

GREEN ECONOMY

**IN THE CONTEXT OF SUSTAINABLE DEVELOPMENT
AND POVERTY ERADICATION**

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INTRODUCTION

Green economy is a concept in the stage of formation. The focusing in its implementation in different countries depends on the type and stage of economic development of the given country, the acuteness of the various ecological problems, the dominating values, existing regulations as well as awareness of the experience and outcomes of green economy in other countries. E.g., some countries can emphasise the reorganisation of traditional industries with high environmental impact into more modern and nature-friendly, others can introduce new activities in agriculture and forestry, yet others can transfer their energy production, transport and other infrastructure utilities to new more economical and environmentally less harmful technologies. The efforts for the implementation of green economy may concern only the economy producing for and servicing the domestic consumer, but the development of export could also be seen as significant (“green export”). Dependent on how radical and extensive the goals are, the promotion of green economy can concentrate on certain economic niches, which allow to expect greater economic, ecological or social impact; on the other hand there could be a policy attempting to achieve success by implementing ecological technologies on a broad front, i.e. in a number of sectors of the manufacturing and servicing economy. The most ambitious option would be the preparation for an ecologically motivated transition (breakthrough), which would set the entire economy and way of life on a different path, one of responsible consumption of environmental resources.

In case of **Estonia**, the context in which the implementation of the green economy concept could be analysed, is quite decisively determined by the watershed, which occurred in the 1990s with the restoration of Estonia’s independence and the transition from the state socialist economy to the market economy. While Estonia was part of the Soviet Union its economy underwent robust industrialisation, the establishment of large-scale industry and the replacement of the formerly small-scale (farms)-based agriculture by industrial production (large state and collective farms, major dairy, pig and poultry farms). Large energy production capacity in energy based on local fuel – oil shale – was developed. The environmental impact of that type of production was naturally high, ecological problems became acute and awareness of them increased especially in the 1970s and 1980s. An economic restructuring process took place during the transition to market economy. A significant share of the large-scale production lost its markets – predominantly the former USSR – resulting in a steep decline in output volumes in industry as well as agriculture and later the emergence of a radically different economy. The steep fall of production volumes brought along a comparable decline in environmental impact and ecological problems lost their high profile in the public awareness compared to the problems faced by the people having to cope in the new market economic society. It is true that new ecological problems copped up at the same time as others declined: the steep rise in the number of automobiles

meant increasing air pollution in the larger cities; intensive logging of forests, the increase of volume of everyday waste (packages etc.).¹

The ecological, sustainable worldview has quite deep roots in Estonia. This is partly based on an approach typical of the traditional Estonian peasant culture, where life and production had been rather harmoniously linked to the natural environment throughout centuries. Conscious nature protection traditions are also quite long in Estonia (the 100th anniversary of Estonian national nature protection was marked in 2010). After the restoration of independence Estonia came under the influence of the mentality prevailing in the neighbouring countries – Finland, Sweden and other Nordic countries – with strong ecological views. These neighbouring countries also extended considerable support to Estonia in the funding of environment recovery and the spreading of know-how of ecological technologies. This transfer of ecological viewpoints and know-how from the neighbouring countries made is somewhat easier for Estonia to meet the European Union environmental requirements when acceding to the EU.

However, it should be pointed out that the ideas of green economy, i.e. those concerning the more environmental and ecological organisation of production processes in general were transferred to Estonia less rapidly than the more traditional ideas and technologies concerning nature protection and the improvement of the state of environment. Accordingly the early years of transition saw intensified attention to the disposal of industrial and municipal waste (e.g. the construction of waste treatment plants for cities) rather than to the replacement of old technologies by new and ecological ones. The slowly recovering economy also lacked the sufficient resources or the awareness needed for introducing structural changes towards more ecological and economical production. Activities were launched in some sectors of green economy, e.g. organic farming, but as niche production based on a few enthusiasts.

When comparing the newly independent Estonia with other countries as to the indicators reflecting ecological aspects (the ecological footprint, the energy, material and “waste” intensity of products), Estonia would not rank high, especially to the background of the neighbouring Nordic countries. Yet according to most criteria Estonia’s ecological situation can be considered quite good with the problems of waste from the oil shale-based power stations mainly accounting for the negative aspects. At the same time the use of oil shale as a domestic fuel for the production of energy has ensured reliable energy supply to Estonia and has improved the balance of payments.

The task of this paper is as follows: a review of how the introduction of green economy in the context of sustainable development would support Estonia’s economic growth and the achieving of social goals.

This paper is a policy analysis, whose objects are primarily the policy measures (e.g. strategies, programmes, action plans etc.) supporting the development of green economy in Estonia. The analysis covers currently existing plans and measures as well as those under development, which involve applications or activities related to green economy. The

¹ See more: Terk, E. (1998). Estonia: Oil-Shale, Environment, and Growth Scenarios. // Environmental Transition in Nordic and Baltic Countries. Ed. by H. Aage, pp. 111–125.

interpretation of green economy in this analysis proceeds from the UN treatment. According to UN approach² green economy (GE) can be defined as one that results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities. GE is characterized by substantially increased investments in economic sectors that build on and enhance the Earth's natural capital or reduce ecological scarcities and environmental risks. The list of such sectors, however, can somewhat vary in the different countries. The UN underlines as such renewable energy, low-carbon transport, energy-efficient buildings, clean technologies, improved waste management, improved freshwater provision, sustainable agriculture and forest management, and sustainable fisheries.

The analysis involves, on the one hand, the documents covering the development of the Estonian society and/or its economy as a whole and on the other hand, sector- or development-specific policy documents, proceeding from the above spheres of activity. The paper analyses the relation to the ideas of green economy of the goals, visions and various planned measures (e.g. financial, fiscal, regulatory, informational, etc.) in the policy documents, from the economic, ecological and social aspects. The paper also attempts to assess the links between the various documents' goals and measures related to the development of green economy.

The documents analysis will be followed by recommendations for better linking of policy measures in the development of environment-friendly economy and the laying of possible sectoral or activity-related emphases in that relation.

The analysis is based on existing studies, analyses and other sources as well as further expert opinions gathered during the process (brief interviews, round table discussions).

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² Source: <http://www.unep.org/greeneconomy/Portals/30/docs/DrivingGreenEconomy.pdf>, p. 4

I HOW CAN GREEN ECONOMY CONTRIBUTE TO GROWTH AND OTHER ECONOMIC OBJECTIVES?

1.1 General strategic framework

A move of quite considerable symbolic significance in Estonia was the passing of the **Sustainable development act**³ in 1995. This act determines the principles of making use of natural resources and sets the goal as follows: “The goal of sustainable use of the natural environment and natural resources is to ensure a satisfactory living environment for the people and the resources necessary for economic development without significantly harming the environment and by preserving the diversity of nature”. The document specifies to a slightly greater extent than other issues the ones related to the use of natural resources: the defining of the usable amounts of natural resources and the regulation of their use, general principles of imposing the fees, the role of development plans in the use of nature. At the same time the law is quite general nevertheless, performing the role of an umbrella act. The implementation of the principles declared in it can only be ensured via other acts and state strategies.

The existing or upcoming national-level development documents in Estonia do not include a strategic (framework) document directly addressing the development of green economy. However, it is possible to point out four documents from among the existing different development strategies, which contain strategic guidelines for the development of green economy. These documents are:

- The Estonian National Strategy on Sustainable Development – Sustainable Estonia 21;
- The Estonian Environmental Strategy 2030;
- The National Environmental Action Plan of Estonia 2007–2013 which is the implementation plan of Estonian Environmental Strategy 2030;
- The development plan of environmentally friendly economy.

Additionally a number of other national-level documents can be found, which concentrate on one or another aspect of the development of green economy and pertain to this sphere as to their nature. However, these four development documents establish a framework of goals, which reflects Estonia’s broader political goals in the development of green economy.

The four above documents are placed at different levels in the hierarchy of Estonia’s national strategic documents; therefore they differ as to the scope and the level of focussing on green economy, while the documents’ goals related to the development of green economy and the

³ Link: <https://www.riigiteataja.ee/ert/act.jsp?id=874359>

sectoral emphases vary as well. The differences between the documents are also apparent in the terminologies used: sustainable development, environmentally sustainable, environmentally friendly economy, green growth, green entrepreneurship etc., which also results in differences between the essential emphases in these documents. Furthermore, the drafting processes of these documents and therefore the extent and broader impact of the related public discussions differ significantly as well. While the formulation of Sustainable Estonia 21 was based on the involvement of various interest groups and is effectively the result of broad-based discussions, the formulation of the Environmentally friendly economic development plan did not bring along such wide public debates and the document can be viewed as an excerpt predominantly produced by officials, a selection from existing development plans and strategies.

The following text spells out the essence of the focuses of these four documents by analysing their set goals and emphases from the viewpoint of developing green economy.

The Estonian National Strategy on Sustainable Development – **Sustainable Estonia 21⁴ (SE21)** (approved by the Estonian Parliament – Riigikogu in 2005) is a strategy for developing the Estonian state and society until the year 2030 with the aim of integrating the requirements for success arising from global competition following the principles of sustainable development while basing in the traditional values of Estonia and developing them further. This document attempts to map a long-term (until 2030) development of Estonia's society and economy, to define potential threats and setbacks, which may emerge in that development process and to point out the most important principles and solutions for ensuring balanced and sustainable long-term development. Unlike the examples from several other countries the SE21 is not a clearly ecology-centred document, it pays a roughly equal amount of attention to ecological balance, the increase of the population's welfare (which includes both the economic and non-economic components), the coherence of the society and the vitality of the Estonian cultural space. Accordingly: ecological issues and developments are treated within the context of economic, social and cultural problems, the document attempts to display how progress in one or another of the listed spheres would influence the remainder by either obstructing or causing positive effects. It also raises the issue of broader background factors, which are necessary for ensuring such complex development process, especially that of the necessary type of governance and the education system.

Within the set of **ecological** problems the strategic document discussed here pays the greatest attention to the well-considered and sustainable use of natural resources: the setting up of corresponding registers, monitoring, exploitation schemes of renewable and non-renewable natural resources, the use of a resource according to the from raw material to end product principle, etc. Yet the document does not set direct limits to the time period under question, which would set the mining or logging volumes or normative rates of transition from the use of non-renewable to renewable resources⁵. Yet the document contains the principle that the use of local natural resources must be ensured until the moment when they could be replaced by something else, e.g. renewable resources. In other

⁴ Link: <https://www.riigiteataja.ee/ert/act.jsp?id=940717>

⁵ Such restrictions have been partly provided in other documents.

words the document leaves open the opportunity for adaptive adjustment of the strategy of using the local natural resources, dependent on the changing situation and the probably increasing knowledge about the technologies of using the resources, ecologically important after-effects etc.

