

Overview of the Global Cable Industry – Markets and Materials

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The cable extrusion industry makes up only a small part of the global plastics industry, accounting for just under 3% of plastic consumption. However, it is a high-value market, where producers commit to the industry for the long term; it is not a sector for opportunistic business.

Geographically, the market is dominated by Asia, and more specifically, China. In terms of market size by polymeric materials, Asia and Australasia accounted for 55% of the tonnage used in cable extrusion in 2018. There are around 8000 cable manufacturers in the world, with the number in China estimated between 4000 and 6000. China has not yet fully consolidated its market, but it has reduced its number of manufacturers from 7000 to around 5000. Most are small or medium-size companies.

The cable industry is a complex market segment, due to the number of applications under the main sub-segments: power and communications. Consequently, there are a large number of cable constructions, which can easily reach more than 2000 per manufacturing site. The cable business is strongly technology driven and therefore requires a good technical understanding by all the parties involved.

Electric cable constructions consist of a copper or aluminum conductor, often with steel armoring, and polymeric materials for insulation and jacketing.

Owing to the range of end-use applications, a variety of polymeric materials are used. As a result, any producers decide to specialize in only a few types of cables to reduce investment in machinery.

Further complexity arises from different national standards, which make it harder for foreign producers to enter markets if their cables do not already meet local requirements. Indeed, in Europe, standards are in place for specific cables, notably in construction (Construction Product Regulation [CPR]) and transportation, which producers have to take into account when manufacturing cables. India and China are also in the process of putting in place legislation for the construction and building sector.

Cable manufacturing involves various stages of production, including metal drawdown, compounding, insulation and sheathing material extrusion, armouring, and eventually cross-linking processes.

The three main sectors that influence the demand for cable are infrastructure, transportation, and construction. Investments in these sectors have a direct impact on a country's demand for cable. Regarding the construction sector, the current trend of urbanization is leading to larger cities, placing with greater demands on power transportation and distribution networks.

The trend toward more eco-friendly solutions for transportation such as e-mobility is also creating additional opportunities for the cable industry.

Renewable energy is also a sector with increasing demand for cable, not least as the electricity generated must feed into the power grid. Indeed, investment in renewable energies is driving particularly strong growth in the medium voltage (MV) and high voltage (HV) segments, related to energy transmission and distribution. In 2017, global cumulative installed renewable power capacity was 2179 gigawatts (GW), with wind energy representing over 23.5%.¹ The Paris Agreement (2016) gathered nations to meet a level of use of renewable energies and has heightened the demand for power cables across the board.

In the Americas and Europe, demand is being driven by the need for power connection between countries and transmission efficiency. In emerging markets such as Southeast Asia and the Indian Subcontinent, rapid economic development and urbanization are key growth drivers.

According to the United Nations Organization,² around 60% of the world population will be living in urban areas by 2030 and 68% by 2050, leading not only to new network needs but also to the renovation of existing infrastructure.

In China, the recent slowdown is not expected to last too long as long as government investment picks up.

Investment in construction is forecast to grow globally at an average rate of 3% per year until 2022 (Figure 1.1). This growth is spread quite evenly between civil engineering, and nonresidential and residential construction, with the latter seeing the highest investment level. Unsurprisingly, however, cable demand growth is not homogeneous across regions.

Rapid economic development and urbanization, especially in Southeast Asia, is driving strong construction investment growth. In more mature markets such as Europe and North America, growth is typically in the low single digits. Currently, the level of urbanization in Asia is 50%, while it is 82% in North America and only 43% in Africa.

Another important and bellwether sector is automotive. Global automotive investment growth is forecast to be marginally slow in 2019–2022 compared to the previous years (Figure 1.2). However, structural trends such as the development of electric vehicles and the trend toward e-mobility are having a positive effect on the cable sector.

1 <https://irena.org/publications/2018/Mar/Renewable-Capacity-Statistics-2018>.

2 <https://www.un.org/development/desa/publications/2018-revision-of-world-urbanization-prospects.html>.

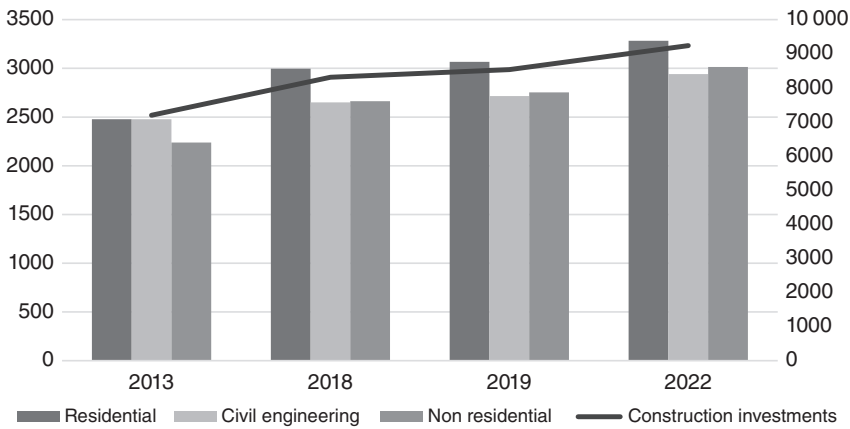


Figure 1.1 Investment in construction in 2013–2022 worldwide.

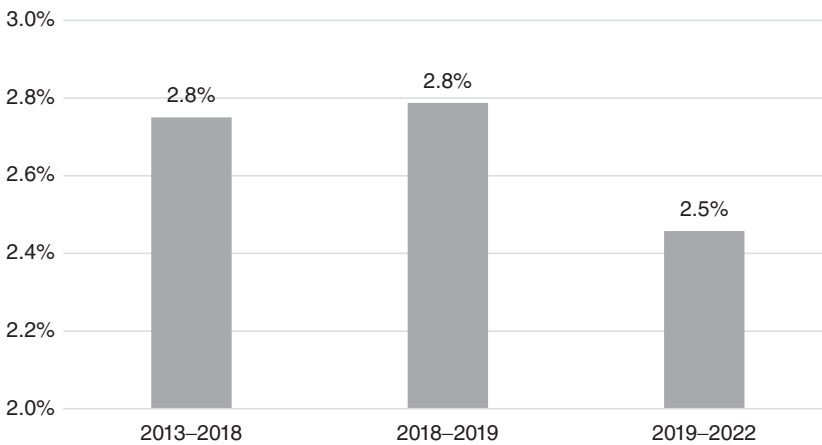


Figure 1.2 Global evolution of automotive production in 2013–2022.

