

Authors: Daniela Thraen , Kay Schaubach and Task 40 members

Edited by: Thuy Mai-Moulin

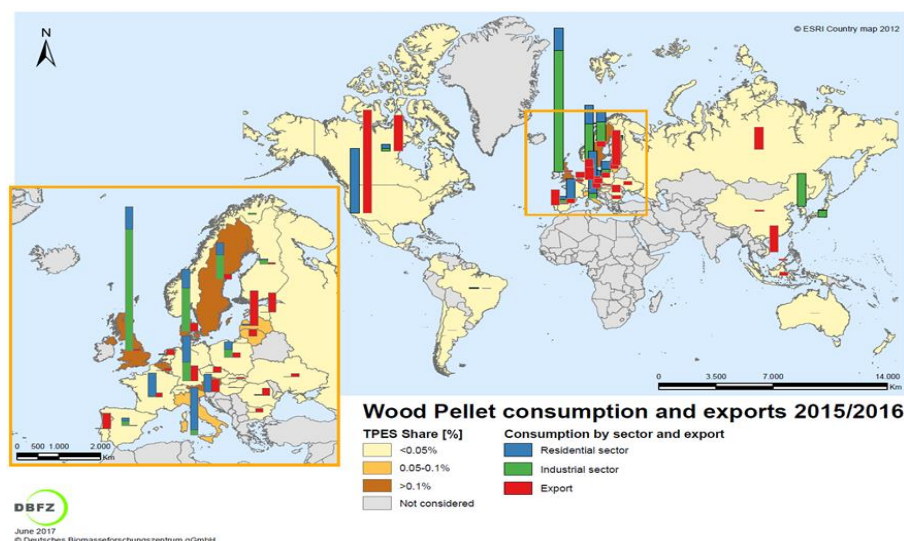
SUMMARY

Over the past 10 years, the global production of wood pellets increased steadily, driven by a corresponding constantly rising demand. For 2006, the production was estimated between 6 and 7 Mt (excluding negligible production in Asia, Latin America and Australia), expanding globally to 14.3 Mt in 2010 (IEA Bioenergy, 2011) and surpassed 26 Mt in 2015.

With this report, we provide an inventory of the wood pellet industries and markets for more than 30 countries with regard to regulatory framework, production capacities, consumption and price trends, trade, logistics and country specific standardization aspects.

So far, wood pellets of dedicated qualities are dominating and are delivered and consumed in two different markets: In the electricity generation sector and in the residential heating sector. Based on ISO 17225-2, two quality groups are defined: Pellets for residential use and those for industrial use, by this reflecting the market segregation. In the future, wood pellets might also become a renewable resource for green chemistry and biobased materials.

The report can be found at: <http://task40.ieabioenergy.com/iea-publications/task-40-library/>



COUNTRIES WITH RELEVANT WOOD PELLET CONSUMPTION AND/OR EXPORT IN 2015

The global wood pellet market has increased dramatically since 2011, with an average increase rate of 14% per year. New countries have entered the market for both, pellet production (such as those from South-East Europe) and pellet consumption (such as East Asia). Also, the global wood pellet trade increased. Intercontinental flows are dominated by the trade relation between the U.S. and the UK. The Asian markets show also a strong growth, with Japan and South Korea as the main consumers to replace coal in large power

plants. The non-industrial use is still mainly an intra-European business. Russia and the Baltic states are becoming increasingly important for these markets as exporters. Given that the major demand is in Europe, the EU as a region is also by far the largest producer (2015: 54%), followed by North America (2015: 35%), which is mainly export-driven. Asia, the Russian Federation, Australia and Latin America play minor roles in the global pellet production (2015: 11%).

On a country basis the U.S. stands out as the largest pellets producer by far with 7.4 Mt in 2015 (FAO-estimate) and 6.3 Mt in 2016. Canada is the country with the most dynamic development, having increased the export from 1.6 Mt in 2015 to 2.4 Mt in 2016. Other large producers are Germany (2.2 Mt) and Sweden (1.5 Mt). With regard to pellet consumption, the United Kingdom is the largest consumer with 6.7 Mt pellets in 2015, followed by the U.S. with 2.9 Mt, Denmark (2.8 Mt) and Italy (2.1 Mt).

For Europe, the European Pellets Council identifies the further improvement of efficiency and quality of pellet production, of logistics and heating appliance efficiency. The residential market is expected to grow at a constant pace. Also, new markets need to be addressed, such as medium scale (heat and CHP). The replacement of coal in power plants has been one of the major growth markets in the past within the EU, but has recently slowed down. Nevertheless new plants i.e. in the Netherlands and Denmark are planned to go online within the next two years. One obstacle is the current uncertainty of bioenergy support from the EU policy level. Several national governments in Europe have strengthened their support, yet are waiting for clear signals from EU level (esp. Winter Package and RED II) clarifying the sustainability demands for wood pellets and the necessity to produce large-scale power only from woody biomass with increasing amounts of other renewable electricity.

Large-scale power markets in East Asia are rapidly picking up. In Asia, South Korea will continue to be the largest consumer, mainly supplied by Vietnam. However, China has set a goal of using 30 Mt of biomass pellets consumption in 2020 to replace 15 Mt of coal. The effects are yet uncertain. Another factor possibly impacting the pellet market is the rising sustainability certification requirement in the EU.

CHALLENGES

The ongoing development of the wood pellet market also leads to new challenges: Appropriate trade infrastructure has to be developed and built, such as storage, loading and handling capacities in the pellets production regions, as well as in commercial areas and harbors. Additional conversion capacities lead to resource demand, which has to be provided in a sustainable way. To deal with those issues, some actions have been taken by different stakeholders, such as policy, pellet consumers and also technology developers. This includes for example the development of sustainability roles and certification schemes (by certain national governments), the preparation of standards for safe handling instructions (by ISO), development of technologies for provision of pellets from more difficult feedstock (i.e. torrefaction of straw based materials) and adjustment of the infrastructure such as harbors.

Several studies have evaluated the cost of producing and transporting wood pellets. Cost calculation of modelled supply chains differ between 60 and 160 €₂₀₁₆ per ton pellets delivered. The prices vary between different settings and based on intransparent data. Thus, the development of a mature and international market is still a challenge.

OUTLOOK

During the last years, the pellet market has been developed continuously worldwide and for the time being this trend is ongoing. Increasing demands are expected for both - industrial application in large scale power plants and small scale application in residential heating systems. More than one third of the overall consumed pellet amount of 26 Mt in 2015 has been intercontinentally traded, mainly from the Americas to Europe and Asia. The efforts taken to improve product qualities (torrefaction) and market information (contracts/indices) provide new opportunities for (wood) pellet application and trade, but their market uptake is not yet visible. The development of pellet prices still differs between countries. Additional effort should be taken to increase market maturity.

Further market development also depends on the regulatory frame conditions, especially the international effort to mitigate climate change and the sustainability requirements for the feedstock. Dynamics in frameworks can be observed in many countries and will be key for the further establishment of wood pellet industry and trade.