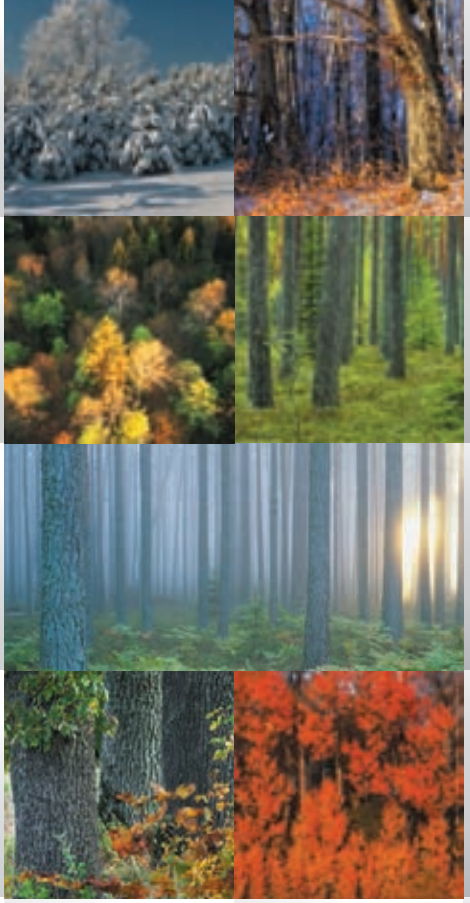
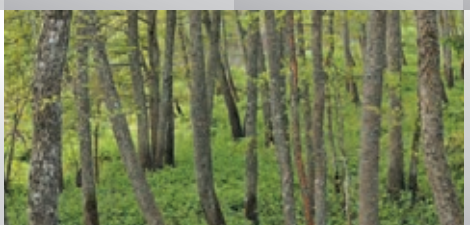


Latvia's Forests During 20 Years of Independence



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01

Forests **for People!**

It can be said with ample certainty that Latvia is a land of forests and timber is the country's green gold. Nearly every resident of Latvia is involved with the forest, forestry and forest products in one way or another. The forest has deep roots in our cultural traditions, it offers ways of spending one's free time, and it allows people to earn money. Timber has been used for centuries in construction and the manufacturing of furniture and various household objects. Since the restoration of Latvia's independence, moreover, the forestry sector has become one of the most important sectors in the country's economy. The forest is one of the most important resources for the development of rural regions, and provides a living for more than 80,000 people who work in various related sectors. To them one can add some 150,000 private owners of forestland in Latvia – people who earn irregular income from the forest. Finally, surveys show that more than 80% of Latvia's residents regularly visit the forest to participate in sports, hunt for mushrooms or pick berries. It is also true that Latvia's forests are home to vast environmental treasures which, in some cases, are unique not just at the European, but also the global level.

The success of Latvia's forest sector has everything to do with the fact that all of these seemingly diverse interests have been successfully harmonised. Compromise has been achieved so as to ensure sustainable forest management. Latvia's official forest policy speaks to the agreement reached in terms of its principles and goals among members of the public, environmental activists and representatives of the wood processing industry.

These seem to be simple and universal truths, but the fact is that public opinion in Latvia is often government by very generalised, out-of-date and, sometimes, completely erroneous ideas about forestry and wood processing. This increases the number of negative stereotypes about this sector, which is of such great importance to the national economy, and it also does not encourage people to use timber products. Latvia, moreover, is not the only country in the world in which similar problems exist. People who take part in global politics are aware of this, and that is why the United Nations declared 2011 to be the International Year of Forests, with the slogan "Forests for People." The UN called on all member states and their governments to become actively involved in organising various events to promote dialogue about forest issues and the sustainable management of forests.

This brochure, "Latvia's Forest During 20 Years of Independence," has been put together by the forest sector to remind not just representatives of the sector, but also the public at large, of the great investment which the forest makes in economic development in Latvia. The authors hope to illustrate that which the forest has provided to people since the restoration of Latvia's independence, as well as the investment which people have made in protecting the forest and ensuring its sustainability.

02

Latvia's Forests **Policy**

Over the past 20 years, the forest sector in Latvia has experienced enormous growth in terms of technologies and knowledge alike. Representatives of the timber industry began to gather together in associations in the 1990s so as to be able to defend their interests more successfully not just in Latvia, but also in export markets. The Latvian Forest Industry Federation, in turn, was established in 2000 to assist in the development and coordination of the activities of the various associations, as well as to represent the interests of the timber industries at the international level. At that time, the number of business issues which could be addressed with the help of the various associations had declined substantially, but many businesspeople felt a need to join together in one organisation. It is also true that this was a period during which the system of governance in Latvia's forest sector was undergoing reforms. Long-term lease agreements in state-owned forests were coming to an end, and the JSC „Latvijas valsts meži" (LVM) was established to manage such forests. That is why it was all the more important to create a powerful institution which could represent the interests of all manufacturers in discussions about the availability of resources.

People all around the world are becoming more and more concerned about the environment, and when they choose goods and services, they devote increasing attention to how these affect the global ecology and climate. During the past decade, forest owners and manufacturing companies in Latvia have sought to receive certification of the sustainable use of forest resources. Forest management processes and timber product delivery chains in Latvia are certified on the basis of the two most widely used systems in the world – FSC and PEFC. At this writing, all of the forestland owned by the state is certified in accordance with the PEFC system, and 15 companies in Latvia have received certification of their delivery chains from the same system. 280 companies and forest owners have received delivery chain certificates from the FSC, and the amount of forestland that has been certified on the basis of FSC requirements exceeds 793,000 hectares.

Latvia's forest sector has done much work over the years to polish Latvia's image abroad, as well as to establish corporate responsibility at home. Companies in the sector are interested in the development of technologies and human resources, so they have actively supported various scientific, educational, cultural and sports events, and they have also provided social security for people who work in the sector. Thought has also been given to fighting against the shadow economy. It was the wood processing sector in particular which initiated the reverse payment procedure for the value added tax which was implemented in Latvia in 2001.

All of the institutions which are involved with the forest have joined together to agree on fundamental principles that are aimed at preserving the national treasure that is the forest for future generations. The long-term strategic and tactical goals are specified in Latvia's Forest Policy, which was approved by the Cabinet of Ministers on April 28, 1998. It is based on the Constitution of the Republic of Latvia (Satversme), international conventions and agreements ratified by the Republic of Latvia, international agreements signed by the government, national traditions and experiences related to the management of the forest, as well as scholarly logic related to Latvia's environment, social issues and economic matters. Latvia's Forest Policy is based on sustainable management principles, and it speaks to the management and use of forests and timber in a manner and at a volume which will preserve biological diversity, productivity and economic and social functions at the local, national and global level without causing any harm to other ecosystems.

03

History of Latvia's Forest

In order to have an objective understanding of the present-day situation in Latvia's forestry and wood processing sector, as well as of the basic principles of Latvia's Forest Policy, we must first take a look into the past and understand how forest areas in Latvia first emerged.

The current species of plants and trees began to emerge 14,000 to 16,000 years ago when the last glaciers of the Ice Age which had dominated Latvia's territory for 200,000 years were gone. Initially the land was a tundra, with typical pygmy birch threes, osier, lichens and mosses, but as the climate became warmer, types of trees typical of the present-day forest became more common – the common pine and the birch. The largest amount of forestland in Latvia existed around 9,000 years ago, when forests covered 90% of the country's current territory. As time went by, the weather became ever warmer and with greater humidity, and that facilitated the emergence of broadleaf forests with oaks, linden trees, elms and hazelnut trees. Hornbeams were found all over Latvia.

The total forest area in Latvia first began to diminish around 6,000 years ago. That was because of an increase of swampland because of weather that was cooler and with more humidity. Human activities were also of undeniable effect. Because people usually tried to create farmland on fertile soil on which broadleaf forests were found, such areas of forestland were gradually diminished. The cycle of farmland took eight years back then, and once that time passed, the forest was allowed to return to the fields. Broadband species of trees did not reappear, however; they were replaced by pines, birches and white alders.

Timber was an inviolable component of human lives back then. It was not just the main building material,

but it was also used to manufacture all kinds of household objects. Timber also provided the firewood without which Latvia's territory probably would never have been populated at all.

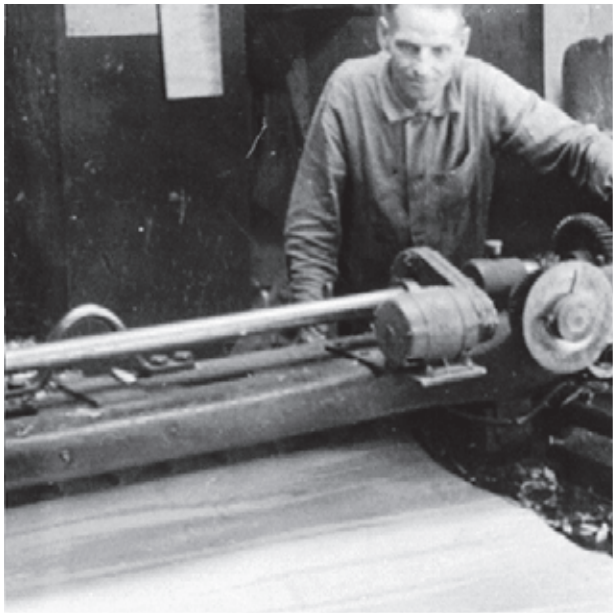
When cleared fields were replaced with a system of fallow land in the 11th century, the forest was pushed out of farmland entirely. Land was used once every three years in this system, allowing it to rest for the remaining period of time. As Medieval farming developed and population numbers increased, there was also an ever increasing need for timber. Most of it was harvested near populated areas and along the shores of the rivers which, at that time, were the main way of transporting logs. The result was that over the past 1,000 years, the amount of forestland in Latvia declined substantially on several occasions, but also recovered because of various wars, epidemics and regimes in the country. Situations which are very typical today were also seen back then – a lack of firewood, for instance, which meant that it had to be imported. Abandoned farmland was overrun with birch and alder trees.

During the latter half of the 19th century, the Industrial Revolution led to a sharp increase in population numbers, as well as to the development of cities. This meant the use of vast amounts of timber in construction, to produce heat, and to manufacture furniture and other everyday products. The result of this is that in the late 19th and early 20th century, the forest covered only 10-30% of Latvia's territory. The use of timber, however, also led to a better understanding of forest management principles in terms of how to tend to the forest and to restore it. German forestry practices were used in Latvia, but local forestry specialists such as Eižens Ostvalds made a major investment in the development of the forest in the early 20th century. Some of the principles which he elucidated are still being used today.

During World War I, areas of forestland which had already been diminished suffered a lot of damage. Large numbers of trees were chopped down near the front lines to build fences, dugouts, bridges and fortifications. Economically valuable forest stands in Kurzeme and along the banks of the Daugava River suffered particular damage, where the front lines were found. Once the Republic of Latvia was established on November 18, 1918, the issue came up of what to do with the forestland that was owned by the state or privately. The temporary government which was headquartered in Liepāja established a Forest Department on February 19, 1919, and it became responsible for forestland once owned by the estates of noblemen and by the imperial crown. The result was that there were nearly two million hectares of forestland in Latvia, including swamps and other non-forested areas. In advance of World War II, there were 0.9 hectares of forest per capita in Latvia. 77% of the forestland was covered with coniferous trees – pines and firs.

Harvest volumes in Latvia's forests were regulated in five-year processes, as is the case today, but the amount of construction in Latvia's countryside and increases in export prices encouraged the system to allow substantial ignoring of existing norms. 78.7 million m^3 of timber were harvested from state-owned forests between 1920 and 1935. Another difference from today is that different groups of consumers paid for timber harvested from state-owned forests in different ways. The market price was paid by representatives of the timber industry, sellers of timber, providers of firewood to heat government institutions, and representatives of sawmills which were owned by the Forest Department. Rural residents and owners of new farms received timber for everyday needs and to restore farms damaged by the war at a discount between two-thirds and one-fifth of the basic price. Timber used to build public roads and bridges, as well as timber used by forestry agencies and administrators, was provided for free.

There was a great deal of demand in Europe for timber during the 1920s to deal with damage caused during World War I, and this caused an increase in prices. The timber industry in Latvia made successful use of this process, and during the period of independence, timber represented 83% of overall exports and 38% of the value of all exports. The leading export groups were sawn-wood, plywood, packaging materials, firewood, timber for paper production, matches, and hewn timber. After Kārlis Ulmanis (The President of Latvia 1936–1940) took power in the year 1934, much more attention was devoted to the export of other Latvian products, par-



ticularly agricultural ones, but the fact is that timber remained the main guarantor of economic stability for the country.

After World War II, when the Soviet occupation began, the economy in Latvia was developed in a centralised fashion and on the basis of five-year plans which were implemented throughout the USSR. The forest industry in Latvia was well developed, and intensive research continued in the areas of forestry and forest selection, but the timber industry was not on the list of priority sectors at that time. Instead, the regime worked to develop manufacturing of electronics, radio electronics, equipment, transport vehicles, chemicals, pharmaceutics, knitwear and semi-finished food products. In agriculture, the focus was on fishing, dairy farming and pig farming to produce bacon. It must be added that initially agriculture was not among the priorities in Soviet Latvia, and the industry really began to develop only in the 1960s, when nearly one million hectares of wetland were drained. Much of the land that had not been used for farming purposes was overrun by the forest, and such trees were not used for timber production during the Soviet years.