Major concerns for the industry include a range of geopolitical uncertainties. Chief among them are US–China trade frictions and Brexit. Such events are, at best, causing investment to be merely delayed.

1.1 Demand for Polymeric Material

In 2018, Asia and Australasia accounted for almost 60% of global demand, with China alone representing just over 40%. Europe (17%), North America (12%), and Middle East and Africa (10%) all had double-digit shares. South America represented just 2% of the global market (Figure 1.3).

1.1.1 Main Companies Profile

The cable industry is spread worldwide, although it is dominated by a few companies that are present on most continents.

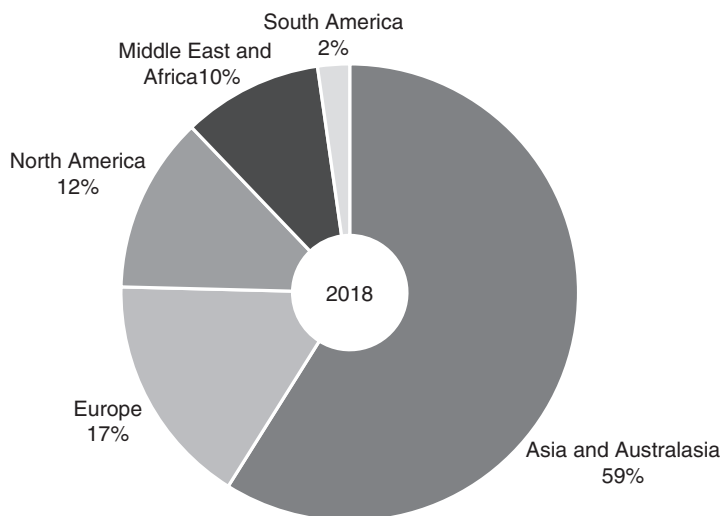


Figure 1.3 Global usage of polymeric materials by region. Source: AMI Consulting 2019.

1.1.1.1 Prysmian

Prysmian is the largest cable manufacturer in the world by revenue. Since the acquisition of General Cable in 2018, their combined sales amounted to €10.158 billion in the year. The company was created in 2005 in Milan, Italy, by Goldman Sachs from the cables and systems division of Pirelli & C. S.p.A. and the group was created in 2011 after Prysmian acquired Draka. Prysmian Group is a public company and offer products and solutions in power grids (including submarine and HV and extra high voltage [EHV] cable systems), oil and gas, telecoms (optical and copper cables), construction and infrastructure, transportation and mobility, and industrial applications. It serves the energy, military, mining, nuclear, and renewable energy industries. The group now has 112 plants in 50 countries. Overall, Prysmian has 29 000 employees not just in the manufacture of cables, but also in cable assembly and wiring and cable systems. Sales are spread as follows: 58% Europe, Middle East, and Africa; 24% North America; 8% Latin America; and 10% Asia Pacific.³ They also operate a network of 25 R&D centers globally.

1.1.1.2 Nexans

Nexans is the second largest cable producer worldwide. Its headquarters are located in Paris, France, and the company has 51 plants in 34 countries, most of them in Europe. It employs 27 000 people.

Nexans manufactures power (low voltage [LV], MV, HV, EHV), telecom, industrial, and transportation cables as well as cable solutions (i.e. harnesses). It supplies the energy, transportation, telecom, industrial, construction, infrastructure, and aerospace industries. Nexans owns three plants in China and has managed to penetrate the Chinese market by winning projects working for the

³ The same included General Cable for the period 01 June to 31 December 2018.

State grid. In 2018, Nexans achieved €6.490 billion in sales (current metal price). The geographic split of revenue is as follows: 37% Europe, 14% North America, 12% Asia-Pacific, 6% Middle East, Russia, and Africa, 5% Central and Latin America (11% harness, 15% HV). The largest application segment is building and infrastructure, accounting for 43% of revenues.

1.1.1.3 Southwire

Southwire is based in Carrollton, Georgia, in the United States. Out of its 19 plants, only one is outside of North America. The company has 8000 employees and in 2017, their sales were US\$ 5.5 billion. It is privately owned and is the largest North American manufacturer after Prysmian, which, thanks to the acquisition of General Cable, has increased its presence on the continent.

Southwire offers power cables (LV, MV, HV, and EHV), telecommunications cables, and industrial cables made of copper rod, aluminum, and magnetic materials.

The company also provides engineering, fabrication, and inventory management services. Southwire supplies to the building sector, utility companies, and original equipment manufacturers for the automotive, electrical, and industrial equipment industries.

1.1.1.4 Sumitomo Electric Industries

Sumitomo Electric Industries is part of the Sumitomo Corporation, a huge Sogo Shosha general trading company that comprises five business units: automotive, information and communications, electronics, environment and energy, and industrial materials. The company is present in 15 countries, with consolidated sales at US\$ 9.8 billion in 2017⁴ and employs over 255 000 people.

Its headquarters are in Chūō-ku, Osaka, Japan. The company was founded in 1897 to produce copper wire for electrical uses.

The automotive business unit accounts for 50% of Sumitomo Electrics' annual sales, the main part being wire harnesses. Info-communication provides products for optical communications, such as optical fibers, cables, and connectors. Sumitomo has invested heavily in R&D and was one of the first companies to manufacture optical fiber. The environment and energy business unit provides electric wire and cable products that are used for energy supply, including LV, MV, and HV power cables, as well as magnet wire.

1.1.1.5 Furukawa Electric Co., Ltd.

Furukawa Electric Co., Ltd. is a Japanese electric and electronic equipment manufacturer. Headquartered in Chiyodo, Tokyo, the company has 89 plants in seven countries and employs 51 925 people (9 consolidated).

Company sales amounted to US\$ 8.8 billion in 2018. Its main activity is telecommunication cable production, with fiber-optic accounting for US\$ 1.909 billion of sales.

Furukawa also produces underground submarine industrial and power cables and accessories (total sales: US\$ 927.2 million). In addition to cables, it also manufactures batteries, wire harness, and components.

4 Consolidated: 3 082 247 million yen, non-consolidated: 1 084 165 million yen (as of March 2018)

1.1.1.6 LS Cable & System

LS Cable & System is by far the biggest cable manufacturer in South Korea (including all its subsidiaries). It also has a very strong presence in South Asia. Headquartered in Anyang, the company has 16 manufacturing plants, with eight in South Korea and the rest across Asia. Its 4203 employees generated revenues of US\$ 3.56 billion in 2018.

