



Food and Agriculture  
Organization of the  
United Nations

# GLOBAL FOREST PRODUCTS FACTS AND FIGURES

# 2016

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# GLOBAL FOREST PRODUCTS FACTS AND FIGURES

# 2016

FAO's forest products statistics present figures for the production and trade (quantity and value) of forest products, covering 55 product categories, 21 product groups, and 245 countries and territories. Final statistics are released at the end of each year and can be found in the *FAOSTAT-Forestry database* from December, before they are published in the *Yearbook of Forest Products* the following April. The database has statistics from 1961 onwards, and the yearbooks date back to 1947.

## HIGHLIGHTS FROM 2012–2016

This note presents highlights and recent trends in data for each of the main product groups, as well as a short summary of recent changes or improvements in statistics. Some of the main points are highlighted below.

- The continuing recovery from the economic downturn of 2008–2009 is evident in the statistics gathered between 2012 and 2016. Globally, production of all major products (industrial roundwood, sawnwood, wood-based panels, pulp and paper) has shown gradual recovery from 2012. Production in 2016 was higher than in 2015 (and the pre-crisis 2007 level) for all of the product groups (with panels at 4 percent growth, industrial roundwood and sawnwood both at 3 percent, wood pulp at 2 percent and paper at 0.5 percent). The fastest growth was in Asia-Pacific, Northern America and Europe, likely due to positive economic growth in these regions.
- China has grown in importance as both a producer and consumer of forest products, and has recently overtaken a number of other big players in different product groups (e.g. Canada in sawnwood production and the United States of America in sawnwood consumption). The country is by far the largest producer and consumer of wood-based panels and paper. It is also highly significant in international trade of forest products, being the world's largest importer of industrial roundwood, sawnwood and fibre furnish (pulp and recovered paper), and the largest exporter of wood-based panels. In 2016, China's imports of industrial roundwood increased by 9 percent, while sawnwood, panel and paper production and consumption continued to grow faster than in the rest of the world.
- Wood pellets production has increased dramatically in recent years, mainly owing to demand generated from bioenergy targets set by the European Commission. In 2016, global production grew by another 6 percent, reaching 29 million tonnes, of which more than half (17 million tonnes) was traded internationally. An increase in the United Kingdom's imports and consumption (by 1.5 million tonnes) accounted for most of the increase in the global consumption and imports. Europe and Northern America accounted for almost all global production (58 percent and 32 percent respectively) and consumption (81 percent and 8 percent respectively).
- Consumption and imports of wood pellets in Asia increased by 17 percent in 2016. The Republic of Korea became the third largest wood pellets importer (was 4th in 2015), driving up wood pellets production in countries in the region (especially Viet Nam, Malaysia, Indonesia and Thailand). Imports of wood pellets also increased in Japan and China.
- Wood-based panel and sawnwood production (combined) grew in all five regions around the world in 2016. Global production of both panels and sawnwood increased by 3 percent while trade growth accelerated to 7 percent, the fastest growth since 2010. Global production of panels was record high (416 million m<sup>3</sup>) and sawnwood registered the highest production since 1989 (468 million m<sup>3</sup>).
- Canada saw double digit growth in production and exports of sawnwood and panels from 2012 to 2016 thanks to increased sales to the United States of America (due to a recovering economy and housing market).
- South America has continued expanding wood pulp production with an increasing number of new pulp mills being built in Brazil, Chile and Uruguay. These three countries currently account for 15 percent of global wood pulp production and 33 percent of exports. From 2012 Brazil increased exports by 52 percent and overtook Canada for the first time as the world's second largest country in fibre furnish exports in 2016.
- Global production and trade in wood pulp grew by 2 and 5 percent respectively, much faster than recovered paper (1 percent) in 2016.
- In 2016, paper production stagnated in Europe but declined in Northern America while it grew modestly in Latin America and the Caribbean and Asia-Pacific. Global production of graphic papers declined by another 2 percent while other paper and paperboard recorded a healthy 4 percent increase.



# INDUSTRIAL ROUNDWOOD



**Industrial roundwood is all roundwood used for any purpose other than energy. It comprises: pulpwood; sawlogs and veneer logs; and other industrial roundwood (e.g. roundwood used for fence posts and telephone or electricity poles). This product group is also divided into roundwood from coniferous and non-coniferous species.**

In 2016, global industrial roundwood production amounted to 1 874 million m<sup>3</sup>. This is an increase of 2.6 percent compared to 2015 (1 826 million m<sup>3</sup>) and 5.9 percent compared to the level in 2012 (Figure 1a).

Most of the growth occurred in Asia-Pacific, Europe and Northern America, which, in 2016, jointly produced 7 percent more than in 2012. Production in Africa and Latin America and the Caribbean did not change significantly during this period.

In 2016, production in each region was as follows: Europe (including the Russian Federation) – 590 million m<sup>3</sup> (32 percent); Northern America (USA and Canada) – 514 million m<sup>3</sup> (27 percent); Asia and the Pacific – 459 million m<sup>3</sup> (24 percent); Latin America and Caribbean – 237 million m<sup>3</sup> (13 percent); and Africa – 73 million m<sup>3</sup> (4 percent).

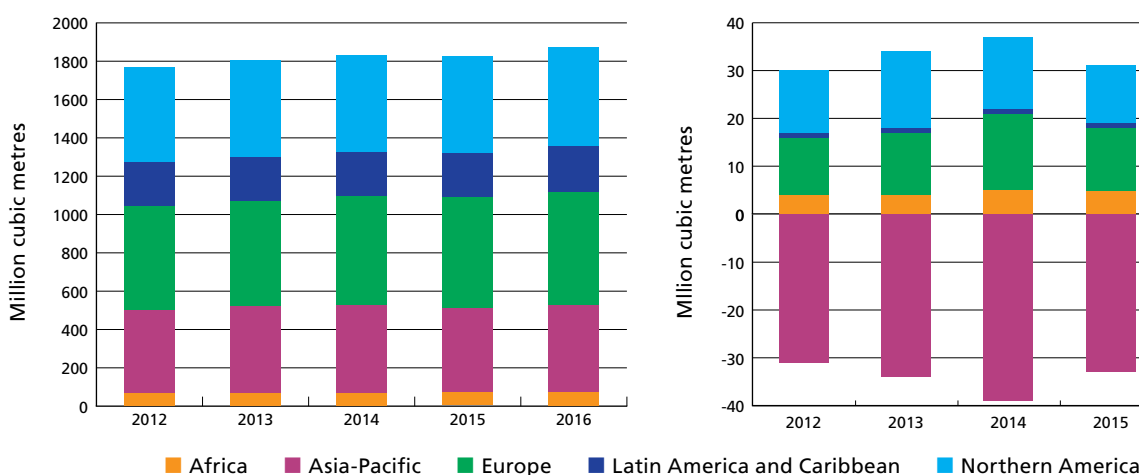
In 2016, global trade in industrial roundwood amounted to 125 million m<sup>3</sup> (equal to about 7 percent of production). Trends in total trade and net trade over the observed period showed an increase of 13 and 5 percent in 2013 and 2014 respectively (Figure 1b), a 9 percent decline in 2015 and a 3 percent increase in 2016. At a regional level, Asia-Pacific was a net importer of

industrial roundwood, and all other regions were net exporters. In 2016, net imports of 36 million m<sup>3</sup> accounted for about 7 percent of consumption in the Asia-Pacific region. Europe and Northern America were the main net exporters of industrial roundwood, with net exports in 2016 of 12 million m<sup>3</sup> and 13 million m<sup>3</sup> respectively, similar to the level of 2015.

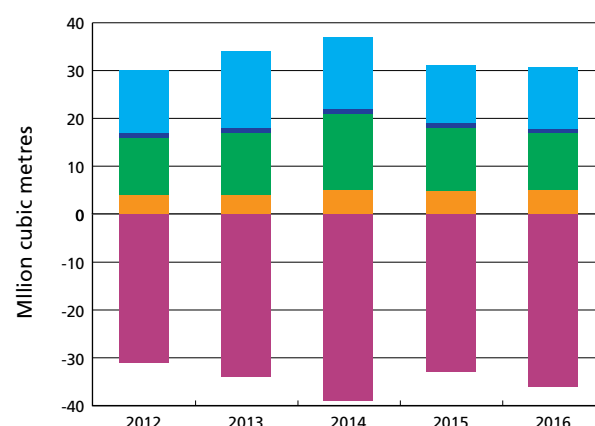
At the country level, the five largest producers of industrial roundwood are the USA, the Russian Federation, China, Canada and Brazil (Figure 2a). Together, these countries produced 1 022 million m<sup>3</sup> in 2016, or 55 percent of total global production. The USA is by far the largest producer in the world (357 million m<sup>3</sup> in 2016); production has been increasing every year since 2012. Production in the Russian Federation and Canada has increased since 2012. Production in China and Brazil declined in 2015 but recovered in 2016.

Compared with other forest products, exports of industrial roundwood are relatively small and only 15-20 countries export more than 1 million m<sup>3</sup> each year. Combined, the five largest exporters accounted for 60 million m<sup>3</sup>, or 49 percent of all exports. The Russian Federation is the main exporter, although exports increased moderately in recent years. Other major exporters are: New Zealand; United States of America; Canada; and Czechia.

**FIGURE 1A. Industrial roundwood production**



**FIGURE 1B. Industrial roundwood net trade**



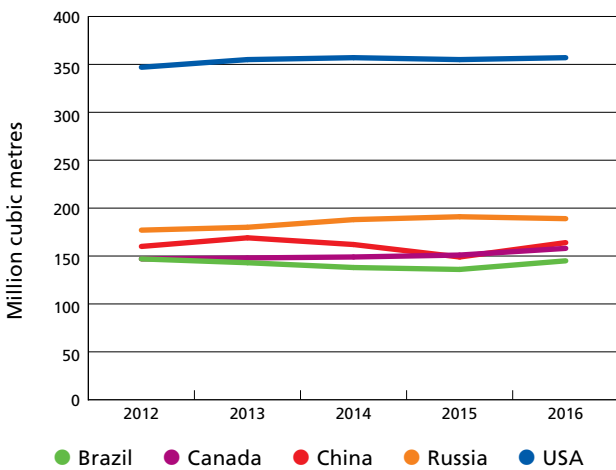


Exports from New Zealand, Canada and Czechia increased while those from United States of America decreased in 2016 (Figure 2b).