04

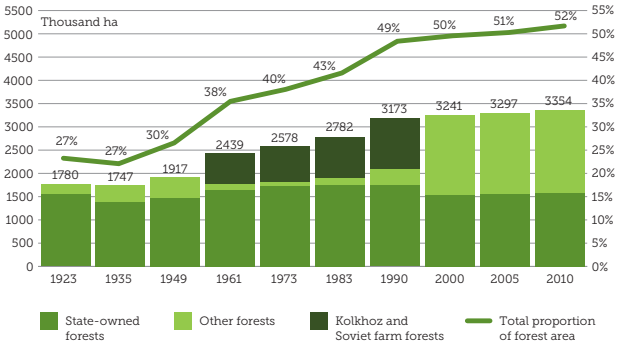
Latvia's forest **resources**

Forest Area

Since the restoration of Latvia's independence, forest area in the country has increased in a stable way – by around 60,000 hectares a year. This process is largely due to the afforestation of land not used for agriculture. People purposefully planted new forest stands, but in other areas the trees did fine by themselves. There is no doubt that of importance in this process has been ever increasing public understanding of the value of the forest, which can not only be used in the here and now, but can also be bequeathed to future generations. The result of this is that 52% of Latvia's territory was covered by the forest in 2010, with a total area of 3,354,000 hectares. This means that there are 1.5 hectares of forest per capita in Latvia – nearly two times more than during the first period of independence.

Information about Latvia's forest resources today is obtained via statistical forest inventories and monitoring of forest resources. This work has been done since 2003 by the Latvian State Forest Research Institute "Silava". This does not mean that specialists count up every tree in the country and measure its growth rate. General information about the forest is obtained by studying several sample territories of different types of forestland, each of them 500 m^2 in area. Forest inventories that are conducted at the level of forest districts make it possible to plan and implement forest management plans in each specific area.

Forest area by property form



Source: 1990-2010 NFI, 1923-1990 data from the Forest Fund

Latvia is a relatively small country, but we can be proud of our forests. Latvia has the fourth highest forest cover among all EU countries, surpassed only by Finland (77%), Sweden (76%) and Slovenia (63%). In the European Union, 41% of the overall territory is forestland, and over the past 20 years, the overall area of forestland has increased by 17 million hectares. For comparison's sake, we can note that according the UN Food and Agriculture Organisation (FAO), there are approximately four billion hectares of forest in the world, covering 31% of the planet's dry land territory. One-half of the world's forests are concentrated in just five countries – Russia, Brazil, Canada, the United States and China.

Forest Timber Volume

As the forest area in Latvia has been constantly increasing over the past 20 years, the volume of timber in the forest, the growing stock has also increased substantially. 93% of Latvia's forests (3,155,00 ha with 592 million m^3 of timber) were available for wood supply in 2010. The remaining forests cannot be used for wood supply for various legal, economic or environmental reasons. In some cases, only a very small volume of timber can be felled in such areas.

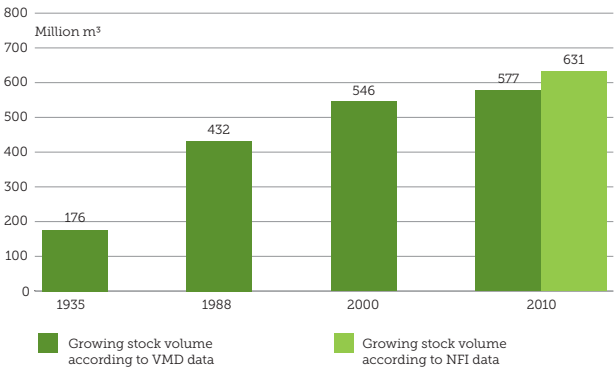
Immediately after the restoration of Latvia's independence, when export markets had not yet been found, the amount of harvested timber in the country was at a level of just 42% of the annual increment. The situation changed very swiftly in subsequent years, however. Because there was comparatively little added value to products at that time, and major timber resources were needed to maintain volumes, a period of fairly intensive use of the forest began. By 2000, the amount of harvested timber was equal to 90% of the annual increment. Between 1992 and 1998, the government applied an export tariff on round-wood so as to avoid the mass export of unprocessed logs from the country.

After the LVM was established in 2000, the amount of harvested timber as a proportion of annual increment diminished, and in 2005, it was at a level of only 72%. For comparison's sake, we can note that during the same period, the proportion in Estonia was 52%, while in Finland, Lithuania and Sweden it was 70%, 73% and 85%

respectively. The result is that the annual harvest volume in Latvia's forests is considerably smaller than the increment. This clearly shows that harvesting of timber in Latvia is at a far smaller amount than natural growth in the forest, and that is one of the most visible examples of the fact that forest management in Latvia is sustainable.

The volume of timber in Latvia's forests has not increased just because there are more forests, however. The increase in growing stock volumes has also been facilitated over the past 20 years by targeted activities in the forestry sector – selection, restoration, cultivation , thinning and harvesting based on the latest achievements of science and technology. This has also led to a stable increase in the growing stock volumes per forest hectare, and that indicates that the productivity of the process has improved. In comparison to 1961, for instance, the average growing stock volume of forest stands at harvesting age increased by 78 m^3 per hectare in 2010 to a level of 281 m^3/ha. This means that the forest has become more valuable, and it is possible to obtain much more high-

Total growing stock volume



Source: Forest Fund, The State Forest Service (VMD), NFI

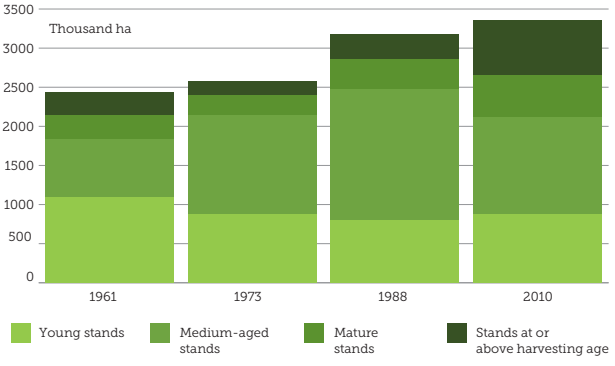
quality timber from each hectare than has ever been the case before. That means, that the same amount of logs can be obtained from a smaller area of forestland or in other words by harvesting a smaller area.

Forest Age Structure

It is important to be aware of the age structure of Latvia's forests so as to understand how much timber is available for economic use and how much timber there will be in future. Ideally, new areas of forestland should be just about as large as is the case with forests that are middle-aged or matured. Similarly, each species of tree should theoretically be represented in a similar way in all age groups. Otherwise there could be enormous areas of young forest stands with fantastic annual increment while the law bans the felling of such trees and the available volume of timber is equal to naught. Another possibility is that all forests reach maturity at once, the increment grinds pretty much to a halt, and as trees gradually perish, the volume of timber for economic use starts to decline.

When evaluating the age structure of the forest, specialists divide trees up into age groups, with intervals depending on how fast each species of trees grows. For coniferous trees and hardwood deciduous trees (oaks, ashes, maples and elms), the age group is changed once every 20 years, while for softwood deciduous trees (birches, aspens, black alders) the interval is every 10 years. For the white alder, it is just five years.

Forest age structure



Source: 2010 inventory, Forest Fund 1961-1988

The overall situation suggests that the age structures of Latvia's forests have been purposefully evened out during the past 20 years, gradually moving towards the theoretically optimal model for the forest. Areas of young forest stands have remained virtually unchanged, which clearly shows that felling areas in Latvia are being restored, and there is no reason to be concerned about the sustainability of forests. At the same time, however, the proportion of mature forest stands, at age, as well as over-mature forest stands has slowly increased. This is in part due to the new Forest Law which was adopted in 2000. The permitted age at which trees can be felled was lowered for various species of trees, and this increased the available volume of wood for the timber industry. It is also true that stands of birch, aspen and white alder trees which grew on farmland no longer used after World War II are reaching harvesting age. The same is true of stands of pine planted in areas cleared during World War I.

Tree Species in Latvia's Forests

	Area, thousand ha	Area, %
Coniferous trees	**1453,6**	**46,0**
Pine	914,5	28,9
Fir	537,4	17,0
Other	1,7	0,1
Deciduous trees	**1708,8**	**54,0**
Birch	883,6	27,9
Aspen	244,7	7,7
Black alder	161,2	5,1
White alder	310,2	9,8
Ash	25,9	0,8
Oak	21,3	0,7
Other	62,1	2,0

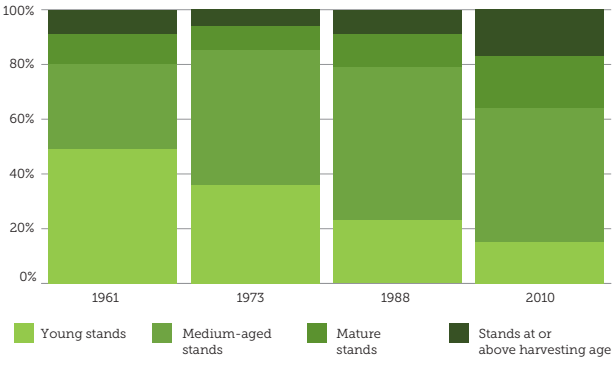
Source: NFI 2010

According to the National Forest Inventory (NFI) data from 2010, the larger share of Latvia's forest consists of deciduous trees. They also dominate in terms of the overall availability of timber – 335 million m^3 of timber from deciduous and 296 million m^3 of coniferous trees. In comparison to the first period of Latvia's independence, the Soviet era, and 1990, the proportion of deciduous trees in Latvia's forests has increased constantly. Reasons for this include the fact that NFI in the forest represent a more precise system of registering the results of economic activities by individuals. In state-owned forests, areas of felled coniferous trees are mostly restored with fir and pine saplings. In privately owned forests, particularly in the 1990s, the restoration of felled areas was often a natural process, with deciduous trees dominating. The natural afforestation of farmland, too, increased the proportion of the birch, aspen and white alder.

The pine

The pine is of particular importance to the timber industry in Latvia. In main harvest areas, pines can be felled when they are 101 years old, which means that most pines which are felled in Latvia at this time were planted around the turn of the 19th century. For the next 50 years, the pine will be widely available, because it was one of the main species to be planted in forests during the first period of Latvia's independence. Among all stands of pine, 19% are mature stands, and 49% are stands of medium-aged trees. The total area of young stands of pines, however, has declined substantially over the past 50 years, down to just 15% of all pine trees in 2010. This, as well as the fact that overall areas of stands of pine are shrinking, means that in the distant future, we can expect a decline in the available amount of pine timber.

Age structure of forest stand – the pine

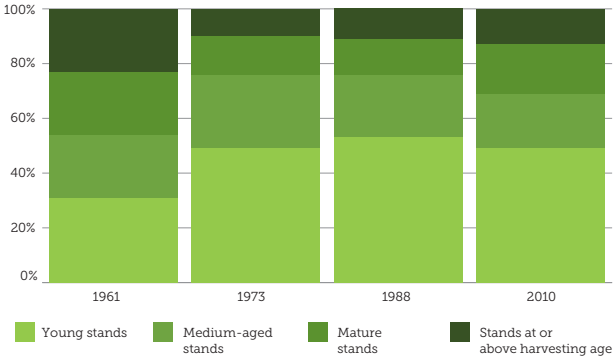


Source: NFI 2010, Forest Fund 1961-1988

The fir

The fir is the second most important coniferous tree in Latvia's economy, and the age structure of stands of firs has remained virtually unchanged over the past 30 years. At this time, nearly one-half of areas of firs is made up of young forest stands, 20% of the trees are middle-aged, 19% are seasoning stands, and 13% of firs are at or above the felling age of 81. This age structure can be explained by a boom in the planting of fir trees in the 1960s and 1970s, which led to vast numbers of stands of firs. Firs were often planted in places where pine trees had grown before. Many fir forests planted during the Soviet era were felled after 1990 and then replaced with new fir trees. That explains why there are so many young stands of firs in Latvia. Unlike the pine, moreover, the firs can be successfully regenerated by means of natural reforestation.

Age structure of forest stand – the fir

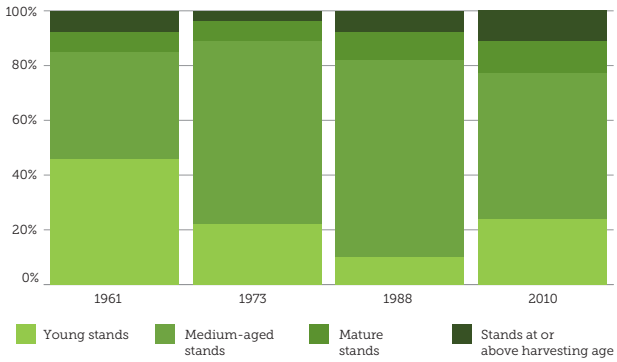


Source: NFI 2010, Forest Fund 1961-1988

The birch

In the early 1990s, more than two-thirds of birch trees in Latvia were middle-aged, but by 2010, the age structure of the tree evened out. The number of young forest stands more than doubled to 24% of the total area of birch trees, and the number of trees at or above harvesting age increased only a bit – to 11%. This can be attributed to the fact that the birch was one of the first trees to naturally take over land not used for farming during the Soviet era. It is also true that the Latvijas Finieris company has expanded manufacturing output, planting ever more birch trees for its needs. In 1996, the plywood company launched a special programme to expand the growth of birch trees in Latvia and to popularise the growing of such trees in the country.