Following a move into the frontier market of Myanmar in 2017, where no other cable extruder is present, it also plans to enter the African and South American markets. The company offers power cables including EHV with cross-linked polyethylene (XLPE) insulation, submarine and super-conductivity cables, industrial, telecommunication with an emphasis on optical cables (fiber to the antenna [FTTA]), automotive cables and harnesses, and military cables. In addition, LS Cable & System provides engineering services, installation and commissioning of HV and EHV landlines as well as turnkey submarine cabling project execution. LS Cable & System also owns the magnet wire and data cable manufacturer Superior Essex.

1.1.1.7 Leoni AG

Leoni AG, based in Nuremberg, Germany, is a cable and harness manufacturing company. In 2018, sales amounted to €5.1 billion. Leoni AG has 44 manufacturing plants in 31 countries, not just for cable manufacturing but also for automotive cable and wire solutions. It employs 92 549 people (2018). The company supplies all types of cables: power (energy, infrastructure, solar, and software), telecom (fiber optic cables), industrial (instrument cables, hybrid cables, thermocouple cables, LV/MV cables, bus cables, and flexible control electronic cables), automotive cables, rolling stock, maritime, bus, coaxial cables, and special cables (hybrid, sensor cables). As with most big players, Leoni AG also offers wire products and solutions, wiring systems, and related services.

1.1.1.8 Hengtong Group

Hengtong Group is a power and fiber-optic cable manufacturer and the first Chinese company entering the top 10 global cable manufacturers by revenue. It manufactures industrial wire and cable. Hengtong Group Co., Ltd. was founded in 1991 and is based in Jiangsu, China. The group possesses 50 wholly owned companies and holding companies. In 2017, sales amounted to US\$ 3.86 billion.⁵

Hengtong offers LV, MV, HV, and EHV cables, railway contact line, and optical ground wire products.

Hengtong Optic-Electric Co., Ltd. specializes in optical fiber and has announced a joint venture with Leoni to make single-mode fibers for telecommunications and data networks in Jena, Germany.

The polymeric material supply chain of the cable industry is versatile and includes both direct sales, distribution, and sales through compounders. Borealis leads polyolefin sales together with Dow DuPont, Ineos, ExxonMobil, LyondellBasell, and Repsol, while LG, Hanwha, Anwil, and Sabic are among the top suppliers of polyvinylchloride (PVC).

⁵ 25.95 billion yuan – <http://www.hengtonggroup.com>.

1.1.2 Global Demand

As mentioned earlier, cables are complex constructions that involve a conductor, typically copper or aluminum, and several layers of polymeric material for insulation and jacketing. They are produced by means of extrusion. More specifically, the conductor is covered by the insulation layer and then the individual coated wires are twisted together into a cable core. This is typically done using a twisting machine or by in-line SZ twisting. The resulting cable core and other construction elements are then jacketed together.

The process is similar for optical cables, but the core material is replaced by fiber. Two materials are used for optical fiber: plastic (mainly PMMA) and glass. They are utilized in different applications – plastic fibers are used for indoor, short-range consumer applications, while glass, which is more expensive, is used for longer range as well as medium range (multi-mode) telecommunications.

In 2017, the number one supplier of fiber-optic cable was Corning (USA); it led the industry and was followed by Yangtze Optical FC (China), and Furukawa (Japan). These three companies represented over 40% of market share.⁶

The main compounds used in cable insulation and jacketing are based on the resins below:

- *Polyvinylchloride*: PVC is a thermoplastic material that is made from two starting materials. Fifty-seven percent of its molecular weight is derived from salt and the rest derived from hydrocarbon feedstocks (ethylene from oil or natural gas). PVC can be combined with different kinds of additives such as plasticizers and fillers, making it a highly versatile polymer.
- *Polyethylene (PE)*:
 - *Low-density polyethylene (LDPE)* (below 0.930 kg/m^3): Conventional LDPE manufactured by a high pressure, high-temperature process. The material has a highly branched structure, the short branches disrupting the crystalline structure and giving a low-density material.
 - *Linear low-density polyethylene (LLDPE)* (between 0.890 and 0.960 kg/m^3): This is produced by a low-pressure process. The addition of various comonomers produces a material with short side branches.
 - *Medium-density polyethylene (MDPE)* (between 0.930 and 0.940 kg/m^3): Comprises polyethylene manufactured by either high- or low-pressure processes, which has a density between 0.930 and 0.940 kg/m^3 .
 - *HDPE* (above 0.940 kg/m^3): High-density polyethylene is manufactured by a low-pressure process and has few short branches and no long chain branches.

Conventional LDPE has seen its market share decrease, largely because it has been replaced by linear low density (LLDPE) grades in LV power insulation and jacketing, as they can offer improved mechanical properties, increased melting temperature, far better stress crack resistance, and faster cross-linking, and are generally cheaper to produce.
- *Cross-linked polyethylene*: XLPE is produced by forming links between single PE molecules in both the crystalline and the amorphous phases of the polymer

⁶ Source: Network Telecom Research Institute (<http://www.nti.news>).

matrix. A three-dimensional network is formed as a result, improving a range of physical properties.

- **Ethylene vinyl acetate (EVA):** EVA, the copolymer of ethylene and vinyl acetate. The weight percent of vinyl acetate usually varies from 10% to 40% with the remainder being ethylene. EVA is a polymer that approaches elastomeric materials in softness and flexibility, yet can be processed like other thermoplastics.
- **Polypropylene (PP):** PP includes all homopolymers and PP-based copolymers.
- **Thermoplastic elastomer (TPE):** TPEs are mainly products with elastomeric properties, but capable of being processed like thermoplastic materials. TPEs included in this category include cable grade TPEs based on blends of different polymers such as EDPM/PP.
- **Rubber:** Includes all cable grade synthetic and natural vulcanized rubbers. In the cable industry, the two main rubbers (elastomers) used are cross-linked EPDM for insulation and cross-linked CPE for jacketing.
- Other polymers such as polyamide (PA) and polybutylene terephthalate (PBT) and thermoplastics polyurethanes (TPUs) and fluoropolymers, such as FEP, PTFE, PFA, PVDF, MFA, and ETFE, are used in high-performance cables, mainly in automotive, aerospace, and military applications.

HFFR/LS0H: The products included in the low smoke zero halogen (LS0H) and halogen-free flame-retardant (HFFR) material sector are polymers based on polyolefins, often combined with EVAs, which have been compounded to give low levels of smoke in the event of a fire.

The total global tonnage of polymeric materials used in cable extrusion is expected to see an annual growth rate of 4.5% until 2023.

