



**BACKGROUND STUDY ANALYSIS**

**FOR**

**NATIONAL BIOECONOMY STRATEGY**

**LATVIA**

**2017**

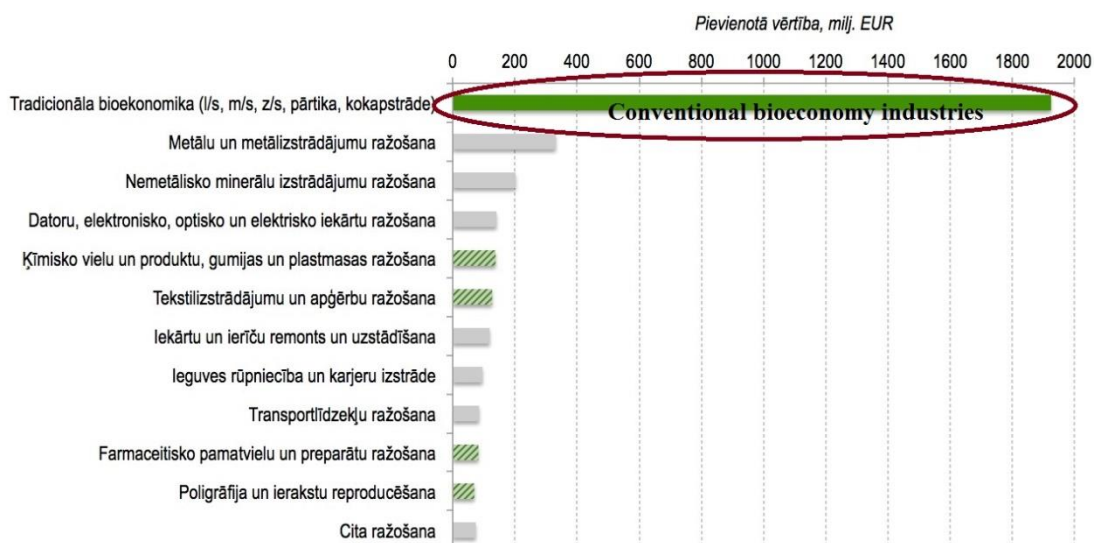
Bioeconomy is a part of the economy, where biological, land and water resources are used in a sustainable and circular form for the production of food and feed, industrial and energy products.

Latvian bioeconomy sector includes many sectors of the economy and conditionally can be divided into four groups:

- Bio-resources primary production (mainly agriculture, forestry and fisheries sectors).
- bio-processing industry, where activity has largely or completely dependent on bio-resources (mainly food and feed production, wood processing, leather products)
- bio-processing industry in which bio-resources competes or is an alternative to other materials, (mainly chemicals, textiles, energy, pharmaceutical industry).
- service industries which based on bio-resources (mainly construction, as well as catering and accommodation sectors).

The first two of these groups are considered to be traditional bio-economy sectors.

Bioeconomy is backbone of the Latvia's economy. Traditional bio-economy sectors` (agriculture, forestry, fisheries, food processing, as well as the timber industry) contribution to the Latvia's manufacturing sector in 2014 accounted for 57% of all productive sectors added value and it is almost 6 times more than the next most important sectors - metal and metal products. In absolute terms, the bio-traditional sectors added value in 2014 was 1.92 billion euro (see. Figure 1).



**Figure 1. Production sectors added value in Latvia, 2014 (mill. euro)<sup>1</sup>**

In addition to conventional bio-economy sectors also part of the chemical industry, textile and pharmaceutical industry produced added value can be attributed to the bio-economy. However, bio-based production part of these sectors is difficult to pinpoint. The situation is similar in construction.

Bio-economy make up around 55-60% of the total national exports of goods and the sector is a critical for balanced state development. In absolute terms, in 2016 the bio-economy sector exports accounted for 4.26 billion euro and the sector overall positive export-import balance was +1.28 billion. Trend mainly was driven by wood and wood products, as well as cereals, oilseeds and dairy products. A considerable part of these products is still exported in the form of raw materials.

Equally important the traditional bio-economy industries are in social terms - in 2014 these sectors employed 125 thousands, or 2/3 of the manufacturing sector, and 14% of the total number of employees in the country. There should also be added about 150 thousand private forest owners who benefit from forest irregular income, as well as more than 30 thousand farmers, who produce for personal consumption.