Age structure of forest stand – the birch

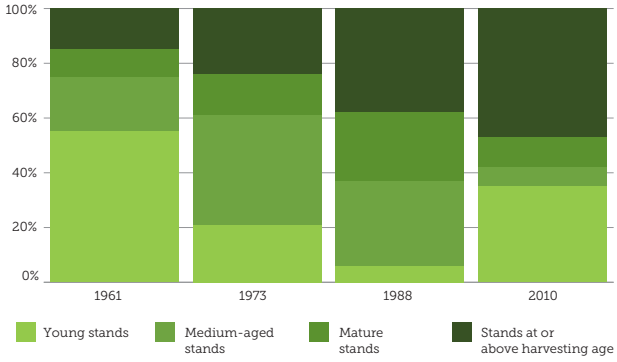


Source: NFI 2010, Forest Fund 1961-1988

The aspen

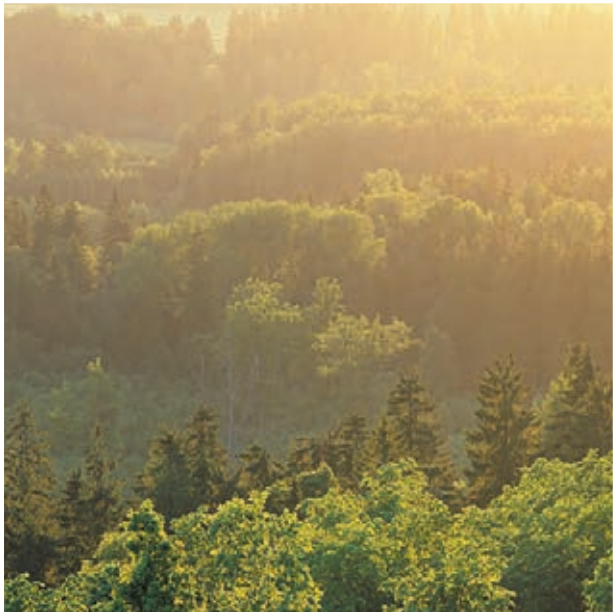
A completely different situation can be seen in relation to the aspen – 47% of aspen trees are at or above harvesting age, once again largely as the result of aspens taking over land not used for farming. The proportion of middle-aged and mature stands is not large – 7% and 11% respectively. There is no danger that timber from aspens might become unavailable in future, because 35% of the stands of aspen trees at this time are young, and the harvesting age for this tree is just 41 years.

Age structure of forest stand – the aspen



Source: NFI 2010, Forest Fund 1961-1988

Carbon Accumulation



Attempts to reduce the level of harmful emissions have become increasingly important in the world in recent years, the aim being to halt global warming. The forest is of essential importance in addressing this problem, because trees absorb atmospheric carbon dioxide (CO_2) and store it not just while the tree is alive, but also in products made from timber. The larger the forest, the more CO_2 is accumulated, and the greater the use of timber products, the less it is necessary to use fossil fuels which cause pollution.

Latvia has achieved the Kyoto Protocol goal of reducing harmful emissions by 8% by 2012 in comparison to 1990. Because of the stable increase in the area of forests and the resulting growing stock, the forest sector currently absorbs two times more CO_2 than all other sectors in Latvia emit, thus ensuring a good national GHG balance . Even more, Latvia is the only carbon-neutral country among the industrialized countries. Most of the carbon in Latvia's forests is locked up in the soil – 948 million tonnes of carbon in 2008. Living biomass contained 271.7 million tonnes of carbon in the same year, while the amount of carbon in litter and dead wood is much lower – 79.5 and 20 million tonnes respectively.

If CO_2 accumulation is to be preserved at current levels, Latvia must maintain a high proportion of middle-aged forest stands, because they absorb the most carbon dioxide. An increase in the proportion of forest stands which are at or above harvesting age may reduce the potential for CO_2 accumulation.

The timber industry provides stimuli for forest restoration. As long as new trees are planted in place of ones that have been felled, the forest will continue to function successfully as a storehouse for carbon. A completely natural forest restored itself, but over the course of 700 years, this involves no more than two or three generations of trees. Active and skilful forest management leads to as many as 10 generations of trees during the same period, and this means that benefits in terms of accumulated carbon are considerably greater.

05

Forests and **the Environment**

Forest Health and Vitality

Just as people think about their future opportunities, the sustainable management of the forest involves the important need to understand whether the forest is healthy and whether its sustainability is or is not endangered by internal or external factors. Annual monitoring of forest health shows that there is no reason to worry about this in Latvia – in general terms, the health of the forest has stably improved. That is mostly because the whole national economy has become more "green" since the early 1990s. There are strict rules on controlling hazardous emissions from industrial companies, no longer are fields sprayed from the air, and a whole series of environmental protection measures have been implemented. The result of this has been a substantial reduction in air pollution, which is one of the factors which affect the health of forests.

A very important indicator in evaluating the condition of the forest is defoliation or the loss of needles or leaves from the crown of the tree. If defoliation is above

25%, the relevant tree is considered to be damaged. Observations show that the condition of Latvia's main coniferous trees has been stable since the restoration of Latvia's independence, and over the past decade there has only been a little bit of damage. That is true even though between 1990 and 1995, damage to the crowns of pine trees was seen as fairly serious.

It does have to be added here that health problems have been identified for several species of trees over the past ten years, and the causes of these problems have not yet been fully understood. The Green Paper On Forest Protection and Information in the EU: Preparing forests for climate change issued by the Commission has been of importance in terms of making it easier for scientists to deal with this problem. The Green Paper speaks to the collection of forest-related information and to all kinds

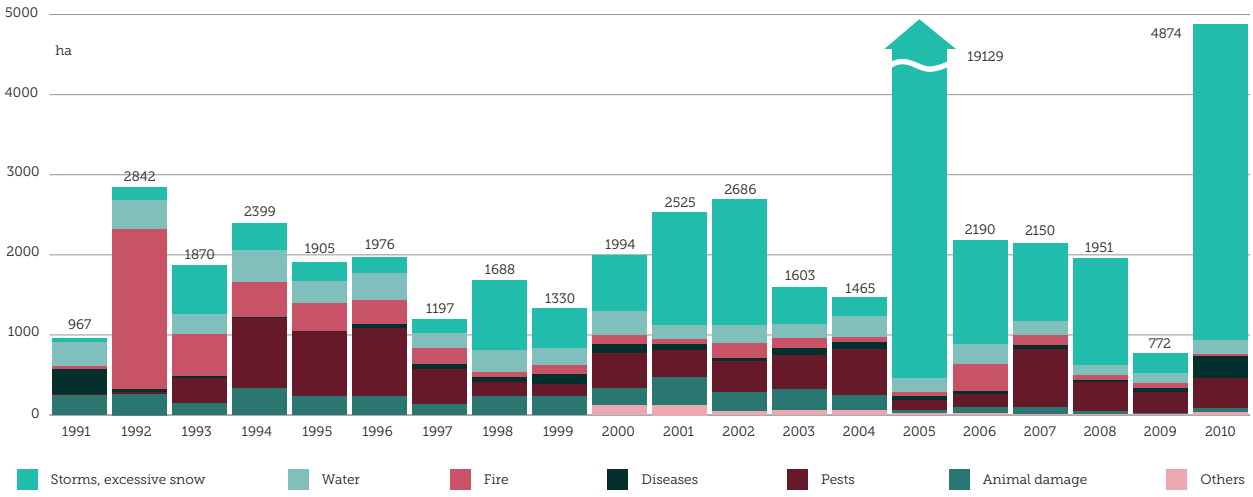
of monitoring at the EU level, improving international co-ordination in this regard.

The forest in Latvia, unlike in many other European countries, is not endangered by regular and extensive natural disasters. In the past and now, wind has been one of the main natural causes of damage in Latvia's forests. Many people surely remember the atypically strong storm which hit Latvia on January 9, 2005, causing substantial losses to Latvia's forests by damaging some 16,000 hectares of forest. Experts calculated that 7.4 million m^3 of timber were lost because of the storm, and that was the most damaging storm in the country for the past 20 years.

Over the last few years there have also been fierce winters with lots and lots of snow, and once again people who work in the forest industry have had to think about a concept that was happily forgotten back when winters were warmer – trees collapsing under the weight of snow and ice. In late 2010 and early 2011, this was a particularly harsh problem in the region of Latgale. Trees collapsing because of snow caused so many long-lasting interruptions in electricity supplies that the Prime Minister of Latvia Valdis Dombrovskis decided to declare a state of emergency in much of the country.

The forest sector has demonstrated, however, that it can deal very successfully with such unpredictable emergency situations. Work to deal with the consequences of storms and excessive snow is always planned and implemented very operatively, thus trying to avoid the mass appearance of causes of pests in the forest – another big problem for trees. Scientists say that the appearance of pests is a cyclical process, without any major trends in terms of increased or decreased damage, but the fact is that unpredicted distribution of insects and diseases over the past 20 years has most specifically been facilitated by the failure to deal with the conse-

Damaged forest stands



Source: VMD

quences of storms and excessive snow in a timely way. In coniferous forests which have been affected by natural disasters, the European spruce bark beetle becomes a serious problem, which is why work in dealing with the consequences of disasters always begins with damaged stands of coniferous trees.

Another source of natural damage in the forest these days is the beaver. This is the largest rodent in Latvia, and its population has increased substantially since the restoration of Latvia's independence. Animals which put up dams on smaller or larger rivers and streams often flood large areas of the forest.

There are fires in Latvia's forests every year, but only in some cases this is a natural process. Statistics show that nearly 100% of fires are caused by careless people who light campfires, drop lighted cigarettes or burn last year's grass on their fields. Arson has also been encountered. Much work has been done during the past 20 years to inform people about these issues, and people have increasingly understood the danger of fire. The number of those who burn the grass has declined. This has also been facilitated to a considerable degree by the afforestation of land that is no longer used for farming, as well as by the further development of agriculture. Accordingly, the past few years in Latvia have been quite peaceful when it comes to forest fires.

Forest Biological Diversity

"Biological diversity" is a relatively new concept in Latvia and the rest of the world. It relates to modern environmental protection policies which are aimed at the all-encompassing protection of ecosystems and at carefully considered environmental programmes. Biological diversity is usually defined as the range of living organisms in all environments, including ecosystems on land, in the sea and in other bodies of water, as well as ecological complexes such as forests. The concept speaks to the diversity within species, among species and among ecosystems.

Comparatively extensive biological diversity has been maintained in Latvia because land and forests began to be used intensively much later than was the case in many other European countries. If Latvia nurtures this diversity appropriately, it can become a true leader in this regard at the EU level. Although many Western European countries offer much more financing to ensure biological diversity, the fact is that they have to restore a

great many habitats which have still been preserved in our country.

There are some 27,700 species of plants, animals and insects that have been registered in Latvia, but the true number may be higher by several thousands of species. Among the species and biotopes that are listed in the EU's bird and biotope directives, Latvia protects 20 species of plants, 20 types of invertebrates, five kinds of mammals, three species of reptiles, 11 kinds of fish, 70 types of birds, and 60 types of biotopes. There are a number of birds and mammals that are endangered in Europe and even at the global level, and their populations make up a substantial number of the individual animals in the relevant species. This applies to the black stork, the lesser eagle, the white-backed woodpecker, the corn-crake, the crane, the beaver, the otter, the wolf and the lynx. The fact that several of these species in Latvia are not just commonly encountered, but also open to hunting shows clearly the great importance of Latvia's environmental treasures in the European context.

An important aspect of environmental protection is not only to preserve uncommon species, but also to maintain the biotopes in which they might potentially live. There are several forest biotopes in Latvia which are on the list of protected biotopes in the relevant EU directive – boreal forests, primary forests along meandering curves of rivers, certain coniferous forests, stands of oaks, forests on hillsides and in valleys, swampy forests, broadleaf forests with excessive moisture, forests on river banks with oak and elm trees, dry fields of heather along seashore lowlands, wet fields of heather with the cross-leaved heath, dry fields of heather, as well as stands of juniper in calcified meadows.

Most of Latvia's forests grew or were renewed naturally. Artificially planted areas of forestland in 2010 represented only 13% of the total forest. Nearly all of Latvia's forests have seen forestry work in recent times. This has become an automatic part of the life cycle of forests. Only 15,000 hectares of forestland in 2010 remained completely untouched by human processes. This can be described as a fully natural forest ecosystem with a completely natural process of development, but this applies to just 0.5% of all forestland in the country. It must be stressed, however, that the area of forestland untouched by human hands has not shrunk since the restoration of Latvia's independence, and this clearly speaks to a thoughtful approach toward the natural environment.

There are more than 50 types of trees and shrubs in Latvia's forests today, but only nine play a truly determinant role in the development of forest stands. According to NFI data, the dominant stands in 2010 were those with two or three species of trees – 54% in all. 37% of all forestland contains just one species of tree, 9% of forestland has four or five species, and just 0.2% of the forestland has more than five types of trees in a single stand. When it comes to genetic diversity among the main species of

trees, studies show that the low level of diversity from genetic norms and the uninterrupted nature of populations of trees are sufficient to ensure that the forest can successfully adapt to the changing climate conditions which have become a part of reality due to global warming and are something with which forest planners must take into account.

It also has to be said that there are hardly any introduced species of trees in Latvia's forests. In 2010, such trees took up just 1,400 hectares, or 0.04% of all forestland. Plantation forests cover just 2,000 hectares, and unlike the situation in other European countries, these are all based on local species of trees. This provides good evidence to show that biological diversity is based on representatives of the local ecosystem, and there is no threat that introduced species might become dominant.