The strategy also lists the tasks concerning the reduction of pollution, waste management, the preservation of heritage landscapes as well as natural diversity and the preservation of nature, with somewhat less emphasis, but in sufficient detail. The need for increasing the use of public and especially rail transport for carrying passengers is also briefly mentioned.

As for **economy** the SE21 document emphasises the movement towards export-oriented services economy⁶. It is presumed that this type of economy would be based on small- and medium-size rather than large enterprises and that the Estonian economy would have to undergo a significant shift towards knowledge economy during the period under observation, that the entrepreneurial structure based on small- and medium-size enterprises and the increasing share of services compared to industrial production should be as a whole positive from the viewpoint of reducing the impact on natural environment (use of natural resources, waste)⁷.

Proceeding from the above the SE21 strategy does not treat the local natural resources as of central importance for Estonia's future economy (the document's logic tends to view the residents' intellectual potential, international strategic networks, possibly the country's geographical location as such resources), but it does state that the presence of local natural resources (forests, oil shale) may serve as a buffer in reducing the state's vulnerability in possible crisis periods, when the volume of foreign trade should significantly fall.

Although the SE21 strategy does not use **green economy** as a keyword, it does provide a certain **context** with its basic positions, which is significant even now (in 2010) for assessing the directions of green economy development in Estonia. Yet the strategy contains some more direct recommendations, which link to the principles of green economy, for example: tax policy has to include mechanisms for promoting recovery of materials and pollution charges for reduction of pollution; energy management of Estonia has to be reorganised by supporting and giving preferential treatment to low-energy activities; environmentally friendlier modes of transport should be preferred. As for the general orientation of the strategy one should primarily point out the idea that in the conditions of Estonia's next period green economy should be orientated not at greater localisation of our economy and very close ties to local natural resources, but instead, first: at observing the general ecology-based requirements in all types of economic activity, and secondly: be linked to certain spheres in the international economy, in which Estonia could specialise thanks to its premises ("green export"⁸). The development of some directions of green economy in

⁶ Obviously, this would not mean the termination of industrial production, but only the increasing significance of the spheres of the new services economy. The share of industry in gross product in Estonia like in the Central and Eastern European countries as a whole is higher than in the EU as a whole.

⁷ Of course, not all spheres of the service economy are ecologically harmless; e.g. this applies to the transit transport, which is quite important for Estonia (incl. the servicing of liquid fuels transport).

⁸ When viewing export in terms of "green", one should obviously consider the transport costs and the environmental impact of transport, even in case the above costs and negative effects have not been reflected in the transport tariffs for some reason.

Estonia's regions, where it is important for the preservation of regional employment and local lifestyles, could serve as a certain exception.

The two following general strategic documents – **The Estonian Environmental Strategy 2030**⁹ and its implementation plan **The National Environmental Action Plan of Estonia 2007–2013**¹⁰ - are built upon the principles of strategy Sustainable Estonia 21. Environmental Strategy has been built in a relatively traditional form, by single components of environment: the various types of natural resources (e.g. water, forests, mineral resources etc.), terrains, key factors related to climate changes (energy, transport). Besides the above the problems related to the changing values of the public and environmentally sustainable consumption have been discussed quite emphatically. Although the Environmental Strategy has tried to view the set of environmental problems in connection with Estonia's economic and social development, it treats economy as a general background (regarding to this some developments are forecast or recommended) rather than as a phenomenon analysed and planned in detail. Therefore the strategic document only yields some individual positions on and references to the problems of green economy and does not contain a systematic treatment. The document has been formulated in the key of ecological issues rather than green economy.

Regarding the changes in the economic structure it is presumed (analogously to the document Sustainable Estonia 21), that a movement towards services-based economy (incl. the expectation that the share of health industry and creative industry would increase) as well as research-intensive production would take place, resulting in a reduction of the impact on nature. **As for energy production** the document calls for the diversification of the sources of energy (aiming at a wider use of renewable energy sources), movement towards the development of dispersed energy production (while preserving the necessary volume of basic energy suppliers) and the improvement of energy production technologies. It is, however, stated that the issue of how long will Estonia's energy production depend on the local source, the oil shale, will remain open for the time being, dependent as it is on the development of the general energy policy and energy market of the EU. **In the chapter on transport** the document calls for increasing the use of environmentally friendly biofuels besides other measures. The Environmental Strategy has a highly radical stance on **agriculture**: it states that a dominating part of Estonia's agriculture should be organic farming by 2030. However, this position is presented in the document as an element of a vision. **Regarding waste** the document sets the target of reducing the depositing of waste products in landfills by 30% and reducing the hazard levels of waste materials. It emphasises the need for better use of natural resources and the recycling of waste.

Several sections of the Environmental Strategy (addressing energy production, transport, waste management, fisheries etc.) emphasise the need for transition to more environmentally friendly technologies yet it does not detail as a rule what type of technologies are meant. New sectors of economy emerging thanks to the ecological

⁹ Link: <https://www.riigiteataja.ee/ert/get-attachment.jsp?id=12793882>

¹⁰ Link: http://www.envir.ee/orb.aw/class=file/action=preview/id=380093/Keskkonnategevuskava+2007-2013_20022007_rtf_1.pdf

emphasis are treated rather haphazardly in the document and are not commented on in any detail (neither are the opportunities they provide to business).

The development of green economy is the most directly treated in the suitably titled strategic document, appendix No 3 to the Estonian Strategy for Competitiveness 2009–2011¹¹: **Development Plan of Environmentally Friendly Economy**¹². This paper meets the requirement for the existence of such EU strategy documents and is essentially a framework document concentrating the existing strategies of that sphere¹³. At the same time the document only contains some selected measures and fails to explain the principles according to which the measures have been selected from the various development plans. In the **Plan for the development of environmentally friendly economy** the government has defined four major lines of action for moving towards more environmentally friendly economy:

- efficiency of energy consumption – primarily related to the renovation of buildings and thus the improvement of their energy efficiency;
- diversifying use of renewable energy – which recognises the need for increasing the share of various sources of renewable energy;
- developing oil shale-based energy production – which means increasing the efficiency and decreasing the environmental impact of oil shale based energy production;
- reducing the overall environmental impact of the economy and development of green entrepreneurship – which concerns turning the behaviour of both consumers and producers more environmentally friendly.

The reason why this document concentrates on the energy issues is primarily the need to react to the corresponding emphases of the European Union. Nevertheless, Estonia's current situation is also of considerable importance. Estonia's energy intensity, measured as gross inland consumption of energy divided by GDP, is very high: in 2007 it was 581 kg of oil equivalent per EUR 1 000, exceeding the EU-25 figure (165 kg) by more than three times. This is mainly caused by the energy sector¹⁴, which is the biggest user of natural resources and polluter in Estonia.¹⁵

It is important to stress in case of this document that it is directly linking together the environment and economic development (its various sectors like energy production, industry, housing etc.). However, since the emergence of this document is primarily related to the meeting of the EU requirements and its formulation never involved a wider public debate, the document as a whole fails to reflect the attempts of the development of green

¹¹ The Estonian Strategy for Competitiveness 2009–2011 is an update to the Estonian Action Plan for Growth and Jobs 2008–2011. It links the latest decisions of the Government with the action plan for growth and jobs and describes the latest plans for the new measures and priorities of the Government. Link: http://www.riigikantselei.ee/failid/Estonian_Strategy_for_Competitiveness_2009_2011.pdf

¹² Link: http://www.riigikantselei.ee/failid/LISA_3_majanduse_roheline_kasv_02_11_2009.pdf

¹³ The Estonian Energy Sector Development Plan until 2020, The Energy Saving Program 2007–2013, The Estonian National Housing Development Plan 2008–2013, The Transport Development Plan 2006–2013, The Development Plan of the Estonian Electricity Sector until 2018, The Energy Saving Program 2007–2013, The Development Plan 2007–2013 for Enhancing the use of Biomass and Bioenergy etc.

¹⁴ Estonian electricity production is based on oil shale.

¹⁵ Source: Leetmaa, R., Nurmela, K. (2009) EEO Review: The Employment Dimension of Economy Greening in Estonia// PRAXIS Center for Policy Studies.

economy based on Estonia's potentials and development prospects.

As a summary, having compared the targets and actual emphases provided by the four strategic documents, it can be stated that the aspirations for the development of green economy in Estonia are primarily linked to the following directions of development:

- the development of the energy sector;
- improvement of the efficiency of energy use (emphasising the specific energy waste in housing and public sector buildings);
- improving the environmental friendliness of the transport sector;
- development of agriculture towards organic farming;
- introducing the environmentally friendly consumption model.

On the other hand it must be admitted that these directions of development only reflect the common area of aspirations and activities submitted in various documents, rather than agreed-upon priorities. Their "levels of strength" and "frequencies of mentioning" are also dissimilar – i.e. the four analysed documents emphasise primarily the aspects related to the efficiency of the energy sector and energy use.

Proceeding from the studies of potential for the development of green economy in Estonia, a recent survey of the European Centre for the Development of Vocational Training (2010) "Skills for green jobs¹⁶" has viewed Estonia's potential in a much broader manner. This survey points out ten spheres, marking that these have the potential for green restructuring of the economy most obvious:

- agriculture (biomass, biofuel and bioenergy; organic farming);
- forestry (complex management of forests, applying new technologies, production of wood pellets);
- mining and quarrying (applying new technologies, water recycling in mines; remediation of open quarry territories);
- electricity, gas and water supply (application of environmentally-friendly technologies in energy production; thermal and/or power plants and boiler plants that use renewable energy sources; combined burning of renewable fuels, waste and oil shale; energy conservation in energy enterprises, electricity networks and heating pipelines; water management);
- manufacture of refined petroleum products, chemicals and chemical products (new technologies for producing motor fuels from oil shale and renewable sources of energy, new technologies for producing chemicals from oil shale);
- manufacture of wood and wood products (complex use of timber; new technologies for timber modification);
- transport and supporting transport activities (sustainable transport);
- construction (new materials and technologies for construction and renovation; renovation of old heating pipelines in district heating networks; construction of passive houses);
- real estate and renting activities (energy certification and energy auditing in apartment buildings; renovation and reconstruction of apartment buildings);
- other economic activities, for example leisure and tourism.

¹⁶ Link: http://www.cedefop.europa.eu/EN/Files/3057_en.pdf

As it was pointed out previously, Estonia has several sectoral development plans, which contain ties to the development of green economy. Using as basis the spheres possessing potential according to the survey, this paper will analyse the goals and activities contained by the existing and upcoming documents in that respect.

1.2 Sectoral strategic documents

AGRICULTURE (ORGANIC FARMING, BIOMASS, BIOFUEL AND BIOENERGY)

Among the policy documents regulating the sphere of agriculture in Estonia primarily the following deserve attention in the context of developing green economy: Estonian Rural Development Plan 2007–2013¹⁷, Estonian Rural Development Strategy 2007–2013¹⁸, the Organic Farming Action Plan 2007–2013¹⁹ and the plan for its implementation²⁰, Development Plan 2007–2013 for Enhancing the use of Biomass and Bioenergy²¹.