<sup>1</sup> Source: Eurostat National Accounts aggregates by industry (up to NACE A\*64) [nama\_10\_a64]

## **The bio-economy development opportunities for Latvia**

Regardless of all the preconditions for the development of the bioeconomy in Latvia, the current trend indicates stagnation. A set of measures is necessary for the development of the bioeconomy in Latvia, which would allow using the existing potential.

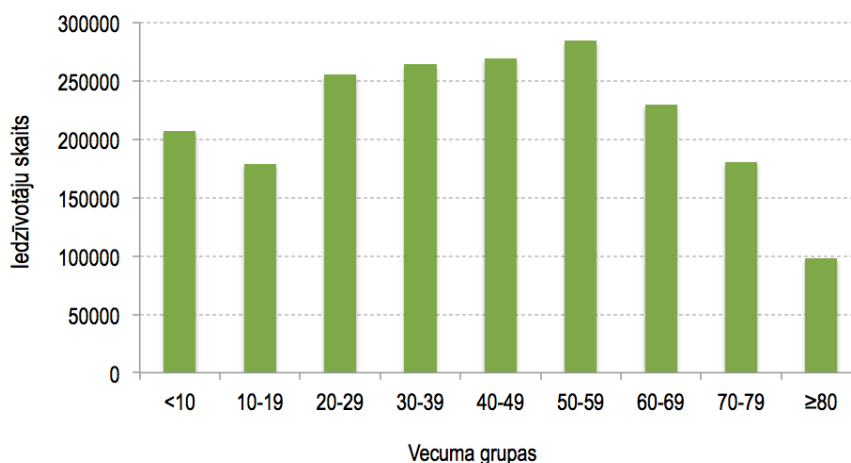
It is urgent for the traditional bioeconomy industries, which already currently represent a pillar of the national economy and have large potential for growth. It is even more urgent for “new” bioeconomy industries, as the replacement of fossil resources with bio-based resources could not be achieved by means of simple replacement of raw materials – it requires cardinal changes in the production chain and processes, considerable investment and innovation in both the development of new products, the modernisation of production and the ability to enter the world’s production chains. It has to be taken into consideration that it requires a lot of investment in both technological resources and human resources.

Besides, it is critically important to change the consumption pattern of society from fossil resource-based goods and materials to bio-based ones.

Increased use of bio-resources is a big opportunity for Latvia’s development, assessing from several angles.

### **Economic development and jobs**

Well-paid job shortage is a critical issue in Latvia. This is the main reason why within the last 15 years over 300 thousands inhabitants have emigrated (a large part of them are young people). This causes significant changes in age structure of society. In fact, age structure of the Latvian society is incompatible with the sustainable development and the crisis is expected in the period up to 2030, when the people who are now in the age group 50-59 years, will reach retirement age, but children of the age group 10-19 years will reach working-age (see Figure 2).



**Figure 2. Latvian population age structure, 2016<sup>2</sup>**

Creation of well-paid jobs is the only way how to address the problem of skilled labour shortage under the national sustainable development by 2030.

Developing of well-paid jobs in a sustainable way is important prerequisite to increase the production of export-oriented (and competing with imports) goods and services. Latvian bioeconomy sectors in this respect have the greatest potential - sectors competitive advantages demonstrate the fact that production of internationally tradable goods already dominates in these sectors.

### **Territorial development**

Development of rural areas is closely linked to land use as the core competitiveness determining resource of rural areas. Bio-economy development is also linked to land use for bio-production. At present, agriculture, forestry and public authorities are major employers in rural areas. Also bio-processing industry is not so highly concentrated around Riga in comparison with other sectors, but located closer to bio-resources. Therefore, bio-economy sector development can ensure more smooth and balanced territorial development compared to other manufacturing or processing industries.