Biological diversity in the forest is the main criterion in indicating that the principles of environmental protection and sustainable forestry are taken into account in forest management. Over the past 20 years, the idea that the sustainable use of natural resources in the long term cannot be ensured without thought being given to environmental protection and preservation of biological diversity has increasingly taken root in public thinking in Latvia. The past century has shown that in economic terms, it is much more advantageous to plan the use of natural resources in accordance with the possibility of restoring them than it is to use natural resources to the extent where environmental protection requires vast sums of money.

Everything that is done to adapt the forest to economic activities occurs at the project level, and the projects are planned so as to have as small an effect on the environment as possible. Overall environmental protection requirements have been drafted, and they are mandatory for everyone who works in the forest. Particular attention is devoted to older and larger trees, deadwood and preservation of micro-terrain indentations in harvest areas, because these are home to various types of animals.

The decision that between 5 and 10 mature and vital ecological trees must be left in clear harvest areas was taken in the mid-1990s. There was much debate about this back then, and there are still lots of people who don't understand the purpose of the rule, but the fact is that from the biological perspective, these ecological trees are of great importance. In forests which are intensively managed, trees are felled down when they have spent just one part of their natural lifespan. Trees such as pines can live for 350, 400 or even more years. Leaving ecological trees behind means that a small number of trees can complete their natural biological cycle.

People also do not understand why trees and lots of scraps are left behind in harvest areas, particularly when local residents lack firewood or have to buy it for a high price. There are others who have the opposite attitude, believing that dead wood is waste which must be removed from the forest. This process is often not of economic advantage, but it is accompanied by the false idea of "cleaning up the forest." The truth is that dead wood does not cause any harm to the forest. On the contrary – deteriorating timbre is more populated during various stages of the process that a living tree with a crown of leaves or needles can ever be. Dead wood is less dense, it does not exude protective substances, and its microenvironment is less mutable. For that reason, such timber is far more appropriate for many of the organism that lives therein. According to NFI data, there were, on average, 17.7 m^3 of dead wood per hectare in Latvia in 2010, with 10.8 m^3/ha being trees which collapsed and 6.9 m^3/ha standing dead wood..

Because forests cover more than one-half of Latvia's territory, preservation of biological diversity in the forest is not perceived as a set of steps unrelated to other ecosystems. The fact is that preservation of biological diversity in the forest facilitates the preservation of biological diversity throughout the country.

Protected Forests

The first environmental protection programmes were developed in Western Europe and the United States in the mid-19th century. Latvia began to understand that forests with distinct biological diversity must be protected at the beginning of the 20th century. The first protected territories in our country were closely linked to the forest. The first protected territory, Moricsala, was protected as a "region of mixed environments" in 1912 at the request of the Rīga Association of Natural Researchers. Nine years later, Moricsala became an environmental monument, and in 1957, it was assigned that status of a nature reserve. The first list of protected forests and parks was confirmed by the Cabinet of Ministers of the Republic of Latviain 1922. It included several objects in the ancient Gauja River valley. The protection of this territory was improved over the course of time, and the Gauja National Park was established in 1973. During the Soviet era, the Krustkalnu Nature Reserve and the Teiču Nature Reserve were established. The Grīņu Nature Reserve, which was created in 1936, was restored.

Efforts to protect environmental values, particularly forests with a high level of biological diversity, became more active after the restoration of Latvia's independence. A list of specially protected environmental territories (IADT) was established in 1993. Though the initial IADT list was quite extensive and much attention was devoted specifically to the preservation of biological diversity in the forest, the fact is that the list has constantly been improved over the course of the year. This was particularly true in 2004, when Latvia joined the European Union and automatically became part of the unified Natura 2000 network of protected territo-

ries in the EU. Today nearly one-half of the 674 IADTs in Latvia are Natura 2000 territories – 336 in all. The list includes four nature reserves (Teiču, Krustkalnu, Grīņu and Moricsala reserves), nine areas of protected landscapes (e.g., Veclaicene, Augšdaugava, Vecpiebalga), one biosphere reserve (Northern Vidzeme), 42 nature parks (e.g., Gaiziņkalns Hill, the ancient Abava River valley, the Curves of Daugava), 259 restricted areas, as well as 355 natural monuments which are individual objects such as protected trees, dendrological plantings, alleys, as well as geological or geomorphologic objects. The missions and management regimes of IADTs of various kinds can differ. The strictest limitations on economic activity are in nature reserves, where access is limited to scientists who have specific permission to be there. The aim is to ensure the uninterrupted development of natural processes. There are strict rules in national parks, as well, but unlike reserves, the parks join protection of nature, as well as landscape, cultural and historical values with limited economic operations which serve to educate the public and to offer leisure opportunities in the forest. The fewest restrictions apply to protected areas of landscape. These are major territories to protect particularly beautiful and diverse landscapes and cultural environments which are specific to Latvia.

Over the course of time, people have come to understand that when it comes to sustainable forest management, of importance is not just the protection of existing forest biotopes, but also the protection of areas of the forest which ensure the preservation of other environmentally valuable elements. In Latvia, this is ensured by protective zones around inland bodies of water, which usually is linked to ensuring the quality of water and to protecting spawning grounds for fish. There are also anti-erosion forests which are meant to prevent shoreline erosion, particularly in terms of the shores of the Baltic Sea and the Bay of Rīga. The total area of protective forest zones in 2010 was 190,000 ha, which is nearly two times more than was the case 20 years ago. Special protection measures are also implemented via protected zones around swamps, cities and forestland in urban areas. In addition to IADTs and protected zones, there are also general environmental protection requirements related to forest work. These set limits on some processes. Clear felling is banned on the islands of swamps and lakes, in forest stands which cover less than a hectare of land and are located more than 500 metres away from the nearest forest, etc.

In the 1990s, the Latvian State Forestry Service (VMD) partnered with the Östra Götaland county forest management agency from Sweden to conduct an inventory of key biotopes in the forest. The aim was to improve the level of knowledge among forest sector specialists in evaluating biological diversity, as well as to identify those areas which were of particular value in terms of biological diversity. The term "key forest biotopes" was replaced with the term "natural forest biotopes." Such biotopes have been found in all state-owned forests and in many privately owned forests, as well. At the end of 2008, there were 39,285 natural forest biotopes in Latvia, covering 66,337 hectares of land. The number of such biotopes has increased a bit since them, because the LVM is always evaluating those areas of forest which are under its control, thus finding new and ever new environmental values.

Improvements are still being made to the system of protected areas of the forest. There are micro-restrictions in some areas to protect natural forest biotopes, and most of them are protected voluntarily. The Latvian Agriculture Ministry, moreover, has proposed that natural forest biotopes and protected biotopes of pan-EU value be integrated into a single system of protected biotopes.

06

Forests and **the Public**

Forest Ownership

One-half of Latvia's forests belong to the state, and they are managed by the stock company Latvian State Forests (LVM). It was established on the basis of instructions from the Cabinet of Ministers which were issued in October 1999, and the agency began to manage forest properties and to organise felling rights auctions in January 2000. With an eye toward ensuring the ongoing flow of resources for the timber industry, the agency transformed the principles whereby growing trees were measured, and it implemented fundamental changes to the system of evaluating felling areas. This helped to obtain objective data about the kinds of timber that were available. Since January 1, 2010, the LVM has replaced the felling rights auctions with direct deliveries to timber industry companies. The main reason for this was to improve the availability of roundwood, to reduce costs for consumers and suppliers, and to enhance the sector's competitiveness in the world. This also created legal obstacles against the export of logs from state-owned forests. The work of the LVM, however, extends beyond management of state-owned forests and the sale of timber materials. It also provides hunting and recreation services and prepares seeds and saplings for forest restoration.

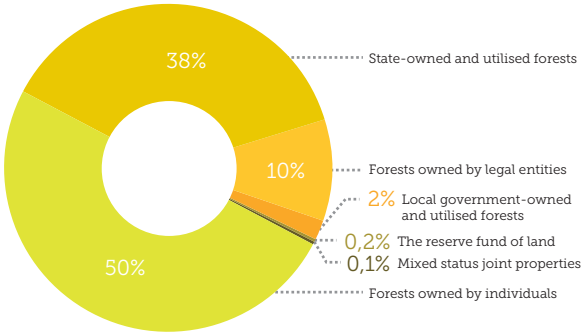
The second largest owner of forestland in Latvia is the city of Rīga, which owns 61,600 hectares of forests outside of the city and 4,900 hectares of forests in the city itself. The local government company Rīga Forests manages the forests, Ltd. It oversees seven forestry districts with 52 forest rangers. It also has its own tree farm, "Norupes."

A relatively large social group forms private owners of forestland in Latvia – some 150,000 people or 7% of the total population. This is one of the highest percentages in Europe, because unlike other countries in which the forest industry is of key importance to the national economy, Latvia is a country in which the average amount of privately owned forestland is very small– just 7.5 hectares. The number of small areas of forestland that are privately owned has tended to decline over the past decade. In 2005, forest properties covering more than 500 hectares could all but be counted on the fingers of one hand, but by 2010, such properties represented 12.4% of all forestland. There has also been increasing interest in properties of more than 50 hectares, which clearly demonstrates that consolidation is ongoing in the country. This has a great deal to do with ever increasing interest among foreigners in Latvia's forests. Between the latter half of 2007 and the middle of 2010, foreign individuals and companies bought an average of a bit more than 24,000 hectares of land each year – both farmland and forestland. Foreign investors today own between 200,000 and 300,000 hectares of Latvia's forest, or between 10 and 15% of all forestland. For the time being, this fact has not created any major strategic risks for the state or the forest sector, because most foreigners see the purchase of forestland as a long-term investment, and they are not interested in felling down all of the trees for a quick profit.

Many local forest owners also have come to understand that the forest is not just a place to harvest lots of timber so as to earn a profit as quickly as possible. Over the past few years, there has been ever increasing interest in forestry models which do not lead to the denuding of forestland. This mostly has to do with selecting harvest principles. The use of such techniques in state-owned forests is not economically justified, because in that case it would not be possible to ensure the uninterrupted flow of timber to industry, but private owners who do not have agreements on the regular delivery of logs can easily choose a forestry model which is particularly friendly toward the environment.

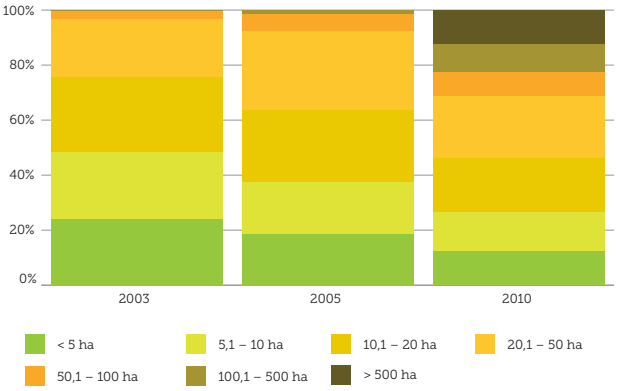
Most forest owners in Latvia earn irregular income from their properties. It must also be said, however, that those people who recovered forestland after 1990 and found that it was in protected areas faced an unequal situation for a long time in comparison to other forest owners who could engage in business operations in their territories and thus earn additional money. Eventually the government came to understand that environmental protection is the state's responsibility and that it could not be put entirely on the shoulders of forest owners. In response to this, the government instituted various state-guaranteed compensations for limits on economic activity in privately owned forests that are in protected areas. The situation also changed after Latvia's accession to the European Union in 2004, because various types of aid from the EU's Structural Funds became available for private owners of forestland. Since 2008, for instance, forest owners have been able to receive compensation for limitations on economy activity in forests which are located in the Natura 2000 system of protected territories.

Forest ownership by status, 2010



Source: State Land Service (VZD)

Structure of privately owned forestland



Source: VZD

Because the effectiveness of the forest sector can be increased substantially if private owners of forestland come together, a bit more than 10 organisations of forest owners have been established in Latvia. At the national level, the interests of forest owners are represented by the Latvian Forest Owners' Association – an NGO that was established in September 2005. It brings together both major and minor private forest owners, as well as companies and local governments which own or manage forestland. In 2008, it was decided that the organisation would represent the interests of forest owners in Latvia and in relations with international organisations.

Also on the government's agenda is a plan that was approved in 2009 to support co-operation among forest owners. It is expected that the process of co-operation will be slow, however, because many forest owners are still biased against collective management because of their experience during the Soviet era. These biases have been exacerbated by negative experience in the early 1990s, when the first attempts at co-operation were destroyed by dishonest business activities. More recently, forest owners have been demonstrating an increased level of interest in working together on the management of their properties, and people have increasingly understood the advantages of such a process. The aim of co-operatives is to create an economic structure for forest owners which allows them better to defend their interests in the timber market, as well as to involve professional employees and modern technologies in managing their properties.

Education in the Forest Sector

Everyone knows that no area of the economy can ensure competitiveness at the international level without appropriately educated specialists. The Latvia's forest sector has been lucky in this regard – education related to the forest sector has a very long history. Knowledge has been transferred from generation to generation, and this has helped to develop new competences. During the Soviet era, the greatest emphasis in this educational process was on forestry processes – planting and maintaining trees. Over the last 20 years, as the timber industry in Latvia has developed, the quality of wood processing training at trade schools and via other study programmes has improved substantially.

