

Portugal Market Report 2019

Index

1	Socio-economic situation, general overview	2
2	Policy measures impacting forest management and forest products trade	5
2.1	Climate change and energy	5
2.1.1	National Integrated Energy and Climate Plan 2030	6
2.1.2	Climate Change Adaptation Action Program	6
2.1.3	Roadmap for Carbon Neutrality 2050	7
2.1.4	Energy	8
2.2	Desertification.....	8
2.3	Circular economy and cascading use of biomass	8
2.4	Forests.....	10
2.5	Timber and timber products markets.....	11
3	Market drivers (wood energy certified products).....	11
4	Development in forest product markets.....	14
4.1	Wood production and markets.....	14
4.2	Sawn wood.....	16
4.3	Veneer sheets and wood base panels	17
4.4	Wood pulp, paper and paper board	17
4.5	Biomass for energy	17
	References.....	19
	Annex.....	20

1 Socio-economic situation, general overview ¹

In Portugal, the current millennium can be divided into two cycles in terms of economic buoyancy. From 2000 to 2013 a long period of stagnation, comprising recessions in 2003, 2009, and 2011-2013. In 2014 the recessive cycle was reversed, with the moderate growth of 0.9%. The slight recovery of 2014 was consolidated in onward years, with gross domestic product (GDP) growth rates of 1.8% (2015), 1.5% (2016), 2.7% (2017) and 2.1% (2018) (Statistics Portugal, 2019a). Hence, the period of 2010-2018 can be divided into two cycles:

- The recession (2011-2013) associated with a modest recovery of the economy after the 2008-2009 crises, with the recessive nature determined by the impact of the restrictive policy applied to the Portuguese economy;
- The reversal of the recessive cycle from 2014 onwards.

In 2018 GDP declined by 0.7 percentage points (p.p.), compared to the previous year, and in nominal terms amounted to €201.6 billion (+3.6%). Net external demand contribution to GDP was -0.7 p.p. (in 2017 was -0.3 p.p.), with exports of goods and services decelerating more compared to the imports. Thus, the import export coverage rate (77%) declined from the previous year (79%) (Figure 1). Mainly, the nominal exports accelerated 5%, but less than in 2017 (10%), whilst the imports augmented 8% (in 2017 the increase was 13%). The external balance of goods and services, thought positive in 2018, has decayed to 0.2% of GDP (in 2017 was 0.8% of GDP).

Exports, however decelerating from the increase recorded in 2017 (10%), still reached their highest value ever in the statistical series on international trade in goods. In 2018, imports also recorded their highest value in the statistical series.

The Portuguese trade flows are dominated by European Union countries both in destination (76.1%) and in origin (75.8%) of goods. Spain, France and Germany are the leading countries on international trade flows, concentrating 49.5% of exports of goods (0.4% p.p. vis-à-vis 2017) and 52.9% of the imports (-0.4% compared to 2017).

The flows with the Portuguese-speaking African countries (PALOP) represent 5% of the exports and 3% of the imports. Amongst these countries, Angola had the highest

¹ The overview of recent developments in Portuguese Socio-economic situation was essentially based on the Statistical data (Publications & Database) of Statistics Portugal (www.ine.pt), the central statistical authority empowered to produce national official statistical information. The main references were the annual Statistical Yearbook of Portugal, published in 2018, comprising the updated to 2017 focused on the relevant multidimensional portrait of the country, complemented by the international trade and economic accounts databases.

weight, being the destination of 52% of the exports and the origin of 37% of the imports, followed by Brazil, with, respectively, 28% and 41% on these trade flows.

Investment increased by 5.5% in real terms (9.2%, in 2017), mirroring the deceleration in gross fixed capital formation (GFCF) to a rate of change of 4.5% (9.2%, in 2017). The positive contribution of domestic demand decreased to 2.8 p.p. (3.1 p.p., in 2017), reflecting a weaker growth of the investment. In 2018, private consumption accelerated to 2.6% (2.3% in 2017) and public consumption from 0.2% (in 2017) to 0.8% (in 2018).

Price growth, assessed by the rate of change in the Consumer Price Index (CPI), recorded an annual average rate of change of 1%, down by 0.4 percentage points (p.p.), compared to the one recorded in 2017 (1.4%).

Construction, comprising investment by households and enterprises, resumed the reversal in 2015 of the downward trend observed since 2002. In 2017 a total of 18,621 buildings were licensed, of which 68% corresponded to new buildings, increasing by 9.9% from 2016. Traditionally, this sector is an important end use within the Portuguese lumber chain.

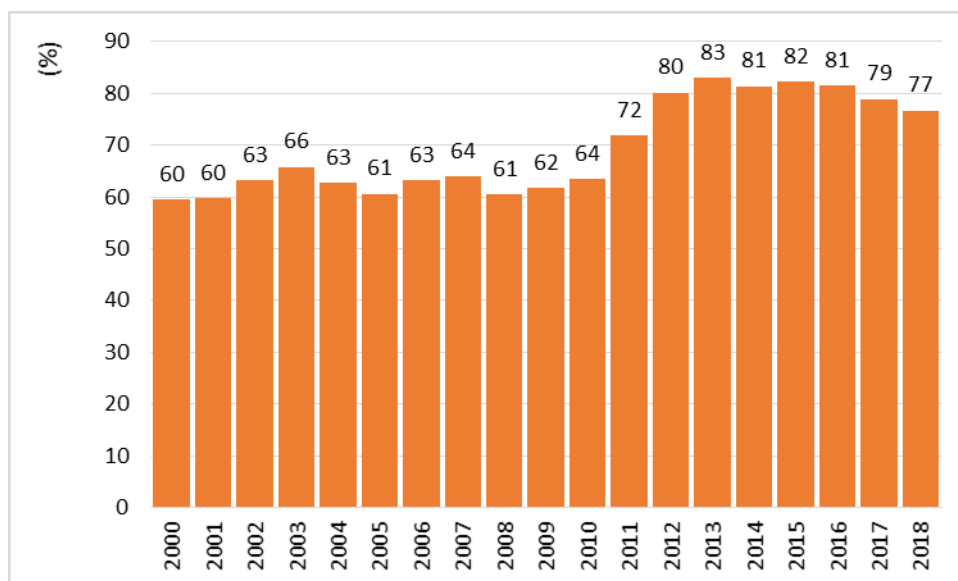


Figure 1 - National export/import coverage rate (Statistics Portugal, 2019a).