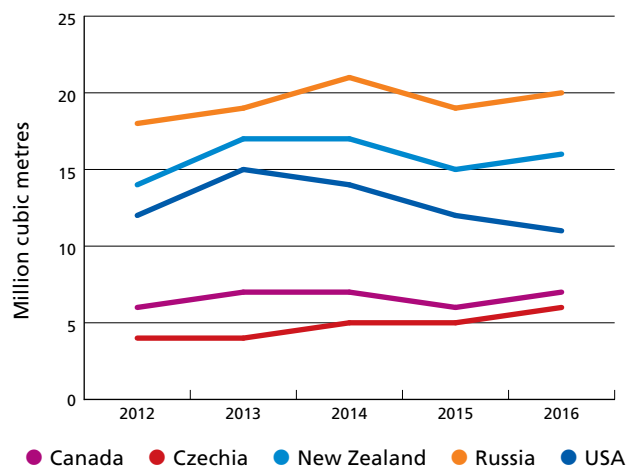
Owing to the relatively small volumes of international trade in industrial roundwood, the five largest producers are also the five largest consumers. China is the second-largest consumer (213 million m<sup>3</sup> of roundwood in 2016), with a 9 percent increase in imports in 2016. The Russian Federation is third (at 178 million m<sup>3</sup>) (Figure 3a). Since 2012, consumption has increased in all major consumer countries except Brazil where consumption started recovering only in 2016.

As Figure 3b shows, imports make up about 23 percent (49 million m<sup>3</sup> in 2016) of China's industrial roundwood consumption. A large share of these imports come from the Russian Federation, although other countries, especially New Zealand, are growing in importance. After China, other major importers of industrial roundwood are Austria, Germany, Sweden and Finland. Together, these five countries imported 80 million m<sup>3</sup> of industrial roundwood in 2016 (equivalent to 63 percent of all imports). Austria overtook Germany to become the second-largest importer in 2016.

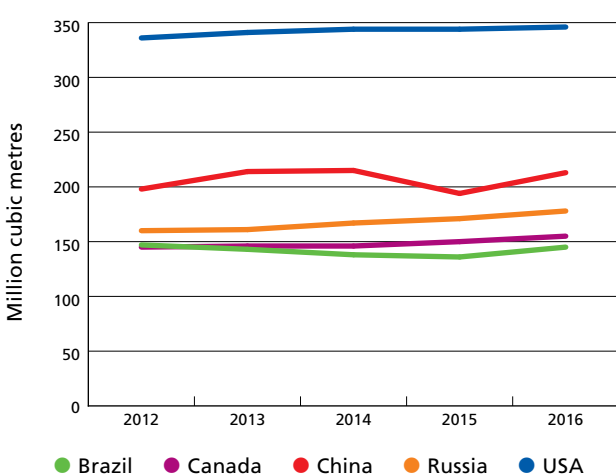
**FIGURE 2A. Industrial roundwood production**



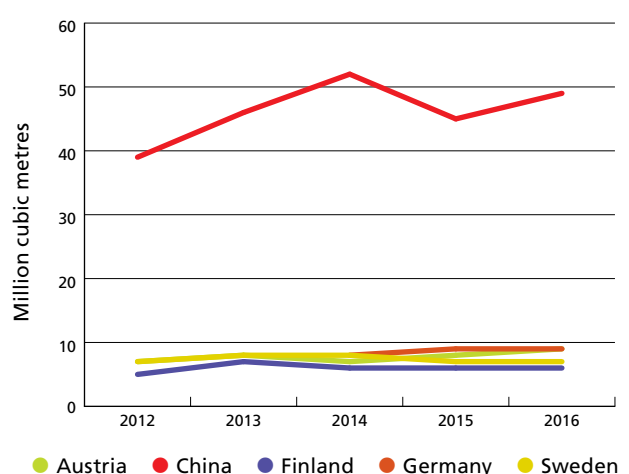
**FIGURE 2B. Industrial roundwood exports**



**FIGURE 3A. Industrial roundwood consumption**



**FIGURE 3B. Industrial roundwood imports**



# SAWNWOOD



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Sawnwood encompasses planks, beams, boards, laths, etc. that exceed 5 mm in thickness. It includes sawnwood that is planed, unplaned, grooved, chamfered, beaded, etc., but it does not include wooden flooring. FAO statistics subdivide this category into coniferous and non-coniferous sawnwood.

In 2016, global sawnwood production totalled 468 million m<sup>3</sup>, which was 3.2 percent higher than in 2015 (453 million m<sup>3</sup>) and 16 percent higher than in 2012 (405 million m<sup>3</sup>). Figure 4a shows that sawnwood production grew consistently over the 2012–2016 period. This trend is largely due to increasing production in Asia and the Pacific, Europe and Northern America. In contrast, production in Africa and in Latin America and the Caribbean remained modest over the same period. The latest regional production figures for 2016 are as follows: Europe – 156 million m<sup>3</sup> (34 percent); Asia and the Pacific – 139 million m<sup>3</sup> (30 percent); Northern America – 128 million m<sup>3</sup> (27 percent); Latin America and the Caribbean – 34 million m<sup>3</sup> (7 percent); and Africa – 10 million m<sup>3</sup> (2 percent).

Global trade in sawnwood amounted to 144 million m<sup>3</sup> (equal to 31 percent of production) in 2016 and, like production, has been increasing since 2012. Most of this growth in trade occurred in Northern America, Asia and the Pacific and Europe. Net trade between the five regions increased consistently during the observed period (Figure 4b).

The two main importing regions for sawnwood are Africa and the Asia-Pacific region, with net imports of 7 million m<sup>3</sup> and 46 million m<sup>3</sup> respectively in 2016. Europe and Northern America

are the main exporting regions, with net exports of 46 million m<sup>3</sup> and 9 million m<sup>3</sup>. Latin America and the Caribbean is a minor net exporter, totalling 4 million m<sup>3</sup> in 2016.

At the country level, the five largest producers of sawnwood are the USA, China, Canada, the Russian Federation and Germany (Figure 5a). Together, these five countries produced over half (56 percent, or 264 million m<sup>3</sup>) of the world's sawnwood in 2016. The USA is the largest producer; production has grown every year since 2012, reaching 78 million m<sup>3</sup> in 2016. Overall production in Northern America grew by 18 percent from its level in 2012 (22 percent growth in Canada). In China production soared by 39 percent, from 56 million m<sup>3</sup> in 2012 to 77 million m<sup>3</sup> in 2016. Production in the Russian Federation grew during the observed period and reached 37 million m<sup>3</sup> in 2016, an increase of 14 percent over the five years. Production in Germany remained relatively stable over the period.

Three of the largest sawnwood producers are also the major exporters (Canada, the Russian Federation and Germany); the other two main exporters are Sweden and Finland (Figure 5b). Together, these five countries exported 89 million m<sup>3</sup> (61 percent) in 2016. Canada's exports grew steadily since 2012, and the country remained the top exporter in 2016 (exporting 33 million m<sup>3</sup>).

FIGURE 4A. Sawnwood production

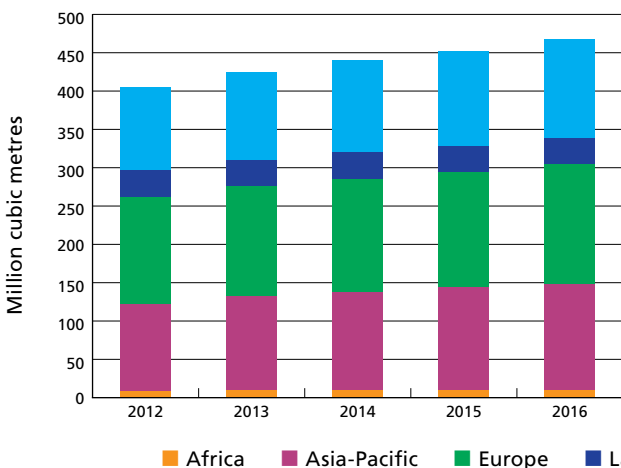
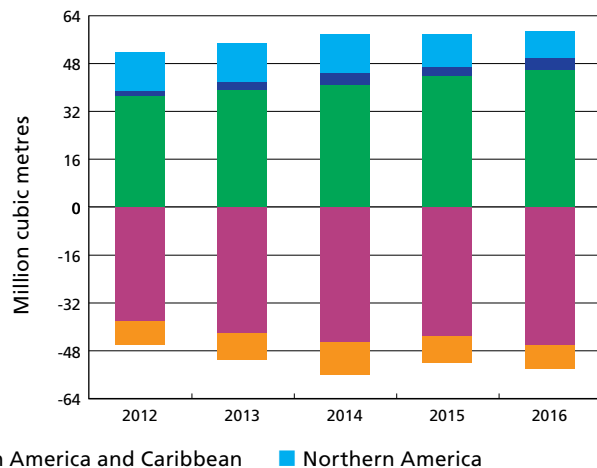


FIGURE 4B. Sawnwood net trade







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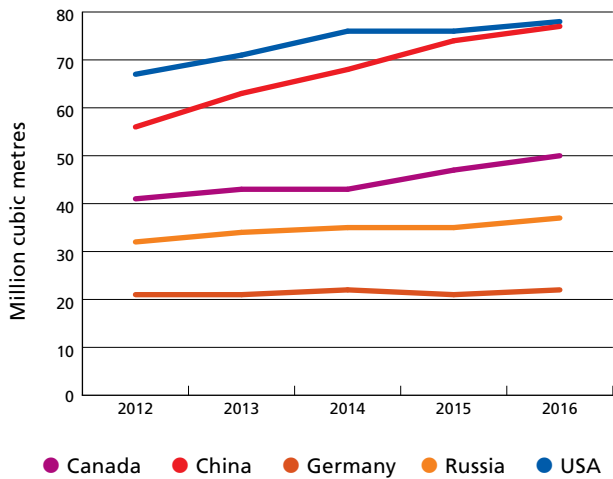
This was largely due to increasing sales to the recovering USA market. Exports from Finland, Germany, the Russian Federation and Sweden increased consistently over the period.