Organic farming

The year 1989, which is the year of the establishment of the Estonian Biodynamic Association (the EBA), is regarded as the beginning of organised organic farming in Estonia. In co-operation with foreign experts, the EBA developed Estonian standards for organic farming and was engaged in the inspection of producers.

Organic farming was given more attention in 1997 with the passage of the first Organic Farming Act and with the introduction of the term “organic farming” and of the state organic label. Considering the results of the expert analysis on organic farming made by the EU experts and the needs discovered in the implementation of the Act, the Organic Farming Act has been amended several times. The present Organic Farming Act²² is in force since 1 January 2007. Estonia follows the minimum requirements for organic farming proceeding from Council Regulation (EEC) No 2092/91 of 24 June 1991 on organic production of agricultural products and indications referring thereto on agricultural products and foodstuffs, which is directly applicable. The Organic

BOX: Organic food in the market

The selection of local organic food in the marketplace is still lacking variety, but it is growing from year to year. According to the study of the Estonian Institute Economic Research the turnover of Estonian organic products increased in 2008 steeply. The growth is based not only on increased number of organic processors and extended choice of processed products, but also on increased sales through the shops and higher prices. The majority of the products are not processed. Fresh produce like fruit and vegetables, berries, potatoes, honey and milk are the most common. There are some producers of bakery products, grain produce, cottage cheese, yoghurt and cheese, beef and mutton and meat products, jams, juice, pasta and dried herbal blends. In fact, a large percentage of organic produce is sold directly from farms to surrounding clients.

Source: Vetemaa, A., Mikk, M. (2010) Organic Farming In Estonia 2009 // Published by Ministry of Agriculture, Republic of Estonia; link: <http://www.maheklubi.ee/upload/Editor/New%20Folder/mahep>

¹⁷ Link: http://www.agri.ee/public/juurkataloog/MAK/RDP_2007-2013.pdf

¹⁸ This document serves as a framework for the preparation of the Estonian Rural Development Plan 2007–2013; link: http://www.agri.ee/public/juurkataloog/MAAELU/MAS/RDS_2007-2013_2010_consolidated.pdf

¹⁹ Link: http://www.agri.ee/public/juurkataloog/TAIMETERVIS/MAHE/mahepollumajanduse_arengukava_2007-2013.pdf

²⁰ Link: http://www.agri.ee/public/juurkataloog/TAIMETERVIS/MAHE/mahe_rakendusplaan_kinnitatud.pdf

²¹ Link:

http://www.bioenergybaltic.ee/bw_client_files/bioenergybaltic/public/img/File/DP_2007_2013_for_enhancing_biomass_bioenergy.pdf

²² Link: <https://www.riigiteataja.ee/ert/act.jsp?id=13197656>

Farming Act only provides the requirements, which according to the EU legislation may or must be established by Member States themselves.

The Estonian Rural Development Plan 2007–2013²³ (hereinafter the ERDP) was prepared to support the regionally balanced development of rural areas through the European Union Common Agricultural Policy measures. In the green economy context it is important to emphasise primarily two measures of this development plan: (1) **modernisation of agricultural holdings** which among other goals target the maintenance of traditional cultural landscape by more environmentally friendly cultivation methods; and (2) **agri-environmental support** which includes the sub-measures such as: (a) environmentally friendly management methods in agriculture which aim at promoting the introduction and continual use of environmentally friendly management methods in agriculture, expanding environmentally friendly planning and increasing the awareness of agricultural producers of the environment, (b) support for organic production which focuses on maintaining and increasing biological and landscape diversity; maintaining and improving soil fertility and water quality; supporting the development of organic farming, contributing to the increase in the volume of organic products; and supporting and improving the competitiveness of organic farming.

BOX: Best organic producer in 2010

The first contest for the title of Best Organic Producer took place in 2010. The contest was ordered by the Estonian Ministry of Agriculture and organised by the Estonian Organic Farming Foundation in cooperation with the Estonian Culinary Institute and the Organic Farming Cooperation Association. The assessment criteria were as follows: 1. the state and fertility of the fields, the state and living conditions of the animals, investments, profitability, turnover etc.; 2. proportion of products at sale bearing the organic farming label; 3. environmental state of the enterprise, general tidiness and environment protection activities; 4. processing and providing added value; 5. active promotion of organic farming; 6. active promotion of local affairs and cooperative activities; 7. varied agricultural activities.

The Pajumäe farm specialising in dairy products was elected the best organic producer of 2010. The farm is located on South Estonia, it produces pure natural milk and processes it into yoghurt, cottage cheese and curds. The full list of dairy products contains more than 40 items. The farm is a small-scale producer. The Pajumäe farm has approximately 80 cows and a dairy. The farm has been recognised as organic producer in animal and plant farming since 2001, the organic cottage cheese and yoghurt production certificate was issued in 2005. The farm employs a milker and a tractor driver, the dairy a technologist and two workers. Market vendors in various towns are also paid by the farm. The farm has received support via the Rural Development Plan. The farm's homepage: www.pajumae.ee

The above measures are therefore essentially regulatory and supportive as well as informative and promotional and are mainly directed at the producer/entrepreneur.

Organic farming support has been paid in Estonia yearly from 2000²⁴. The area of land used for organic production has rapidly grown since then. In 2002, there were 583 approved

²³ Link: http://www.agri.ee/public/juurkataloog/MAK/RDP_2007-2013.pdf

²⁴ Since joining the EU in 2004, the basis for the distribution of support money has been the agri-environment support of the Rural Development Plan. 80% of the support money is covered by European Union and 20% is covered by the Estonian government. By applying for support the applicant assumes the duty to continue organic farming for at least five years.

organic producers in Estonia²⁵, who managed a total of 30 550 ha of organically farmed land or transitional land, then in 2009, a total of more than 102 767 ha of agricultural land was in organic use (and 1278 approved organic producers).

In 2007 the Estonian Ministry of Agriculture endorsed the **Organic Farming Action Plan 2007–2013**²⁶ and the plan for its implementation. The preparation of the plan was initiated by Estonian Organic Farming Foundation. The strategic aim of this plan is to increase the competitiveness of organic farming and the number of products in the marketplace, making a variety of local organic food more easily available to the consumer. The intention is to develop the organic agricultural area of 72 800 hectares (2006) to 120 000 hectares by 2013, to grow from 1173 active organic farms (2006) to 2000 by 2013, to enlarge the number of organic processing facilities from 14 (2006) to 75 (2013) and to increase the percentage of Estonian grown organic products in the domestic market from 0.15% (2006) to 3% by 2013. To meet these goals measures are planned according to six groups:

- **producing**, which include the following: supporting and promoting organic farming, improving the investment opportunities of organic farmers, which include direct subsidies paid to the producers in support of their production as well as the development of certification requirements and infrastructure; one of the measures involved is the holding of the contest for the title of the best organic producer and best organic product;
- **processing**, which include the support of investments made by processing entrepreneurs as well as investments in product development; as well as improving the awareness of product development and supporting the procurement of equipment;
- **marketing**, which include improving the organic farming awareness of the consumers, marketers and caterers, improving the correspondent cooperation and the development of the support infrastructure (marketing centres);
- **training, advisory services and distribution of information**, which include the training of organic producers, processing entrepreneurs and their marketers, the development of a corresponding advisory system and extending the treatment of organic farming in the syllabi of various levels; furthermore increasing the variety of information and the channels for its distribution;
- **research and development**, which include the expansion and intensification of research and development activities concerning organic farming and the related international cooperation;
- **legislation and control**, which concern the improvement of the related laws, increasing the efficiency of supervision and strengthening the cooperation between the involved departments.

Therefore these are essentially broad-based measures including financial subsidies, the development of infra- and support structures, the increasing of awareness as well as strengthening the regulative base, while the target group involves the producer/entrepreneur as well as the general public and consumers.

²⁵ Estonia's surface is 45,227 km².

²⁶ Link: http://www.agri.ee/public/juurkataloog/TAIMETERVIS/MAHE/mahepollumajanduse_arengukava_2007-2013.pdf

Biomass, biofuel and bioenergy

The share of Estonia in the production of renewable energy in agriculture and in forestry is small, compared with EU-25. The need for biomass²⁷ is growing from year to year. 95% of the produced biomass is exported by Estonia. There is potential for the growth of biomass production in lands out of use in Estonia and with the implementation of rational support policy it will certainly find a realistic output.

As for policy documents the sphere of biomass, biofuel and bioenergy is primarily regulated by the following documents: The Estonian Rural Development Plan 2007–2013²⁸ and Development Plan 2007–2013 for Enhancing the use of Biomass and Bioenergy. The document **The Estonian Rural Development Plan 2007–2013**²⁹ contains the following most significant support measures:

- “Investments in bioenergy production” - investments are supported that are directed at the production of biomass and bioenergy in agricultural enterprises³⁰;
- „Diversification into non-agricultural activities“ supports the investments aimed at the production of bioenergy, where the produced energy is sold³¹;
- “Improving the economic value of forests and giving added value to forestry produce” support is provided for investments by microenterprises of the industry processing forestry produce into tangible and intangible assets in order to obtain and deploy new products, processing techniques and technologies (including investments in the production of bioenergy), with a view to ensuring a more extensive supply and use of forestry produce, the production of innovative high-quality forestry products and yield with a higher added value (including bioenergy products), energy saving and environment-friendly management;
- „Adding value to agricultural and non-wood forestry products“ is among other aspects focused on ensuring the sustainability of the environment and energy savings and promoting the production of biofuels and the use of bioenergy.

The above measures are therefore largely support instruments offering financial aid and are directed at producers/entrepreneurs, who can apply for support if they meet the defined criteria.

²⁷ At present the most widely used form of plant biomass in Estonia’s energy production is wood (wood fuels) and predominantly for the production of heat. Boilers heated by chipped wood are used all over Estonia. Wood-based fuels are also used in households for heating and the preparing of food, especially in rural areas.

²⁸ Link: http://www.agri.ee/public/juurkataloog/MAK/RDP_2007-2013.pdf

²⁹ Link: http://www.agri.ee/public/juurkataloog/MAK/RDP_2007-2013.pdf

³⁰ Specific objectives: new market for agricultural entrepreneurs; introduction of new technologies; increase in the competitiveness (i.e. income) of agricultural entrepreneurs; maintenance of the environment; maintenance of landscape; supply certainty of raw material for energy production; diversity of energy sources; distributed energy production.

³¹ Beneficiaries: micro agricultural producers.