In 2018 the degree of openness of the Portuguese economy, as measured by the ratio of the sum of exports and imports of goods to GDP at current prices, was 66%, growing by 2 p.p. from the previous year. The upward trend followed the 2015 (-0.7%) and 2016 (-1.1) short decline, after successive increases between 2010 and 2014. Developments in this indicator have been conditioned by the overall economic pace, and there was a noticeable direct relationship between the business cycle and the openness of the economy. In the long run, the pattern shows the trend towards the increase in the degree of openness to external trade: in 1995 this indicator stood at 49%, compared to 66%, in 2018.

The Portuguese population was estimated at 10,276,617 persons in 2018, 14,410 less than in 2017, equivalent to the negative crude rate of -0.14% (compared to 2017). The downward trend in population growth remains since 2010, with lesser decay in the last two years. The deceleration in the decline is the result of the improvement in net migration (from 4,886, in 2017, to 11,570, in 2018), since the negative natural increase deteriorated (from -23,432 in 2017 to -25,980 in 2018). Thus, in 2018, the crude rate of net migration registered a positive rate of 0.11% and the crude rate of natural increase a negative rate of -0.25%.

With regard to the structure of the population by age groups, in 2018 the number of young people (persons aged 0-14) stood at 13.7% of the total resident population; those aged 15-24 represented 10.6%; those aged 25-64 stood at 53.8%; and the number of elderly (those aged 65 and over) was 21.8% of the total. This age distribution led to an ageing ratio of 159.4 elderly per every 100 young people (i.e. a 4.0 p.p. increase vis-à-vis the previous year).

The changes on the size and age-sex structure of the population residing in Portugal, in particular, due to low birth rates and increased longevity in the last decades, suggests that, aside from the population decrease in the last years, the demographic ageing continued.

In 2018 the number of live births of mothers residing in Portugal was 87,020, an increase of 1.0% compared to 2017, which translated into a crude birth rate of 8.5 live births per 1,000 inhabitants.

The employed population was estimated at 4,866.7 thousand people, increasing by 110.1 thousand people (2.3%) compared to 2017, maintaining the upward trend started in 2014. The unemployed population amounted to 365.9 thousand people, corresponding to an unemployment rate of 7%, the lowest since 2011.

The percentage of the labour force aged 45 and over vis-à-vis the total labour force (excluding those aged less than 15) increased by 0.8% in 2018, compared to the previous year, reaching 47.8%. The upward pattern has been registered since 1998 (Statistics Portugal, 2019).

Labour force's educational attainment continued to follow the increasing trend observed since 1998, with the share of those in active age who completed secondary education rising from 19.6%, in 1998, to 54.1%, in 2018 (Pordata, 2018 & 2019).

Final synthesis:

From 2010 to 2013, the Portuguese socio-economic macro trends highlight the positive improvement of the balance sheets and of the openness of the economy, which was associated with the strong slowdown in imports, given the fall in domestic demand, the maintenance of high export growth, and the drop in GDP. The good performance of the exports hasn't been enough to counter the stagnation or even, in the last years of the period, the recession of the economy. The negative conditions were also reflected on investments with the strong shut down on gross capital formation.

From 2014 onwards, the reversal of the recessive cycle is reflected in 2018 macro-economic figures of the GDP and GFCF. Though the upward performance decelerated from 2017 to 2018, with rates of change in GFCF lessening from 2.7% (2017) to 2.1% (2018), in GDP, and 9.2% (2017) to 4.5% (2018). Reflecting the weaker growth of the investment which increased by 5.5% in real terms (9.2% in 2017).

The population profile is marked by growth rates inferior to one and the increase of the elderly. This profile has recessive implications on the short run and on the long-term concerning implications, namely, on labour force's sustainability. Still, in 2018, the remark on the unemployment (7%), the lowest since 2011.

2 Policy measures impacting forest management and forest products trade²

2.1 Climate change and energy

Nationally determined contributions (NDCs) are at the heart of the Paris Agreement and the achievement of its long-term goals. NDCs embody efforts by each country to reduce national emissions well below 2 degrees Celsius above pre-industrial levels and to strengthen the ability of countries to deal with the impacts of climate change (UNFCCC, 2019).

The Portuguese framework for climate and energy policy is aligned with the European Commission (EC) strategic package to tackle in different areas the Paris Agreement global challenge. These include the Energy Climate 2030 Package, the Clean Mobility and the Clean Energy Package for all Europeans.

Those instruments are being or have been transposed to the Portuguese legal system, underlining for the direct or indirect application/impact on forest sector (APA, 2019):

- The (presented on 28 January 2019, submitted to public consultation up to 5 of June 2019, the final version is presently on preparation, which must be submitted to EC till 31 of December);
- The Climate Change Adaptation Action Program (Government Order 130/2019);
- The Roadmap for Carbon Neutrality 2050 (Government Order 107/2019):

² Based on references disseminated by the National Authorities empowered within the policies of forests, environment, economy and energy, mainly: the Portuguese Agency for Environment (apambiente.pt), endorsed on Climate Change themes; the Directorate-General of Economic Activities (<https://www.dgae.gov.pt/>) with attributions on circular economy (<https://eco.nomia.pt/>); the Directorate-General of Energy and Geology (<http://www.dgeg.gov.pt/>), with competence on energy policies; the Institute for Nature Conservation and Forests (<https://www.icnf.pt/>), the National Authority for Nature Conservation and Biodiversity and the National Authority for Forests.

2.1.1 National Integrated Energy and Climate Plan 2030

The National Integrated Energy and Climate Plan 2030 (PNEC2030) integrates on its 2030 targets the reduction of greenhouse gases within -45% to -55% and the use of renewable sources to 47%.

The Plan recognises the role of forests and forest biomasses toward the measures of action to decarbonize economy, promote sustainable agriculture and enhance carbon sequestration, advocating the:

- Augmentation of the natural capacity of forest as carbon sinks;
- Promote more effective forest management with the reduce of burned area;
- Enhance the role of bioeconomy through the intensification of active afforestation, promotion of more efficient forestry practices and upgrading ecosystem services;
- Promotion of circular use of materials, including wood and non-wood forest productions and derived products, and the cascading use of energy, enabling the transition for circular economy;
- Progress with green taxation;
- Promotion of R&D projects that support the transition to a low carbon economy.

The Plan covers as well actions to reinforce and promote renewable sources and reduce the country dependency on energy, endorsing within its measures the acceleration of the contribution of small renewable production in market mechanisms by promoting their aggregation and enhance the purchase and use of decentralized heat and cold production systems from renewable energy sources.

