awards for companies like Prysmian, Nexans, NKT, LS Cable, Hellenic Cables, amongst others.

Distribution of offshore wind subsea cables in already announced projects by core km 2022-2029

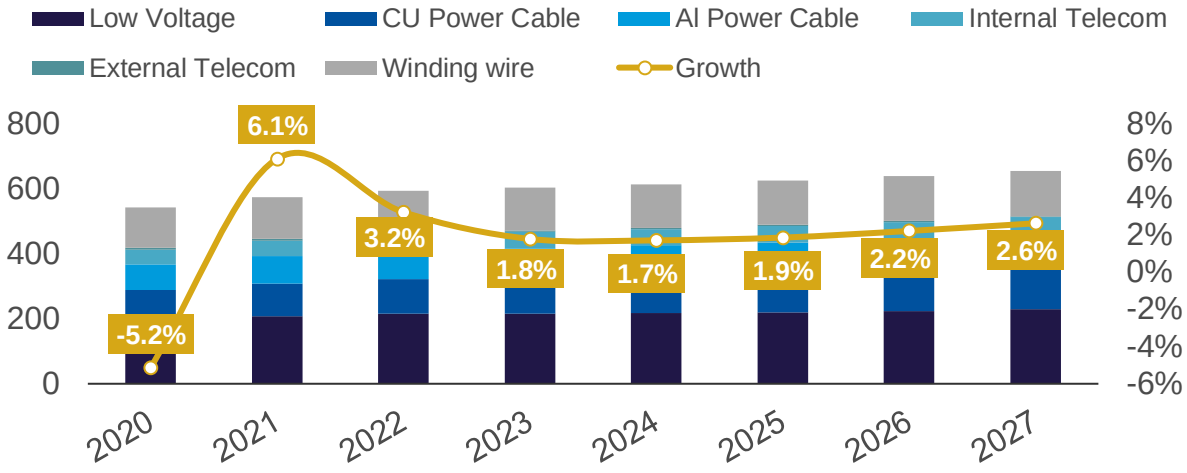
Share by country**, %**



DATA: CRU, European Commission

German power cable production is growing rapidly even with reduced smelting

German cable production is forecasted to grow in 2023,
RHS conductor kt, LHS % growth



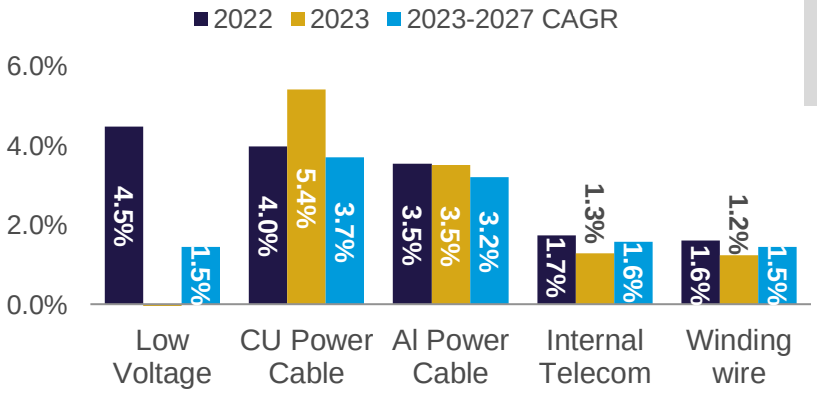
Like consumption Germany's cable production is growing steadily as well

German cable production in 2023 is forecast to increase by **1.8% y/y** to **603 kt conductors**. This is mainly on robust growth in copper and aluminium power cable production, which in 2023 is forecasted to grow by **5.4% y/y** and **3.5% y/y,** respectively. Power cable demand will continue to be mainly driven by investments in renewables and grid infrastructure projects.

In 2022, aluminium power cable production grew by 3.5% y/y despite a reduction in European aluminium smelting as a result of high energy prices caused by the war in Ukraine and sanctions on Russia. European aluminium production capacity decreased by 452 kt in 2022, of which 302 kt was lost between August 2022 and October 2022, when energy prices were at their highest. This pushed European cable manufacturers to import aluminium from the Middle East to satisfy demand.