The issues of bioenergy are the most directly addressed in the policy document **Development Plan 2007–2013 for Enhancing the use of Biomass and Bioenergy**³². The main objective of the development plan is to create favourable conditions for the development of domestic biomass and bioenergy production, in order to reduce Estonia's dependence on imported resources and fossil fuels, decrease the pressure on the environment, use the land resource efficiently and sustainably and enhance employment in rural areas. In order to achieve the main objective, the activities are implemented through three subordinate objectives: (1) to ensure the research and development necessary for promoting the use of biomass and bioenergy; (2) to increase the awareness of consumers, investors, entrepreneurs and policymakers regulating the market; (3) to ensure the implementation of instruments required for market organisation.

For achieving objective 1 – to ensure the research and development necessary for promoting the use of biomass and bioenergy – the following measures are foreseen, including carrying out studies and analysis of assessing the biomass resource and its possibilities for use; strengthening international and interdisciplinary research and improving the collection of statistical data. For achieving objective 2 – to increase the awareness of consumers, investors, entrepreneurs and policymakers regulating the market – especially the following actions have been highlighted: improving the communication of information among different target groups and increasing the international cooperation. Concerning objective 3 – to ensure the implementation of instruments required for market organisation – the establishment of the technical committee for Biomass and Bioenergy was foreseen as well as exploring the need for making rearrangements in Estonian fiscal instruments, public procurement system, etc.

The above measures are thus essentially of the type developing support activities and structures and are directed at various target groups, including besides the producers/entrepreneurs the public and the scientific circles.

At the same time it should be admitted that while Estonia's position regarding biofuels is hardly as good as it could be³³, the implementation of this development plan has also

Starting from May 2007 the website presenting activities in the sphere of biomass and bioenergy www.bioenergybaltic.ee has been open. The website provided information about research concerning biomass and bioenergy, legislation, pricing, support measures and a review of ministries, research institutions and organisations dealing with the sphere. The website also includes a forum, where all interested parties can make recommendations for wider use of bioenergy.

³² Link:

http://www.bioenergybaltic.ee/bw_client_files/bioenergybaltic/public/img/File/DP_2007_2013_for_enhancing_biomass_bioenergy.pdf

³³ The share of biofuels in the consumption of transport fuels in Estonia remained below 0.15% in 2007. The share has not significantly increased in 2008 or 2009. This indicator places us among the last in the EU. It is highly likely that Estonia would not achieve the 5.75% goal set for 2010. It should be commented that despite the exemption of the biofuels from excise in Estonia the fuels containing the mandatory 5% biological component are not cheaper than the regular fuels; as a result there is practically no demand for fuels containing biological additives. Such tax exemptions combined with investment support in production equipment have proven successful in the developed industrial countries, but failed to give any effect in Estonia.

remained below expectations. The development plan was to have been implemented in two stages³⁴. The report on the realisation of the development plan states that while the year 2007 could be considered a success, especially regarding the initiated research and promotion activities, the commissioning of new research essentially came to a standstill in 2008. The primary reasons were the reduction of funding and the volume of research activities in 2007, which exceeded the original estimates³⁵.

Regarding the latest developments, a renewable energy action plan until 2020 is currently being drafted in Estonia, which will also contain the goals and activities listed in the Development Plan 2007–2013 for Enhancing the use of Biomass and Bioenergy and the drafting of the latter can be completed as a separate sectoral development plan³⁶.

Despite the listed support schemes there are still some drawbacks. The support measures or national programmes cover only individual elements of the production chain; e.g. the role of biogas has not been covered by the supports. The measures for the support of bioenergy are in need of systematic, deliberate and complex development. Support schemes, incl. indirect measures like the obligation to buy renewable energy or excise exemptions for biofuels³⁷ are certainly important for the promotion of the implementation of bioenergy, but not the only ones. More and closer cooperation is needed between research institutions, the entrepreneurs' representative organisations and the public sector for an adequate picture of political, legal, economic, technological, social and ecological obstructions to the production, processing and use of bioenergy and of the solutions.³⁸

Source: Valdkondliku arengukava „Eesti taastuvenergia tegevuskava aastani 2020” koostamise ettepanek; link: http://www.valitsus.ee/failid/taastuvenergia_ettepanek.pdf

³⁴ In stage I (2007–2008), surveys will commence to analyse the market, resources, technologies, market organisation measures and other factors affecting the use of biomass. Communication of information will also begin while international cooperation will be continued. The strategic environmental assessment of the measures to be implemented in stage II will also be carried out in stage I. In stage II (2009–2013), all reasonable, well justified market organisation measures under the analyses and surveys made in stage I — support, charges, standards, availability of know-how, etc. — will be implemented to promote biomass use.

³⁵ Source: Biomassi ja bioenergia kasutamise edendamise arengukava aastateks 2007–2013” täitmise aruanne 2007–2008. a kohta; link: http://www.valitsus.ee/failid/Biomass_ja_bioenergia_aruanne.pdf

³⁶ Source: Valdkondliku arengukava „Eesti taastuvenergia tegevuskava aastani 2020” koostamise ettepanek; link: http://www.valitsus.ee/failid/taastuvenergia_ettepanek.pdf

³⁷ The permit for exemption of biofuel from excise duty issued to Estonia by the European Commission on 27 July 2005 is valid six years only – till 27 July 2011.

³⁸ Source: Valdkondliku arengukava „Eesti taastuvenergia tegevuskava aastani 2020” koostamise ettepanek; link: http://www.valitsus.ee/failid/taastuvenergia_ettepanek.pdf

FORESTRY AND MANUFACTURE OF WOOD AND WOOD PRODUCTS

Forests cover more than one half (50.6%) of Estonia's territory. The area and reserve of forests has significantly increased during the past half-century and represents one of Estonia's greatest treasures, both as a natural resource and economically.³⁹ In comparison with the other EU Member States, in Estonia, forest coverage is among the widest. Estonia is one of the four European countries, where the share of the sector of forestry in GDP is more than 10% (after Finland, Sweden and Slovenia).⁴⁰

It is therefore important in Estonia's context to emphasise the role of forests as a significant ecological resource and, on the other hand, its considerable (potential) contribution to the economic development. The setting of goals in the development plan for forest management until 2010⁴¹ is also based on a dual objective: on the one hand to observe the principle of economical management of forests and on the other hand the economic interests related to forest management. The ability to handle this situation could be considered one of the key tasks in the development of green economy in Estonia.

Among the policy documents regulating forestry one should at present single out the **Forestry Act (2007)**⁴² the goal of which is the preservation and economical use of Estonia's wealth of forests, as well as the development plans drafted for the enactment of the law – the **Forestry development plan until 2010**⁴³ and due to the latter's expiry the **Forestry development plan until 2020**⁴⁴, which is currently being drafted. However, the general forestry development framework proceeds from the Estonian Environment Strategy until 2030⁴⁵, which has set the following goal: *Balanced meeting of the ecological, social, cultural and economic needs in forest management in very long perspective (longer than the 25 year period addressed in the strategy)*. Important forestry-related measures have also been included in the Estonian Rural Development Plan 2007–2013.

A leading idea in the forestry development plan until 2010 is the attempt to find balance between the preservation of the diversity of forests and ensuring the growth by economical and sustainable management of forests. Thus both the ecological and economic problems are emphasised side by side and this should be pointed out in the green economy context as well. A further goal of the development plan, concerning the improvement of public awareness of sustainable forestry, needs to be emphasised in the green economy context. Moreover, the development plan pays attention to the diversified use of the forest resources (incl. nature tourism)⁴⁶.

³⁹ Source: <http://www.envir.ee/375987>

⁴⁰ Source: Estonian Rural Development Strategy 2007–2013, link:

http://www.agri.ee/public/juurkataloog/MAAELU/MAS/RDS_2007-2013_2010_consolidated.pdf

⁴¹ Link: <http://www.envir.ee/orb.aw/class=file/action=preview/id=2447/Eesti+metsanduse+arengukava+%28MAK%29+aastani+2010.pdf>

⁴² Link: <https://www.riigiteataja.ee/ert/act.jsp?id=13318447>

⁴³ Link: <https://www.riigiteataja.ee/akt/221835>

⁴⁴ Link: <http://www.envir.ee/orb.aw/class=file/action=preview/id=1127812/MAK2020.pdf>

⁴⁵ Link: <https://www.riigiteataja.ee/ert/get-attachment.jsp?id=12793882>

⁴⁶ Source: <http://www.envir.ee/orb.aw/class=file/action=preview/id=2447/Eesti+metsanduse+arengukava+>

The Forestry development plan 2011–2020, which is being drafted, will continue its effort to achieve the two above goals, setting as the main objective: ensuring the productivity and vitality of forests and their diversified and efficient use. Unlike the current development plan the document under development pays greater and specific attention to the non-timber exploitation of forests and the related diversification of opportunities for spending leisure and vacation time in forests – accordingly on more varied use of forests as an economic as well as social and cultural resource. The specific measures called for are as follows: the training and informing of forest owners about the various ways of using forests; the launching of a cost-profit analysis of the non-timber forestry services.

The above measures are thus predominantly informative and are directed at the entrepreneurs as well as the public.

Forestry is an important branch of the Estonian economy. The wood cluster makes up to one fourth of the turnover of the Estonian industry, one fifth of export and one third of investments⁴⁷ are made in this sector. Therefore wood related activity is one of the most significant factors for improving Estonia's negative trade balance⁴⁸. Value added of GDP in forest management has decreased in the last years, but added value produced per one employed person is by 30% higher than in other branches of economy together.⁴⁹

Among the goals set in the forestry development plan until 2010, which could be considered relevant from the green economy viewpoint the following one is of great importance: improving the international competitiveness of the forestry and timber industry and increasing the domestic use of production in order to ensure the maximum use of timber from the management of forests⁵⁰. Considering that the logging volumes in Estonia and the import of timber from Russia have both declined in recent years the forestry development plan 2011–2020 pays greater attention to the maintaining of the competitiveness of Estonia's forestry industry and forest management and plans measures for increasing the logging volume in the short run and stabilisation in the longer perspective as well as for the maximisation of added value in the timber industry sector.⁵¹ Regarding this goal and the planned measures from the viewpoint of green economy it is important to emphasise the increasing of value added of timber (the significance of design) and the development of new technologies in timber industry, which enable the increasing of its competitiveness. The measure supports product development and the improvement of awareness and is directed

%28MAK%29+aastani+2010.pdf

⁴⁷ Source: Estonian Rural Development Strategy 2007–2013, link:

http://www.agri.ee/public/juurkataloog/MAAELU/MAS/RDS_2007-2013_2010_consolidated.pdf

⁴⁸ Source: Seletuskiri Vabariigi Valitsuse korralduse „Eesti metsanduse arengukava aastani 2020” koostamine” eelnõu juurde; link:

http://www.envir.ee/orb.aw/class=file/action=preview/id=1101998/MAK2020_seletuskiri.pdf

⁴⁹ Source: Estonian Rural Development Strategy 2007–2013, link:

http://www.agri.ee/public/juurkataloog/MAAELU/MAS/RDS_2007-2013_2010_consolidated.pdf

⁵⁰ Source: Metsanduse arengukava aastani 2010; link:

<http://www.envir.ee/orb.aw/class=file/action=preview/id=2447/Eesti+metsanduse+arengukava+%28MAK%29+aastani+2010.pdf>

⁵¹ Source: Seletuskiri Vabariigi Valitsuse korralduse „Eesti metsanduse arengukava aastani 2020” koostamine” eelnõu juurde; link:

http://www.envir.ee/orb.aw/class=file/action=preview/id=1101998/MAK2020_seletuskiri.pdf

at the producer/entrepreneur. It is also planned to amend the taxation system in order to improve the competitiveness of forest management, so as to ensure fair taxation of individual forest owners and to increase the interest in forest management. The planned measure is one of the few fiscal measures supporting the development of green economy.