2.1.2 Climate Change Adaptation Action Program

The Climate Change Adaptation Action Program (P-3AC), approved by the Government Order 130/2019, of 2 of August, complements and systematizes the work carried out in the context of the previews National Strategy for Adaptation to Climate Change (ENAAC 2020). The Program elects eight lines of action with direct intervention in the territory and infrastructures, complemented by a transversal line. These lines aim to address the main impacts and vulnerabilities identified for Portugal.

The P-3AC lines of action and correspondent measures encompass:

- Rural fire prevention (e.g. economic valorisation of biomass; creation of discontinuity buffers and plots; reconfiguration of infrastructures and support systems);
- Conservation and improvement of soil fertility (e.g. erosion control; water retention; soil composition and structure);

- Diseases, pests and invasive species (e.g. enhancement of genetic material; disease control and invasive alien species; surveillance; information and communication);
- Capacity building, awareness raising and adaptation tools (e.g. monitoring and decision making; capacity building and planning; communication).

The operationalization of the Program is ensured through two parallel approaches to promote adaptation actions: one in the short term (by 2020); and one in the medium term (by 2030). These approaches embody guidelines to mobilize financial resources. Additionally, the medium term also define policies and political instruments and promotes the implementation of structural actions to reduce the vulnerability of the territory and economy to climate change impacts.

2.1.3 Roadmap for Carbon Neutrality 2050

Since 2005, greenhouse gas emissions (GHG) have fallen due to better prevention and control technologies, less polluting fuels and energy production, and improvements in the energy efficiency of processes. The trend in 2015, however, was for rising emissions as a result of economic growth and the use of coal to produce electricity (ECO.NOMIA, 2019).

Presently (2017), official statistics estimate greenhouse gas emissions without LULUCF (Land Use, Land-Use Change, and Forestry), including indirect emissions of CO₂, at about 70.7 Mt of CO₂eq and emissions with LULUCF at 78.0 Mt CO₂eq, corresponding to an increase of 7.0% in total emissions between 2016 and 2017 (Statistics Portugal, 2019).

Portugal has committed internationally to reduce its greenhouse gas emissions so that the balance between emissions and removals from the atmosphere, namely through the use of forests, will be zero by 2050. The goal of a net zero carbon footprint has been labelled "carbon neutrality".

The main objective of the Roadmap for Carbon Neutrality 2050 (RCN 2050) is to identify and analyse the implications associated with technically feasible, economically viable and socially accepted alternative trajectories.

The roadmap will embark on alternative, low-carbon development paths until 2050 in four areas of intervention linked to those sectors mainly responsible for greenhouse gas emissions and carbon sequestration: energy; transport and mobility; waste; agriculture forest and land use. These will be based on three multifaceted aspects: socioeconomic scenarios; circular economy; societal participation.

The Roadmap consider and systematise the work done under the National Strategy for Adaptation to Climate Change (ENAAC 2020), endorsing within the actions lines to tackle impacts and vulnerabilities the: prevention of rural wildfires; implementation of practices of soil conservation and fertility; increase the resilience of ecosystems, species and habitat's to the effects of climate change; prevent the installation and expansion of invasive species, diseases transmitted by vectors, agricultural and forest

pests and diseases. The financing instruments mobilized to implement the actions and measures of the roadmap are laid down on it.

2.1.4 Energy

Portugal is dependent on external energy, given that it has no fossil energy resources, leading to the need for importing the largest share of its primary energy consumption: in 2017, 79.7% of the primary energy consumption in Portugal was imported (74.0% in 2016).

At European level, Portugal has a good rate on the accomplishment of the targets related to the incorporation of renewable energies in the gross consumption of energy.

In 2017, the renewable energy sources contributed to 28.1% to the gross final energy consumption (28.4% in 2016). Biomass represented 56% in the total renewable energy production, rising 1.6 p.p. from the previous year (54.4 % in 2016) (DGEG, 2019).

The operations of energy recovery managed 95.9 kg/inhabitant (20.7%). The operations of organic recycling (82.1 kg/inhabitant) and multi-material recovery (55.9 kg/inhabitant) summed up less than 1/3 of the total managed (29.7%). (Statistics Portugal, 2019a).

2.2 Desertification

The National Action Program to Combat Desertification (PANCD), approved in 2014 (Government order n.º 78/2014, of 24 of December), follows international agreements in the framework of the United Nations Convention to Combat Desertification (UNCCD). The first strategic objective of the PANCD concerning soil and water conservation is a consequence of UNCCD commitments. The map of susceptibility to desertification for mainland Portugal was drawn in the framework of this Program.

2.3 Circular economy and cascading use of biomass

Portugal is one of the EU member states that has come up with Circular Economy strategies, roadmaps and action plans, in line with the ambitions of the European Commission.

The ambition set out for Portugal 2050 was designed to leverage and spur development of work within the Action Plan for the Circular Economy (APCE), Government Order n.º 190-A 2017, which advocates on its elements (ECO.NOMIA, 2019):

- A carbon neutral economy that is efficient and productive in its use of resources encompassed by neutral GHG emissions and effective use of materials, with the significant fall in their extraction, importing and in final waste generated, attaining better management and value extraction from the resources in circulation;

- Knowledge as impulse, enhancing solutions in products, services, business models, consumption/use and behaviour with lower emissions and resource intensity, integrated into business models that spur job creation, efficient and effective use of mobilized resources, and their lasting economic value;
- Inclusive and resilient economic prosperity through economic development impacting all sectors of society and the resilience against price and risk volatility and gradually decoupled from negative environmental and social impacts;
- A flourishing, responsible, dynamic and inclusive society.

The plan considers three levels of actions:

- Macro, structural in scope, produces transversal and systemic effects which enable society to appropriate the principles of the circular economy;
- Meso, or sectoral, covering actions or initiatives defined and accepted by all players in the value chain of sectors relevant to raising productivity and the efficient use of resources, seizing the economic, social and environmental benefits;
- Micro, regional or local, related to actions or initiatives defined and accepted by all regional and/or local government, economic and social actors which incorporate a local economic aspect and which emphasise this in the approach to social challenges.

The different levels of actions are inter-related and reinforce each other positively, creating feedbacks that evolve the context iteratively and allow knowledge, policies, projects and results to be consolidated, spurring the actors involved.

The plan is based on the understanding and experience common to four areas of governance (science, technology and high education; economy; **environment, agriculture, forestry and rural development**), comprising the “inter-ministerial group” which drafted the APCE. This involved a survey of current performance, known measures, an analysis of the European action plan, and benchmarking against other circular economy plans, from which actions were proposed with their respective guidelines.