The growth trend for aluminium power cables has been strong for a number of years, with their share of power cable production increasing from 40.9% in 2015 to 44.9% in 2021. This increase in share primarily was caused by high copper prices in the late and early 2010s and 2020s respectively, which made aluminium cables more competitive. It is important to point out that a slight drop in this share occurred in 2022 due to high aluminium prices caused by the war in Ukraine. Despite this, aluminium power cable production growth in 2023 is expected to outpace total cable production growth of **3.2%.**

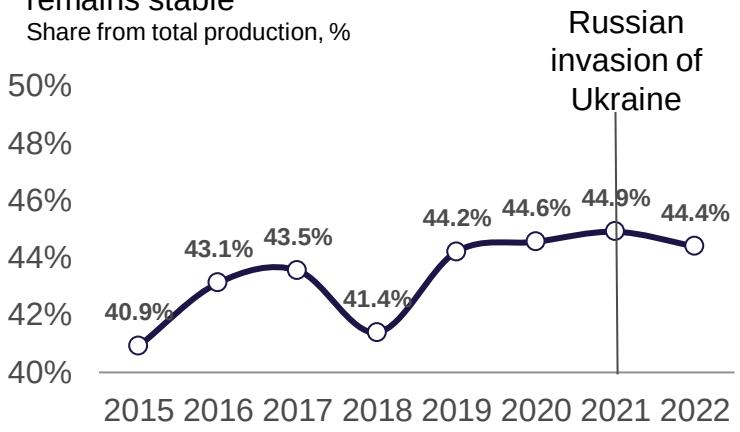
Germany's cable production by cable types,
kt conductor



Aluminium plant shutdown announcements between August 2022 and October 2022

Plant	Country	Annualised Production	Reduced Production	Shutdown Date
Talum	Slovenia	39 kt	11 kt	Aug – 22
Lista	Norway	95 kt	31 kt	Aug – 22
Husnes	Norway	190 kt	20 kt	Sep – 22
Ziar and Hronom	Slovakia	104 kt	104 kt	Sep – 22
Neuss	Germany	145 kt	70 kt	Oct – 22
Dunkirk	France	269 kt	63 kt	Oct - 22

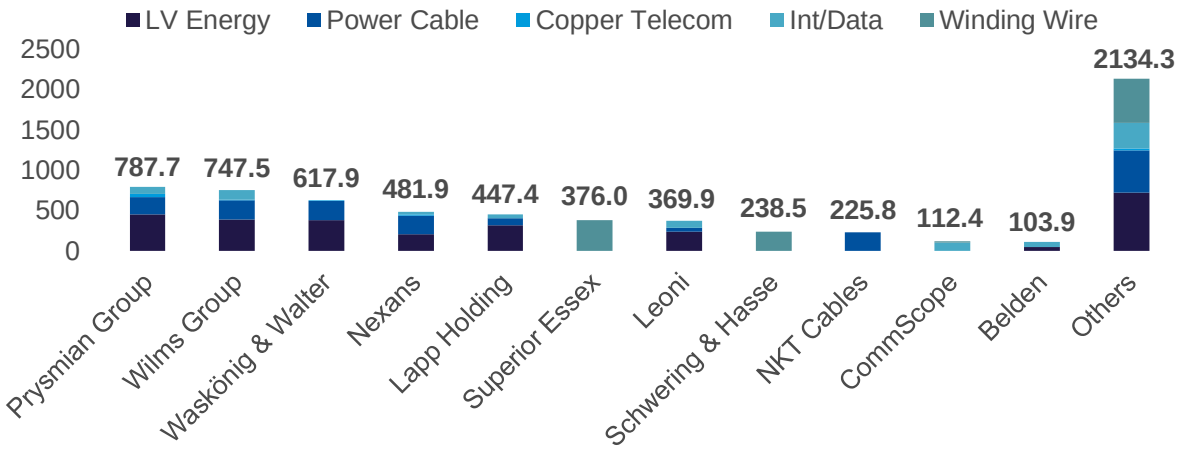
Share of aluminium in power cables production remains stable
Share from total production, %