Ever since Latvia joined the EU, educational institutions in the forest sector have actively sought financing from the EU's Structural Funds to improve existing educational programmes and to establish new ones. The result is that education in the forest sector involves the development of modern technologies, thus ensuring that specialists who are trained for the sector have as much knowledge as possible. A good

example is the Ogre Forestry Technical School, where two training programmes for operators of forest machinery have been set up thanks to the initiative of companies in the sector and support from the European Social Fund. One is one-and-a-half years long, and the other lasts for four years. Prior to this, no educational institution in Latvia offered training for operators of forest machinery, and all that was available was certification related to operating a harvester and a forwarder. Existing machinery operators were mostly self-trained, and that was seen in the quality and quantity of work that was done. This created substantial problems not just for forestry companies, but also for suppliers and processors of timber.

Instruction in various areas of forest-related specialisation today is available at professional secondary education institutions, colleges and universities. There are 22 professional secondary education institutions and colleges which offer instruction related to 10 timber industry and six wood processing professions. A higher education in forestry and wood processing has been available since the restoration of Latvia's independence at the Forest Faculty of the Latvia University of Agriculture (LLU). Many specialists who were trained during the Soviet era have diplomas which carry the former name of the faculty and university – the Forestry Faculty of the Latvian Agriculture Academy.

Because the forest sector proved to be a stable employer even during the economic crisis, the number of applications to study at the LLU Forest Faculty increased substantially in 2011. For the first time in history, there were 10 applications per study slot in the bachelor's degree programme in forest engineering, nine applications per study slot in the bachelor's degree programme in forest science, and 3.8 applications per study slot in the bachelor's degree programme in wood processing. The result of this is that the Forest Faculty has become the most popular faculty at the LLU. Surveys of new students show that most of them chose the Forest Faculty on the basis of good motivations. Because of this, some 80% of graduates have successfully found jobs, mostly at companies in the forest sector. This clearly shows that young people in Latvia understand the role of the forest sector in Latvia's economy and believe in its future and its sustainable development.

An important issue in recent years in the forest sector has been finding ways of improving the qualifications of employees in the sector. As the number of workers has declined, companies have become more competitive, but only if the remaining employees are true professionals who constantly improve their knowledge and monitor the development of related technologies in the world. Over the past six years, a major investment in this area has been provided by the Forest and Timber Product Research and Development Institute (MeKA). It has an ongoing education centre which regularly organised various seminars and educational courses for managers and employees of wood processing companies, specialists in the sector, as well as people from related sectors. Since 2005, the MeKA has offered training courses via an Internet-based distance learning platform. Such classes have become more and more popular, because they allow students to save time and resources while also not having an effect on the quality of work in the educational process. Since 2008, the MeKA has also offered classes to forestry specialists which help them to gain theoretical knowledge and practical skills related to forest machinery – harvesters and forwarders.

When it comes to education about the forest, even very small children and schoolchildren are not forgotten. There are no programmes at the preschool or elementary school level to talk about the ecological, economic and social functions of the forest and interaction among them, but NGOs working in the area of the forest and the environment have organised various educational activities related to these issues.

In 2005, LVM and the Education Ministry established the programme "Learn About the Forest," which seeks to enhance the understanding of teachers and students about the diverse importance of the forest in our lives, involving the forest as a subject in general education. Thousands of students take part in LVM Forest Days events each year, planting trees, cleaning up the forest, competing in the Forest Olympics and visiting tourism destinations that are part of the "Mama Nature" programme. Nine schools opened up "Mama Nature" embassies during the 2012/2012 school year to bring the schools closer to nature.

Another tradition is a competition organised by the Agriculture Ministry ever since 2006 – "Our Little Hike," which involves students from general and professional schools, as well as interest groups and youth organisations. The aim is to attract the attention of children and adolescents to the diverse riches of the forest and to the forest sector's contributions in Latvia. There are also a number of socially responsible companies in the forest and wood processing industries which organise or provide financial support for various educational events for schoolchildren and their parents. These include AS Latvijas Finieris, Stora Enso Mežs, Metsaliitto Latvia, "Rīga Forests" Ltd and many others.

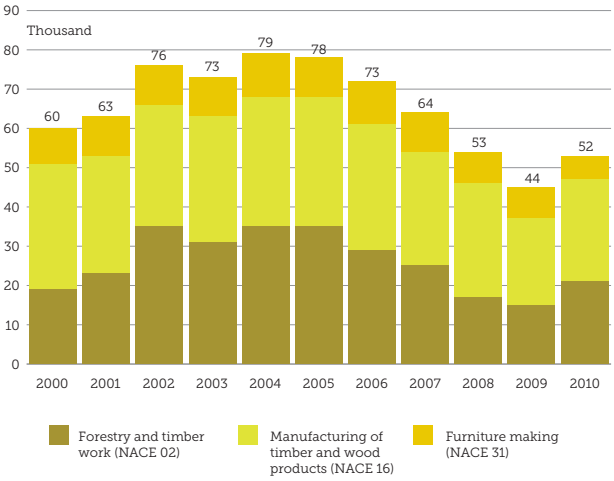
Employment in the Forest Sector

The forest sector has been one of the main employers in Latvia's rural regions ever since the early 1990s, when many people began to establish small sawmills. Many of the country's smaller villages and populated areas have survived only thanks to wood processing companies which provide people with work and allow many service providers to stay in business. If this were not the case, the number of people emigrating from Latvia for work purposes would be far higher.

The largest number of employees in the forest and wood processing sector existed in 2004/2005, when nearly 80,000 people worked in manufacturing, forestry and the timber industry. The number of employees began to decline quite rapidly after that, mostly because of mechanisation of procedures and increased efficiency in operations. In most manufacturing companies, work was gradually automated. Technologies meant that functions that had been handled at one time by 10 workers could now be handled with computer-run and programmed wood processing systems which required just one operator. The timber industry has undergone similar changes – operators of hand-held power saws have gradually been replaced by harvesters.

The forest and timber industries experienced a particularly harsh decline in employment numbers in 2008, when the global economic recession began. Harvesting costs and rationalising the use of resources were the only way in which companies could survive and remain competitive. Though many employees were made redundant, those who kept their jobs had more stable wages during the crisis than was the overall case in Latvia. The Welfare Ministry and the State Employment Agency established a programme which allowed companies to hire part-time workers who, during the remaining part of the day, could attend various training courses. This helped to preserve good workers even if they could not be given full time jobs.

Employment in the forest sector



Source: Central Statistical Board

As the crisis eased up and companies restored their output capacities, the number of people working for the timber industry began to inch upward once again in 2010. At this time, the forest sector in Latvia directly employs some 52,000 people, but there are also some 30,000 jobs which are indirectly related to the sector in areas such as transport, metal processing, education, science, construction and the energy sector.

Wood processing and forestry work, sadly, are two sectors in which there has historically been a fairly high percentage of illegal employment. The stereotype of

wages being paid under the table has remained in place in society, but several major steps have been taken in recent years to battle the shadow economy. One of the most visible processes was organised by LVM, which declared in 2011 that bids for tender on the delivery of round-wood would be open only to those companies which paid official wages at a level of at least 70% of the average wages in the sector.

Annual Forest Sector Award

For a very long time, the work done by Latvia's best specialists in the development of the forest sector was known to a very narrow range of people who were involved in the process. In 2004, the Agriculture Ministry joined with state and public organisations to establish an annual awards ceremony to change the situation and to thank those who have invested their careers in the forest sector, making sure that they could be praised not just in the context of the sector itself, but also in the context of Latvia as a whole. The award is known as the "Golden Pine Cone." Initially it was presented during Forest Days, but then the awards ceremony became a separate event which is organised at the beginning of each year. The categories in which awards are presented and the number of such categories has changed over the course of time, but the "Lifetime Achievement" award has always been a constant. As of 2011, this highest award in the forest sector has been received by 33 people who are respected and honoured by people in the forest and wood processing industries:

2004: Leons Vītols, a successful forester and long-time minister for forestry and the timber industry in the Latvian SSR, forester Severīns Freimanis, and forest ranger Egons Ķeruzis from Priekuļi;

2005: Five "Lifetime Achievement" awards – Professor Zigurds Saliņš from the Forest Faculty of the Latvia University of Agriculture (LLU), Professor Henns Tuhermans from the Department of Wood Processing of the same Forest Faculty, the deputy director of the Strenči forest district of the LVM Eastern Vidzeme Forestry Division, forester Aija Zviedre, and forest ranger Edgars Bauers-Bimšteins;

2006: The first award in the design of the "Golden Pine Cone" – forester Andris Jurevskis, Docent Voldemārs Kozuliņš from the Department of Wood Processing of the LLU Forest Faculty, Romāns Kumerovs, director of the Sāgas Grupa furniture making company Tuko-T, Ltd, Professor Rūdolfs Ozoliņš from the Department of Mathematics of the LLU Institute of Informatics, and forester Arvīds Šnēfelds;

2007: Forestry specialist and founder of the forest sector emplyee men's choir "Silvicola", Ovalds Cinītis, former deputy minister for forestry and the timber industry Jānis Elmārs Rubenis, forestry specialist Juris Matīss, long-time Latvijas Finieris employee Andrejs Nikļcevs, and forester Aija Fišere;

2008: Profesor Alfons Grīnfelds from the Forest Use Department of the LLU Forest Faculty, Ogre Forest Technical School teacher Rita Insbergi, forester Jānis Kazeks, the director of the Kalsnava Forest Research Station, Antons Kažemaks, and the senior forester in Liepāja, Viktors Šķērsts;

2009: Engineering professor Leonards Līpiņš from the LLU Forest Faculty, Dr Imants Baumanis, a senior researcher at Latvian State Forest Research Institute "Silava", Egīls Āboliņš, former director of the Bauska Forest Industry Company and Lāns, Ltd, Mirdza Bondare, chairwoman of the labour union at Latvijas Finieris, and Andris Plezers, executive director of the Latvijas Koks and Latvijas Mēbeles associations;

2010: Juris Biķis, president of the Latvian Timber Industry Federation, forester Antoņina Erta, Latvian State Forest Research Institute "Silava" researcher Valentīns Lazdāns, Professor Imants Liepa from the Forest Faculty of the LLU, and Andrejs Miška, Forest District director for the LVM.

Recreation and Leisure in the Forests

People in Latvia have lived in harmony with the forest for centuries and have largely been dependent on the natural benefits which it provides. Even today, Latvians just love to hunt for mushrooms and berries, take hikes in the forest or engage in sports there. State and local government forests are freely open for such purposes, although private owners of forestland have the right to limit the presence of others therein. During the course of more than 20 years of restored independence, this has not been a particularly common procedure, and the fact is that less than 1% of all of Latvia's privately owned forestland is restricted by its owners. By comparison the area in which recreation is one of the primary goals of forest management takes up 8% of all forestland.

LVM does a great deal of work to create and clean up locations where people can engage in leisure activities in the forest. The agency regularly invests money which it earns from selling timber in creating new leisure facilities. There are more than 400 objects of this type in the forest today, and in many other locations there is the infrastructure that is needed for various outdoor activities.

In 2005, there were 2,299 cultural monuments, nine forest landscape monuments and 3,513 trees identified as noble trees in Latvia's forests and other areas covered with trees. Many of the elements of historical heritage in the forest have not yet been identified, and it is also true that the precise location of some of the objects that are on lists of protected cultural monuments is unknown. Accordingly, much work remains to be done in systematising and improving this information.

Hunting has always been a major form of recreation among some Latvians, and there are some 25,000 active hunters in the country at this time. They are often the people who are most familiar with Latvia's forests and fauna, they take care of forest animals during the winter, and they battle predators which endanger Latvia's birds and small mammals. The State Forest Service has kept track of the populations of hunted animals, and the data show that during the first years of Latvia's restored independence, the populations tended to shrink. The nadir was reached in 1996/1997, mostly because of illegal hunting and shortcomings in the law which were later addressed. Since then, the number of animals which are hunted has increased very rapidly, and in 2011 the number of such animals was considerably higher than was the case back in 1990.

Forest Days

The Forest Department of the Latvian Agriculture Ministry organises Forest Days each year to provide information about the role of the forests and wood processing sectors in Latvia's economy not just to narrow interest groups, but also to the public at large. This tradition dates back to the first period of Latvian independence. On May 12, 1928, the boulevard of the emerging town of Varakļāni was installed, and in the spring of 1930, the first All-Latvian Forest Days event was held. More than 20,000 people in all 54 forestry districts in Latvia planted trees and cleaned up forestland. The Forest Days event expanded year by year, and senior government officials, including the country's president, set the example in planting trees and cleaning up the forest. A Central Forest Committee was set up to co-ordinate the massive event, and its members came from various institutions and organisations. World War II ended the fine tradition, but the idea of regularly reminding people of the treasures of the forest did not disappear, and tree-planting activities occurred each spring in Latvia during the Soviet occupation.

The Forest Days were reborn in their traditional format in the mid-1990s, and a committee to organise the event was established in 2005. Forest Days are meant to encourage people, particularly schoolchildren and rural residents, to become involved in the various events. The committee is chaired by the agriculture minister, and other members include the education and science minister, the environmental minister, the chairman of The Latvian Association of Local and Regional Governments , as well as people who are respected in the sector – LKF president Juris Biķis, the president of the Latvian Association of Forest Owners, Aivars Berķis, the chairman of the Valmiera City Council, Inesis Boķis,

and Professor Zigurds Saliņš from the Forest Faculty of the LLU.