The example of Portuguese forest sector is reiterated by the long term practices under the principals of circular economy and cascading use, covering resources efficiency and reutilization of by-products and residues. The underline in 2018 through the dynamics of production and markets of these processing sub-products:

- On sawn and furniture chain, the wood residues and the recovered post-consumer wood, with, respectively, over 913.5 and 138.1 thousand tons, in production, and over 5.3 million and 917.3 thousand euros, on international trade balance;
- On pulp, paper and paperboard chain, the recovered fiber pulp and the recovered paper with, respectively, 213.6 and 792.5 thousand tons, in

production and -645.1 thousand euros and over 37.8 million euros, on international trade balance;

- On cork chain, the production of around 397 thousand tons million euros and a international trade balance of more than 33.7 million euros of cork waste, crushed, powdered or ground;
- On biomass for energy chain, within the production of electricity and steam, the consumption of more than 4.6 million tons of by-products and residues originated on forest processing industries, comprising: 1.3 thousand tons of sawdust and wood chips, mostly of pine and eucalyptus; 913.8 thousand tons of bark; and more than 3.7 million tons of fibers from other ligneous constituents, mostly black liquor.

2.4 Forests

The Portuguese forest sector is subordinated to the instruments of political administration provided in the 1976 Portuguese Constitution and endorsed by the Forest Policy Act of 1996, as well as other specific legislation.

The European commitments for forest policies are incorporated in the Portuguese National Strategy for Forests (NSF), which was approved in 2006 and updated in 2015, by the Government Order n.º 6-B/2015, of 4 of February.

The NSF assumes the maximization of the total economic value of forest as its main purpose, and it's organized in the following strategic objectives: minimization of fire risks and biotic agents; specialization of the territory; enhancement of productivity through sustainable forest management; internationalization and increase in products value; to enhance efficiency in general and to improve the sector's competitiveness. The NSF aims are articulated within seven Regional Forest Plans (PROF).

The PROF are national sectorial policy instruments, embodied under the scope of the Portuguese territorial planning legal system. At regional scale, they encompass the strategic framework, guidelines and specific norms regarding the use, occupation and forest management.

Public and community forests, as well as private properties above a given size and "forest intervention zones" (ZIF)³, must have a Forest Management Plan (FMP). In the Mainland, about 3,000 FMP are approved, which cover 1.72 million hectares, corresponding to 31% of the total forest area. Stone pine, cork oak and eucalyptus stands have a FMP coverage rate above the national average.

The small forest holdings, below the size of mandatory FMP and not integrated by a ZIF zone, are still subject to the minimum standards endorsed by each PROF. These standards entail:

³ Decree-Law n.º 127/22905, of 5 of August, regulates the cooperative management of the forest lands, designed as Forest Intervention Zones (ZIF).

- Preventive forestry standards;
- General forestry standards;
- Forestry models adopted within each PROF following the homogeneous division of the region in sub-regions.

2.5 Timber and timber products markets

The Timber Regulation (Reg. EU 995/2010) to combat trade in illegally harvested timber was adopted in October 2010 by the EU. This regulation counters the trade in illegally harvested timber and timber products through key obligations:

- It prohibits the placing on the EU market of illegally harvested timber and products derived from such timber;
- It requires traders who place timber products on the EU market for the first time to exercise ‘due diligence’.

The legislation to apply the timber regulation on Portugal establishes as mandatory the register of all the operators with activity in the country. The register is made electronically through a system named «RIO system». The link to the digital platform of «RIO system» is located at the website of the Institute for Nature Conservation and Forests (ICNF, I.P.), the competent authority for the application of the Regulation, and is accessible since the 26 of July, 2013. The main indicators are also available in the same website (<https://ruem.icnf.pt/>).

It was considered that the register of the operators was a good instrument to verify the application in Portugal of the obligations laid down by the timber regulation. The register was considered essential to identify the operators working in Portugal, enabling to plan the monitoring actions to verify the application of the “due diligence”.

3 Market drivers (wood energy certified products)

The Portuguese forest sector has long been export oriented. Forest products exports have been among the country’s main exports, accounting in the current millennium for 9% of the total exports, while the sector is only responsible for 4% of the imports (figure 2). After 2015 the exports surpass the imports in more than 2.5 thousand million euros (table 1), making it one of the most international markets dependent sector of the Portuguese economy.

Portugal is a price-taker in international markets. The fact that a large share of forest production is exported and that Portugal is primarily a price taker makes it very vulnerable to market developments elsewhere (Rego et al, 2014).

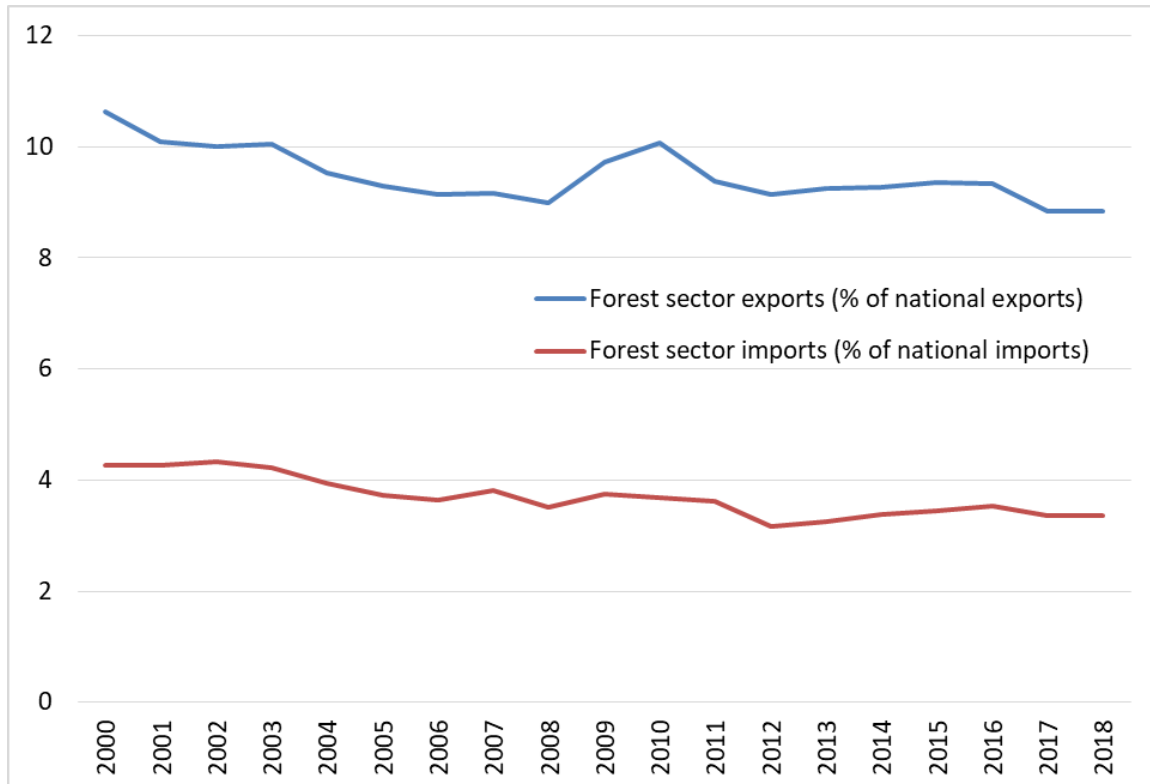


Figure 2 – Relevance of forest sector exports & imports in the context of the Portuguese international trade (Statistics Portugal, 2019a)