As well as being the largest producers, China and the USA were also the two main consumers of sawnwood in 2016, consuming 110 million m<sup>3</sup> and 101 million m<sup>3</sup> respectively (Figure 6a). Consumption in both China and the USA increased by 7 percent in 2016. China's consumption grew by 42 percent, and the USA's by 28 percent over the five-year period. The other three main

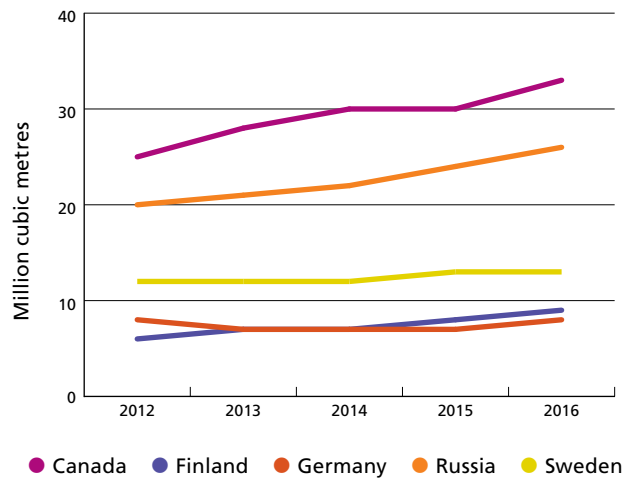
consumers of sawnwood in the world are Germany, Canada and Japan (consumption remained stable in the latter).

In 2016, China and the USA imported 33 million m<sup>3</sup> and 30 million m<sup>3</sup> respectively (Figure 6b). Other major sawnwood importers were the UK, Japan and Germany. Together, these five countries imported 81 million m<sup>3</sup> of sawnwood (equal to 57 percent of all imports) in 2016, and in all of these countries, imports accounted for a significant share of sawnwood consumption (30 percent in China, 29 percent in the USA and 40 percent in Japan alone).

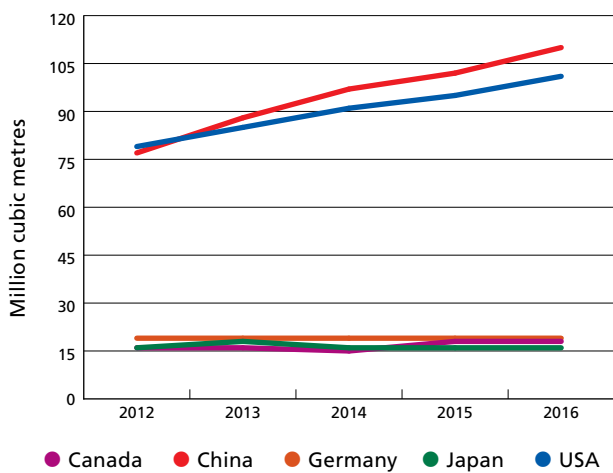
**FIGURE 5A. Sawnwood production**



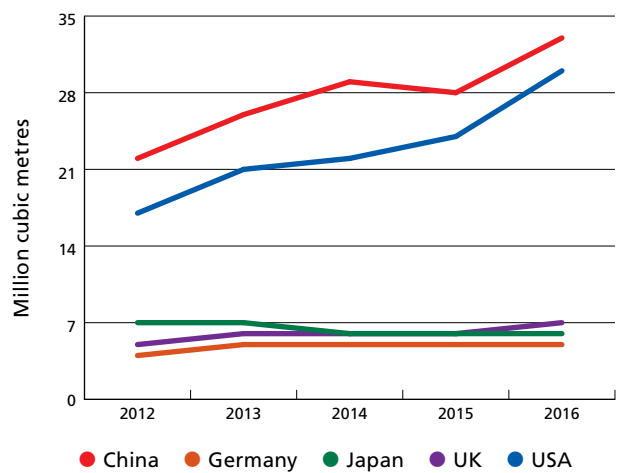
**FIGURE 5B. Sawnwood exports**



**FIGURE 6A. Sawnwood consumption**



**FIGURE 6B. Sawnwood imports**



# WOOD-BASED PANELS



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The wood-based panels product category consists of veneer sheets, plywood (including blockboard), particleboard, Oriented Strand Board (OSB) and fibreboard. Fibreboard is also subdivided in FAO's statistics into hardboard, medium/high density fibreboard (MDF/HDF) and other fibreboard, based on the density and manufacturing process of these panels.

In 2016, global wood-based panel production reached 416 million m<sup>3</sup>, a 4 percent increase over the previous year (399 million m<sup>3</sup>) and a 24 percent increase over the observed period (Figure 7a). Wood-based panels was the product category that saw the fastest growth in production, owing to the rapid and consistent growth in the Asia-Pacific region. Production surged by 33 percent in the region during 2012-2016 while it grew by 13 percent in the other four regions over the same period.

The Asia-Pacific region accounted for 62 percent of global production in 2016 (259 million m<sup>3</sup>), followed by Europe (86 million m<sup>3</sup>, or 21 percent), Northern America (48 million m<sup>3</sup>, or 11 percent), Latin America and the Caribbean (20 million m<sup>3</sup>, or 5 percent) and Africa (3 million m<sup>3</sup> or 1 percent). Production in the Asia-Pacific region increased by 5 percent in 2016, stayed unchanged in Latin America, while in Europe and Northern America it grew by 3 and 4 percent respectively.

Global trade in wood-based panels has increased gradually since 2012. In 2016, it grew by 6 percent to 87 million m<sup>3</sup>, equal to 21 percent of total production. Two regions – Europe and Asia-Pacific – dominated international trade in wood-based panels, and together accounted for 74 percent of all imports

and 81 percent of exports in 2016. Imports and exports in both of these regions have increased since 2012. In Northern America, wood-based panel exports and imports also increased from 2012 to 2016.

Northern America was the main net importer of wood-based panels in 2016 (6 million m<sup>3</sup>), followed by Africa (2 million m<sup>3</sup>). Europe meanwhile exported 6 million m<sup>3</sup> of the products to the rest of the world as the largest net exporter (Figure 7b). Net exports from the Asia-Pacific region and Latin America were 8 million m<sup>3</sup> combined. Within Europe, Western Europe has increasingly become a net importer of wood-based panels while Eastern Europe has emerged as one of the largest net exporters, with growing trade surplus in wood-based panels mainly owing to within-region trade.

The five largest producers of wood-based panels (China, the USA, the Russian Federation, Canada and Germany) accounted for 69 percent (287 million m<sup>3</sup>) of global production in 2016 (Figure 8a). China alone accounted for 51 percent of global production in 2016. The most notable trend was the 42 percent increase in production in China over the period, from 149 million m<sup>3</sup> in 2012 to 211 million m<sup>3</sup> in 2016. Production

FIGURE 7A. Wood-based panel production

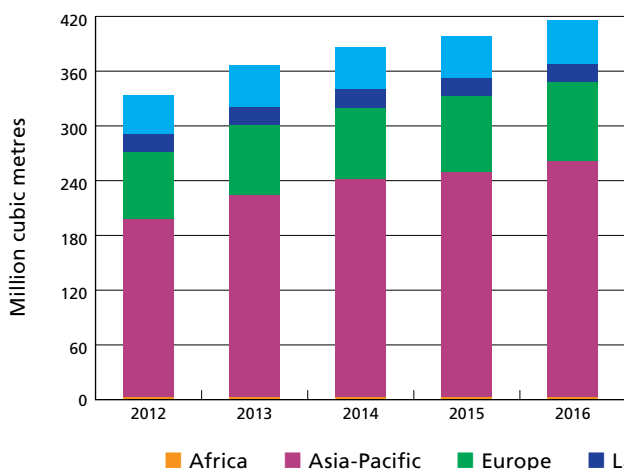
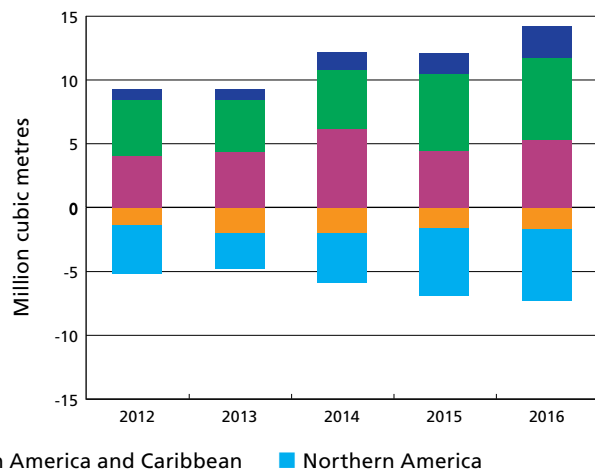


FIGURE 7B. Wood-based panel net trade







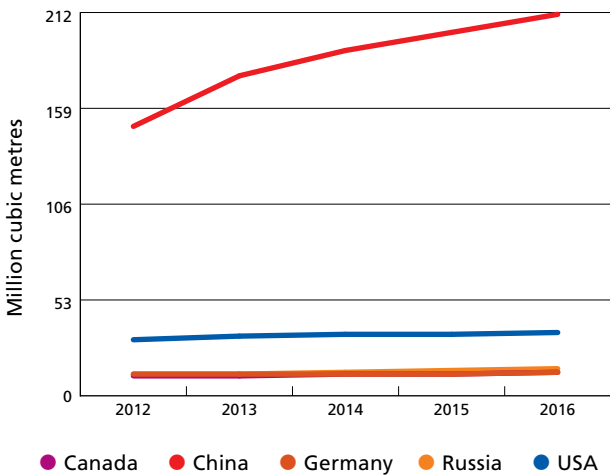
in Canada and the Russian Federation increased by 24 percent and 18 percent respectively over the period. In 2014, Canada overtook Germany to become the fourth-largest producer. In contrast, production grew below 10 percent in the USA and Germany over the 2012–2016 period.