Each year, from March until May, state and non-governmental organisations related to the forest sector join together with local governments, schools and other partners to organise various events for forest owners, local residents and students. The Agriculture Ministry co-ordinates the whole process. Trees are planted, locations and historical sites are cleaned up, there are competitions and exhibitions, "bird days" events, as well as educational seminars and lectures for forest owners. The central events of the Forest Days were organised in Dome Square in Rīga for several years, while in 2011 they were held at the Mežaparks park in the city. People could meet with representatives of the leading organisations and companies from the forest sector, learning lots of new and interesting things about the country's "green gold" and how it can be used. The Forest Days today are the most important event in terms of shaping public views about the forest sector. It is precisely because of the event that lots of people now understand the great role which the forest plays in the country's economy.

The Forest Days have become more and more popular, and happy participants include forest owners, local residents, local government staff and students. Government representatives have also taken part in Forest Days with an eye toward popularising the need for sustainable forest management. The President of Latvia is patron of the Forest Days.

07

Forest Sector in **Latvia's Economy**

Forestry

Although the forest is of enormous importance in preserving biological diversity and is also an inviolable component of Latvia's landscape, the main pillar of support for sustainable forestry is the economic advantage that is offered by the regular harvesting of timber and its processing into products which have as much added value as possible.

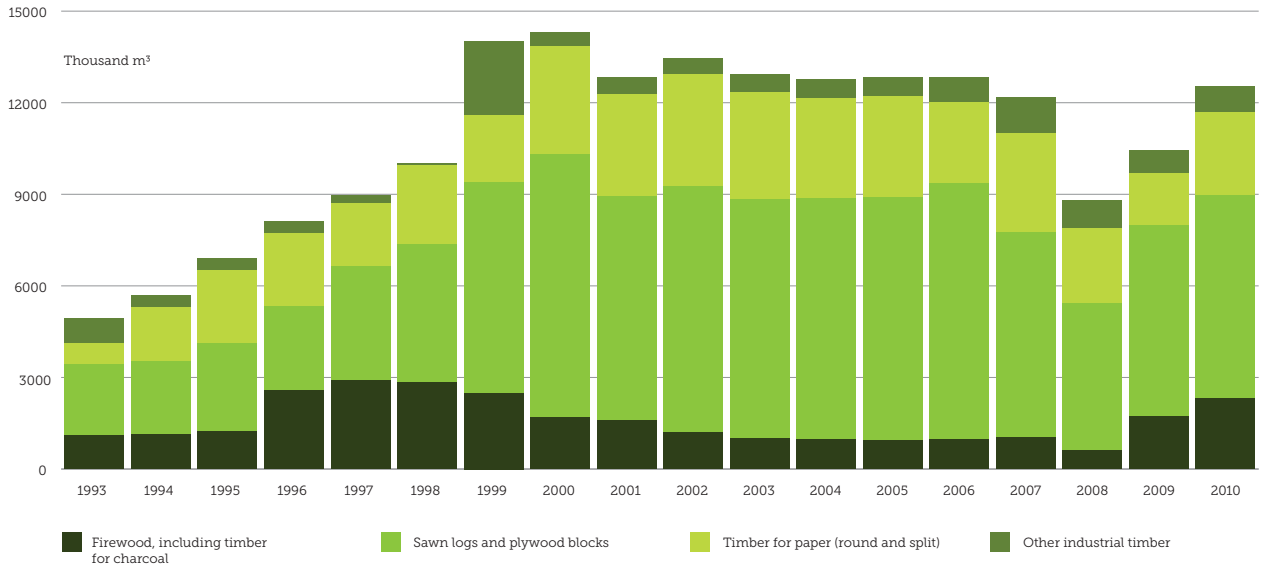
The timber industry and forestry have always been two sides of a single coin. Without money gained from the export of finished products, there can be no financing for the restoration, nurturing, selection and environmental protection of the forest. Without sustainable forestry that does not denude the forest in the long term, the wood processing industry cannot survive. This means that the sector of the development has always been closely linked to the volume of timber that is removed from the forest.

The average volume of timber harvested from Latvia's forests over the past decade has been 12 million m^3 of roundwood. Dominating in the assortment of timber are sawn logs and plywood blocks, and in terms of species, up to 70% of the timber comes from coniferous forests. Between 2000 and 2007, most of the timber came from privately owned forests, but then the situation changed quite rapidly. The price of roundwood in Latvia increased substantially, due in part to higher prices throughout Europe, but also to the fact that there were companies in Scandinavia which were prepared to pay more money in the Baltic States to supplement their own stocks of timber. These more expensive deliveries made up a negligible part of overall volumes of timber consumed in Scandinavia, but private owners of forestland were no longer willing to sell timber to local companies if they were not prepared to pay the same price as the Scandinavians. The competitiveness of Latvia's wood processing sector suffered terribly, and at some points there was an absolutely absurd situation in which Latvian companies were forced to buy roundwood and sawn logs from those countries in Europe to which they had exported timber in the past – Germany and Finland among them. Accordingly, the timber industry was in very dire straits indeed in 2007, which was a year which most people in Latvia still saw as part of the so-called years of abundance in Latvia.

The situation deteriorated even further in 2008, when the global economic crisis began and the price of roundwood plummeted. This led to an increasingly drastic reduction in timber harvest from privately owned forests – just nine million m^3 of timber, which was the lowest indicator during the previous decade. In order to rescue this enormously important economic sector, the Latvian government took the courageous decision to increase the volume of timber to be harvested from state owned forests in 2009 and 2010 by two million cubic metres of timber. This decision did a great deal to save the timber sector from a wave of bankruptcies, thus saving thousands of jobs. It also offered very clear evidence to show that state owned forests are of enormous importance in guaranteeing stability in the sector, and this stabilising role must be preserved in future, as well. Even if the total felling volume in state owned forests was increased by four million m^3, moreover, this did not lead to the felling of more trees than was the average during the past decade. That was because timber stored up in the forest between 2001 and 2005 come be accessed.

As the economic situation in the country has gradually stabilised and forest owners have came to understand that the 2007 prices of roundwood were inappropriately high and would probably not return during the next several years, the volume of timber harvested from privately owned forests has begun to increase once again – to 4.7 million m^3 in 2010.

Round-wood removed from the forest, by type



Source: CSP, ZM

Timber Industry

When Latvia regained its independence, the forest sector quickly restructured itself to adapt to market economy rules. Today it is the second largest manufacturing sector and one of the most important segments of Latvia's industry – right after the food processing sector. Exports to other parts of the former USSR broke down after the restoration of independence, and exports to Western countries had not yet really begun, but even so, the forest sector represented 12% of overall exports in the early years of independence. The situation changed around 1995, when countless small sawmills were set up and larger companies gradually began to emerge. There were increased exports of simple, non-dried and unsorted sawnwood and roundwood to Great Britain, Germany and other European countries. In 1999 and 2000, timber and timber product exports reached a record level of 43% of all exports in Latvia, with a total export value of LVL 488.2 million.

Over the course of the past decade, overall revenues in the forest sector have tripled to LVL 1.5 billion in 2010. The volume of wood processing products in 2010 increased by 27.7% in comparison to 2009. The global economic decline had only a short-term effect on the development of exports from the forest sector, and in 2010 exports rose by 45% in comparison to the previous year, achieving the second highest level of revenues in history (LVL 1.02 billion). These exports represented 22% of overall exports from the country. In 2010, the forest sector represented approximately 5% of GDP.

Of key importance for anyone in the forest sector has been the ability to think in the long term. The availability of resources depends on the lengthy period of growing trees – more than 100 years in some cases. The wood processing industry has undergone very dynamic changes in Latvia over the past 20 years. Although the forest is a renewable resource, its accessibility is strictly limited, and under conditions of competition, only those who know how to produce a product with as much added value as possible from each cubic metre of timber will survive. The development of the relevant industrial facilities requires enormous resources, as well as time and knowledge, so it is not enough to think just one day or a few days ahead.

It is for this reason that wood processing companies in Latvia have, during the past decade, focused ever greater attention on new technologies, greater operational efficiency, as well as better logistics. Companies have also tried to work with end consumers, as opposed to intermediaries. Although most of the output of the forest sector at this time is still sawn materials, the quality of this timber has improved substantially, and that has meant higher prices, as well. In parallel to this, there has been an increasing level of products with a high level of added value. The value of furniture exported in Latvia doubled between 2000 and 2007, and the manufacturing and export of products for building and carpentry, wood packaging, wood chips and similar products expanded, as well. Since 2000, the proportion of sawn materials has declined year by year, and processed products and roundwood have taken on a great role. The sector reached its highest export volumes in 2007, when products worth LVL 1.06 billion were exported.

Latvia's accession to the European Union was of key importance to the forest sector, because Structural Fund financing became available. Many companies in the sector have used such financing to develop technologies and infrastructure and to improve the knowledge of workers.

The sad fact is that the export of processed products form Latvia served as something of a patch to cover shortages in markets in other countries. The rapid increase in the sale of such products also related to

the growing bubble in Latvia's real estate market. This meant that when the global economic crisis began in 2008, Latvia's wood processing companies suffered the most. The crisis threw them back to the level of 2003 or so, and the overall proportion of timber products shrank to 19% in Latvia's export structure. The proportion of sawnwood in exports from the forest sector rebounded significantly in 2009 and 2010, mostly because companies which engaged in the preliminary processing of timber survived the economic decline more easily. Even though construction volumes in Europe declined, the market for sawnwood which could be used for a variety of purposes remained in place. What's more, companies in this niche in Latvia were usually not linked to specific buyers or groups of consumers, which allowed them easily to find new partners and sales markets. The forest sector as such survived the crisis quite well, and beginning in late 2010 and early 2011, the situation in the sector has improved very substantially. At this writing, nearly one-quarter of exports from the sector have a high or medium-high level of added value.

True, 15% of exports from the forest sector in 2010 were made up of roundwood. It has to be explained here that most of that timber was used to produce paper and to provide energy resources, and sawn logs represented a negligible part of the exports. Lots of people in Latvia have the false belief that unprocessed Latvian timber is being brought out of the enormously valuable natural resource that is the forest and sold for a pittance specifically because they have seen piles of roundwood destined for pulp mills at Latvia's ports.

There has been a lot of debate in Latvia over the past decade about whether Latvia should have its own pulp factory to process these resources. The debate was closest to a resolution in 2004, when the Matsaliitto Group from Finland was prepared to build a plant at Ozolsala, but there were questions about how this would affect the ecosystem of the Daugava River and the quality of drinking water in Rīga. The project was shut down. Another round of debate about the matter occurred in 2011, but no serious investor has indicated any interest in the project. It is also true that the volume of timber available for such purposes has declined year by year as some paper wood is processed for energy resource purposes in Latvia, and there is also an increasing demand for such products elsewhere in Europe. Increasing numbers of companies in Latvia are aware of this fact and have invested in the development of energy resource products, mostly granules. Much of the output is consumed domestically, but export of energy-related timber products has been on the rise – to LVL 140 million in 2010, or 39.6% more than in 2009. This is a fairly relative increase if we look at the situation in the longer term, however, because 2009 was a very bad year for exporters of energy-related timber resources.

The best results during the first years since the crisis ended have been posted by the plywood industry. The Latvijas Finieris company is the market leader in this segment, and in 2010 it exported products at a value of LVL 79 million. The wood chip and OSB manufacturer Bolderāja LTD, Ltd increased output by nearly one-third in 2010, and it exported more than 90% of its output.

The furniture industry in Latvia has not done well, and several large furniture makers and many, many small ones went under during the global economic crisis. Demand for new furniture has collapsed in Latvia, and that means that far fewer manufacturers focus on the domestic market. Exports have remained rather stable, particularly to Germany, the UK and Denmark.

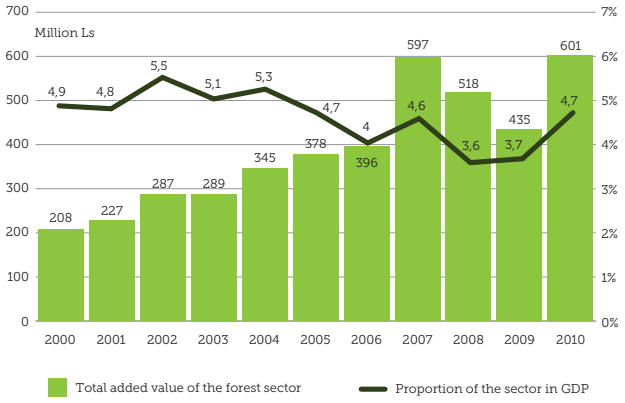
At the end of the day, most wood processing companies in Latvia survived the crisis quite well, and the added value that has been created by the forest sector

has increased considerably during the past decade – from LVL 208 million in 2000 to LVL 601 million in 2010. In 2006, the proportion of the wood processing sector in the processing industries was 21.3%, but its proportion of exports in that sector was fully 67.3%. In 2010, the figures were 26.3% and 84.8% respectively.

Calculated on the basis of each employee, the added value from the timber and wood product industry in 2010 was LVL 9,000, in furniture making it was LVL 7,000, and in forestry and the timber industry it was LVL 8,000. By comparison, the average per-employee added value in the processing industries in Latvia in 2010 was LVL 8,000. As employee numbers have shrunk in response to investments in more efficient equipment, productivity in the timber product industry has improved considerably in recent years in terms of per-employee figures. Although many timber and wood product companies suffered losses during the economic decline, those which survived and did not go bankrupt returned to profitability in 2010.