### **Strategic goal of the development of the bioeconomy**

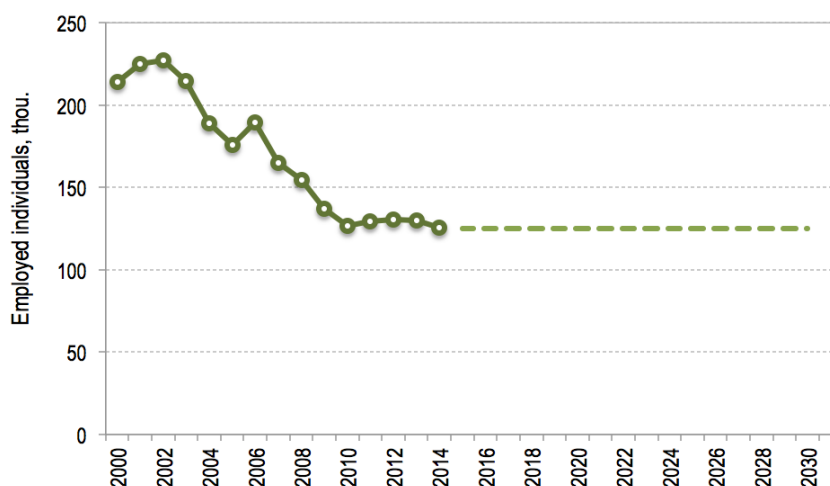
Latvia's **vision for the strategy of the development of the bioeconomy** – the bioeconomy industries of Latvia are innovation leaders in the Baltic States in preserving natural capital, increasing its value and in efficiently and sustainably exploiting it. In Latvia, innovative approaches to the efficient and sustainable

<sup>2</sup> Avots: CSP datubāze (ISG022, Pastāvīgo iedzīvotāju skaits un vecuma struktūra gada sākumā)

exploitation of natural resources are developed and introduced in the bioeconomy industries in order to provide growth in the national economy through higher value-added, exports and employment.

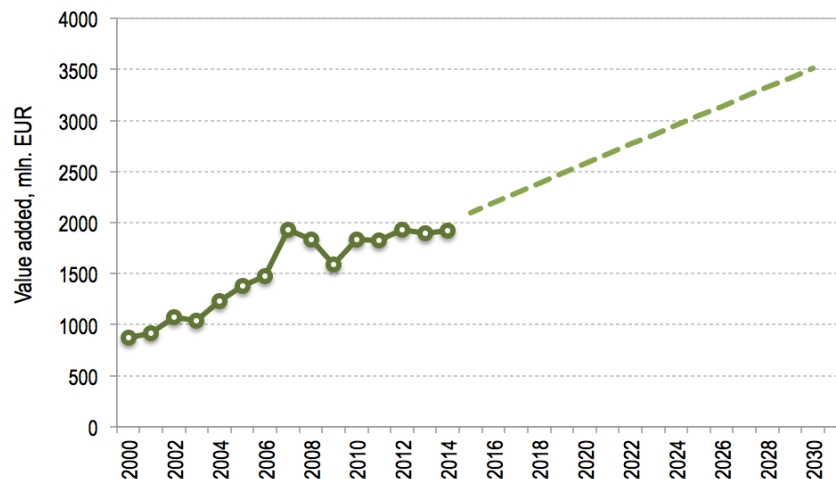
The **strategic goals of the development of the bioeconomy** are divided into three groups: higher value-added, increase in exports and retention of employment.

The long-term employment trend in the bioeconomy sector is downward sloping. This, to a great extent, is associated with structural changes in the agricultural sector, in which small farms quit the market. However, at the same time, production efficiency increase processes take place fast in all the bioeconomy industries, and conventional agricultural production requires fewer employees year by year. The goal of this strategy is to ensure that by 2030 the conventional bioeconomy industries retain the number of their employees at the level of 2014, i.e. 125 thousand individuals.



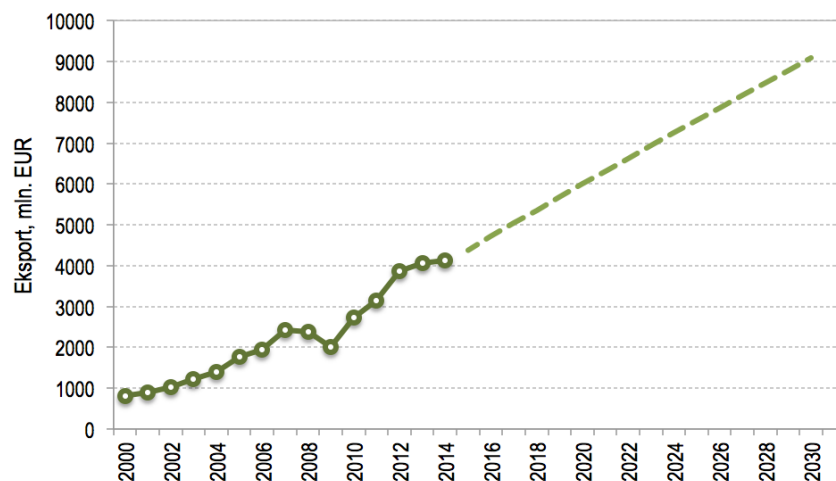
**Figure 3. Number of employed individuals in Latvia in the period 2000-2014 and the employment target for the conventional bioeconomy industries until 2030**