The five largest exporters (China, Canada, Germany, the Russian Federation and Thailand) exported a combined 40 million m<sup>3</sup> in 2016 (equal to 44 percent of global exports) (Figure 8b). In the Russian Federation, Canada and Thailand exports surged by 79 percent, 59 percent and 50 percent respectively from 2012.

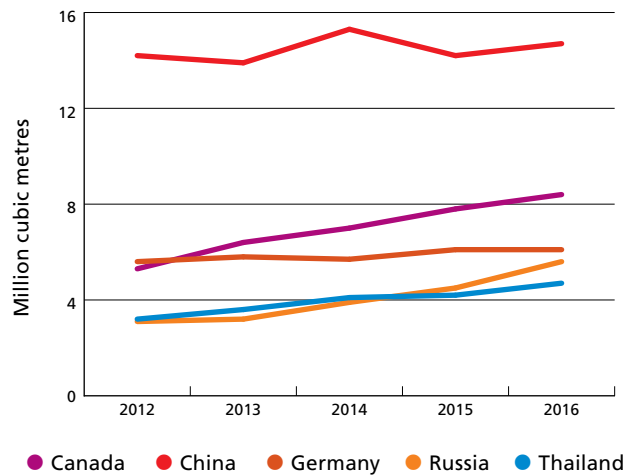
Other two countries (China and Germany) saw a moderate 6 percent increase over the period 2012–2016. In 2016, the Russian Federation and Thailand overtook Malaysia leaving it behind as sixth-largest exporter of wood-based panels.

The four top consumers of wood-based panels are the same as the four largest producers, suggesting that the products are mostly consumed domestically. The trends in consumption are similar to those in production (Figure 9a). The fifth-largest consumer is Turkey (overtaking Japan in 2015), where consumption increased from 9 million m<sup>3</sup> in 2012 to 10 million m<sup>3</sup> in 2016.

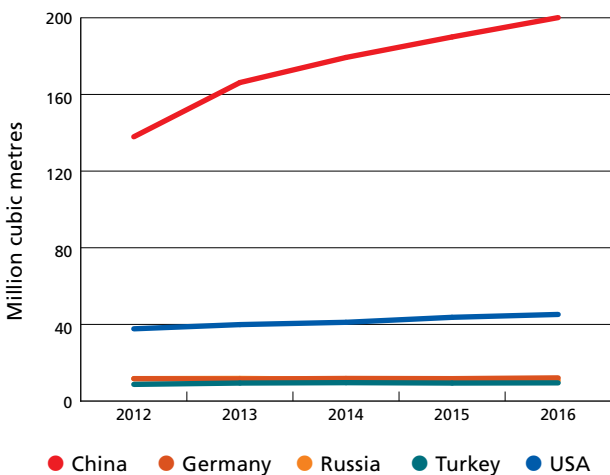
**FIGURE 8A. Wood-based panel production**



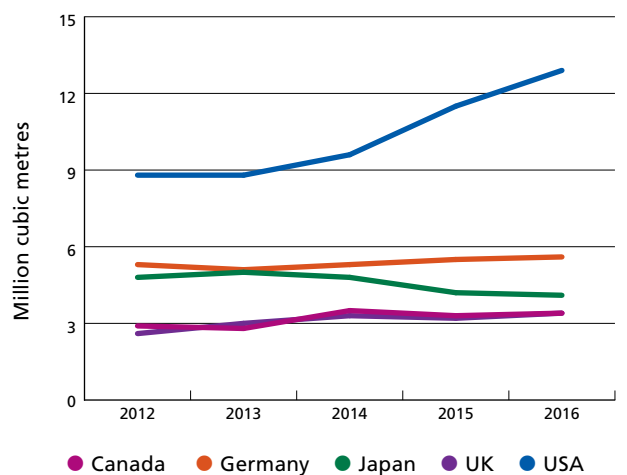
**FIGURE 8B. Wood-based panel exports**



**FIGURE 9A. Wood-based panel consumption**

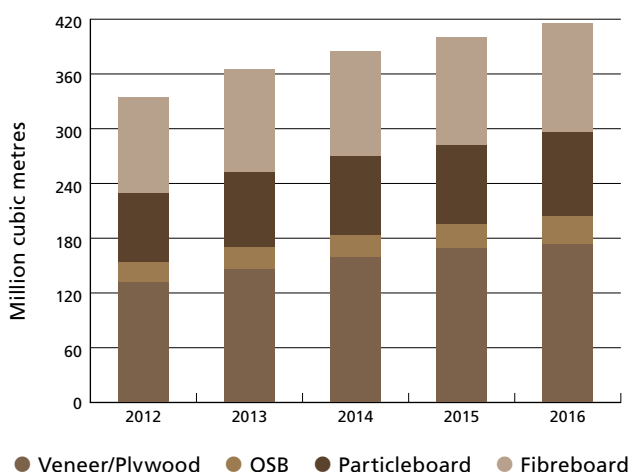


**FIGURE 9B. Wood-based panel imports**





**FIGURE 10A. Wood-based panel production**

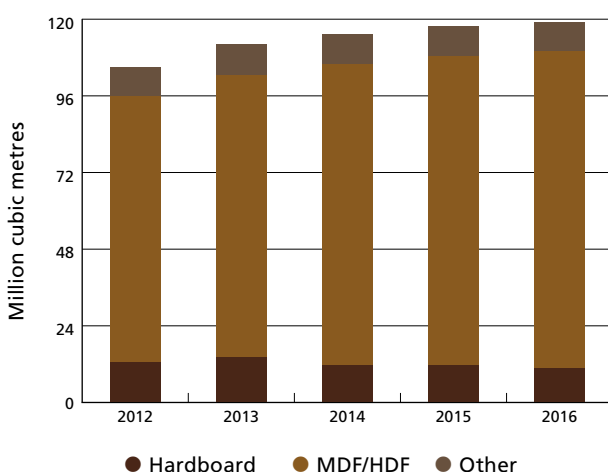


The USA was the top importer in 2016 (with imports equal to 28 percent of consumption), followed by Germany, Japan, UK and Canada (Figure 9b). Together, these five countries imported 29 million m<sup>3</sup> (or 35 percent of all global imports) in 2016. Imports have increased in all of these countries since 2012, except Japan. The growth in imports has been fastest in the USA and the UK; Germany and Canada grew moderately in these last years.

Figures 10a and 10b show recent trends in production of the wood-based panels by product category. Veneer and plywood (including blockboard) have become the dominant wood-based panel type, with production of 174 million m<sup>3</sup> (representing 42 percent of all wood-based panel production) in 2016, an increase of 32 percent from 2012. This is mainly because of rapid growth in plywood production in China, where production increased by 52 percent over the observed period, accounting for 69 percent of global production in 2016. In the remaining countries, the growth in veneer and plywood production was very modest (1 percent) over the same period.

There are regional differences in the composition of various wood-based panel products. Reconstituted panels (OSB, particleboard and fibreboard) dominate other product categories in Northern America and Europe while veneer and plywood (including blockboard) is the major wood-based panel product in the Asia-Pacific region (mainly in China). In Latin America and the Caribbean, each major wood-based panel product accounts for about an equal share of the total production.

**FIGURE 10B. Fibreboard production**



Growth in global production of fibreboard was 1 percent in 2015–2016 and 13 percent over 2012–2016 (Figure 10b). Production of all types of fibreboard increased over 2012–2016, but most of this growth occurred in MDF/HDF production (which accounted for 83 percent of all fibreboard production in 2016). Since 2012, MDF/HDF production has been growing by 4 percent annually on average; China accounted for most of this increase.

In contrast to previous years, production of particleboard jumped by 8 percent to 93 million m<sup>3</sup> in 2016. Production of OSB grew by an average of 8 percent from 2012 to reach 30 million m<sup>3</sup> in 2016. Most of this growth for both products was recorded in Europe.



# FIBRE FURNISH



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In FAO’s forest products statistics, the fibre used to manufacture paper and paperboard is referred to as “fibre furnish”. This includes recovered paper (wastepaper), other fibre pulp and the wood pulp used to make paper. The latter includes mechanical, chemical and semi-chemical wood pulp, but not dissolving pulp (which is used for other purposes). Chemical wood pulp is also sub-divided in the statistics into bleached or unbleached and sulphite or sulphate wood pulp, and various combinations of these different products are presented as product groups in FAOSTAT and the Yearbook.

Global production of fibre furnish in 2016 amounted to 415 million tonnes (Figure 11a), a growth just below one percent from previous year. At the global level, the production of fibre furnish increased from 400 million tonnes to 415 million tonnes in 2016.

The regional distribution of production in 2016 was as follows: Asia-Pacific – 150 million tonnes (36 percent); Northern America – 116 million tonnes (28 percent); Europe – 107 million tonnes (26 percent); Latin America and Caribbean – 39 million tonnes (9 percent); and Africa – 4 million tonnes (1 percent). Production in the Asia-Pacific region, Europe, Northern America and Africa remained roughly the same over the period from 2012 to 2016. In contrast, production in Latin America and the Caribbean has grown consistently over the period. Production in the region grew by 9 percent in 2016 and by 21 percent from 2012 to 2016 as the new pulp mills came into operation in South America.

About one quarter of fibre furnish production was traded in international markets in 2016, trade which has increased consistently over the period (from 110 million tonnes in 2012 to 117 million tonnes in 2016 – equal to a 6 percent total increase).

Net trade expanded over the period (Figure 11b). The Asia-Pacific region is the only net importing region, and net imports of fibre furnish increased by 8 percent over the period, from 49 million tonnes in 2012 to 53 million tonnes in 2016. Net imports have also increased at about the same rate as consumption in the Asia-Pacific region and accounted for 26 percent of consumption in 2016. The main net exporter is Northern America, totalling 32 million tonnes in 2016, followed by Latin America and the Caribbean at 17 million tonnes and Europe at 6 million tonnes. Net exports increased by 52 percent over the period in Latin America and the Caribbean, but remained almost unchanged in Northern America and Europe.