One of the goals of this development plan is the increasing of the use of timber production and use so as to reduce the environmental impact of the use of fossil fuels and non-renewable natural resources. One of the measures foresees the promotion of the use of timber via green public procurements - thus emphasising the specific regulative measures.

The development plan also pays attention to the development of education and vocational training; one of the planned measures comprises the more extensive integration in the vocational training programmes of the principles of sustainable forest management and ensuring the diversity of wildlife.

The document **Estonian Rural Development Plan**⁵² also contains measures related to the development of the forestry and timber industry. One should point out the measure “Improving the economic value of forests and giving added value to forestry produce” according to which support is provided for investments by microenterprises of the industry processing forestry produce into tangible and intangible assets in order to obtain and deploy new products, processing techniques and technologies (including investments in the production of bioenergy), with a view to ensuring a more extensive supply and use of forestry produce, the production of innovative high-quality forestry products and yield with a higher added value (including bioenergy products), energy saving and environment-friendly management.

⁵² Link: http://www.agri.ee/public/juurkataloog/MAK/RDP_2007-2013.pdf

MINING AND QUARRYING AND MANUFACTURE OF OIL SHALE PRODUCTS

Mining and quarrying

The general strategic framework for the mining and quarrying sector in Estonia is provided by the Environmental Strategy of Estonia 2030, which has set the following goal: environmentally friendly mining of natural resources, which saves water, terrain and air, and efficient use of the mineral resources with minimum loss and minimum waste. Several development plans and laws regulate the economical use of natural resources with several important policy documents being in progress at present.

The Parliament approved in 2008 the **National development plan for the use of oil shale 2008–2015**⁵³, which comprises the following three most important strategic goals: 1) ensuring Estonia's supply of oil shale energy and Estonia's energetic independence; 2) improving the efficiency of oil shale mining and use; 3) reducing the environmental impact of oil shale mining and use. A significant share of the measures supporting the achieving of the goals is related to regulative measures, i.e. imposing or amending of various restrictions (the issue of mining licenses, optimisation of mining volume, use of oil shale deposits etc.). According to the development plan an initial limit of oil shale mining volume of up to 20 million tons per year will be set. The goal of this restriction is to ensure the economical use of oil shale resources and in the longer perspective finding opportunities for gradual reduction of annual oil shale use volumes so as to reduce significantly the negative environmental and social impact related to its mining and use. The monitoring results show that the oil shale mining volume in the years 2007-2009 has been lower than the established mining limits⁵⁴. The development plan foresees measures meant for producers/entrepreneurs like the promotion of product development, including the development and implementation of new environmentally sustainable technologies. The carrying out of various (applied) studies and analyses is also reflected as measures.

The Government of the Republic approved in 2008 the drafting proposal of the **National development plan for the use of natural building materials 2010–2020**⁵⁵. The development plan will cover the quarrying and use of the Estonian deposits of limestone, dolomite, crystalline building stone (in Estonia predominantly granite), sand, gravel and clay. The development plan was made necessary primarily by the increased consumption of mineral deposits and the related problems, which can be solved by national regulation. The main goal of the development plan is to ensure the supply of natural construction materials considering the acceptable quality of the materials, their optimum cost, minimum possible transporting distance and economical use of resources and environment. The development plan sets three strategic goals: (1) Adequate supply of mineral building materials to the state infrastructure construction sites and consumers; (2) Improving the efficiency of mining and use of natural construction materials and the use of possible alternative materials; (3)

⁵³ Link: <http://www.riigiteataja.ee/ert/get-attachment.jsp?id=13058929>

⁵⁴ Source: Monitooringuaruanne Eesti keskkonnategevuskava aastateks 2007–2013 rakendamisest perioodil 2007–2009 (2010); link:

http://www.valitsus.ee/failid/Eesti_keskkonnategevuskava_aastateks_2007_2013_rakendamisest_perioodil_2007_2009.pdf

⁵⁵ Draft: <http://www.envir.ee/orb.aw/class=file/action=preview/id=1103410/ArengukavaEelnou.pdf>

Reducing the environmental impact of the mining and use of natural building materials. These goals would be achieved, on the one hand, via regulative measures, which are related to the reviewing and adjustment of environment use and mining licenses, while on the other hand the document points out the need for a new supervisory system and amendments to the system of environmental fees. The measures of the development plan in progress are also related to the carrying out of studies and the making of prognoses, as well as the involvement and informing of the public, which would cover the general population besides the producers/entrepreneurs.

The preliminary version of the development plan has been completed, but its approval by the Government has been delayed due to considerable public interest; according to existing plans it is intended to submit the document for approval within 2010⁵⁶.

The drafting of the bill on the protection and sustainable use of Estonia's peat deposits⁵⁷ began in 2007 and preparations were carried out for the basic studies necessary for the development plan. The assessment of abandoned peat mining areas in all 15 counties of Estonia ended in 2008. However, the drafting of the national development plan of peat mining and use has been delayed, since several studies in this sphere are yet incomplete (e.g. the stock taking of Estonia's wetlands, experiments of covering the used peat deposit areas with peat moss etc.).⁵⁸

The drafting of the **Basics of the use and protection of mineral resources**⁵⁹ began in 2009 and the document has been completed and made public by now. Among other issues this document addresses in detail the environmental impact of the mining of mineral deposits, its minimisation and the need for rapid re-cultivation of the mined areas. This will serve as a basis for the bill of the new mineral deposits act. Besides the mineral resources act it is planned to draft a bill of the methodology and procedure for addressing mineral deposits.

The 2007–2009 (2010) report of monitoring of the implementation of the Estonian environmental action plan 2007–2013 stated that the environmentally friendly mining and efficient use of mineral resources has been helped by the implementation of the existing oil shale development plan and the future implementation of the building materials development plan currently in progress. The achievement of the goal has been generally achieved by sustainable and environment-saving use and it can be stated that the selected activities have been generally adequate and topical.⁶⁰

⁵⁶ Source: Monitooringuaruanne Eesti keskkonnategevuskava aastateks 2007–2013 rakendamisest perioodil 2007–2009 (2010); link: http://www.valitsus.ee/failid/Eesti_keskkonnategevuskava_aastateks_2007_2013_rakendamisest_perioodil_2007_2009.pdf

⁵⁷ Estonia is one of the most swampy countries in the world: peat deposit areas cover 1.2 million hectares or 22.5% of dry land. Source: Eesti turbaalade kaitse ja säästliku kasutamise alused (eelnõu); link: http://www.envir.ee/orb.aw/class=file/action=preview/id=1083186/Turbakontseptsioon_kodulehele_T%C4IENDATUD.pdf

⁵⁸ Source: Monitooringuaruanne Eesti keskkonnategevuskava aastateks 2007–2013 rakendamisest perioodil 2007–2009 (2010); link: http://www.valitsus.ee/failid/Eesti_keskkonnategevuskava_aastateks_2007_2013_rakendamisest_perioodil_2007_2009.pdf

⁵⁹ Link: http://www.envir.ee/orb.aw/class=file/action=preview/id=1127881/ALUSED_21072010.pdf

⁶⁰ Source: Monitooringuaruanne Eesti keskkonnategevuskava aastateks 2007–2013 rakendamisest perioodil

Manufacture of oil shale products

Estonia has considerable space for development in that respect. Two basic directions of use have been developed by today: the use of oil shale as solid fuel and its processing into shale oil, shale gas and oil shale chemistry products.⁶¹ However, the processing of oil shale has mainly concentrated on the production of fuel oil, while other options for its value adding (e.g. the production of motor fuels) require study. The national development plan for the use of oil shale 2008–2015⁶² points out that for the purpose of value adding to oil shale (including processing for motor fuel) would require from the state and the private sector to carry out further research and tests in industrial processing equipment. No new licenses for the expansion of oil shale production should be issued before that. It is necessary to establish assessment criteria for value adding to shale oil.

2007–2009 (2010); link:

http://www.valitsus.ee/failid/Eesti_keskkonnategevuskava_aastateks_2007_2013_rakendamisest_perioodil_2007_2009.pdf

⁶¹ Source: PÕLEVKIVI KASUTAMISE RIIKLIKU ARENGUKAVA 2008–2015 RAKENDUSPLAANI 2009–2012 ELLUVIIMISEST 2009. AASTAL ARUANNE (2010); link:

<http://www.envir.ee/orb.aw/class=file/action=preview/id=1126249/P%F5levkivi+kasutamise+riikliku+arengukava+2008-2015+%28aruanne%2C+kiidetud+heaks+Vabariigi+Valitsuses+8.+juulil+2010%29.pdf>

⁶² Link: <http://www.riigiteataja.ee/ert/get-attachment.jsp?id=13058929>

ENERGY PRODUCTION

The strategic framework document of the energy sector among Estonia's national development plans is the **Estonian Energy Sector Development Plan until 2020**⁶³, which specifies its vision as follows: "The efficient and innovative energy sector shall support Estonia's sustainable and balanced development". One of the three main goals⁶⁴ of the development plan calls for sustainable energy supply and consumption⁶⁵; sustainability is meant to cover both the environmentally friendly and economical aspects. The measures included in the development plan for that goal include the improvement of energy efficiency regarding the producers, distributors and consumers, laying considerable emphasis on corresponding propaganda.

Estonian Energy Sector Development Plan until 2020 foresees that the development of sustainable energy use takes place in accordance with more specific national development documents, incl.: 1. Energy saving target programme 2007–2013, 2. Estonian National Housing Development Plan 2008–2013, 4. Development Plan 2007–2013 for Enhancing the use of Biomass and Bioenergy, 5. National development plan for the use of oil shale 2008–2015, 6. Development Plan of the Estonian Electricity Sector until 2018 etc. Further, measures targeting producers/entrepreneurs have been included as individual measures, which are related to the development of energy technologies and the increasing of the share of renewable energy sources and cogeneration in the energy balance. Furthermore there are several regulative measures related to the drafting and/or passing of corresponding development documents and programmes as well as the implementation of the EU directives.