To retain such a number of employed individuals in the bioeconomy by 2030, given the production efficiency increase process, it is necessary to considerably increase the value added created in the bioeconomy sector. Assuming that the value added per employee is expected to increase from EUR 15.2 thou. in 2014 to EUR 28 thou. in 2030, the value added target for the conventional bioeconomy industries would be an increase from the current EUR 1.92 billion to EUR 3.5 billion.



**Figure 4. Value added created by the conventional bioeconomy industries in Latvia in the period 2000-2014 and the value added target for 2030, mln. EUR**

Increasing the value added is impossible without increasing exports. The export target of the Bioeconomy Strategy of Latvia is to reach EUR 9 billion by 2030.



**Figure 5. Exports of the conventional bioeconomy industries in Latvia in the period 2000-2014 and the export target for 2030, mln. EUR**

Increasing the value of exports to such a level would considerably improve the country's foreign trade balance, which will make secondary positive effects in the national economy through new jobs and output increase in domestic market-oriented service sectors.

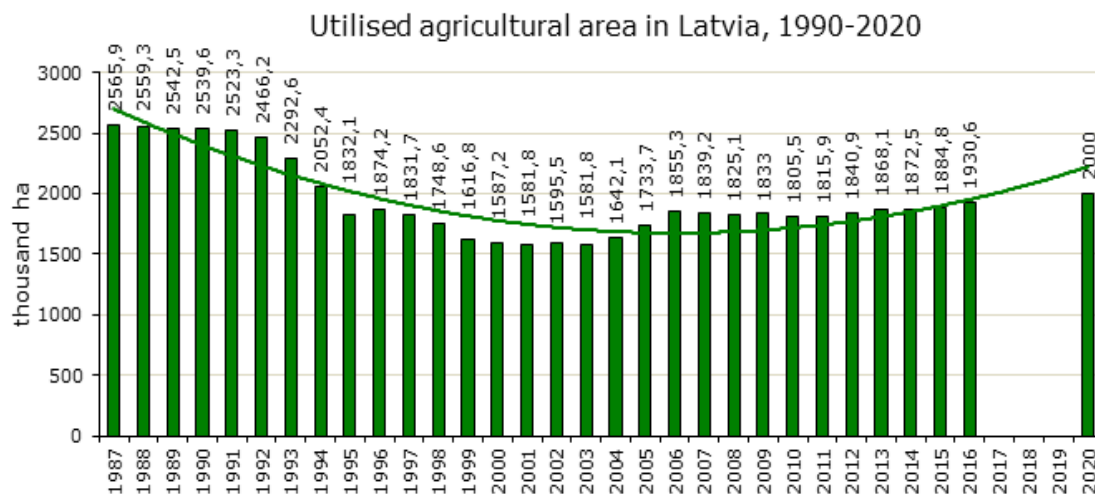


## Land management

Land management policy development is critically important in the context of the bioeconomy development as bio-based industries are fully dependent on land use.

52% of the land area in Latvia is forest and 37 % is agricultural land (including 26% of cropland and 11% of grassland), respectively, rural territories covers more than 80% of country's area, thus functional and inclusive land use planning is of essential importance.

One of Latvia's specific circumstances which have to be highlighted is unused potential of land resource (e.g. income and added value per ha) which is identified in each of the land use categories. In Latvia the highest national-level medium-term planning document – the National Development Plan 2014–2020 emphasize “*economic growth strategy*”, inter alia recognising sustainable use of natural resources (agricultural land, forest, peatland – for sustainable production of food, feed, fibre and fuel). National target set in the National Development Plan 2014-2020 foresees that by 2020 managed agricultural land share has to be 95% from the total land area that can be used for agricultural purposes.



**Figure 6. Utilised area of farmlands<sup>3</sup>**

Currently, policy documents in Latvia in different areas related to land use are not always consistent. There are documents emphasizing forestry and agriculture related targets, simultaneously others solely emphasize regional

<sup>3</sup> EUROSTST, last update 7 November 2016.