The main producers of fibre furnish are the USA, China, Japan, Brazil and Canada (Figure 12a). Together, these countries produced 240 million tonnes of fibre furnish in 2016 (59 percent of the global total). As Figure 12a shows, production remained roughly the same or slightly declined over the period in the USA, China, Japan and Canada. This was because of stagnating or declining paper production and consumption in these countries, which is now a common trend in many countries due to an increasing

FIGURE 11A. Fibre furnish production

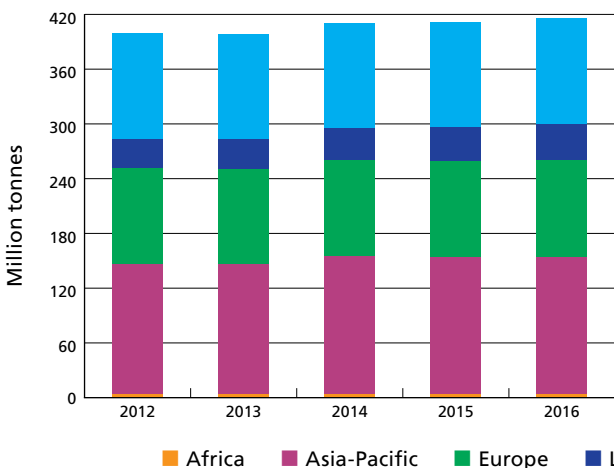
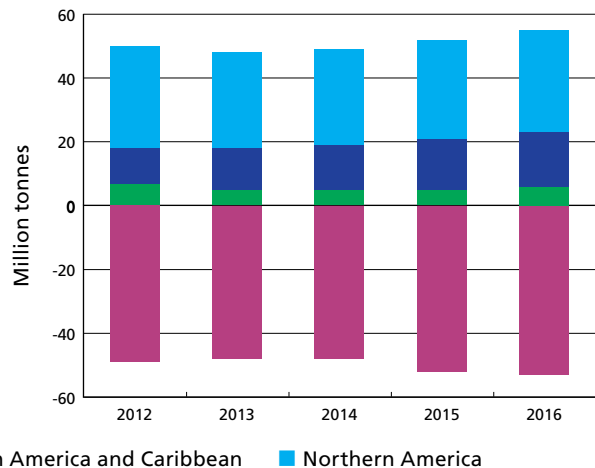


FIGURE 11B. Fibre furnish net trade



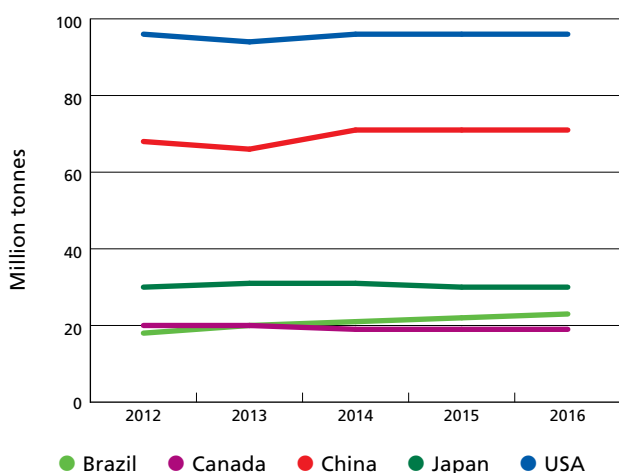


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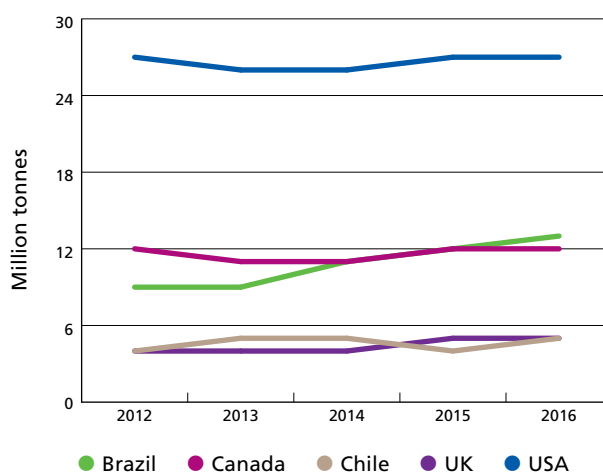


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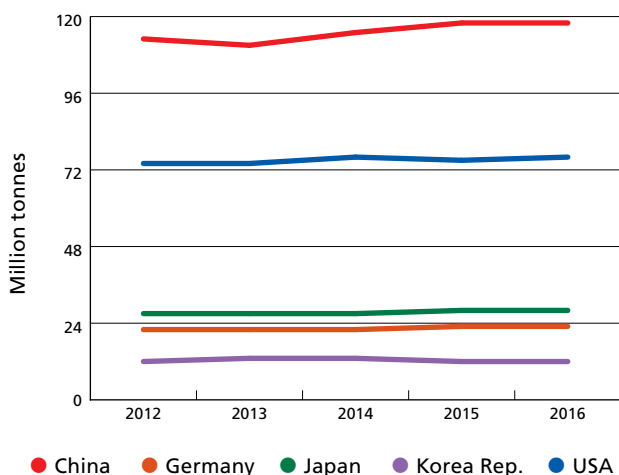
**FIGURE 12A. Fibre furnish production**



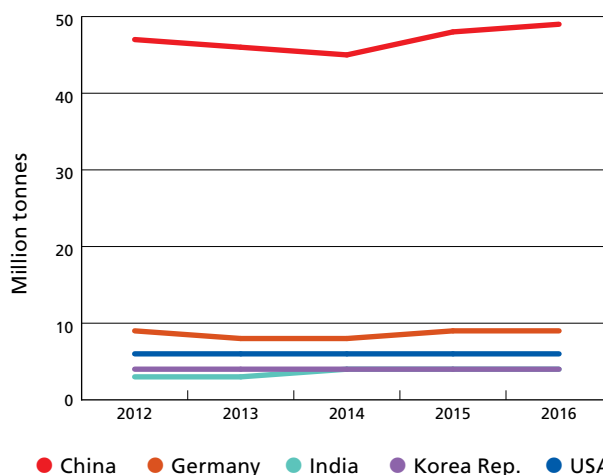
**FIGURE 12B. Fibre furnish exports**



**FIGURE 13A. Fibre furnish consumption**



**FIGURE 13B. Fibre furnish imports**



use of electronic media. Fibre furnish production (and exports) has been increasing consistently in Brazil, where fast-growing planted forests give the country a competitive advantage in the manufacturing of wood pulp. In 2014, Brazil overtook Canada to become the fourth-largest producer of fibre furnish in the world and increased production by a further 6 percent in 2016 (by 28 percent from 2012 to 2016).

Three of the main producers of fibre furnish are also the main exporters (the USA, Canada and Brazil), with the UK in fourth and Chile in fifth places (Figure 12b). These five countries exported 62 million tonnes (52 percent of the global total) in

2016. Exports increased by 52 percent over the observed period in Brazil (overtook Canada to become second exporter in 2016), by about 10 percent in the UK and Chile, and remained roughly the same in Canada and the USA. As already noted for Brazil, these trends are partly driven by each country's competitiveness in wood pulp manufacturing. However, because a large part of fibre furnish is recovered paper (56 percent), the need to dispose recovered paper can also be an important driver of growth in places like the USA, the UK and Japan.

The five main consumers of fibre furnish are China, the USA, Japan, Germany and the Republic of Korea, which altogether





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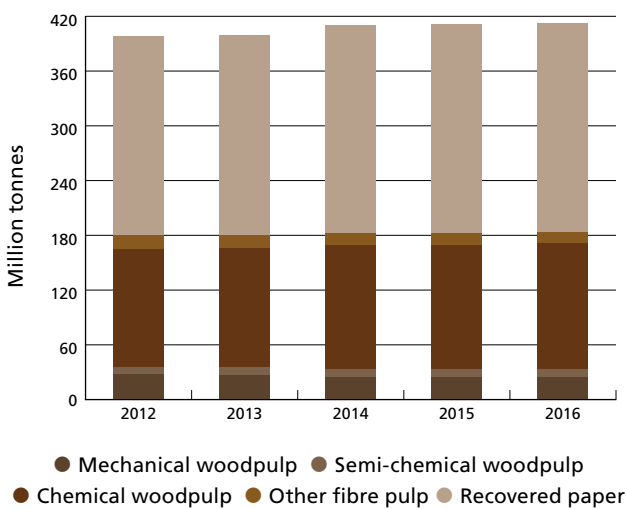
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consumed 256 million tonnes (62 percent of the global total) of fibre furnish in 2016 (Figure 13a). Consumption in these five countries was relatively stable, with a growth from one to five percent over the period.

Four of the largest consumers of fibre furnish are also the largest importers (China, Germany, the USA and the Republic of Korea); India is another top importer (Figure 13b). Imports to these five countries amounted to 72 million tonnes (62 percent of the global total) in 2016. Comparing the two figures, it becomes evident that consumption in several of these countries is highly dependent on imports, which accounts for 30 to 41 percent of consumption in China, Germany, India and the Republic of Korea. Over the observed period, imports grew significantly in India (32 percent), while in the other four countries imports remained stable.

Figure 14a shows the trends in the composition of fibre furnish consumption between the main products included in this product group. It shows that recovered paper and chemical wood pulp are the two main products used to manufacture paper, accounting for 56 and 33 percent respectively of all fibre furnish consumption in 2016. Mechanical wood pulp is the next most important (6 percent), followed by other fibre pulp (3 percent) and semi-chemical wood pulp (2 percent).