BOX: Study results show that:

Environmentally aware behaviour of Estonia's residents is generally related to economic considerations. The largest share of population attempts to save energy (always 57%), water (53%) and sorts waste (48%). 21% of residents (almost) never sort waste. Source: EESTI ELANIKE KESKKONNATEADLIKKUS. Eesti 15-74-aastase elanikkonna uuring (2010); link:

<http://www.envir.ee/orb.aw/class=file/action=preview/id=,lk6>

In Estonia, electric energy is mostly produced from oil shale (95%), which is a rather burdensome solution for the environment⁶⁶. The percentage of renewable energy sources in the Estonian energy balance increases but in electricity production the percentage of renewable energy sources is still quite marginal. While in 2007 the share of renewable

⁶³ Link: http://www.valitsus.ee/failid/Energiamajanduse_riiklik_arengukava_aastani_2020.pdf

⁶⁴ Other goals concern the ensuring of uninterrupted energy supply at a justified price.

⁶⁵ The energy sector is responsible for using more than 90% of all the water used in Estonia, emitting into air more than 90% of all the pollutants and 70% of all the waste. Those numbers indicate clearly the environmental burden caused by the energy sector. Oil-shale mining physically alters and disrupts the environment by causing the ground surface to sink and by lowering the groundwater level. The extensive use of oil shale in energy production increases emissions into the atmosphere. Source: Lelumees, L. (2010) CARRING OUT THE ECOLOGICAL TAX REFORM IN ESTONIA // Ministry of Finance

⁶⁶ Source: Estonian Rural Development Strategy 2007–2013, link:

http://www.agri.ee/public/juurkataloog/MAAELU/MAS/RDS_2007-2013_2010_consolidated.pdf

electricity was 1.75% of total consumption, it is estimated that in 2010 the share of renewable electricity will exceed 5.1% which meets national goal for 2010.⁶⁷

In the near future the most significant policy document in the green economy context shall be the **Estonian Renewable Energy Development Plan until 2020**, which is currently in progress. The full version of the development plan has not been released as of now (October 2010), yet based on the EU directives and various development plans it can be stated even today that by 2020 Estonia will have to meet the following targets: share of renewable energy out of final consumption 25%, share of renewable energy in gross consumption 15% and the share of biofuels in transport 10%⁶⁸.

Despite the fact that the approval of the general development document on renewable energy has been delayed, several support measures have been implemented during the past years for the producers of electricity and heat from renewables. The measures are based mostly on the EU assistance directed according the Rural Development Plan 2007–2013 and the Development Plan for Living Environment 2007–2013. Out of renewable energy sources the development of bioenergetics has so far received the predominant share of support measures:

- **energy cultures growing subsidies**, aiming at the reduction of dependence on imported fossil fuels and amounts of waste greenhouse gas, recovery of abandoned farmlands;
- **awareness increasing support**, aimed at ensuring the availability of information to the public, consumers, entrepreneurs, investors, researchers and officials shaping policies for the regulation of the market about the opportunities of using biomass and bioenergy;
- **investment subsidies for the production of bioenergy**, which support the diversification of production of agricultural entrepreneurs and the improvement of their competitiveness;
- **diversification towards non-agricultural activities**, which support the investments in the production of bioenergy, where the produced energy would be marketed;
- **investment subsidies to value adding to forestry products**, which supports the purchase of machines and equipment for the processing of timber, as well as expenditures on inventions and patents;

BOX: Aulepa – the largest wind farm in the Baltics

A significant move towards environmental and responsible energy production was the opening of the Baltic states' largest wind farm in the summer of 2009.

The wind farm comprises 13 wind turbines each with a capacity of 3 MW. The wind farm's annual output is approx. 100 gigawatt-hours (GWh), which amounts to roughly 1.3 percent of energy consumption in Estonia. This equals to the annual energy consumption of approx. 35,000 households.

The Aulepa wind farm is Estonian Energy's largest investment in the development of renewable energy production. Total cost of the project was nearly 900 million kroons and it was financed by Estonian Energy. The main building contractor was the Finnish turbine producer Winwind OY.

⁶⁷ Source: Lelumees, L. (2010) CARRING OUT THE ECOLOGICAL TAX REFORM IN ESTONIA // Ministry of Finance.

⁶⁸ Source: Valdkondliku arengukava „Eesti taastuvenergia tegevuskava aastani 2020” koostamise ettepanek; link: http://www.valitsus.ee/failid/taastuvenergia_ettepanek.pdf

- **wider use of renewable energy sources for energy production**, aiming at the increasing of the share of renewable energy sources in the energy balance and the reduction of the amounts of waste materials from the energy production system. Support decisions so far have been made for the reconstruction of remote heating systems and the building of cogeneration stations⁶⁹.
- **National energy technology programme**, which is aimed at the development of energy technologies based on oil shale and renewable energy sources.⁷⁰

Accordingly, the measures for the development of bioenergy are predominantly so-called direct (offering financial support) activities and investment supports aimed at producers/entrepreneurs.

In addition to the EU assistance, there are two other financial schemes used for enhancing renewable energy production and sustainable energy economy in general – the price subsidy to electricity producing from renewables and investment grants from the international greenhouse gas emission trading system. The subsidy for energy production from renewable sources⁷¹ is paid according to the Electricity Market Act⁷². Several amendments have been made to the act in recent years and a broad discussion is going on in the society about whether the green energy production is an over-subsidised sector. According to a new act in force since the beginning of 2010 the producers have the right to subsidies in the following cases:

- for electric energy produced from a renewable source except biomass;
- for electric energy, if this has been produced from biomass in cogeneration mode. In case electric energy is produced from biomass in condensation mode, no subsidy shall be paid. This is a new article restricting inefficient use of renewable energy sources;
- for electric energy produced in efficient cogeneration mode from waste according to the waste act, from peat or oil shale production carbonisation gas;
- for electric energy produced in efficient cogeneration mode in a production plant with electric output not above 10 MW;
- for the usability of installed net output of oil shale-consuming production plant if the plant has started production between January 1, 2013 and January 1, 2016, dependent on the cost of the CO2 quota.

The international greenhouse gas emission trading established by the Kyoto Protocol is supplemented by the EU emission trading system. In the years 2009–2010 Estonia has been

⁶⁹ Source: Monitooringuaruanne Eesti keskkonnategevuskava aastateks 2007–2013 rakendamisest perioodil 2007-2009 (2010); link:

http://www.valitsus.ee/failid/Eesti_keskkonnategevuskava_aastateks_2007_2013_rakendamisest_perioodil_2007_2009.pdf

⁷⁰ Source: Valdkondliku arengukava „Eesti taastuenergia tegevuskava aastani 2020” koostamise ettepanek; link: http://www.valitsus.ee/failid/taastuenergia_ettepanek.pdf

⁷¹ For the purposes of this Act, renewable energy sources are water, wind, solar, wave, tidal and geothermal energy sources, landfill gas, sewage treatment plant gas, biogases and biomass.

⁷² Link: <https://www.riigiteataja.ee/ert/act.jsp?id=13349025>

actively selling its Assigned Amount Units to member countries of the EU as well as other developed Western countries. Estonia is using the earned resources for the renovation of buildings for greater energy efficiency, the purchase of environmentally friendly buses, the support of the construction of wind turbines etc.

TRANSPORT

The Estonian Environment Strategy until 2030 provides a general strategic framework to the sphere of transport and sets the following target: Development of an efficient, environmentally friendly and comfortable public transport system, safe light traffic (more comfortable alternatives to automobiles) and a residential and production structure reducing forced commuting and road traffic (reduction of the need for transport). There are two basic documents concerning the transport sector: Transport Development Plan 2006–2013 and Public Transport Development Programme 2006–2010.

Good practice: Skype

The free communication software Skype, created in Estonian-Swedish cooperation, could be considered in some sense a good example of an innovation indirectly helping to reduce transport-related pollution. Free video conferences have reduced to some extent the need to cross state borders (incl. minimisation of air traffic with its harmful effects), but Skype has also promoted domestic opportunities for remote working.

The Estonian parliament approved in the beginning of 2007 the **Transport Development Plan 2006–2013**⁷³ aiming at the development of an effective, safe and environmentally friendly transport system, which would also meet the requirements. As for the green economy context primarily two vision targets should be pointed out in this development plan: to minimise the negative environmental impact of the transport sector and to develop public transport and light traffic in order to ensure the opportunities for sustainable meeting of the transport needs. Among the measures addressing the former target the following should be mentioned: the development of an assessment system of the external cost of the transport system and accordingly the formulation of the taxation principles of transport⁷⁴. It is also necessary to emphasise the promotion of green technologies by increasing the share of environmentally friendly fuels, the development of environmentally friendly transport technologies, priority development of electric transport and the improvement of the corresponding public awareness. For meeting the second target – the development of public transport – the development plan measures foresee the improvement of nationwide coordination of public transport, improvement of competitiveness of public transport by upgrading the quality of rolling stock, the building of new lines, the promotion of public transport, the development of quality norms for public transport; and also the improvement of the light traffic infrastructure and the promotion of light traffic. Thus the measures address equally the entrepreneurs operating in the sector and the wider public.

⁷³ Link: <https://www.riigiteataja.ee/ert/get-attachment.jsp?id=12784610>

⁷⁴ A study of the external costs of transport was carried out in 2009, which allows the use of the external costs entering principle in the forming of transport costs in the future so that it would correspond to the actual cost of the society.

Public Transport Development Programme 2006–2010⁷⁵ has defined its target as follows: to offer an environmentally friendly and sustainable alternative to automobile transport⁷⁶. This programme has set six targets with corresponding measures, which specify the public transport-related goals and activities of the above development plan. The goals are as follows: (1) Improvement of the efficiency of the nationwide management, coordination and supervision of public transport; (2) Improvement of the subsidies system of public transport; (3) Development of the public transport infrastructure; (4) Improvement of the public transport rolling stock quality; (5) Promotion of the spreading of information about public transport; (6) Improvement of the quality of the public transport staff. Various organisational measures, related to the development of the public transport coordinating and supervisory structures, were planned for achieving these goals; as well as regulatory measures in the shape of formulating the basics and principles of subsidising the public transport system, and also financial measures – the increasing of investments for improving the quality of the public transport rolling stock. The measures of the informative type were related to the improvement of public awareness of the advantages and opportunities of using public transport and the training of the public transport staff.

The share of public transport users for travelling to work at the end of 2008 was estimated at 26.3%. In order to implement the development plan the Public Transport Department was established within the Estonian Road Administration in 2008, which addresses the optimisation of the counties' bus traffic.

It is expected that Road Administration will take a role of a body coordinating whole public transport in Estonia in a (longer) perspective into. One step in this direction is the launching

⁷⁵ Link: <https://www.riigiteataja.ee/ert/get-attachment.jsp?id=12784615>

⁷⁶ The number of personal cars has significantly increased in Estonia within the past 10–15 years, while the development of public transport has slowed down. The rapid growth of car use has been brought along by historical factors, among others. Purchasing private cars was difficult during the state socialist regime under the Soviet Union. The emergence of market economy and the increasing wealth of the people led to a massive drive to acquire private cars.