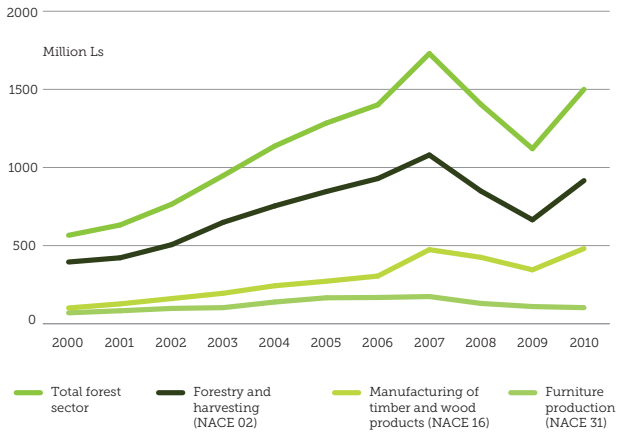
It must be stressed here that these improvements in economic indicators are not fully down to global economic recovery or to a recovery of demand in the main export markets for the Latvian timber industry. Companies in the sector themselves did a lot of homework during the crisis by optimising manufacturing, cutting staff numbers, controlling costs more carefully, and looking for new export markets without the involvement if intermediaries so that companies could deal directly with final consumers. Manufacturers have increasingly been looking in the direction of Asia, where many countries are experiencing rapid economic growth.

Added value of the forest sector and its proportion in GDP (fixed prices)



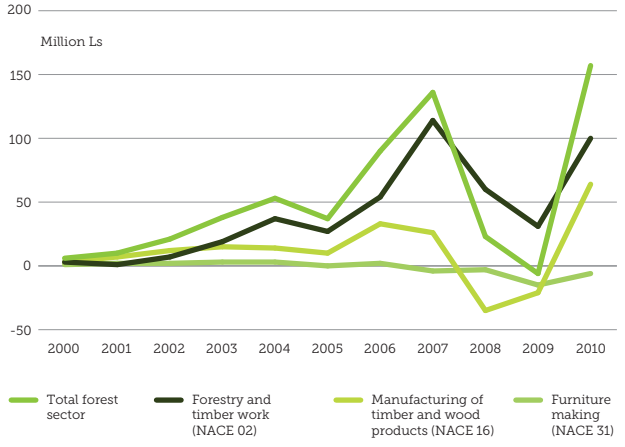
Source: CSP

Net revenues



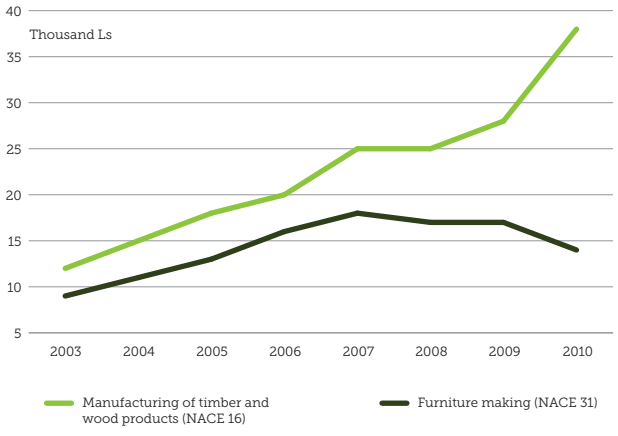
Source: CSP

Profits by form of activity



Source: CSP

Output per-employee (fixed prices)

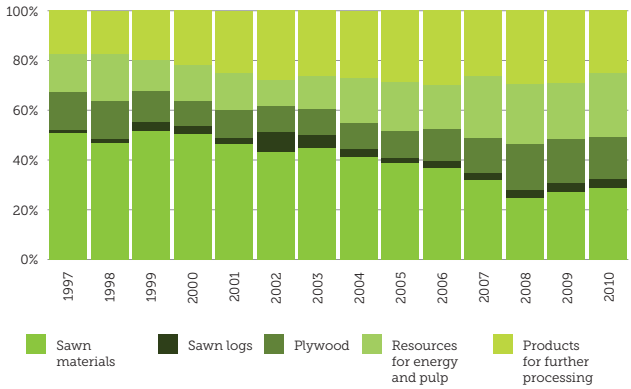


Source: CSP

Proportion of forest sector products in overall Latvian exports

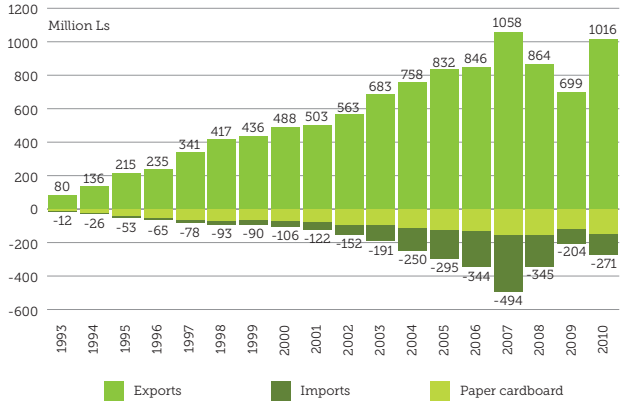
Source: CSP

Trends in the export of forest sector products



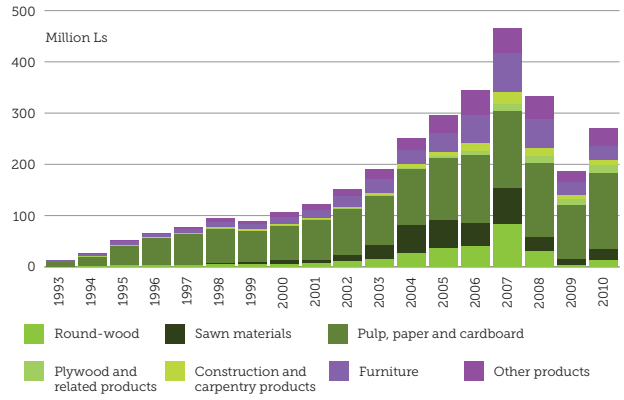
Source: CSP

Foreign trade of the forest sector



Source: CSP

Trends in the import of forest sector products



Source: CSP

Investments in the Forest Sector

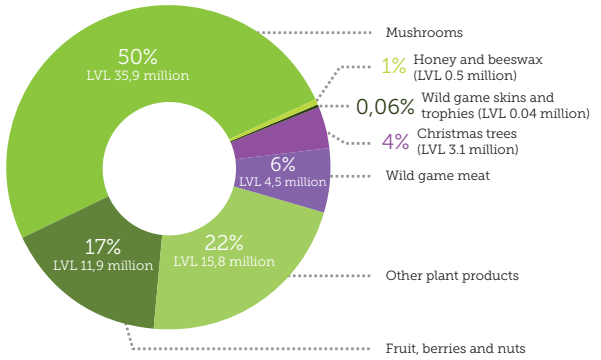
The forest sector in Latvia has brought in foreign money not just because of exports, but also as the result of investments. Investments in the forest sector expanded considerably after Latvia joined the EU. Despite the economic crisis, moreover, foreign investments in the equity capital of forest sector companies registered in Latvia kept on growing to LVL 592.12 million in 2010 or nearly three times more than in 2005. The only thing is that the areas in which investments are made have changed – prior to 2007, 75 to 78% of foreign investments, on average, were made in the equity capital of wood processing companies, but since the crisis an ever greater share of investments have gone to forestry companies (52% in 2010).

When it comes to non-financial investments in forest sector companies (investments in infrastructure, buildings, equipment, transport vehicles, etc.) increased stably until 2008, but collapsed in 2009 to less than LVL 100 million fixed prices. In 2008, by contrast, such investments in the forest sector amounted to more than LVL 300 million. The problem is not that foreign investors lost trust in the competitiveness of Latvian companies. It is that investors all over Europe are scared about the possibility of a second wave of the crisis – one that could be created by the unstable economic situation which prevails in several countries in the South of Europe. Such investors choose not to make short-term investments in manufacturing sectors which are subject to various dangers, but instead in the timber industry, where investments are more secure than bank deposits and annual increases in growing stock volumes also ensure higher profits.

Forest Products and Services in Latvia

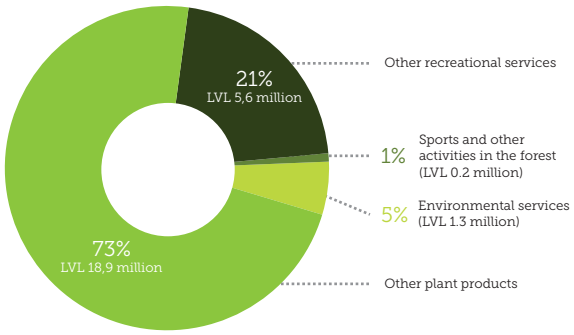
Latvia is among Europe's leading countries in terms of several indicators related to the forest sector, but consumption of wood products in Latvia remains quite low – around two cubic metres a year on a per capita basis. The figures in neighbouring Estonia and Finland are 3.3 and 4.8 cubic metres a year. The use of wood products has never been too high in Latvia over the past 20 years, and it declined dramatically in 2008/2009 when the real estate market collapsed in response to the global economic crisis. Inevitably this meant lower demand for furniture, as well.

Non-wood products from the forest



Source: The study "Evaluating the Contribution of Non-Wood Forest Products and Services to Latvia's Economy" as part of Project No. LV0081, "Development of Integrated Environmental and Forest-Related Economic Accounts in Latvia."

Value of forest-related services



Source: The study "Evaluating the Contribution of Non-Wood Forest Products and Services to Latvia's Economy" as part of Project No. LV0081, "Development of Integrated Environmental and Forest-Related Economic Accounts in Latvia."

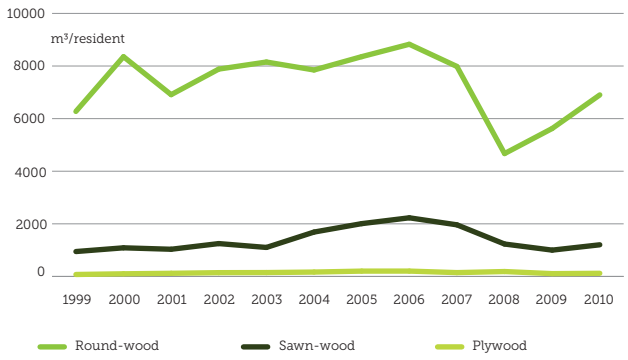
Although many people in Latvia will never build a wooden house, buy wooden furniture or install a parquet floor, the fact is that very few people have never light a fireplace, stove or campfire. Firewood for many centuries was the main source of heat not just for private homes and farm buildings, but also for public buildings and manufacturing facilities. Individual households remain the primary consumer of firewood in Latvia in terms of percentages, but the proportion has declined as the amount of firewood used in industry has increased stably. That is the future for firewood, because many manufacturing companies, including ones in the timber industry, are currently using heat that is produced

from gas and are increasingly looking at timber biomass cogeneration systems which produce not just the heat which the companies need, but also heat and electricity for the relevant local government territory.

Renewable energy resources make up 32% of all consumed energy in Latvia at this time. That is a lot in comparison to other European Union member states, and ours is the second "greenest" country in the EU after Sweden. Still, the massive majority of these resources (97%) involve water from the hydroelectric power plants that are on the Daugava River. An EU directive specifies that the proportion of renewable resources in Latvia's energy balance must be raised 40% by 2020, and it is clear that the foundation for this will inevitably be hard biomass, biogas, small hydroelectric power plants, wind and, of course, timber, as well.

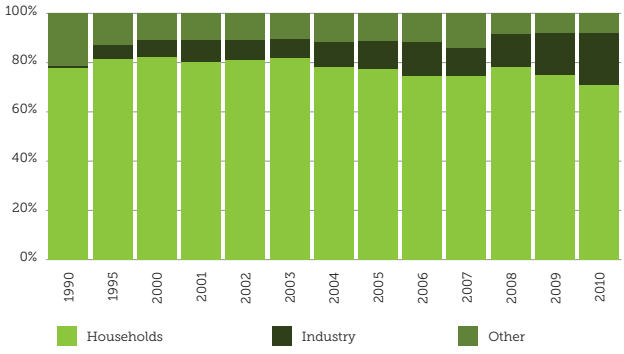
It is also true that it is not just timber that is found in Latvia's forests. They also have recreational and leisure functions, offering a wealth of berries, mushrooms, wild game and many other goodies which have been appre-

Consumption of round-wood, sawn-wood and plywood



Source: CSP, ZM

Consumption of firewood

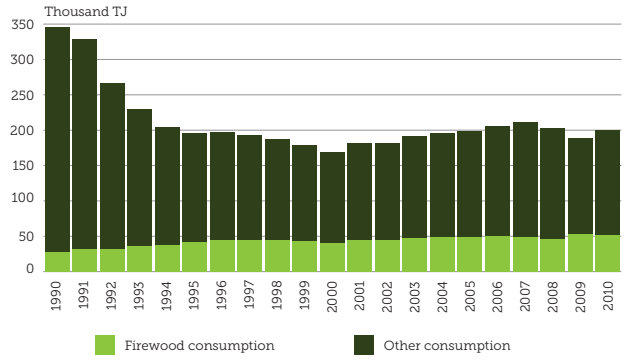


Source: CSP

Proportions of types of firewood in total output of same

Source: CSP

Total consumption of energy resources



Source: CSP

ciated for centuries. How valuable are these non-wood products in cash terms? We found out in 2010, when the Agriculture Ministry conducted a major study on the matter. It sought to determine the value of non-wood products and services in the forest, the effects of these on Latvia's economy, as well as the social importance of the forest. The results show that the extraction of non-wood products in the forest is an essential component in the economies of Latvia's rural regions, particularly in terms of the consumption of individual households. In 2010, the value of non-wood products and services in Latvia's forests amounted to LVL 97 million. Non-wood products were wroth LVL 71 million, or LVL 32 per resident of Latvia. Mushrooms made up one-half of that sum. To be sure, it would be hard to sell all of the products, and that fact is that most people who gather them up consume them themselves. The value of services in the forest in 2010 was LVL 26 million, with 73% of that sum being related to hunting-related services.