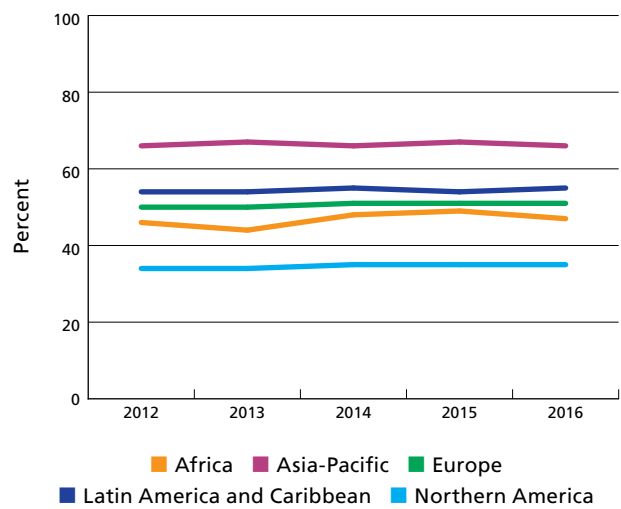
**FIGURE 14A. Fibre furnish consumption**



The trends in consumption also show that recovered paper accounts for more than half of all fibre used to make paper. In 2016, recovered paper consumption amounted to 229 million tonnes (56 percent of the total), compared to 217 million tonnes (54 percent of the total) in 2016. In contrast, consumption of other fibre pulp has declined, both in absolute and percentage terms. Total wood pulp consumption and its share remained unchanged over the same period.

Figure 14b shows the share of recovered paper in the consumption of total fibre furnish (the utilization rate) in each of the main regions. Differences in the levels of utilization and trends reflect the geographical and socio-economic situations in each region, as well as other factors such as recycling and waste disposal policies and the availability of pulpwood. For example, the Asia-Pacific region has a high utilization rate (partly met by a large amount of recovered paper imports) owing to the high demand and intense competition for wood fibre there. Conversely, in Northern America, where the availability of wood fibre is relatively high, recovered paper utilization is much lower (and a lot of recovered paper is actually exported to the Asia-Pacific region). Europe lies somewhere in between, with both a relatively high availability of wood fibre and numerous policies promoting recycling that encourage the use of recovered paper.

**FIGURE 14B. Recovered paper utilization rate**



# PAPER AND PAPERBOARD



The paper and paperboard product group comprises graphic papers (newsprint, printing and writing paper) and other paper and paperboard. The latter is further subdivided into wrapping and packaging paper, household and sanitary paper, and other paper and paperboard not elsewhere specified (NES). Various combinations of these different products are presented as product groups in FAOSTAT and the Yearbook.

Paper and paperboard production increased over the period 2012–2016 from 399 million tonnes to 409 million tonnes (Figure 15a). Growth in 2016 was under one percent.

Almost all of this growth was due to a 6 percent rise in production in the Asia-Pacific region. This offset the decline of 4 percent in Northern America and 1 percent in Europe. Production in the other two regions remained roughly the same. In 2016, the regional distribution of production was as follows: Asia-Pacific – 196 million tonnes (48 percent); Europe –104 million tonnes (26 percent); Northern America 82 million tonnes (20 percent); Latin America and the Caribbean – 22 million tonnes (5 percent); and Africa – 4 million tonnes (1 percent).

With respect to international trade, about one quarter of production is exported (roughly the same as the proportion of fibre furnish that is exported). Global trade remained quite stable at around 109 million tonnes over the period. Thus, changes in global demand (e.g. high growth in demand in Asia-Pacific and declining demand in Europe and Northern America) seem to have had more of an impact on international trade in fibre furnish than on trade in paper and paperboard.

Figure 15b shows slight decline in net trade between the regions in the observed period. Europe and Northern America are net exporting regions, with net exports of 11 million tonnes and 6 million tonnes respectively in 2016. Asia-Pacific, Latin America and the Caribbean, and Africa are all net importers, with net imports of 6 million tonnes, 6 million tonnes and 4 million tonnes respectively in 2016.

The two largest paper and paperboard producers in 2016 were China (113 million tonnes) and the USA (72 million tonnes) (Figure 16a). Their combined production accounted for 45 percent of global production. The other three largest producers were Japan (26 million tonnes), Germany (23 million tonnes) and India (14 million tonnes), which accounted for another 16 percent of global production. China and India were the only countries that increased their production (by 6 percent and 46 percent respectively) over the observed period. Production in Japan and Germany remained about the same from 2012 to 2016, while the USA saw a decline of 3 percent.

Exports from the five largest paper and paperboard exporters ranged between 8 million tonnes and 13 million tonnes

FIGURE 15A. Paper and paperboard production

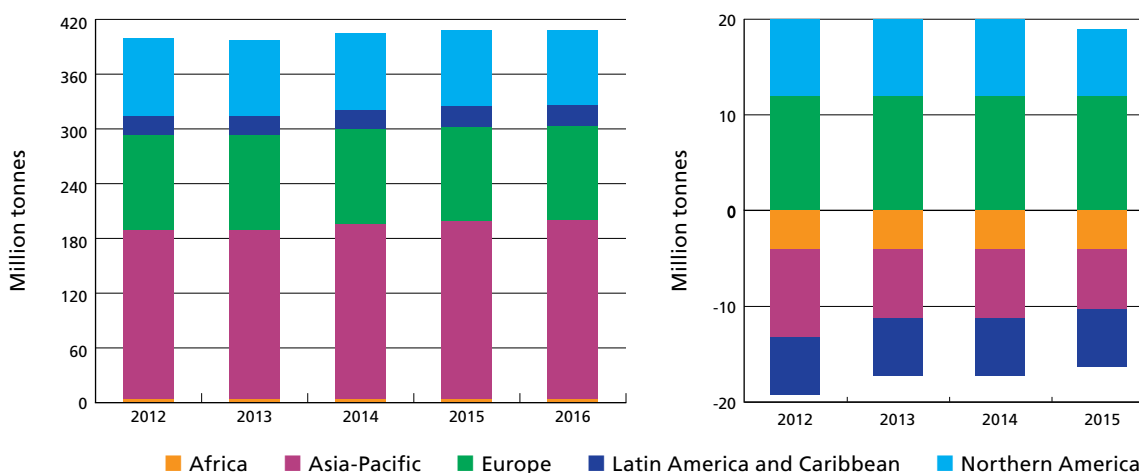
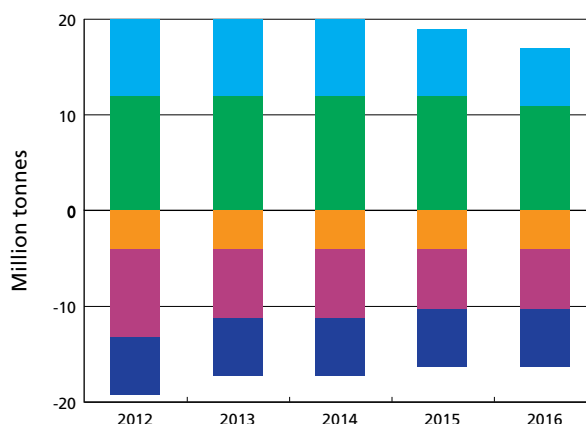


FIGURE 15B. Paper and paperboard net trade







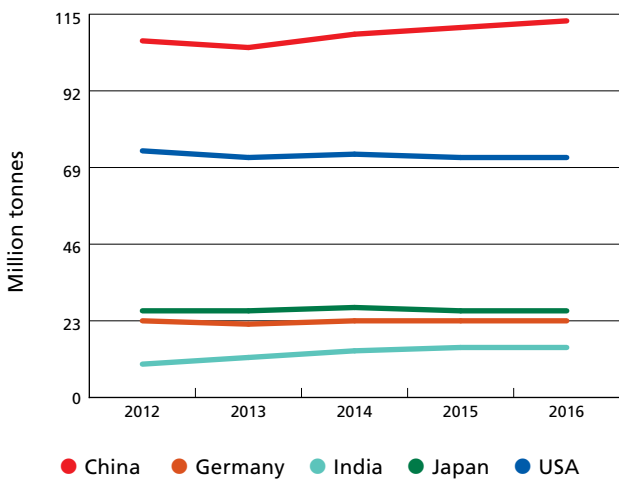
(Figure 16b). These five countries – Germany, the USA, Sweden, Finland and China – exported 51 million tonnes (46 percent of global exports) in 2016. Figure 16b also shows that exports are quite variable from year to year. Exports from Germany remained unchanged while they trended downwards in the three other countries except China. Exports from Sweden and Finland declined by 3-4 percent while the USA saw a 9 percent decline.

Trends in paper and paperboard consumption were similar to the trends in production (Figure 17a). Consumption in China increased by 4 percent, from 106 million tonnes in 2012 to 110 million tonnes in 2016. After a pause in 2013 when production and

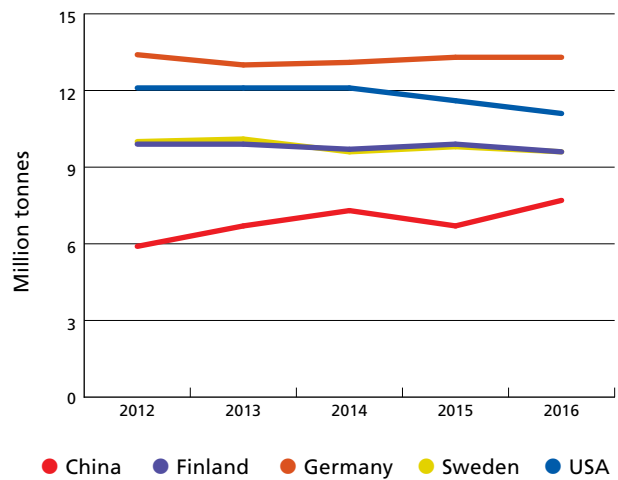
consumption fell slightly, China resumed its growth the following year. Consumption has been growing quite steadily in India (46 percent from 2012 to 2016) and remained quite stable in Germany, Japan and the USA. Total consumption in these five countries amounted to 243 million tonnes in 2016, or 60 percent of global consumption.