Table 1 - National and forest sector commercial balance (Statistics Portugal, 2019a)

Year	Commercial balance (million €)		Coverage rate of exports over imports (%)	
	Forest sector	National	Forest sector	National
2000	943	-18 491	148	60
2001	823	-18 701	141	60
2002	894	-16 619	146	63
2003	1 064	-15 181	157	66
2004	999	-18 340	151	63
2005	978	-20 242	151	61
2006	1 212	-20 654	159	63
2007	1 225	-21 632	154	64
2008	1 235	-25 347	155	61
2009	1 154	-19 682	160	62
2010	1 593	-21 379	174	64
2011	1 858	-16 723	186	72
2012	2 354	-11 161	232	80
2013	2 522	-9 710	236	83
2014	2 460	-10 978	223	81
2015	2 567	-10 711	223	82
2016	2 508	-11 385	216	81
2017	2 527	-14 671	208	79
2018	2 603	-17 406	203	77

The exception to export oriented markets are the end uses of wood products within construction and wrapping and packaging sectors. Historic data show that these wood products have the domestic consumption in Portugal as its major destination. Since 2000, domestic markets represented, on average, 76% of the consumption in builder's joinery and carpentry of wood and 72% in wooden wrapping and packaging (Table 2).

Beginning in 2010, vis-a-vis the recent Portuguese crisis, the domestic consumption of builder's joinery and carpentry of wood has drop (-21%), reflecting the consequences of construction contraction and the overall economic activity decay. Hence, between 2016 and 2017 a positive shift (1%) is observed.

The domestic consumption and the market trends of wooden wrapping and packaging materials are irregular, showing a strait opposite interaction between them. With the domestic consumption decaying from 2010 to 2013, followed by the rise between 2013 and 2014, the subsequent decline (2015/2016) and stagnation (2016/2017). The pattern of wood packaging materials sales reflects the augmentation of domestic demand resulting from the recovering of previous economic difficulties, the increase of activity entails higher consumption of packaging and wrapping materials, which seems to be withdrawing after 2015.

Table 2 – Patterns of domestic consumption and exports of the end products of wood construction and packaging materials (Statistics Portugal, 2019a)

(% of total sales)		2000	2010	2011	2012	2013	2014	2015	2016	2017	2000 to 2017*
Builder's joinery and carpentry of wood	Domestic Consumption	89	77	76	72	66	61	61	60	61	76
	Exports	11	23	24	28	34	39	39	40	39	24
Wooden wrapping and packaging	Domestic Consumption	71	77	73	70	62	68	72	75	72	72
	Exports	29	23	27	30	38	32	28	25	28	28

* annual average since 2000

The export orientation of Portuguese forest sector is the dominant factor on the option for certification schemes. Presently two systems are followed:

- The Programme for the Endorsement of Forest Certification (PEFC) with 278,311 hectares of certified area, 1,808 forest producers, 168 Chain of Custody's certificates and 436 sites (PEFC Portugal, 2019).
- The Forest Stewardship Council (FSC) with 465,125 hectares of certified area, corresponding to 33 certificates of forest management, more than 3,350 forest owners and 319 certificates of the Chain of Custody (FSC Portugal, 2018).

4 Development in forest product markets

4.1 Wood production and markets

Following the forestry accounts (table 3) accomplished by Statistics Portugal under the national economic accounts, in the current millennium, the production, in value, of coniferous timber for industrial uses has been decreasing at concerning rates (average annual variation -3%). Even so, in the current decade (2010 to 2017) a positive change of 4% was observed. The non-coniferous roundwood shows an opposite evolution rising at an annual average rate of 3%.

The evolution in cubic meters unities of volume from 2000 to 2018 (Faostat, 2019), as reported under the Joint Forest Sector Questionnaires (JFSQ), follows as well, in the production of coniferous timber for industrial uses, a reduction pattern with average annual rates of -1% (total variation -18%); whilst the non-coniferous timber has been rising on average 4% (total variation 65%). In the present decade (2010 to 2018) both these types augmented, though the average increase in non-coniferous was more intense, with the average annual change of 8% (total 54%), whereas in coniferous was 3% (total 19%).

The investments made on production capacity by forest industries, namely within the pulp, paper and paperboard chain, upgraded raw material demand.

As well, the cluster of forest biomass for energy, presently associated with the policies on climate change mitigation and reduction of global greenhouse gases, represents an additional demand on wood raw material supply.

At European level, the timber deficit context is corroborated by the Indufor study's forecast horizon for 2016 (European Commission, 2013) which states that "...the EU

will face a shortfall from EU sources of 63 Mm³ of RWE⁴ per annum in trying to meet the EU renewable energy targets, as shown by the NREAPs (National Renewable Energy Plans). In this context, the NFS (National Forest Strategy) assumes clearly as its main policy strategy the minimization of fire risks and biotic agents and the enhancement of productivity

These evidences reinforce the uncertainties associated with domestic markets to fully satisfy the supply of raw-material to wood base industries. On the long run, the high risks related to wildfires and pest and diseases are a threat to the production of roundwood at national level.

In 2018 and 2019 the severity of wildfires in Portugal decline, following the 2017 extreme impact of their incidence, with a total burnt area of 539,921 hectares, equivalent to: 500,099 hectares in forest space, comprising 329,514 hectares in forest stands and 170,585 hectares in scrublands; and 39,822 hectares in agriculture areas. Effectively, in 2018 the total burnt area is much smaller: 38,641 hectares, with 34,781 in forest space, distributed amongst 20,651 hectares of forest stands and 15.352 hectares of scrublands; and 2,638 hectares of agriculture. (ICNF, 2018).