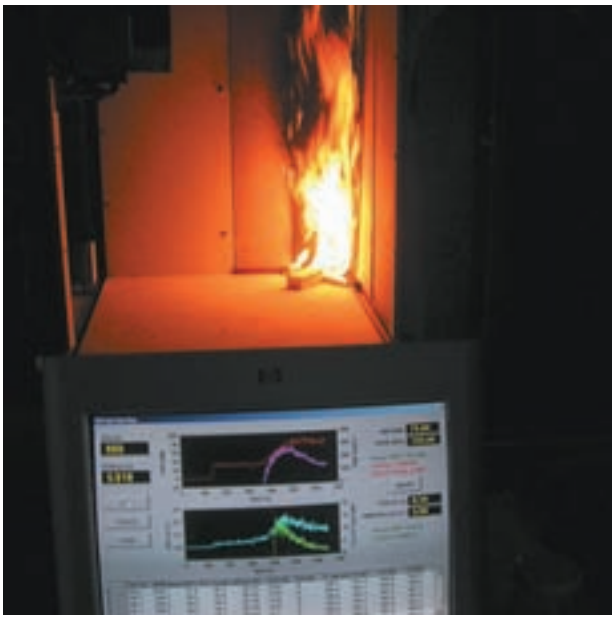
Science and Innovations

A country as small as Latvia can compete successfully at the international level only if it can produce something very inexpensive and at high volumes, or if it can offer innovative products with a high level of added value. The industry spent the 1990s largely in trying to conquer foreign markets with low-price sawn materials, but during the past decade, much more attention has been devoted to innovations in the broadest sense of the word.

The fact is that the foundation of foundations in the forest sector is not a log, but instead a seed. One of the most important centres in coming up with ideas, research and everyday work related to this issue is Latvian State Forest Research Institute "Silava", which was established back in 1946. Since the restoration of Latvia's independence, the Latvian State Forest Research Institute "Silava" has worked on the restoration of forest ecosystems, on studying the components of those ecosystems, and on coming up with recommendations on how forest management can be organised without denuding the forest while, at the same time, ensuring the rational and effective use of forest resources and products. A major investment in the development of forest-related ideas, methodologies and technologies has also been made by the Forest Faculty of the LLU and its senior scientists.

Latvia's leading timber science centre – the Latvian State Timber Chemistry Institute – is as old as the Latvian State Forest Research Institute "Silava", and at this time it seeks to develop scientifically justified, environmentally friendly and low-waste technologies for the production of competitive materials and products from timber and other types of biomass. The institute engages in research, and it has established close partnerships with a whole series of wood processing and other companies. Scientists at the institute have patented several products such as furfurol, heat insulation materials, charcoal, cosmetics and other products.

The forest sector is nearly the only sector in Latvia's economy in which industry, science and education work hand in hand. This was clearly seen in December



2004, when the LLU, LVM and LKF opened the Forest and Timber Product Research and Development Institute, or MeKA. It has brought together specialists from universities and the sector to find competent and responsible solutions to problems related to the development of forest and timber products and the relevant professional education processes. The result is that the MeKA has become one of the most effective forest and timber competence centres in the Baltic States, with competent and motivated employees who offer services related to product research, development and testing, as well as informal professional education programmes.

Much has been done to integrate science and higher education in Latvia's forest sector, thus increasing the competence of academic personnel and making sure that new knowledge is integrated into study programmes as quickly as possible. Latvia's scientific institutions have been actively involved in the development of a unified pan-European research space, ensuring close co-operation with foreign colleagues and organisations.

Major innovations have also occurred at manufacturing enterprises in recent years. One of the most important driving forces behind innovations in the forest industry over the past decade has been the LVM, which has facilitated the use of modern technologies and the latest methods in forest management in Latvia. The development of wood processing technologies in Latvia, in turn, has been very much helped by money from the EU's Structural Funds, which have allowed many small companies to buy equipment which they would otherwise not be able to afford. This means that most manufacturing companies have technologies which are at or past the average European level. Structural Fund money was also used to establish the Forest Sector Competence Centre, which brings together innovation-focused companies and scientific institutions to work together on industrial research and the development of new projects to develop products and technologies so as to help companies to increase their competitiveness.

Most companies in the sector try to update their technologies regularly so as to optimise and rationalise the manufacturing of existing products, but the fact is that Latvia's leading plywood, glued wood construction, home building and furniture making companies occasionally come up with new products which are often unique at the global level. One of the most positive examples of this is Dendrolight Latvija Ltd, which became the first company in the world to open a plant in Ventspils in October 2010 to produce the solid timber cell material "DendroLight." There is vast international interest in this product, as was seen in the company's great success at the "Ligna 2011" exhibition of wood processing technologies and products, and there is reason to believe that DendroLight has every opportunity to become the long-awaited "Latvian Nokia."

08 Forest Sector **in Europe**

Any discussion about Latvia's forest sector which focuses on an objective evaluation of its contributions to the national economy must certainly involve consideration of the sector in the context of Europe. This can be done thanks to an evaluation of European forests which was presented in June 2011 in the Norwegian capital city of Oslo, where the sixth ministerial conference on protecting European forests the 6th Ministerial Conference on the Protection of Forests in Europe was convened. This was the first review of sustainable forest management in Europe's various regions. The qualitative and quantitative indicators of the "Forest Europe" study focused on Latvia as one of the Northern Europe countries (together with Finland, Sweden, Denmark, Iceland, Lithuania, Estonia and Norway).

These are Northern European Countries with a high proportion of afforestation, as well as highly developed wood processing industries which mean that the forest industry is of key importance to national economies. Cutting does not exceed natural increases in timber resources in any of the countries, and that is the cornerstone for sustainable forest management. There are stable increases in growing stock volumes in all of the countries in the Nordic group. It is also true that apart from Iceland Denmark, the Nordic countries are not planning to increase their amount of forestland, which is already quite massive (77% in Finland and 76% in Sweden).

Forests in these countries tend to be dominated by single species of trees, but in essence the forest is a natural element, and forest management makes use of methods which are as close to nature as possible. Access to the forest and its non-wood values and products has traditionally been free of charge and without any particular limitations, and that is why the price of these products and services tends to be comparatively low.

Latvia is the only country in Europe in which the absorption of CO_2 exceeds the output of greenhouse gases from all other sectors of the country's economy. There was stable growth in the amount of carbon absorbed by living biomass in the Nordic group and in Latvia between 1990 and 2000 – an average of 2% a year in Latvia.

In Latvia, as in Finland, Norway and Sweden, the forest sector makes the largest contribution toward overall exports from the relevant country. The largest investment in GDP by the forest sector is also seen in Latvia and Finland. The proportion of the population that is employed in the forest sector is highest in Latvia – 2.4% of all of the country's residents.

The use of wood biomass to produce energy is of great importance in the Nordic region, particularly in those countries which have no domestic sources of fossil fuels, but have massive forest resources – Finland, Latvia, Lithuania and Sweden. Timber biomass makes up more than 20% in the energy resource balance of these countries.

Between 15 and 20% of all forestland is protected in Denmark, Estonia, Finland and Latvia, as compared to just 2-8% in Sweden, Iceland and Norway. This is largely down to differences in the concepts and classifications of protected territories.

Decisions related to the forest sector are of key importance in these countries because of the major economic contributions which the sector makes. At the same time, however, the Nordic countries must devote more attention to work with the public so as to explain the specific contributions of the forest sector to the national economy and to the availability of other types of services. As interest in forest management issues increases in Latvia, too, more attention must be devoted to this subject in future.

A comparison of countries in Northern Europe

Indicators	Unit	Denmark	Estonia	Finland	Iceland	**Latvia**	Lithuania	Norway	Sweden
Change in forest area, 1990-2010	%	0,06	0,00	0,05	0,01	**0,13**	0,18	0,06	-0,01
Change in growing stock m^3/ha, 1990-2010	%	2,37	-0,24	0,57	-0,54	**1,91**	-0,54	1,6	1,51
Change in CO_2 absorption in living biomass, 1990-2010	%	3,76	0,90	0,77	6,92	**2,02**	0,80	2,13	0,33
Ratio fellings, 2005	%	44,57	58,64	71,84	–	**71,81**	89,33	48,39	93,34
Proportion of introduced species	%	46,24	0,04	0,15	19,85	**0,04**	0,18	1,93	1,76
Consumption of timber products, 2010	m^3 per capita	3,6	3,3	4,8	1,1	**2,1**	1,6	2,4	3,4

Source: Forest Europe 2011

09

Looking **Forward**

If we look back at the last 20 years in Latvia's forest sector, we can say with absolute certainty that there has been stable growth. The area of forestland and the volume of timber in Latvia's forests are increasing, and that has a positive effect on carbon absorption in the forest. The overall health of the forest has also improved. The volume of timber removed from the forest has been stable during the past 20 years, and over the past five years, the removal of timber has been at a level of 70% of the increase in total amounts of timber. According to the State Land Service, one-half of all forests in Latvia are owned and managed by the state. The structure of private forest properties is very fragmented, but there has been gradual consolidation in the sector over the past five years. There has also been increasing interest among foreign investors who wish to purchase forestland in Latvia.

Forest management and processing of forest products ensure stable income for forest owners, companies and employees in the sector. The forest sector is the only one in Latvia with a positive import/export balance – since 1993, the total sum of forest sector exports has been LVL 7 billion. The massive economic decline in the world has been successfully overcome, and in 2010, the forest sector represented 5% of GDP, while exports represented 20% of all exports.

The future of the forest sector is very important. The total area of forestland in Latvia may well increase in future, because more than 300,000 hectares of farmland are laying fallow at this time, but the fact is that future growth should involve more of a discussion about how to improve the effectiveness of forest management in already established forestland. There must also be work to ensure an even structure of species of trees and the age of trees so as to ensure maximum timber availability, as well as increases and diversity in the relevant values.

Nothing suggests at this time that manufacturers in Latvia might find cheap imported timber from Russia or some other country, so the fact is that the greatest unused potential in the forest sector is in the further processing of timber. There are vast opportunities here to increase added value and export volumes alike. More in-depth processing of timber will be possible, however, preferably if timber products with a high level of added value are sold domestically before being tested in foreign markets. This would make it possible to test and improve the products. There must also be greater support for the transfer of technologies and the development of new products. There is a potential: Latvia's government provides the lowest amount of support for innovations among all EU member states.

When it comes to products which should be developed in future, we should certainly look beyond the classified boundaries of the sector. The future of the forest sector must involve inter-sectoral cooperation in which timber is an alternative, ecologically clean and renewable natural material which can be integrated into all kinds of aspects of human lives.

People who buy timber product such as tables, chairs or design materials not only enjoy practical and aesthetic value, but also help to increase the absorption of CO_2 by choosing these natural materials. The carbon that is accumulated in timber products will remain in those products as long as they are used. When reprocessed, too, timber products help to improve the climate, because they replace non-renewable fossil fuels such as oil products and coal – those which create greater greenhouse gas emissions. It is essential to increase the use of timber products in Latvia not just from the economic perspective, but also with an eye toward the environment and climate change. If we look back at the last 20 years, we can certainly say that we have obtained broader knowledge and a deeper understanding of climate change and the very essential role of the forest sector therein.

The 19th century was a period when charcoal triumphed, while the 20th century saw a boom in the use of oil and oil products. Today, however, we are living in a century of renewable resources. Even though the forest sector has done a lot of work to popularise timber products and will certainly continue to do so, initiatives aimed at closer co-operation must also come from other sectors. Only if the people of Latvia and the whole world come together to understand the advantages of sustainable forestry and of timber as a raw material will we be able to ensure an ecologically clean and harmonic environment for our children and grandchildren whilst, at the same time, preserving the unique ecosystem of our planet.

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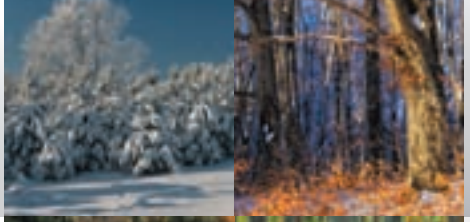

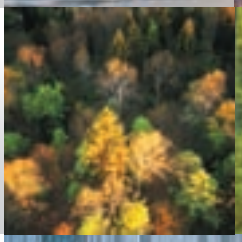
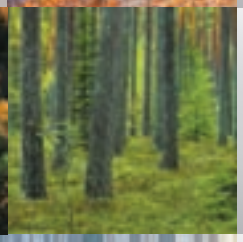
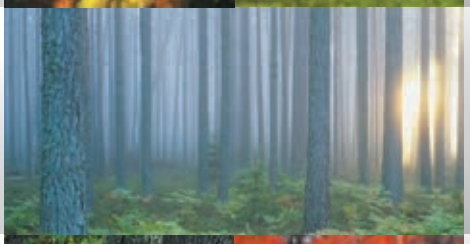
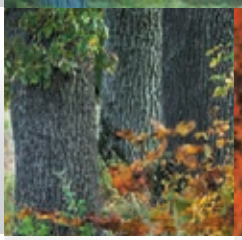


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