Low smoke zero halogen/halogen-free flame-retardant compound is expected to grow the fastest in the next four years. LS0H/HFFR consumption is being driven by increasing concerns over the effects that halogen released from cable materials may have in case of fire. Current technology of thermoplastic LS0H/HFFR compounds is mostly based on PE copolymers or a blend of LLDPE/EVA and filled with flame-retardant fillers such as alumina trihydrate (ATH), magnesium hydroxide (MDH), and also synergists such as zinc borate, silica, and also organoclays. With the organoclays, nanocomposites are formed with a strong reduction in heat release and enhanced char formation.

Prime areas of application for cables with halogen-free compounds are public buildings and transportation infrastructure where a high degree of protection against fire and fire damage must be provided with the demand of low smoke generation. The trend started in Europe in the early 2000s but it has gained global momentum and is spreading across the rest of the world although at different rates. North America, for example, is lagging behind with HFFR accounting for less than 5% of its total demand while in Europe it represents over 15%. In addition, the demand for more material to be recycled is inciting producers to use more halogen-free additives that can be recycled. The Fraunhofer Institute for structural durability and system reliability LBF in Germany conducted a project between 2015 and 2018 to boost mechanical recycling of plastic

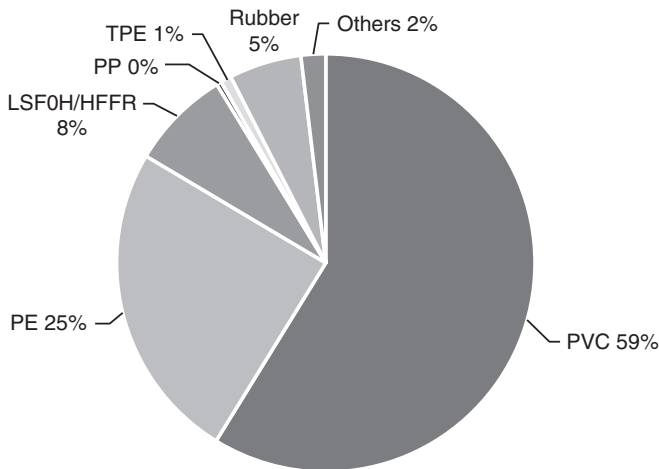


Figure 1.4 Polymeric material consumption in the Global Cable Industry, 2013.

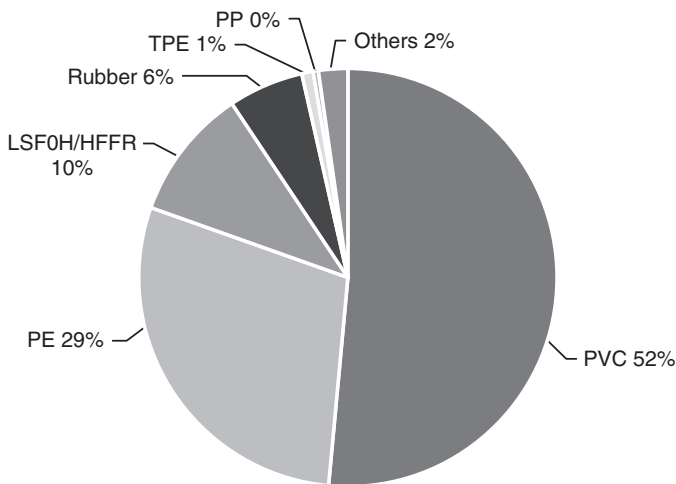


Figure 1.5 Polymeric material consumption in the Global Cable Industry, 2019.

containing halogen-free retardants in partnership with Forschungsgesellschaft Kunststoffe e.V. and PINFA (Figure 1.4–1.6).⁷

Polyvinylchloride compounds used in the cable industry are by far the slowest growing polymeric materials globally. Its 2019–2023 CAGR is just 1.1%. Despite being gradually replaced by other materials, PVC compounds remain the most used polymeric material in the global cable industry and in 2018 it accounted for 53% of overall tonnage. Legislation such as European CPR, fully implemented in July 2017, is encouraging other materials such as XLPE, PE, and HFFR compounds to replace PVC compounds.

⁷ <http://fgkunststoffe.de/?q=content/recycling-von-halogenfrei-flammgesch%C3%BCtzten-kunststoffen>.

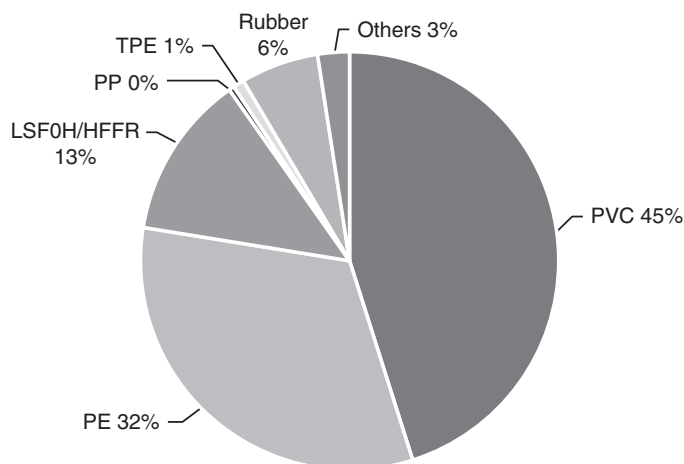


Figure 1.6 Polymeric material consumption in the Global Cable Industry, 2023.

In 2018, PP compounds accounted for less than 1% of global polymeric material tonnage consumed for cable extrusion. While it has a solid, if not spectacular, 2019–2023 CAGR of 5.4%, this figure is somewhat more uncertain than for other materials. Cable industry stakeholders note that PP compounds, over the long run, could increasingly replace XLPE compounds for insulation, with the former being cheaper, easier to work with, and recyclable. The issue is that leading extruders have invested heavily in machines and an overall production process that makes use of XLPE compounds, and would have to invest heavily once more to shift to PP. Unless Prysmian (which drives the market of PP for insulation) introduces a new formulation to the market, XLPE will remain the most used insulation material for MV and HV cables in particular, at least over the medium term.

1.2 Asia and Australasia

1.2.1 Demand for Cable

The construction market in Asia and Australasia is predicted to grow at around 2.5% in 2019 (Figure 1.7).

The pace of growth is slowing down in China while the reverse is true for India. Several big transportation projects are in the pipeline, for example, the PAN Asia railway network linking China, Singapore, and all mainland Southeast Asian countries.

Global Construction 2030 (a global study of the construction and engineering industry published by Global Construction Perspectives and Oxford Economics) predicts that Southeast Asia's construction market will exceed US\$ 1.0 trillion by 2030.

Despite a slowdown in China, the 13th Five-Year Plan and Made in China 2025 are expected to boost cable demand growth going forward.