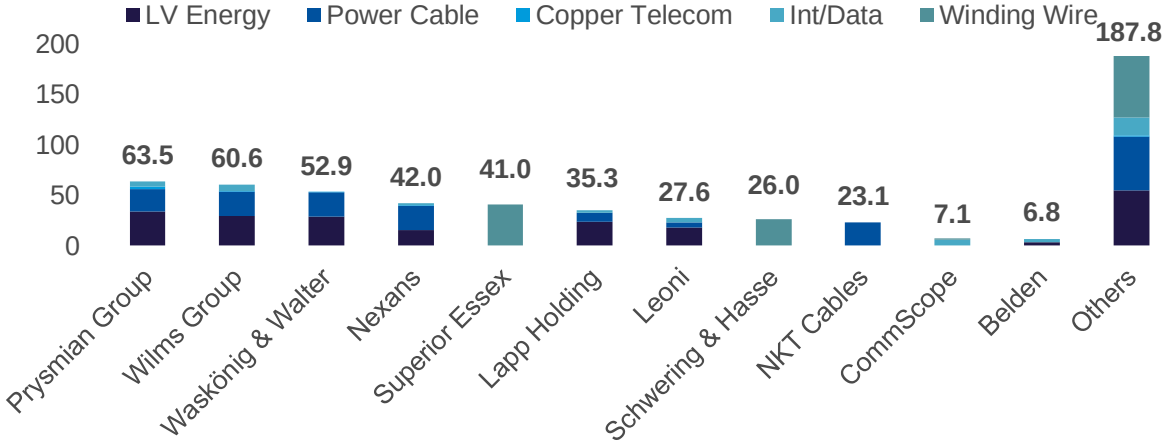
DATA: CRU. Note: The cable

German cable market neared $7 billion in value

German cable production revenue by company by USD, billion
Company shares of W&C production, $ million



German cable production by conductor weight per company
Company shares of W&C production, kt



The German cable market neared $6.6 billion in value

We estimate that eight main cable producers dominate around 68% of Germany's industry. The largest of these in US dollar value terms is thought to be Prysmian, followed by Willms, Waskönig and Walter, Nexans, Lapp Holding and Superior Essex. It has to be noted that Lapp Holding and Superior Essex switch positions when we look at the ranking by conductor tonnes.

Prysmian has six plants, making energy cables at Schwerin, Ronsdorf near Wuppertal and Neustadt, and telecom cables at Berlin and Nuremburg. The Ronsdorf facility makes cables for the solar industry and also makes automotive wiring. The Neustadt facility makes a broad range of cables including elevator, mining, marine, shipboard, rolling stock, crane, and DC cables

The Wilms Group consists of several companies under the same ownership, with the individual operations trading under their own names and operating relatively autonomously under the control of Hans Wilms Beteiligungs-Gmbh. Apart from a number of production subsidiaries in other EU countries, most of its production is based in Germany. In 2019 it also took over the UK's BT Cables, which has been renamed BCC – British Cables Company. The company is said to have an annual turnover of about €1 billion of which around half is generated in Germany.

Waskönig and Walter is a privately-owned cable company, with a production unit at Ramsloh, northwest Germany, which mainly makes building wire and power cable up to 220kV with some flexible and copper communication cables. The company is said to have a turnover of over $600 million per year.

Nexans used to be one of the largest producers in Germany, but due to Prysmian's takeover of General Cable and the closure of Nexans' Hannover plant, the company has moved down several places. Production of HV cables has moved to Charleroi in Belgium, while industrial cables production has moved to its unit in Mönchengladbach which produces mainly industrial cables and copper communication cables. Nexans also has a unit at Nuremburg, which makes automotive wire, rolling stock, automation, and high temperature cables.

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