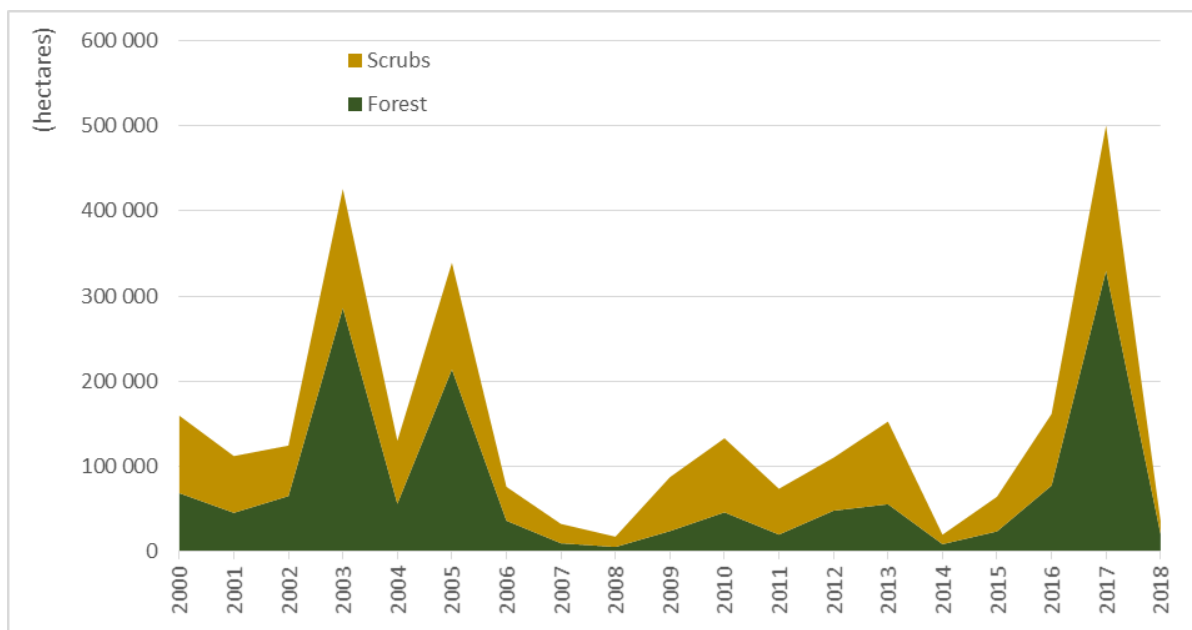


Figure 3 – Burnt areas in forest space, comprising forest stands and scrublands.

The quality of burnt wood is depreciated or even unappropriated for industrial uses. Thought, a part of the burnt wood can be used by wood base chains. On the short run, this evidence changes the patterns of the markets.

In general, the prospects for 2019 and 2020, assumes a “business as usual scenario” as no extra supply of roundwood is expected, either resulting from wildfires incidence or

⁴ RWE = roundwood equivalent, i.e. how much wood raw material is needed for a given quantity of product.

other stands disturbance events affecting national production, nor within international market developments.

In tropical timber, as well, was assumed a “business as usual”, both on imports and exports, deriving from restrictions on tropical wood markets related to the application of the timber regulation (Reg. EU 995/2010) in Portugal.

Table 3 – Forest production structure between 2000 and 2017 (Statistics Portugal, 2019a).

		2000	2010	2016	2017	2016/2017	2000/2017		2010/2017		
		10 ⁶ euros				rate of change (%)					
						annual	annual average	total	annual average	total	
Forestry and logging output at basic prices		1 458	1 025	1 240	1 260	2	-1	-14	3	23	
Forestry goods at basic prices		1 146	753	908	884	-3	-1	-23	0	17	
Timber	Coniferous timber for industrial uses	270	122	152	154	1	-3	-43	4	26	
	Sawlogs and veneer logs - coniferous	220	99	131	134	2	-2	-39	5	35	
	Pulp wood (round & split) - coniferous	42	17	15	13	-13	-4	-68	-3	-21	
	Other wood - coniferous	9	6	6	7	15	-2	-26	2	14	
	Non-coniferous timber for industrial uses	188	247	300	297	-1	3	58	3	20	
	Sawlogs and veneer logs - non-coniferous	3	5	5	5	0	3	46	0	-1	
	Pulp wood (round & split) - non-coniferous	182	241	293	291	-1	3	59	3	21	
	Other wood - non-coniferous	3	2	2	2	-2	-2	-32	2	13	
Biomass for energy		89	47	51	55	8	-2	-38	2	17	
Growing stock		103	124	133	90	-32	-1	-13	-4	-28	
Other products	Cork	469	196	249	263	6	-3	-44	5	35	
	Nursery forest plants	8	4	5	6	14	-1	-23	5	37	
	Other forestry products	19	14	19	19	1	0	0	5	34	
Net added value		267	230	260	294	13	1	10	4	28	
Secondary non forest activities		45	41	72	82	14	5	83	14	98	

4.2 Sawn wood

The Portuguese economic crisis had particular effect on the construction activity, which showed a rough contraction. Traditionally this sector dominates the end use of swan wood and carpentry products.

Another important product of sawnwood industries is wood for wrapping and packaging, which is recovering to the pre-crisis levels (in 2017 the domestic consumption exceeded in 16% de value of 2013, being 2 p.p. higher than 2012 and only -1 p.p. inferior to the one of 2011 see chapter 3).

The estimate and the forecast for sawnwood (2019 & 2020) from coniferous resume the “business as usual” scenario. Manly the previous projected increase in production and exports assumed in 2018, after 2017 wildfires, didn’t occur. It was assumed the “business as usual” is a recurrent pattern in coniferous sawn processing. Otherwise, the production of sawn derived from non-coniferous seems to be sensible to the rise of sawlogs and veneer logs, non-coniferous (2018), which incentive saw plants’ productivity. The estimate and the forecast for sawnwood (2019 & 2020) from non-coniferous prospects the adjustment of the plants to the “business as usual” levels of productivity.

In tropical sawn the context imposed under the restrictions on tropical wood markets related to the application of the timber regulation (Reg. EU 995/2010) is expected to induce estimates (2018) and forecast (2019) resuming a pattern without significant changes, since this regulation is being applied some years and supposedly the plants have already invest on subsequent adjustments.

4.3 Veneer sheets and wood base panels

The significant characteristic of the overall Portuguese forest based industries embody the efficiency in the use of the wood residues, generated within the timber processing activities, and of recycled wood products as raw material. The reutilization is particularly relevant in wood panel industries. In these sense, these industries are linked to other wood based chains, namely to sawmill activities.