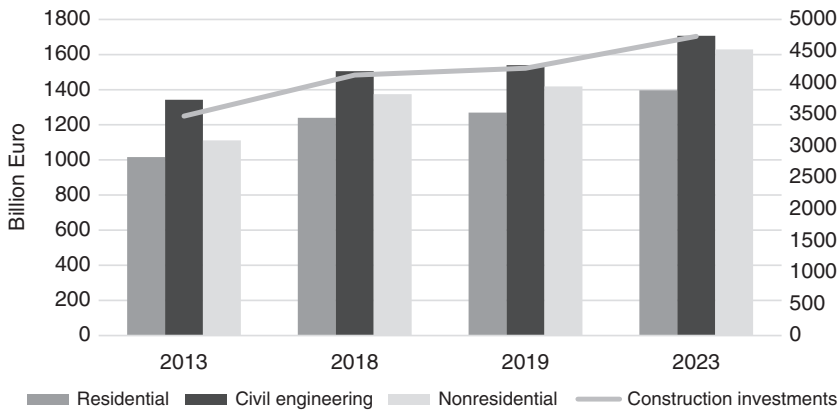


Figure 1.7 Construction investment in Asia and Australasia 2013–2022.

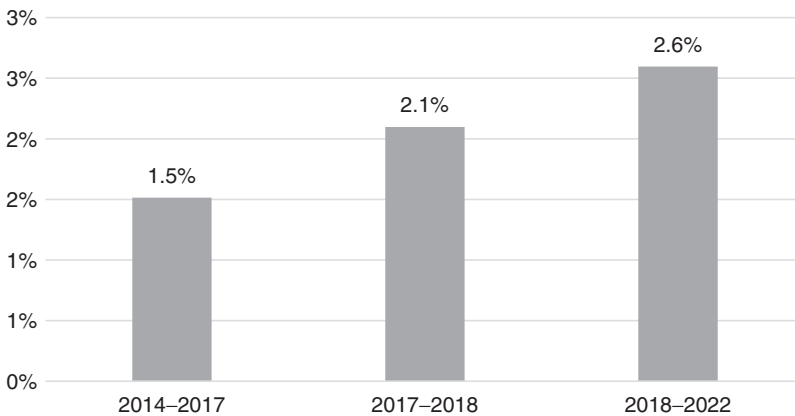


Figure 1.8 Evolution of automotive production in Asia and Australasia in 2014–2022.

According to voices in the industry, India's construction sector will achieve a CAGR of 7–8% from 2019 to 2023, with 10–12% growth in infrastructure. In terms of power grid development, government targets state that India's inter-regional transmission and distribution network capacity should increase from 86 GW in fiscal 2018 to 130 GW in fiscal 2023.

As for the automotive sector, declining car production in Japan will be offset by growth in automotive production in India. For the region, the annual growth rate for automotive production is expected to slow down to 2.6% between 2018 and 2022 (Figure 1.8). New car sales in Southeast Asian countries rose by 5% in 2017 but were predicted to experience a slowdown due to a looming tax hike in the Philippines (Tax Reform for Acceleration and Inclusion Act) and currency fluctuation.

1.2.2 Demand for Polymeric Material

Asia and Australasia accounted for almost 60% of global polymeric material demand related to cables production in 2018. Demand for polymeric material

in the region is being driven by strong economic growth leading to robust construction and infrastructure investment. Southeast Asian nations have pledged US\$ 323 billion on infrastructure developments over the next few years, and will be a particularly strong sub-region for growth. The ASEAN Smart City Network will support urbanization and will serve as a platform to share best practice and link cities with private investment and secure funding.

Asia and Australasia are the biggest consumers of polymeric materials for cable extrusion, and despite a slowdown in the last few years, they clearly outperform other regions in terms of growth.

China dominates global and regional demand for polymeric materials, representing 70% of the regional demand. While China's Hengtong is one of the world's 10 largest cable extruders by revenue, the country is nevertheless a highly fragmented market, with more than 6000 cable manufacturing sites. The top five companies are estimated to represent less than 15% of the total market.

Asia and Australasia's top 10 cable producers by material demand are dominated by local players. The top five are Chinese-based companies, while South Korea and Japan only have one producer each in the ranking. Prysmian is the only European company in the top 10, ranking 9th.

Power cable production in Asia and Australasia will be primarily driven by major new urban and infrastructure developments across the region, necessitating power grid expansion.

Japan's demand for polymeric material slowed down in 2018 due to decreased demand for power, telecommunication, and automotive cables. Cable demand is expected to barely increase over the forecast period.

However, in India, demand for polymeric material is expected to grow faster than any other country in Asia and Australasia until 2023.

Halogen-free flame-retardant compound is the fastest growing polymeric material in the region and is expected to carry on being so for the foreseeable future. XLPE is replacing PVC in the insulation of power cables and its use has been extended where there is a need for more heat resistance. It represents 14% of the tonnage, far behind PVC's leading share of 54%.

1.3 Europe

1.3.1 Demand for Cables

In Europe, overall construction investment is predicted to grow in the low single digits over the next four years (Figure 1.7).

Superior investment forecasts related to civil engineering projects (road, rail, airport, and maritime) coupled with favorable structural trends are driving higher growth rates for transportation-related cables. While annual residential construction investment growth of just over 1% is behind overall growth expectations for power cables, the 2019–2023 CAGR for MV and HV cables of above 5% is being driven by renewables and power grid investment (Figure 1.9).

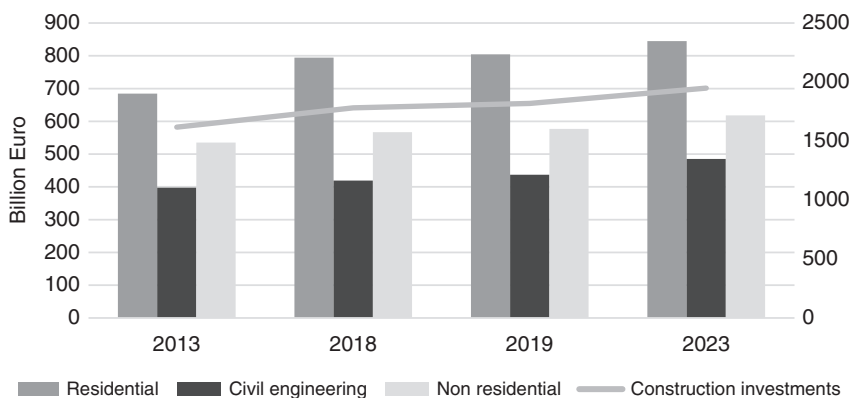


Figure 1.9 Construction investment in Europe in 2013–2023.