BOX: Environmentally friendly traffic projects in Tallinn and Tartu

Estonia's largest cities – the capital Tallinn and the second largest city Tartu – participate in various international projects for the development of environmentally friendly transport. A public transport promotion campaign was held in Tallinn in 2008 as part of the CIVITAS SMILE project. SMILE is a project carried out within the EU 6. framework project CIVITAS II initiative. CIVITAS (City-Vitality- Sustainability) is dealing with the implementation of cleaner and more economical urban transport in the EU cities. Seventeen European cities take part in CIVITAS II. Tartu takes part in several projects promoting environmentally friendly transport like the "Baltic Sea Region's biogas-powered public transport", with AB Storstockholms Localtrafic as the leading partner. Tartu also takes part in the "ACTIVE" project, which develops economical, healthy and safe urban transport by improving the competence of the city government and involving various interested parties in the municipality's activities. The project's leading partner is the on Napier University in Edinburgh, the UK. Tartu also takes part in the project "Cycling through Vidzeme and South Estonia". Twenty-six local governments from Estonia and nine from Latvia have joined the project. The leading partner is the Vidzeme Tourism Association.

Source: Monitooringuaruanne Eesti

keskkonnategevuskava aastateks 2007-2013

rakendamisest perioodil 2007-2009 (2010); link:

http://www.valitsus.ee/failid/Eesti_keskkonnategevuskava_aastateks_2

in 2009 of the first nationwide travel planning portal⁷⁷, which concentrates all public transport opportunities. The system provides information about the timetables of Estonia's county bus routes, long-distance routes, international bus lines and urban lines of major cities. It also contains information about ferry links, domestic airlines and train lines. Yet this system could benefit from further development and should be made more user-friendly. Future plans include the opening of a ticket sale system, which would enable the portal to provide information about ticket prices and deductions.

Although various policy documents emphasise the need for the environment-friendly electric transport development, the Transport Development Plan admits that, due to small size of Estonia and population sparseness, road transport will remain the basic mode of domestic transport. Nevertheless, the need for developing passenger railway transport is being increasingly emphasised. National government approved the list of transport investments of national importance in 2008, which includes the financing of the procurement of new rolling stock for passenger train operators in Estonia (18 electric and 10 diesel-powered trains are being purchased), the reconstruction of the Tallinn-Tartu railway stretch and the modernisation of the railway platforms.

The recent years are also characterised by an intensive construction of light traffic lanes in Estonia. More than 83 million kroons have been invested in the building of the local governments' light traffic lanes with the local governments' share amounting to more than 27 million kroons.

However, actual developments in the transport sector show that despite the goals expressed in the development plans and the formulated measures the activities so far have been mainly addressed at the development of transport (both rail and road transport) infrastructure, which has appropriated the lion's share of the investments in the transport sector.

⁷⁷ For details see: <http://www.peatus.ee/>

CONSTRUCTION, REAL ESTATE DEVELOPMENT AND ENERGY EFFICIENCY OF BUILDINGS

The sector of construction, real estate and renting is regulated primarily by the following two strategic policy documents: **the Energy Saving Program 2007–2013**⁷⁸ and the **Estonian National Housing Development Plan 2008-2013**⁷⁹.

Energy saving programmes⁸⁰ have been consistently implemented in Estonia since the restoration of independence. The general target of the **Energy Saving Program 2007–2013** currently in force is the improvement of the use of fuels and energy and the achievement of saving fuels and energy⁸¹. The programme has set the four basic goals: (1) Making information on fuels and energy economy more available to energy consumers, the organisers of energy production and use and energy enterprises, having them make use of the information and achieving the preference of more economical equipment by consumers; (2) Ensuring lifelong learning of energy saving to specialists of energy production, buildings construction and management and to expand the number of NGOs offering training in energy saving; (3) Improving opportunities for the financing of investments aimed at fuels and energy saving and supporting projects aimed at saving fuels and energy; (4) Ensuring the adoption of the EU directives on fuels and energy saving and the assessment of the effect of their implementation. A part of the measure for the implementation of the goals concentrates on the development of offering energy saving technological solutions and energy services. A significant share of the measures is related to various advisory, informing and promotion activities, as well as education and advanced training. The development plan also contains several supportive regulative measures like the imposing of the energy saving obligation on energy enterprises and the favouring of gathering the initial capital for energy saving investments as well as direct financial measures in the form of supporting local governments' small-scale projects for fuel and energy saving via investment subsidies. The programme also contains measures, which call for the implementation of several EU directives.

Out of the three central goals of the **Estonian National Housing Development Plan 2008–2013** two can be linked to green economy: the development of a quality and sustainable living environment and ensuring the diversity, and balanced sustainable development of residential areas. The measures listed under the heading *developing a quality and sustainable housing stock* discuss the turning of the housing into energy-efficient⁸² via

⁷⁸ Link: http://www.valitsus.ee/failid/energias_stu_programm_kinnitatud05.11.07.pdf

⁷⁹ Link: http://www.valitsus.ee/failid/eluasemevaldkonna_arengukava_2008_2013.pdf

⁸⁰ The first basic document on energy saving – “Estonia’s Energy Saving Programme” – was approved in 1992.

⁸¹ The vision for 2013 is as follows: the know-how for the realisation of fuel and energy saving projects has been widely spread in Estonia. Energy enterprises and consumers are economising and have motivation for finding new opportunities to save fuels and energy.

⁸² A fall in housing quality due to the depreciation of the housing stock of Estonia, the rise of residence costs and the obligations resulting from the European legal environment have led to the emergence of the issue of improving the energy efficiency of the housing stock. As 70% of dwellings of the Estonian housing stock are located in block houses constructed between 1960s and 1980s, this part of the housing stock requires particular attention from the point of view of energy efficiency. As the Estonian housing stock has reached the limit of its useful life and is both physically and morally worn-out, average energy consumption per square

support to the renovation of apartment houses and guaranteeing the renovation loans and the improving of the residents' awareness of energy saving as well as the training of individuals concentrating on it. The measures also call for the support to the carrying out of energy audits and the improvement of the entire related legal environment. As for the measures under the heading *Ensuring the diversity, balanced sustainable development of residential areas*, the measure for supporting the restoration and sustainable renovation activities in valuable residential environments is primarily related to green economy. Thus the development plan measures contain direct financial, regulative and informative elements and address the population/consumers as well as the enterprises operating in the housing sector.

The sustainable energy service of the energy department of the Ministry of Economics and Communications is responsible for the implementation of the energy saving policy. The implementation of the energy saving target programme's enactment plan was financed to the tune of 5.255 million kroons in the period of 2001–2006, while the state budget has also supported the local governments' energy saving investments (altogether in 2001–2007 worth 52.09 million kroons), while foreign aid for the realisation of the energy saving programme has also been received. Support has been made available to local governments for the modernisation of buildings and remote heating systems under their administration, within the national housing policy for the implementation of apartment houses' reconstruction and for the development of the rental housing stock by the local governments.⁸³

BOX: Housing Fair 2011

Housing Fair 2011 will be the first of its kind in Estonia and the precursor to a large international fair in 2012. The Housing Fair 2011 display will be held at the pastoral seaside Estonian Golf and Country Club. (Homepage: www.egcc.ee). The country club surroundings offer a uniquely tranquil setting as the backdrop for integrating home construction design into the landscape, conveying the coherence of advances in energy-efficient construction and the environment. Gathering the most exciting and economical energy-oriented construction designs, Housing Fair 2011 will promote creativity and quality of lifestyle in Estonia to residents and the significant number of visitors, business groups, real estate development professionals and investors expected to attend.

The aim of the fair will be to showcase the top innovative developments at the cutting edge of construction materials, housing technology, modern design and sustainable building techniques. 8 housing designs will be chosen from competitive submissions and 8 homes will be constructed, with no limits on design or materials except for the expectation that these homes meet the commonly recognized Passive House criterion. Top competitors will receive special consideration in the larger Housing Fair in 2012 that will give their construction and design capabilities exposure on a large international scale.

The first building meeting the passive house standards will be completed in 2010. The building will be constructed by OÜ Madalenergia Ehitus, following the technology of a German passive house manufacturer, Wolf Thermo Module GmGH. The project is a cooperative effort between the Jõelähtme Housing Fair and the Climate and Energy Agency.

meter is higher in the residential buildings of Estonia than in other EU member states. The relevant indicator value for Estonia is approximately 250 kWh/m² and below 150 kWh/m² for Finland and Sweden. According to expert assessments, proper reconstruction and renovation of a block house can yield, on an average, a 20–30% energy saving. Source: Operational Programme for the Development of the Living Environment; link: http://www.struktuurifondid.ee/public/elukeskond_ENG.pdf

⁸³ Source: Estonian Energy Sector Development Plan until 2020; link:

Starting from 2006 the Energy Efficiency Consulting Centre has been operating at the Credit and Export Guarantee Fund KredEx⁸⁴. The purpose of the Energy Efficiency Consulting Centre is to promote the application of reasonable energy saving measures in buildings, administer the total information concerning the topic of energy saving of buildings and bring together different parties of whom the further development of energy consumption in Estonia depends. In November 2009, the unit was reformed into Energy and Climate Agency, whose scope of activity shall be expanded. KredEx is used to co-finance renovation loans and to grant various subsidies for the carrying out of energy audits as well as for the increasing of awareness, several seminars were organised, an information campaign and energy efficiency week (see BOX) were carried out.

The buildings' energy efficiency minimum standards have been upgraded in Estonia recently. The labelling of household⁸⁵ appliances according to their energy efficiency has been well implemented in practice as well. Starting from 2007, according to the energy efficiency act of appliances improved in accordance with the EC Eco-Design (EuP) Directive 2005/32/EC must be provided with energy efficiency marking. The marking shall bear the appliance's energy efficiency class, energy requirement etc. Starting from 2009 houses as well as appliances are labelled. A law amendment came in force in Estonia in 2009 based on the European Parliament and Council directive 2002/91/EÜ (EPBD), according to which anyone wishing to design a new house, to buy or rent a house or an apartment is entitled to claim the building's energy label.

BOX: Energy efficiency week

In year 2009 was carried out the first energy efficiency week in Estonia with a motto „Saving Is Smart“. A model for the energy efficiency week was the Energiansäästöviikko in Finland, which has been organised by Motiva OY already for fifteen years. The purpose of the energy efficiency week was to change people's way of thinking towards a more saving lifestyle. For the coordination of the week's events and distribution of information, a web page www.energiatark.ee was opened, which outside the active period works as an information portal of energy efficiency. (Source: Credit and Export Guarantee Fund KredEx Annual Report 2009; link: http://www.kredex.ee/aastaruanne2009/eng_pdf/2009_eng.p). A second energy efficiency week will be held in November 2010.

http://www.valitsus.ee/failid/Energiamajanduse_riiklik_arengukava_aastani_2020.pdf

⁸⁴ The Credit and Export Guarantee Fund KredEx was founded in 2001 by the Ministry of Economic Affairs and Communications with the aim to improve the financing of enterprises in Estonia, decrease export-related credit risks, enable people to build or renovate their homes and promote energy efficiency in Estonia. See more: <http://www.kredex.ee>

⁸⁵ The nature and purpose of the energy label is analogous to the well-known energy class of household implements.