The wood panels production is dominated by particle board (almost 61%) followed by fibreboard (more than 39%), which consists almost exclusively on the production of MDF (medium density). Veneer sheets had a residual importance in the overall wood panels and timber based productions, whilst no production of Plywood is made.

The great majority of panels' production (more than 76%) is exported to international markets. Thought, a significant volume is imported as well.

The estimate for 2019 and the forecast for 2020 follows the "business as usual scenario" assumed both in Roundwood and sawnwood.

4.4 Wood pulp, paper and paper board

The supply of domestic raw materials to pulp industries does not fulfil this chain industrial capacity needs. The whole satisfaction of these industries demand is yearly accomplished with raw material imports.

The estimates and forecast for 2018 and for 2019 considers the "business as usual scenario.

In Portugal the production of paper and paperboard is essentially concentrated on printing and writing paper, packaging paper and paper board and household and sanitary papers. The prospects for 2019 and 2020 are considered similar to the ones observed in previous years as no significant investments on industrial capacity are projected.

4.5 Biomass for energy

The industrial capacity to produce biomass for energy increased in recent years. The upward of this chain characterises is on table 4.

The estimates for 2018 and forecast for 2019, resume the increase of pellets' production and exports, mainly resulting from the higher production, and the "business as usual" scenario within the imports.

Table 4 - Industrial capacity of the chain of forest biomass for energy.

Type of plants	State 2018	Number	Capacity (MW)	Round wood consumption (tonnes/year)	Biomass consumption in 2015 (tonnes/year; 35% humidity)
Dedicated	Operating	9	93,5	-	1.208.084
	Approved	11	85,0	-	1.105.607
	Project	9	78,5	-	619.845
Cogeneration	Operating	8	47,3	-	715.910
Concrete	Operating	7	-	-	44.288
Pellets	Operating	6	-	840.000	126.000
	Construction	3	-	290.000	43.500

References

- APA, 2019, PNEC2030 & Programa de Ação para a Adaptação às Alterações Climáticas (P-3AC) & RCN2050, Agência Portuguesa do Ambiente, URL: <https://apambiente.pt/>
- DGEG, 2019, renováveis, estatísticas rápidas – n.º 176 – junho de 2019, Direção-Geral de Energia e Geologia, URL: <http://www.dgeg.gov.pt/>
- ECO.NOMIA, 2019, A INICIATIVA ECO.NOMIA, Secretaria Geral do Ambiente & Ministério do Ambiente & Crescimento Verde & CENSE, URL: <https://eco.nomia.pt/>.
- European Commission, 2013, A blueprint for the EU forest-based industries, (woodworking, furniture, pulp & paper manufacturing and converting, printing), Brussels, Commission Staff Working Document SWD (2013) 343 final.
- FAOSTAT, 2018, URL <http://www.fao.org/faostat/en/#home>.
- FSC Portugal, 2018, URL <http://pt.fsc.org/fsc-portugal.299.htm>.
- ICNF, 2018, Institute for Nature Conservation and Forests URL <http://www2.icnf.pt/portal/florestas/dfci/relat/rel-if>
- PEFC Portugal, 2018, URL <http://www.pefc.pt/certificacao-gfs/introducao>.
- Pordata, 2019, Pordata, Base de Dados Portugal Contemporâneo, Fundação Francisco Manuel dos Santos, URL <https://www.pordata.pt/>.
- Pordata, 2018, Retrato de Portugal PORDATA, Edição 2018, Lisboa, Fundação Francisco Manuel dos Santos, URL <https://www.pordata.pt/>.
- Rego, F., Constantino, L.; Louro, G., 2014, Forest Policies in a Changing International Context, Springer, World Forests 19, Forest Context and Policies in Portugal, Present and Future Challenges, pp 219-233.
- Statistics Portugal, 2019, Statistical Yearbook of Portugal 2018; Lisboa, Instituto Nacional de Estatística, IP..
- Statistics Portugal, 2019a, Statistics on external trade of goods, Statistics Portugal, Industrial Production Statistics, Economic Accounts for Forestry, URL: www.ine.pt.
- UNFCCC, 2019, The Paris Agreement, United Nations Climate Change, URL: <https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement>.

Annex
Table 5 - TIMBER FORECAST QUESTIONNAIRE, roundwood



 TF1 TIMBER FORECAST QUESTIONNAIRE Roundwood		Country: Portugal		Date: September 2019			
		Name of Official responsible for reply: Graça Louro					
Official Address (in full): Instituto da Conservação da Natureza e das Florestas, IP, Avenida da República, 16, 1050-191 LISBOA – PORTUGA		Telephone: (+351) 213 507 900		Note: Complete only if data for 2018 have been revised.			
		E-mail: Graca.Louro@icnf.pt					
Product Code	Product	Unit	Historical data		Revised	Estimate	Forecast
			2017	2018	2018	2019	2020
1.2.1.C	SAWLOGS AND VENEER LOGS, CONIFEROUS						
	Removals	1000 m ³ ub	1 848	2 050 E	1 851	1 900	1 950
	Imports	1000 m ³ ub	164 #	100 #	173	170	165
	Exports	1000 m ³ ub	42 #	50 #	9	15	30
	Apparent consumption	1000 m ³ ub	1 970	2 100	2 016	2 055	2 085
1.2.1.NC	SAWLOGS AND VENEER LOGS, NON-CONIFEROUS						
	Removals	1000 m ³ ub	59 R	30 E	189	100	60
	Imports	1000 m ³ ub	126 #	60 #	200	140	130
	Exports	1000 m ³ ub	0 #	7 #	13	10	8
	Apparent consumption	1000 m ³ ub	185	83	376	230	182
1.2.1.NC.T	of which, tropical logs						
	Imports	1000 m ³ ub	23 #	20 E	22	20	22
	Exports	1000 m ³ ub	4 #	6 E	9	6	7
	Net Trade	1000 m ³ ub	18	14	13	14	15
1.2.2.C	PULPWOOD (ROUND AND SPLIT), CONIFEROUS						
	Removals	1000 m ³ ub	1 861	1 939		1 930	1 920
	Imports	1000 m ³ ub	61 #	40 #	90	70	80
	Exports	1000 m ³ ub	232 #	240 #	43	100	90
	Apparent consumption	1000 m ³ ub	1 690	1 739	1 987	1 900	1 910
1.2.2.NC	PULPWOOD (ROUND AND SPLIT), NON-CONIFEROUS						
	Removals	1000 m ³ ub	8 454	8 430		8 450	8 440
	Imports	1000 m ³ ub	940 #	900 #	1 572	1 100	1 000
	Exports	1000 m ³ ub	181 #	200 #	410	400	350
	Apparent consumption	1000 m ³ ub	9 213	9 130	9 591	9 150	9 090
3	WOOD CHIPS, PARTICLES AND RESIDUES						
	Domestic supply	1000 m ³	2 323 C	2 584 C	2 175	2 400	2 500
	Imports	1000 m ³	1 736 C	1 726 C		1 730	1 740
	Exports	1000 m ³	51 C	126 C		80	120
	Apparent consumption	1000 m ³	4 009	4 183		4 050	4 120
1.2.3.C	OTHER INDUSTRIAL ROUNDWOOD, CONIFEROUS						
	Removals	1000 m ³ ub	111	120 E	159	130	120
1.2.3.NC	OTHER INDUSTRIAL ROUNDWOOD, NON-CONIFEROUS						
	Removals	1000 m ³ ub	185	210 E	199	195	190
1.1.C	WOOD FUEL, CONIFEROUS						
	Removals	1000 m ³ ub	169	235		200	170
1.1.NC	WOOD FUEL, NON-CONIFEROUS						
	Removals	1000 m ³ ub	878	944		950	950