The five largest importers – Germany, the USA, the UK, Italy and France – imported a similar amount of paper and paperboard every year (from 36 million tonnes to 37 million tonnes over the observed period). A sharp decline in imports was seen in France (9 percent) over the period (Figure 17b). In Germany and the UK

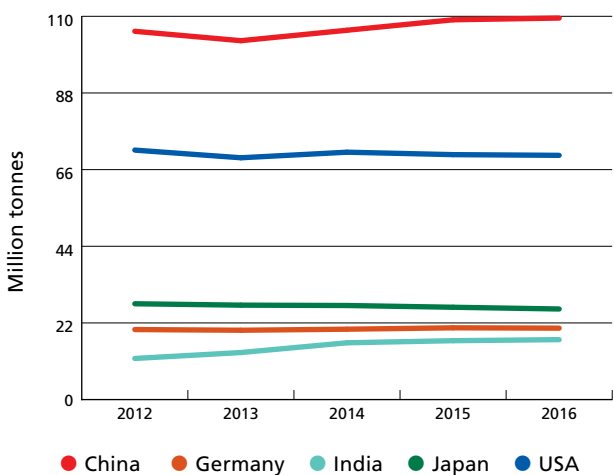
**FIGURE 16A. Paper and paperboard production**



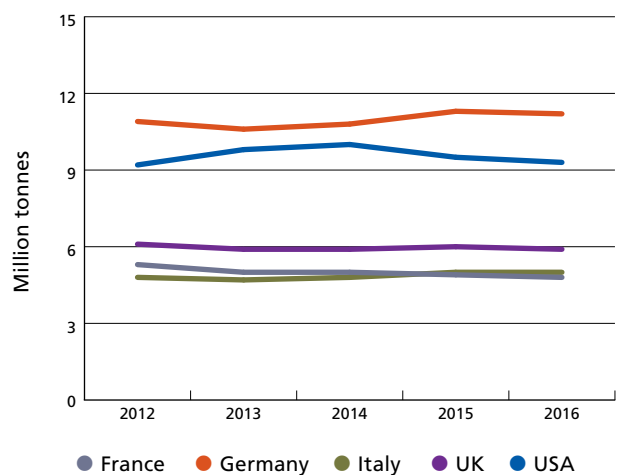
**FIGURE 16B. Paper and paperboard exports**



**FIGURE 17A. Paper and paperboard consumption**



**FIGURE 17B. Paper and paperboard imports**





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imports remained quite stable, while Italy recorded a 6 percent growth over the period and overtook France in 2016. The other notable feature of international trade in paper and paperboard is that imports are distributed much more evenly across different countries, with these top five importers accounting for only 36 percent of global imports in 2016.

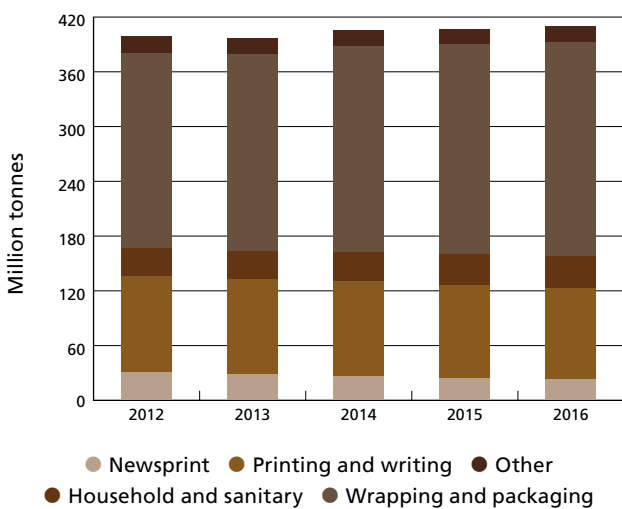
Figure 18a shows the distribution of paper and paperboard production among the five different product types of this group. Wrapping and packaging paper accounted for over half (235 million tonnes, or 57 percent of the total) of all production in 2016. Printing and writing paper was the second-largest (100 million tonnes or 25 percent of the total), followed by household and sanitary paper (8 percent), newsprint (6 percent), and other paper and paperboard. The two main trends in the different products are the gradual decline of graphic papers (newsprint and printing and writing papers) and growth in other paper and paperboard grades. Newsprint production fell by 22 percent from 31 million tonnes in 2012 to 24 million tonnes in 2016, and printing and writing paper declined by 6 percent (from 106 million tonnes to 100 million tonnes) over the same period. Wrapping and packaging paper production increased by 10 percent (from 214 million tonnes to 235 million tonnes) over the period. Household and sanitary paper production also

increased by 10 percent to 34 million tonnes; production of other paper remained roughly the same over the period.

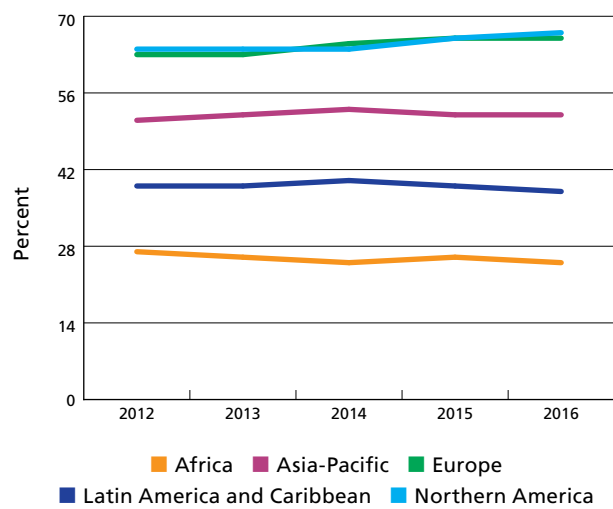
Figure 18b shows the amount of paper consumption collected for re-use in the pulp and paper industry (i.e. the recovery rate). At the global level, this remained roughly the same at 56 percent over the observed period (with a slight upward trend). In the three main regions that consume paper and paperboard (and use recovered paper), the recovery rates were high and remained stable over the period. In 2016, Northern America and Europe had the highest recovery rate (67 percent and 66 percent, respectively), followed by the Asia-Pacific region (52 percent).

Some of the factors that explain the differences in recovery rates are the same as noted previously (for the utilization rate), but one other important factor is the “hidden” trade in wrapping and packaging paper. This occurs where manufactured goods are packed in paperboard and traded across borders (and therefore the movement of the paperboard is not recorded). This partly explains the relatively low recovery rate in the Asia Pacific region, where packaging of goods for export is counted as paperboard consumption; this packaging paper is then recovered and counts as fibre furnish production in other regions such as Europe and Northern America.

**FIGURE 18A. Paper and paperboard production**



**FIGURE 18B. Recovered paper recovery rate**





# WOOD FUEL, CHARCOAL AND PELLETS



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Wood fuel is roundwood that is used as fuel for cooking, heating or power production and it includes wood used to make charcoal and pellets. It includes wood harvested from main stems, branches and other parts of trees (where these will be used for fuel) and wood chips to be used for fuel that are made directly (i.e. in the forest) from roundwood. However, it does not include all types of wood used for energy (e.g. wood residues from the forest processing industry, black liquor or recovered wood waste). It is subdivided into wood fuel from coniferous and non-coniferous species, and statistics for charcoal production and trade are also presented as a separate dataset in FAOSTAT and the Yearbook. Data series for wood pellets and other agglomerates (briquettes, etc.) appear in FAOSTAT from 2012 onwards.

Global wood fuel production amounted to 1 863 million m<sup>3</sup> in 2016 (Figure 19a). This was a minor increase from 2012 and from 2015 (less than 1 percent). At the regional level there are some differences in trends. For example, wood fuel production decreased in Asia-Pacific (by 3 percent) and Latin America and the Caribbean (by 5 percent) over the period 2012–2016, but increased in Northern America (by 20 percent), Europe (5 percent), and Africa (5 percent) over the same period.

The Asia-Pacific region was the largest wood fuel-producing region in 2016, accounting for 39 percent (733 million m<sup>3</sup>) of global production. Africa ranked second, with a 36 percent share (673 million m<sup>3</sup>), followed by Latin America and the Caribbean (14 percent), Europe (8 percent) and Northern America (3 percent).

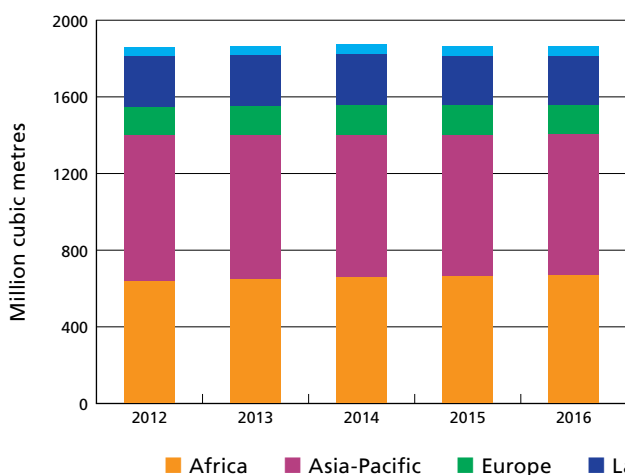
About 51 million tonnes of wood charcoal were produced in 2016, with an increase of 4 percent over the observed period (Figure 19b). In 2016, Africa accounted for 64 percent of global

charcoal production (with an increase in production from 29 million tonnes in 2012 to 32 million tonnes in 2016). Production in Latin America and the Caribbean grew consistently to reach 9 million tonnes in 2014, however in the following years it declined to 8 million tonnes. In the Asia-Pacific region production remained stable at 9 million tonnes. Charcoal production was relatively low and remained mostly unchanged in the other two regions.

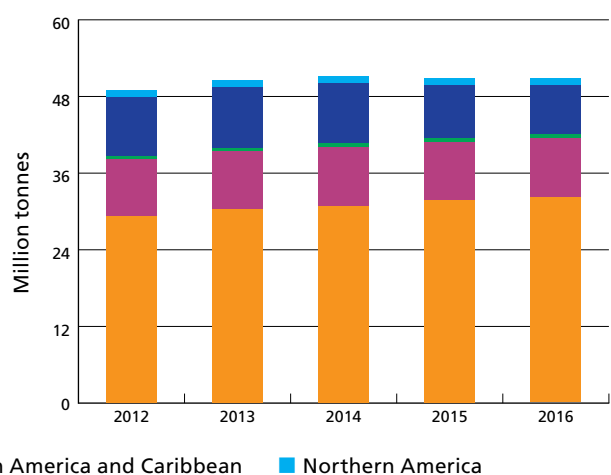
Different production growth in Africa and Latin America can be explained due to the fact that the main charcoal users vary in these two regions. In Africa, charcoal is mainly used by urban households for cooking, so consumption trends change only gradually. In Latin America and the Caribbean, the steel industry in Brazil is the main charcoal consumer, so trends in production are closely linked to (more volatile) economic trends.