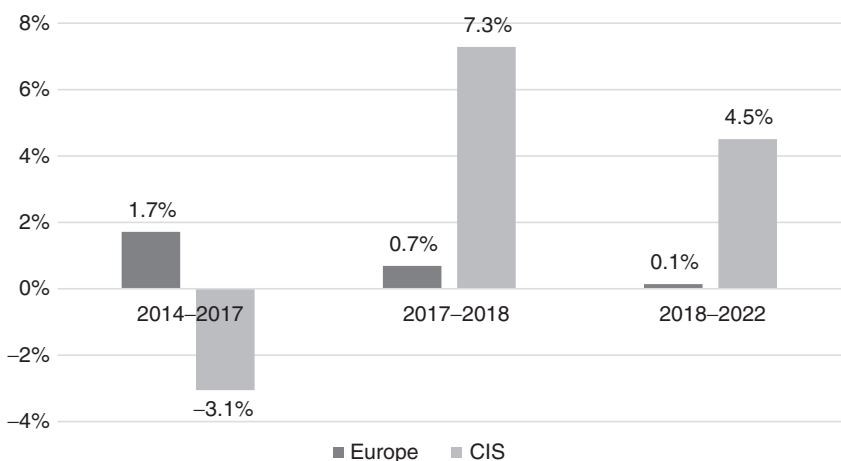


Figure 1.10 Evolution of automotive production in Europe in 2014–2022.

Automotive production growth is set to slow down in Europe over the next three years (Figure 1.8). Germany has been particularly hit by the threat of US tariffs on its cars as well as new EU rules on car emissions, particularly diesel. Production growth in the CIS region is predicted to be in the mid-single digits by 2022, a far stronger performance compared to 2014–2017, a period when Russia was experiencing significant economic difficulties (Figure 1.10).

1.3.2 Demand for Polymeric Materials

European cable production accounted for 16.3% of global polymeric material demand related to cables production in 2019.

Low smoke zero halogen/halogen-free flame-retardant compound is forecast to grow the fastest in Europe. Its consumption is planned to reach over 20% of the total polymeric material used in cable production in Europe by 2023.

Conversely, the share of PVC compounds is decreasing. It represents 39.5% of the market in 2019 down from over 48% in 2013 and it is expected to decrease to under 35% by 2023.

Ongoing concern over the effect that halogens released from cable materials have in the event of fire and approval of the CPR are driving the dynamics of LSOH/HFFR and PVC compounds in particular.

Countries such as Spain and Italy were early adopters of HFFR compounds in the early 2000s, followed by Scandinavia. Germany, France, and the United Kingdom were behind but are increasing their consumption.

Four countries (Russia, Italy, France, and Germany) have regional material demand market shares of above 10%. Italy is Prysmian territory, France is Nexans', and Germany is the home of Leoni and NKT, which have a significant amount of their manufacturing sites there.

Power cable applications account for around two-thirds of European material demand. Telecom is around one-fifth, while transportation and appliances and industry are both just under 10%.

Prysmian, with its major acquisitions of Draka and more recently General Cable, is by far the largest source of material demand in Europe, accounting for almost 25% of the market.

France-based Nexans is almost three times smaller. Some of the big players in the region have their plants located in one country (Tele-Fonika, Romcab, etc.). Ongoing consolidation is helping to mitigate overcapacity and profitability issues; market concentration is increasing.

1.4 The Middle East and Africa

1.4.1 Demand for Cables

Civil engineering accounted for almost half of Middle East and Africa's construction investment in 2018. Nonresidential and residential investments were of approximately equal size, accounting for around a quarter of investment each. Construction investment growth will be highly contingent on the price of oil for the next four years (Figure 1.11). Therefore it is difficult to predict growth.

As for the automotive sector, Africa manufactures around 1 million vehicles/yr. South Africa accounts for over half of this, with Morocco representing most of the remainder.

Except for Turkey and Iran, both of which manufacture over 1 million vehicles/yr, the Middle East has very little automotive production. Iran's growth prospects have been severely curtailed by the reintroduction of American sanctions.

Growth prospects for 2018–2022 in both the Middle East and Africa are considerably weaker compared to 2014–2017 growth (Figure 1.12).

1.4.2 Demand for Polymeric Materials

Middle East and Africa's cable production accounted for 9.8% of global polymeric material demand related to cables production in 2019.

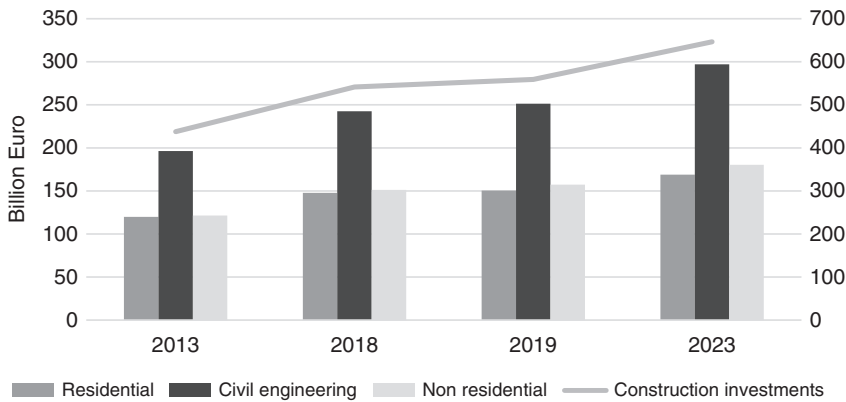


Figure 1.11 Investment in construction in the Middle East and Africa in 2013–2023.

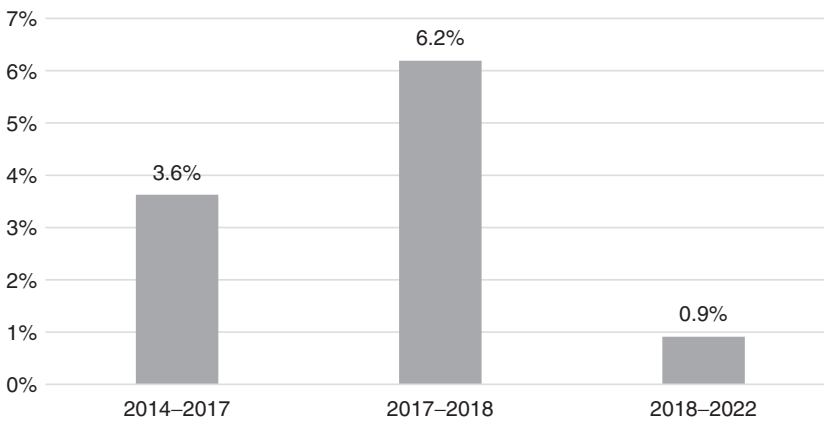


Figure 1.12 Evolution of automotive production in the Middle East and Africa in 2014–2022.