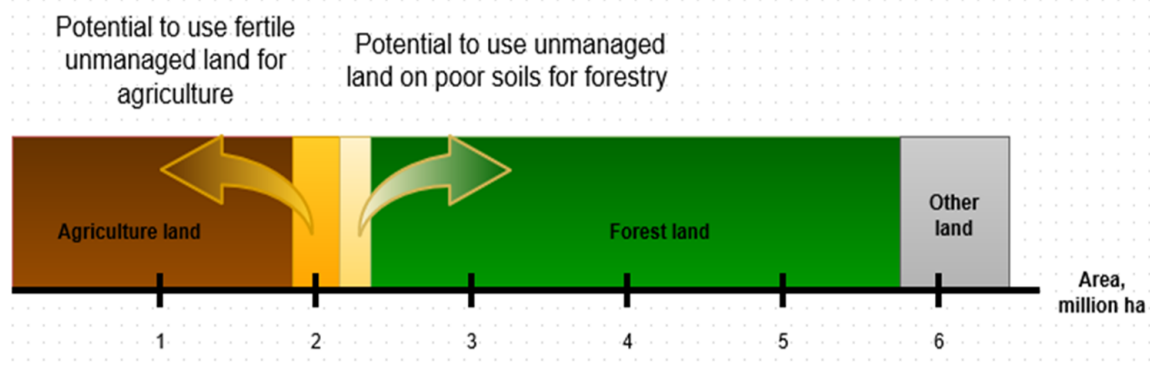


development, biological diversity, water and environmental protection. Farmland (agriculture and forest) is expected to provide increased productivity and at the same time ensure high quality environmental and social services. Efforts to address these diverse functions bring us to more and more comprehensive and functional land use planning needs at country, municipal and real estate level.

Functionality of land use planning becomes especially important when management decisions have to be adopted for territories that are special or marginal for some reason (e.g. organic soil or abandoned land).

Maximum sustainable biomass productivity goal for each hectare has to be balanced with social, environmental and climate impacts. The question is how to produce more of agriculture and forestry added value goods, foster rural employment and by this carry less impact on environment.

There exists considerable land use potential in Latvia (Pilvere et.al.(2014))<sup>4</sup> and it has to be covered under the development of bioeconomy strategy in Latvia.



**Figure 7. Land use potential in Latvia**

Land use structure has changed significantly during the period of last 20-25 years mainly concerning agricultural land. Initially changes dominated by the process of intensive natural regrowth of forest in areas where agriculture has become less intensive, but lately process of conversion of recently afforested land back to agriculture has gained importance.

To support successful bioeconomy development in Latvia, comprehensive land use policy has to be developed first and land use potential should be attained

<sup>4</sup> Pilvere I., Nipers A., Upite I. (2014) Agricultural Land Utilization Efficiency: the Case of Latvia. IJTEF International Journal of Trade, Economics and Finance. IACSITPRESS, Singapore, Vol.5, No.1, February 2014, pp.65-71

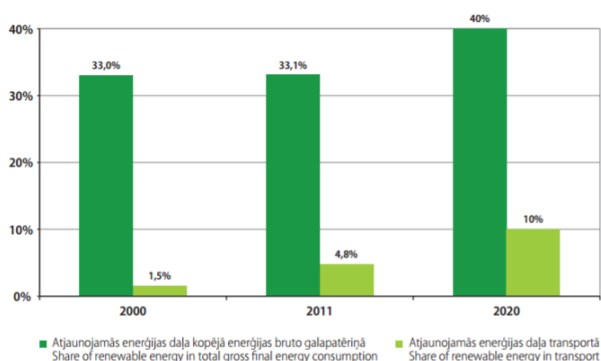
both - in vertical dimension by adding value to production and in horizontal dimension by adding currently unused land either to active forest management or agriculture land management.

Looking from biomass production perspective it is important to balance land used for food and feed and land used for bioenergy purposes. Comprehensive and up-to-date soil information as well as good knowledge of soil characteristics and functionality is absolutely necessary to achieve this balance. One of Latvia's specific circumstances which have to be highlighted is high proportion of organic soils (around 5-7 %). Understanding amount of greenhouse gas emissions released by organic soil cultivation, this type of soils should become a hot spot in land use management planning process in Latvia. Currently Latvia has some information (still more of historic not up to date nature) on physical data on organic soils, but lacks socioeconomic and scientifically sound based analyses on the most appropriate land use management solutions. Such research is needed and can help develop knowledge based and well-motivated policies.