Figure 20 shows estimated proportion of all roundwood production that was used as wood fuel in 2016 (in FAO statistics,

**FIGURE 19A. Wood fuel production**



**FIGURE 19B. Charcoal production**





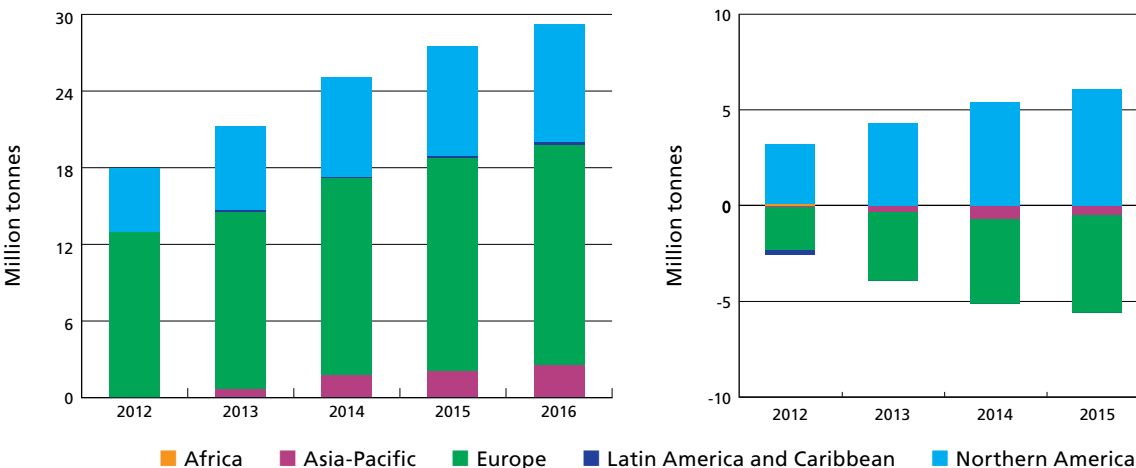
roundwood is simply divided into industrial roundwood and wood fuel). At the global level, wood fuel production accounted for half (50 percent) of all roundwood produced in 2016. This proportion remained stable over the observed period.

Wood fuel production is by far the most significant in Africa, where it accounted for 90 percent of roundwood production in 2016. It is also relatively important in the Asia-Pacific region, where it accounted for 61 percent of roundwood production. Wood fuel use in Latin America and the Caribbean was close to the global average at 52 percent of all roundwood production, whereas in Europe and Northern America it accounted for only 21 percent and 9 percent of all roundwood production respectively. These proportions remained relatively unchanged in most of the regions over the period.

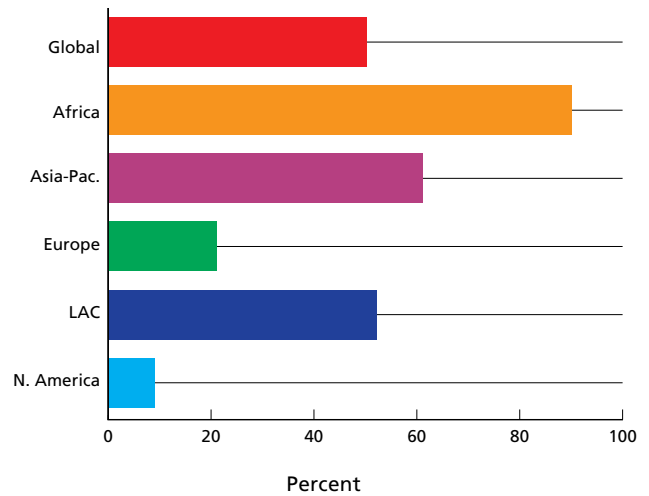
In contrast to the trends for wood fuel and charcoal, production and trade in wood pellets continued to surge (Figure 21a). Pellet production increased from 28 million tonnes in 2015 to 29 million tonnes in 2016. Nearly all production was concentrated in Europe and Northern America. In 2016, the regional distribution of production was as follows: Europe – 17.2 million tonnes (59 percent); Northern America – 9.2 million tonnes (31 percent); Asia-Pacific – 2.6 million tonnes (9 percent); and Latin America and the Caribbean and Africa – 0.2 million tonnes combined (1 percent).

With respect to international trade, over half of production (60 percent) was exported in 2016. Exports increased from 16.2 million tonnes in 2015 to 17.4 million tonnes in 2016.

**FIGURE 21A. Wood pellets production**



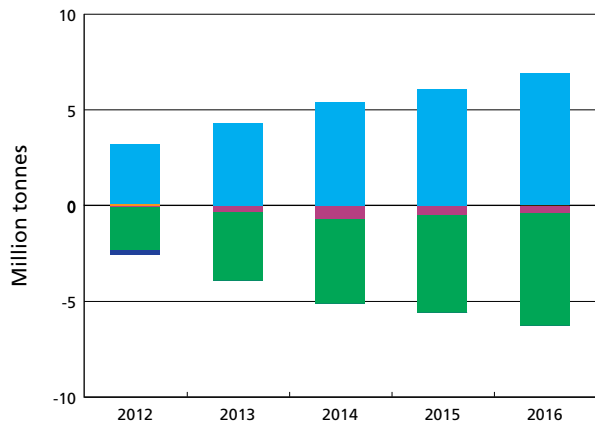
**FIGURE 20. Amount of roundwood used as wood fuel in 2016**



Net trade between the regions grew as well. Northern America is a net exporting region, with net exports of 7 million tonnes in 2016 (Figure 21b). Europe and Asia-Pacific registered net imports of 6 million tonnes and 0.4 million tonnes respectively in 2016.

The five largest pellets producers in 2016 were the USA (6.4 million tonnes), Canada (2.8 million tonnes), Germany (1.9 million tonnes), Sweden (1.7 million tonnes) and Latvia (1.6 million tonnes). Together, their production accounted for 49 percent of global production.

**FIGURE 21B. Wood pellets net trade**







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Three of the five largest pellets producers (the USA, Canada and Latvia) are also the largest exporters, joined by Viet Nam (which overtook the Russian Federation and Portugal in 2015) and the Russian Federation. Together, these five countries exported 11 million tonnes (64 percent of global exports) in 2016.

Only one main producer (the USA) is among the largest consumers. Four other countries that ranked among the top five consumers of wood pellets in 2016 were the UK (first), Denmark (third after the USA), Italy (fourth) and Republic of Korea (fifth). Total consumption in these five countries amounted to 15 million tonnes in 2016, or 53 percent of global consumption. The UK's

consumption increased by 9 percent in 2016 (and quadrupled from 2012) and accounted for 26 percent of global consumption in 2016.

The five largest importers (the UK, Denmark, Republic of Korea, Italy and Belgium) imported 13.5 million tonnes of wood pellets – an increase of 6 percent from 2015. In the UK imports increased by 9 percent (from 6.6 million tonnes in 2015 to 7.1 million tonnes in 2016), and in the Republic of Korea imports grew from 1.5 million tonnes in 2015 to 1.7 million tonnes in 2016. Imports in the other three countries remained stable or slightly decreased in 2016. Together, these five countries accounted for 81 percent of global imports in 2016 (the UK alone stood for 53 percent).



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## DEVELOPMENT OF FAO'S FOREST PRODUCTS STATISTICS

This final section presents some details of recent changes to FAO's forest products statistics, the results of capacity-building efforts, and improvements in the collection and dissemination of statistics. Below are some highlights from 2017.

### Enhancing dissemination of forest products statistics

- FAO's *Forest products statistics website* has been regularly updated and is available in Arabic, Chinese, English, French, Russian and Spanish.
- Global data series on annual production and trade in OSB and Particleboard were separated in the *FAOSTAT-Forestry database* (from 1995).

### Improving international statistical classifications and standards

- FAO, in collaboration with the International Tropical Timber Organization (ITTO), United Nations Economic Commission for Europe (UNECE) and the Statistical Office of the European Union (Eurostat) proposed amendments for wood and non-wood forest product (NWFP) codes in the Harmonized System (HS) through their proposal to the World Customs Organization (WCO) for the HS 2022 revision. WCO's HS Review Sub-Committee examined the proposal in its 52nd and 53rd sessions. The proposal will be further scrutinized by WCO in 2018.
- As a part of an ongoing effort to improve statistics on NWFPs, FAO published the document *Non-wood forest products in international statistical systems*.
- In 2015, FAO's Forest Products Programme launched a project with a focus on improving developing countries' capacities

to collect statistics on wood fuel consumption. The project aims at developing a methodology for incorporating a wood fuel module into existing national household surveys. The project is co-funded by the *Global Strategy to Improve Rural and Agricultural Statistics*. As a result, the following outputs were produced in 2017:

- *Technical Report* on national surveys and censuses that could incorporate a Woodfuel Supplementary Module;
- *Technical Report* on How to include the Woodfuel Supplementary Module into Existing Surveys and Derive Woodfuel Indicators;
- Organization of an *Expert Meeting: experts* from WHO, UNSD, IRENA and other international organizations gathered in Rome to discuss and provide suggestions to the proposed methodology;
- Implementation of field tests of the methodology in two pilot countries (Ecuador and Lesotho);
- Presentation of the proposed methodology at the *African Energy Commission* (AFREC) of the African Union in *Abidjan, Addis Ababa* and *Casablanca*.

The final Guidelines will be completed in 2018.

### Strengthening national statistical capacities

- In collaboration with ITTO, a *workshop* on forest products statistics for Portuguese-speaking countries was organized in Portugal on 9-11 October 2017. The workshop brought together 30 participants from seven countries: Angola, Brazil, Cabo Verde, Guinea-Bissau, Mozambique, Portugal and Sao Tome and Principe.

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