By polymeric material, for 2019–2023, the annual growth rates forecast for LS0H/HFFR and XLPE are highest. Market dynamics in North Africa are significantly influenced by Europe. It is becoming an ever more popular “near-sourcing” location for Europe, as is the case with Turkey, where demand growth for HFFR compound is forecast to be particularly strong.

Indeed, of the largest cable manufacturing countries in the Middle East, Turkey (8.3%) has by far the strongest growth rate forecast for polymeric material tonnage overall, followed by the UAE, while Saudi Arabia’s growth is notably lower (2.5%).

North African countries dominate Africa’s cable production, with South Africa and Nigeria being the main markets elsewhere. While cable plants themselves are ramping up production in North Africa to supply Europe directly, they are also feeding nearby manufacturers. For example, the region is home to a substantial automotive industry, which also exports heavily to Europe.

Middle East and Africa’s top 10 cable producers by material demand are dominated by local players. Two of the top three are Egypt-based companies, El

Sewedy Cables and Energya Cables, while Saudi Arabia is the home of Riyadh Cables and Saudi Cables. The United Arab Emirates is the home of just one of the top 10, while Turkey has three manufacturers in the top 10.

Power cable production in the Middle East is primarily being driven by major new urban and commercial developments across the region. Numerous Gulf states are launching various long-term “Visions” to develop their economies, with the focus on diversifying away from hydrocarbons. The success of these plans remains highly contingent on the price of oil going forward.

1.5 North America

1.5.1 Demand for Cables

Residential investment accounted for almost 45% of North American construction investment in 2018. Nonresidential and civil engineering (road, rail, airport, and maritime) investments accounted for 30% and 25%, respectively. The ratio of investments between these three sub-segments does not change much over time (Figure 1.13).

As for the automotive industry, the United States is the largest vehicle manufacturer in the region, manufacturing over 11 million units in 2018. Mexico’s production is almost three times smaller with over 4 million vehicles in 2018. Canada accounts for just 12% of the regional market share, with the production of 2.1 million units in 2018, bringing regional production overall to 18 million units in 2018.

North America is forecast a compound annual growth rate of 0.22% between 2018 and 2022 (Figure 1.14). President Trump’s administration is threatening taxes on General Motors for importing vehicles to the United States from Mexico. Ford announced it would not open its planned facility in San Luis Potosi, Mexico; instead, it will invest US\$ 700 million in a plant in Michigan, USA.

The unpredictable government policy environment is making investment decisions for regional automotive manufacturers difficult, making North American vehicle production difficult to forecast.

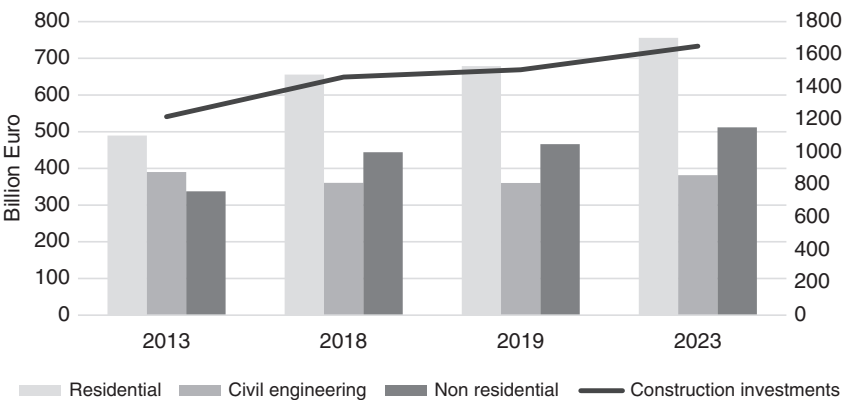


Figure 1.13 Investment in construction in North America in 2013–2023.

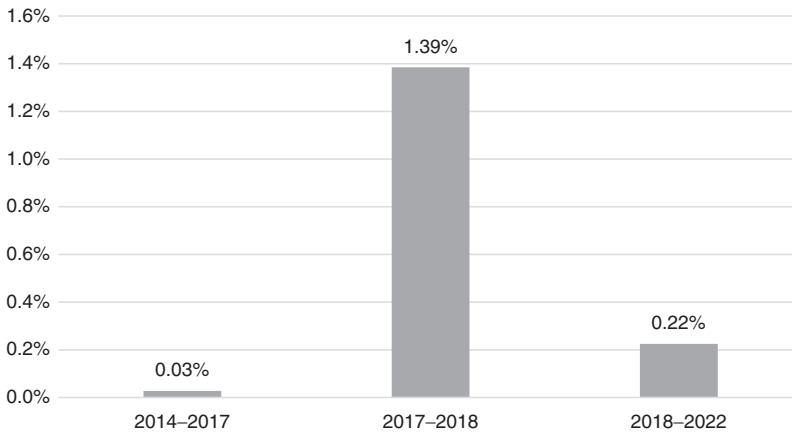


Figure 1.14 Evolution of automotive production in North America in 2014–2022.

1.5.2 Demand for Polymeric Materials

North America's polymeric material consumption accounted for 12.3% of global polymeric material demand related to cables production in 2019.

Marginally negative growth forecasts for PVC compound are largely explained by other materials such as XLPE, PE, and HFFR compounds being used as substitutes. HFFR compounds have the highest regional growth rate primarily due to the substitution of PVC compounds in cables for public buildings and public transport. XLPE and PE compounds will be in high demand from the ongoing need to maintain and replace parts of the power grid affected by natural disasters.

Rapid growth in renewable energies is also expected to stoke a strong demand for MV/HV cables, also explaining the relatively strong growth expectations for XLPE, PE, and rubber compounds. According to the 2019 Sustainable Energy in America Factbook, in 2018, 18% of all electricity in the United States was produced from renewable sources, up from 11% in 2009. Renewables generation grew by 5.1% in 2018, with a 13% increase in wind and solar offsetting a small decline (–2.7%) in hydropower output. A study from the Department of Energy's National Renewable Energy Laboratory showed that the United States can generate most of its electricity from renewable energy by 2050. This will obviously necessitate a full commitment from the government along with the right policies and measures in place.