Table 6 - TIMBER FORECAST QUESTIONNAIRE, forest products.

 UNECE TF2 TIMBER FORECAST QUESTIONNAIRE Forest products		Country: Portugal		Date: September 2019			
		Name of Official responsible for reply: Graça Louro					
		Official Address (in full): Instituto da Conservação da Natureza e das Florestas, IP, Avenida da República, 16, 1050-191 LISBOA – PORTUG					
		Telephone: (+351) 213 507 900		Note: Complete only if data for 2018 have been revised.			
		E-mail: Graca.Louro@icnf.pt					
Product Code	Product	Unit	Historical data		Revised 2018	Estimate 2019	Forecast 2020
			2017	2018			
6.C	SAWNWOOD, CONIFEROUS						
	Production	1000 m ³	952	1 100 E	954	950	955
	Imports	1000 m ³	93	109		100	99
	Exports	1000 m ³	279	307		290	300
	Apparent consumption	1000 m ³	766	902	756	760	754
6.NC	SAWNWOOD, NON-CONIFEROUS						
	Production	1000 m ³	37 R	40 E	132	100	99
	Imports	1000 m ³	589 E	83 E	614	550	600
	Exports	1000 m ³	103	72		80	90
	Apparent consumption	1000 m ³	523	51	673	570	609
6.NC.T	of which, tropical sawnwood						
	Production	1000 m ³	15 R	12 E	13	12	13
	Imports	1000 m ³	39	35		34	35
	Exports	1000 m ³	50	32		33	32
	Apparent consumption	1000 m ³	4	15	16	13	16
7	VENEER SHEETS						
	Production	1000 m ³	13 C	30 C	94	60	45
	Imports	1000 m ³	3 C	24 C		25	20
	Exports	1000 m ³	15 C	37 C	32	30	35
	Apparent consumption	1000 m ³	0	17	86	55	30
7.NC.T	of which, tropical veneer sheets						
	Production	1000 m ³	0	1 E	78	20	15
	Imports	1000 m ³	8	6		7	6
	Exports	1000 m ³	6	4		5	4
	Apparent consumption	1000 m ³	1	4	81	22	17
8.1	PLYWOOD						
	Production	1000 m ³	0 C	0 C		0	0
	Imports	1000 m ³	93 C	96 C		90	95
	Exports	1000 m ³	36 C	18 C	41	15	20
	Apparent consumption	1000 m ³	58	78	55	75	75
8.1.NC.T	of which, tropical plywood						
	Production	1000 m ³	0 R	0 E		0	0
	Imports	1000 m ³	3	3		3	3
	Exports	1000 m ³	1	1		1	1
	Apparent consumption	1000 m ³	2	1		2	2
8.2	PARTICLE BOARD (including OSB)						
	Production	1000 m ³	661	637		645	650
	Imports	1000 m ³	456	587		500	460
	Exports	1000 m ³	459	435		440	450
	Apparent consumption	1000 m ³	658	789		705	660
8.2.1	of which, OSB						
	Production	1000 m ³	0	0		0	0
	Imports	1000 m ³	24	33		30	35
	Exports	1000 m ³	0	2		1	2
	Apparent consumption	1000 m ³	23	32		29	33
8.3	FIBREBOARD						
	Production	1000 m ³	389 C	414 C	411	409	415
	Imports	1000 m ³	367 C	387 C	412	410	405
	Exports	1000 m ³	311 C	384 C	325	310	295
	Apparent consumption	1000 m ³	445	418	498	509	525
8.3.1	Hardboard						
	Production	1000 m ³	29	29 R	26	29	30
	Imports	1000 m ³	29 E	52 E	34	40	35
	Exports	1000 m ³	20 E	26 E	22	20	25
	Apparent consumption	1000 m ³	38	55	37	49	40
8.3.2	MDF/HDF (Medium density/high density)						
	Production	1000 m ³	360	386		380	385
	Imports	1000 m ³	266	319	310	300	310
	Exports	1000 m ³	220 E	312 E	235	230	220
	Apparent consumption	1000 m ³	406	392	461	450	475
8.3.3	Other fibreboard						
	Production	1000 m ³	0	0 R		0	0
	Imports	1000 m ³	72	17	68	70	60
	Exports	1000 m ³	72 E	46	68	60	50
	Apparent consumption	1000 m ³	1	-29	1	10	10
9	WOOD PULP						
	Production	1000 m.t.	2 753 C	2 773 C		2 780	2 775
	Imports	1000 m.t.	172 C	182 C	187	175	181
	Exports	1000 m.t.	1 179 C	1 152 C	1 159	1 160	1 155
	Apparent consumption	1000 m.t.	1 745	1 803	1 801	1 795	1 801
12	PAPER & PAPERBOARD						
	Production	1000 m.t.	2 095 C	2 060 C		2 080	2 090
	Imports	1000 m.t.	877 C	904 C		900	880
	Exports	1000 m.t.	1 889 C	1 887 C	1 882	1 888	1 890
	Apparent consumption	1000 m.t.	1 083	1 077	1 082	1 092	1 080
5.1	WOOD PELLETS						
	Production	1000 m.t.	710	735		740	750
	Imports	1000 m.t.	34	6	53	25	30
	Exports	1000 m.t.	501	515	537	540	545
	Apparent consumption	1000 m.t.	243	225	250	225	235