## Energy sector in Latvia

Latvia is one of those countries strongly dependent from imported energy resources. The most significant local energy resources used are fuelwood and hydro energy (Daugava HPP cascade). Solid fuel, oil products and electricity are imported from several countries and supply regions, but there is only one supplier for natural gas – Russia. The split of energy flows shows the relatively high dependence from energy import<sup>5</sup>.

Atjaunojamās enerģijas 2020. gada mērķu izpilde (pēc Direktīvas 2009/28/EK\* metodoloģijas)  
Fulfilment of renewable energy 2020 targets (by Directive 2009/28/EC\* methodology)



\* Eiropas Parlamenta un Padomes Direktīva 2009/28/EK (2009. gada 23. aprīlis) par atjaunojamo energoresursu izmantošanas veicināšanu un ar ko groza un sekojoši atceļ Direktīvas 2001/77/EK un 2003/30/EK (Dokuments attiecas uz EEZ)  
Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and subsequently repealing Directives 2001/77/EC and 2003/30/EC (Text with EEA relevance)

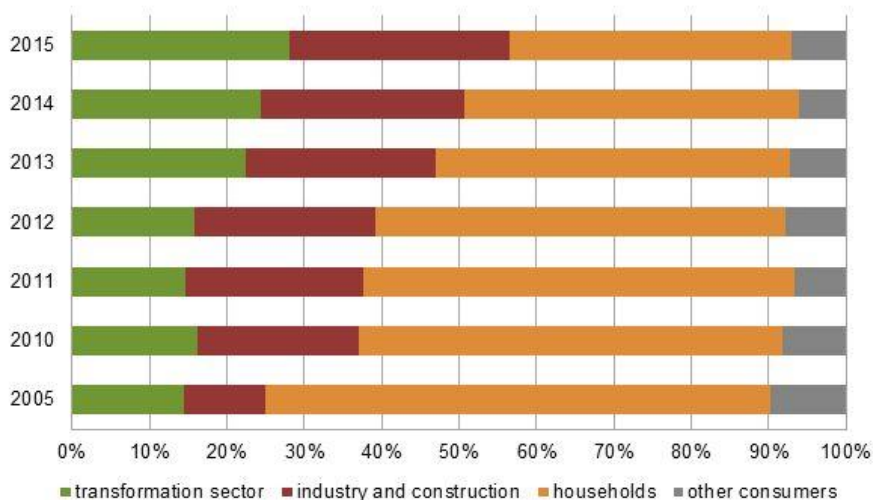
<sup>5</sup> [https://www.em.gov.lv/files/energetika/les\\_2013.pdf](https://www.em.gov.lv/files/energetika/les_2013.pdf)

During recent years the structure of energy consumption has changed – consumption of natural gas has decreased, consumption of renewable energy resources, especially fuelwood, has increased. Over a period of ten years the share of natural gas in gross energy consumption has dropped by 4,7 %, and was 24.9 % in 2015. Meanwhile, the share of fuelwood consumed has risen by 4.5 %, reaching 30.2 % in 2015. The gross consumption of other energy resources, including straw, biogas, and biofuel, increased from 0.7 PJ in 2005 to 8.0 PJ in 2015.

As the gross consumption of renewable resources (mainly formed by domestic energy resources) increased, Latvian dependence upon imported energy resources reduced – from 63.9 % in 2005 to 40.6 % in 2014<sup>6</sup>.

Over the decade, gross consumption of fuelwood has increased by 6.4 %, reaching 52.6 PJ in 2015. In 2015, the share of fuelwood in the gross energy consumption accounted for 28.4 %.

The highest consumption of fuelwood still was recorded in household sector, however the indicator has declined by 28.7 % during the decade, constituting 36.4 % of the gross consumption of fuelwood in 2015. Compared to 2005, fuelwood consumed in industry and construction has risen 2.9 times, and in 2015 fuelwood consumption in the sectors accounted for 28.5 % of the gross consumption of fuelwood.