The United States accounted for approximately 80% of North American polymeric material demand in 2018. Indeed over 85% of the total number of cable extrusion facilities of the region are in the largest economy of the region. For 2018–2023, it is forecast that the United States and Canada will suffer a deceleration in their GDP growth, relative to 2013–2018, primarily due to uncertainty from trade frictions and oil price fluctuations. The reverse is true for Mexico where the economy continues to grow despite the uncertainty linked to recent elections and the country's trading relationship with the United States.

By country, Mexico has the strongest growth rate forecast for polymeric material demand between 2019 and 2023 due to an acceleration of the economy and a continuous focus on construction projects.

North America's top 10 cable extruders by material demand are led by Italy's Prysmian, thanks to its acquisition of General Cable, followed by the American producer Southwire.

By application, power cable production in North America represents over three-quarters of the market. It is forecast to be the fastest growing end-use application, with an annual rate of 2.7% from 2019 to 2023 with the HV and EHV sectors growing the fastest.

1.6 South and Central America

1.6.1 Demand for Cables

Residential investment accounted for almost 40% of South America's construction investment in 2018. Nonresidential and civil engineering investments were of approximately equal size, accounting for around 30% of investment each. Construction investment growth across South America is expected to improve over the next five years compared to 2013–2018 (Figure 1.15). This is the case for all three sub-segments. Brazil's economic difficulties primarily account for the poor performance of the region for the last five years. Investments in the sector will increase demand for power, communications, and industrial cables.

Brazil is the main regional vehicle manufacturer, producing over 2.3 million cars in 2018, which represents a 6.7% uplift from 2017.⁸ General Motors is expected to invest US\$ 2.7 billion in Brazil in two of its plants over the next five years. Argentina is far smaller, producing around 210 000 cars in 2018 and 260 000 commercial vehicles. Other countries have very little production.

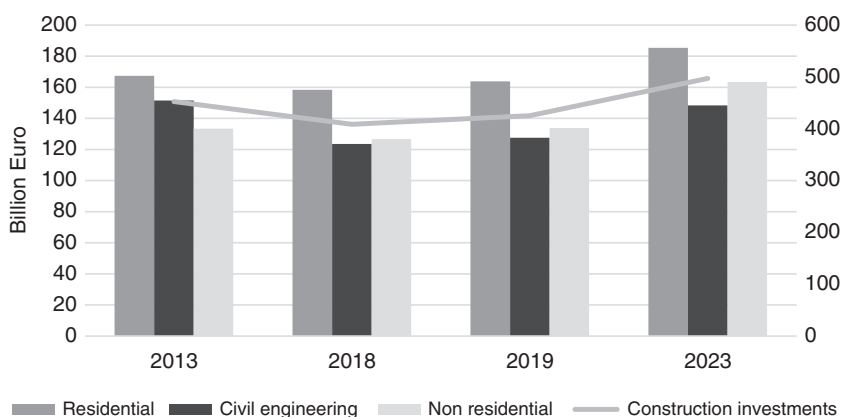


Figure 1.15 Construction investment in South America in 2013–2023.

⁸ Total automotive production 2 880 724 units including cars, light commercial vehicles, trucks, and buses.

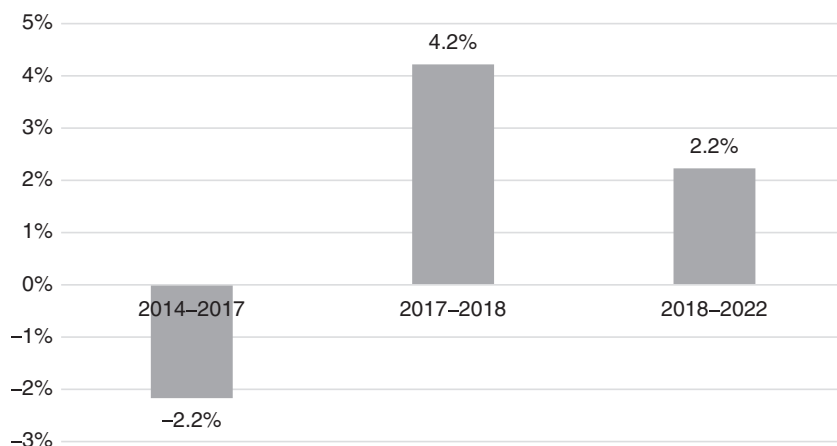


Figure 1.16 Evolution of automotive production in South America in 2014–2022.

South America is recovering from a big fall in production. The region produced over 4 million vehicles in 2012, whereas the output was below 3 million in 2017 and 2018. Growth prospects for 2018 to 2022 in South America are considerably stronger, primarily due to Brazil's expected recovery (Figure 1.16).

1.6.2 Demand for Polymeric Materials

South American cable production accounted for 2.2% of global polymeric material demand related to cables production in 2019.

Low smoke zero halogen/halogen-free flame-retardant and XLPE compounds are expected to grow fastest between 2019 and 2023, both at an annual average rate of 8.1%. HFFR is not forecast to grow as fast as in other regions, but in Chile, the need for special cables for the mining sector is driving an especially strong demand for non-halogenated cables.

Among the largest cable manufacturing countries, Chile has by far the strongest growth forecast due to new projects in mining and renewables, followed by Peru, while Brazil's growth is notably lower. Brazil and Argentina dominate cable production in the region, accounting for 43% and 30% respectively of overall material consumption.

South America's largest markets have struggled with economic and political instability in recent years, which could resurface going forward. Hence, forecasts for this region have a high degree of uncertainty.

South America's top 10 cable producers by material demand are dominated by foreign players. The two largest are Prysmian and Nexans, while most of the local producers in the top 10 are Brazilian companies, i.e. Nambei, Corfio, and Megacabos.

Power cable production in South America is still the largest end-use market, but the fastest growth is forecast for the transportation sector, with an annual growth rate of 4.8% expected between 2019 and 2023. However, transportation is still a small market compared to power and telecom meaning that this growth

will only contribute an additional 3000 tons to material demand in absolute terms.

The biggest economy in the region, Brazil, has a 2019–2023 CAGR of over 3%. After going through a deep recession and a slow recovery, some have hope in the new president's policies.

Renewable energies will be an important sector driving cable demand going forward. In 2018, 79% of the electricity generated was from renewable sources. In Brazil's Energy Master plan 2016–2026, it is expected to install 18.5 GW of additional wind power generation. Currently, wind energy is growing at an average of 2 GW/yr. As for oil and gas, Petrobras has unveiled multi-billion plans in Brazil, with oil production growth forecast at 10% in 2019 due to new operations.

Numerous projects in the mining, renewable energy, and automotive sectors will also be important for stoking material demand.