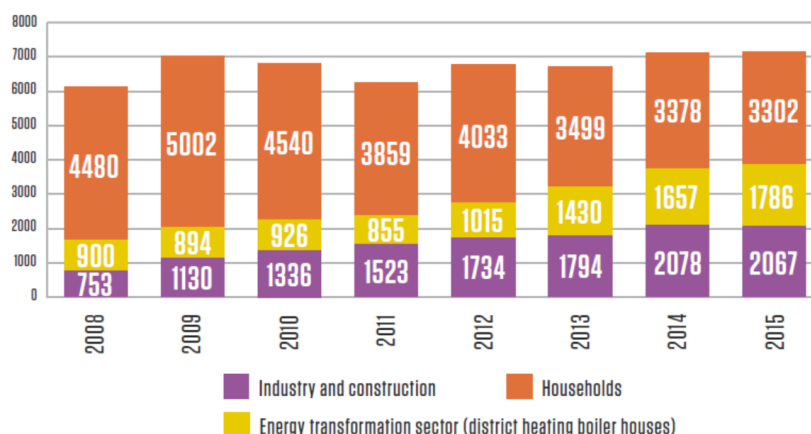


**Figure 8. Consumption of fuelwood in Latvia, % (Source: CSB)**

<sup>6</sup> <http://www.csb.gov.lv/en/notikumi/consumption-renewable-energy-resources-2015-44050.html>

During the decade, the share of renewable resources consumed in transformation sector has grown by 19.4 percentage points, reaching 36.1 % in 2015. Compared to 2014, the consumption of fuelwood in transformation sector has went up by 7.6 %. It may be explained by the fact that number of combined heat and power (CHP) plants and share of renewable sources in the transformation sector was growing, and the share of natural gas was reducing. During the time period from 2005 to 2015, consumption of fuelwood in the transformation sector increased 2.1 times, reaching 14.7 PJ.

Wood biomass domestic consumption in m<sup>3</sup> has been stable in last eight years with little increase (See Figure). At the same time Latvia export resources for energy to other European countries – such as Denmark, United Kingdom, Sweden etc.. Export amount in monetary terms illustrate Figure 10.

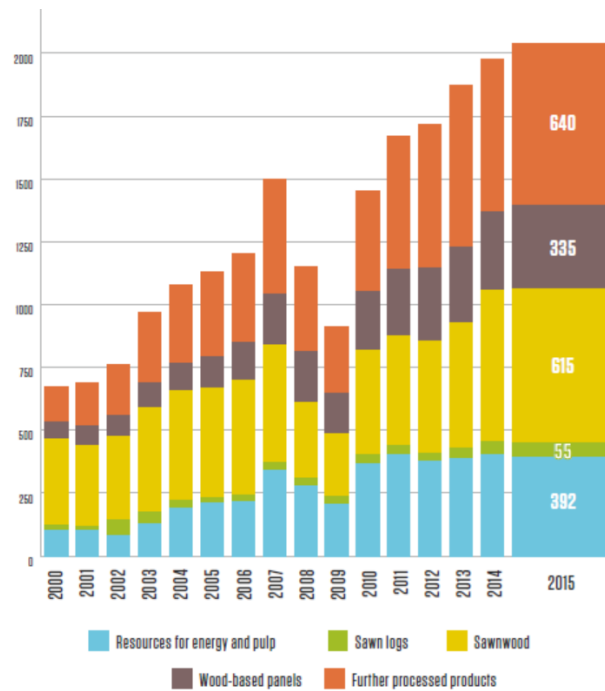


**Figure 9. Wood biomass consumption in Energy production, Thousand m<sup>3</sup>**  
(Source: Forest and Wood Products Research and Development Institute)

In 2015, Latvia exported 33.7 PJ of fuelwood – 11.1 % more than in 2014. Compared to 2014, the volume of wood pellets produced grew by 14.1 %, and the volume of wood chips produced went up by 8.4 %. In 2015, Latvia exported 28.0 PJ of wood pellets – 20.4 % more than in 2014.



Ministry of Agriculture  
Republic of Latvia



**Figure 10. Forest Sector export development, Mill. Euro**

*(Source: Latvian Forest Industry Federation)*

In Latvia’s energy sector bio-resources are used primarily for heat production. Although the heat production is an important area of energy generation and for such products are favourable market conditions, but it is low value-added products. In the future, it would be necessary to promote greater added value of bio-resources.

Biofuel production is largely considered to be the transition of resources, while developing vehicles electrification. At the same time in the future biofuels could be use in cases where electrification is difficult to implement.