CROSS-SECTORAL ACTIVITIES

Regarding activities, which influence the entire society the following subjects can be mentioned in the green economy context in Estonia: the ecological tax reform, green public procurements, waste minimization and recycling, eco-labels and environment management systems.

The ecological tax reform⁸⁶

An important role as a regulatory mechanism in the sphere of environment use and the reorientation of production related to natural resources is played by taxes and various environmental fees. The need for changes in that sphere was met by the environmental tax reform (hereinafter ETR) started in Estonia in 2005.

The need for the reform arises from environmental problems, caused above all by oil shale energy generation, but also motor transport. Besides, the increasing consumption habits of the people are causing further environmental problems. In 2005 a broad-based working group formulated the principles of the tax reform which were presented to the government. The concept was discussed and in principle approved at a government cabinet meeting on 7th of July 2005.

The key principle of an ETR concept is a partial re-orientation of taxes from taxation of income to taxation the use of natural resources and pollution of nature. Through taxation a clear signal must be given to taxpayers that wasteful use of fossil fuels is not tolerated and the “polluter pays principle” will be put into practice. These goals will be mainly achieved by increasing the tax rates of fossil fuels and taxing those fossil fuels which are not taxed yet, introducing new taxes, increasing environmental fees in order to decrease environmental damages caused by the energy sector and increasing the effectiveness of energy and materials use, abolishing the environmentally harmful subsidies (especially in the energy sector), favouring the use of renewable resources and promoting public transport. In the ETR concept it has been also emphasized that the rise of environmental taxes and fees must be done gradually so that the ETR will not damage the competitiveness of Estonia and will not result in a socio-economical shock.

Environmentally related taxes in Estonia are fuel and electricity excise duty, heavy vehicle tax and packaging excise duty. In addition there are several environmental fees, most important of them are pollution charges, water abstraction charge, mineral extraction charges and in addition state fee for registration of cars. The main revenue from environmental taxes and fees comes from fuel excise duty (over 80%).

Implementation of the ETR

According to alcohol, tobacco, fuel and electricity excise duty act the excise duty rates of petrol and diesel were raised to EU minimum levels from 1st of January 2008. This was two years earlier than according to transitional periods given to Estonia with council directive 2004/74/EC (amending directive 2003/96/EC). The excise rates of those fuels⁸⁷ were raised

⁸⁶ Source: Lelumees, L. (2010) CARRING OUT THE ECOLOGICAL TAX REFORM IN ESTONIA // Ministry of Finance.

⁸⁷ We received the permission from the EU Commission to exempt biofuels from excise since August 2005. The

again from July 2009 and from January 2010. By now the relevant excise rates are much higher than the EU minimum excise rates.

The excise rate on natural gas was raised significantly from July 2009 – from 0.3 to 0.7 EUR per GJ. And from March 2010 the excise rate of electricity was raised from 3.2 to 4.47 EUR per MWh.

The rapid raising of the above excises did not take place for exclusively ecological reasons. Without doubt, one of the motives was the difficult fiscal situation caused by the economic crisis. Regardless of the share of the various motives, the excise raise placed the users of the resources in a new and different situation.

Besides excise duties on electricity consumption all the users of natural resources and polluters, who are obliged to have an environmental permit (including oil shale and peat miners and producers of electricity and heat) have to pay water abstraction charge, mineral resources extraction charge and pollution charges for air emissions, water effluents and disposal of waste. Additionally, there is an emission charge claimed from the emission of CO₂ but since 2008 the producers of electricity do not have to pay CO₂ emission charge on produced electricity because they are paying the excise duty.

Environmental fees are in essence pollution charges and charges for using natural resources. Pollution charges are payable for waste disposal and for releasing pollutants from stationary sources of pollution into ambient air, groundwater, water bodies or soil. Fees for the right of use are payable for mineral rights, special use of water, fishing right, regeneration cutting of standing crop and for the right to use hunting districts.

Environmental fees have been implemented in Estonia already since 1991, but their rates have been rather low for a long time and therefore the positive effect on environment use has not been too noticeable either⁸⁸. However the situation has changed as during the past few years the revenue from environmental fees and charges has been increasing rapidly.

Will the rapid growth of the environmental taxes and fees continue in the coming years as well? It would be difficult to answer this question at present. On the one hand it can be argued that the previous logic of shifting the tax burden from the taxation of labour and income to the use of resources has not changed. On the other hand it is necessary to consider the impact of further increase of excises and environmental fees on the lower-income population as well as on the future prospects of Estonia's energy sector.

Green public procurements

The share of public sector constitutes about 14–16% of GDP in Estonia, 75% of that is spent through public procurements. Therefore “greening” of public procurements is seen as a significant measure to spread environmental technologies and the development of environmentally sound products.

exemption is applied for a period of 6 years.

⁸⁸ Most of the revenue has been used for different environmental projects.

According to Directives 2004/17/EC and 2004/18/EC, the Government of Estonia took a commitment to amend Public Procurement Act with principles of Green Public Procurements (GPP). The new Public Procurement Act that enforces a procurer to favour environmentally friendly goods and services is due from May 2007. Although the legislative basis for green procurements exists for some years, the implementation remains so far quite poor. The situation of the Estonian national budget in the complicated economic circumstanced of the recent years has contributed to this. Another problem is posed by the fact that the existing Public Procurements Act tends to consider as a criterion in case of procurements the one-time purchase expense to the detriment of the later operating expenses. However, the results of environmentally friendly procurements (both environmental and financial) as a rule become evident during a longer period. This leads to the preference of cheaper solutions with higher long-term cost or having larger external cost. The options for including environment-related criteria in the procurement terms exist in principle, but according to the involved parties, the formulation and correct implementation of such additional criteria is a complicated, time-consuming and frequently administratively discouraged activity. A special working group formed at the Ministry of Environmental Affairs is currently engaged in the solving of such problems; among other tasks the same team had prepared and adapted to Estonian situation green public procurement sample materials, based on the EU models.

Waste minimization and recycling

The legislation on and organisation of Estonia's waste management sphere have undergone several changes according to the European Communities Council waste directive 75/442/EMÜ and the European Parliament and Council of the European Union package and package waste directive 94/62/EÜ.

The packages recycling system came on force in 2004, entitling the consumers to return the taxes drink packages and all other sales packages. The end users have to sort the package waste separately from other waste for that purpose and deliver to the corresponding collection stations; i.e. the working of the package waste collection and recycling system depends on the consumers' awareness and the activeness of their participation. In order to promote the recycling of package waste a twinning project financed by the European Commission and planned by Austrian experts was launched, which includes support materials (instructions, video clips, folders, etc.) for the organisation of such campaigns under the general title "Help to recycle packages". The targets of collecting and recycling of package waste have been met, but there are still some areas, where the residents face problems handing over separately collected package waste. The collection of packages for return fee is operating satisfactorily.

BOX: Campaign Let's do it

A significant campaign for promoting public waste awareness was the privately launched action Teeme Ära 2008 (Let's do it). A nationwide cleaning-up action was organised within the campaign with approximately 50,000 people gathering a total of 10,000 tons of waste from nature during a single day.

Important change took place in 2008, when the depositing of unsorted household waste in landfills was banned. Since the sorting of waste was alien to the Estonian public, local governments in cooperation with the Ministry of Environment and waste management organisations carried out extensive information campaigns, using various media channels and information leaflets. It is noticeable that the volume of waste deposited in landfills is steadily declining and the share of recycled waste is increasing.

Depositing unsorted waste in landfills is forbidden in Estonia since 2008, therefore the sorting of waste has progressed rapidly. The organisation of waste management is the task of local governments, which they have handled adequately – while 98% of household waste was deposited in landfills in 1995, the share was only 66% in 2008.

In order to speed up the implementation of environmentally friendly techniques in production facilities (i.e. management and technologies) the Complex Prevention of Pollution and Control Act⁸⁹ has been approved. The law adopted the Directive 96/61EC (amended 2008/1/EC of the European Parliament and of the Council of 15 January 2008) concerning the “integrated pollution prevention and control” requirements. The Directive introduces the requirement that those obliged to acquire complex license put to use the Best Available Technique (BAT), so as to reduce the specific cost of resources and waste per product unit. By the deadline set by the directive (October 2007) all firms subject to the mandatory complex license possessed valid licenses. As of September 30, 2010, 248 complex licenses have been issued. Meeting the standards of the complex license is regularly monitored.

Eco-labelling and environment management systems

The Estonian organizations have a choice to choose between two environmental management systems: ISO 14001 international standard or EMAS (Eco-Management and Audit Scheme). Amongst the eco-labels is a possibility to implement European Union Eco-label⁹⁰.

According to the EC eco-label regulation (1980/2000/EÜ), after the EU accession in 2004 Estonia had to develop a system enabling enterprises to apply for and use the EC eco-label – the EU flower. According to the Environmental impact assessment and environment management system act the competent institution for issuing the eco-label in Estonia is the Estonian Environment Information Centre.

In Estonia there are two companies what have the right to use the EU eco-label. Significantly more widespread than the EC eco-label are organic farming labels⁹¹ and various self-declared

⁸⁹ Link: <https://www.riigiteataja.ee/akt/13202039>

⁹⁰ Source: http://www.emas.envir.ee/index_en.php

⁹¹ Organic food and animal feed is labelled with the Estonian or EU organic logo. In addition (or instead of) the label the organic product can bear the Estonian terms „ökoloogiline“ (often used in the form of the prefix „öko-“) and „mahe“, which are both legally acceptable terms in Estonian for „organic“. Labelled products must originate from organic land or organic animals. The organic farming label (logo) can be used for processed products where at least 95% by weight of the ingredients of agricultural origin are organic and only these non-organic ingredients are used that are listed in the regulation (EC) No 889/2008 annex VI. Source: Vetemaa, A., Mikk, M. (2010) Organic Farming In Estonia 2009 // Published by Ministry of Agriculture, Republic of Estonia;

labels (Green Energy etc.). The introduction of environment management systems is increasing. As of 2010, there are 322 enterprises in Estonia certified according to the ISO 14001:2004 standard and 1 according to the EMAS standard.

II SOCIAL IMPACTS OF GREEN ECONOMY IN ESTONIA

Social impact of green economy

Besides the ecological and economic impacts, the development of green economy should also consider the social impact. Social problems may be focused on somewhat different issues in different countries. The reduction of poverty is one of the priority goals of green economy in some developing countries, primarily due to the rather high labour-intensity of several of its sectors. Widespread poverty is not a centrally important problem in Estonia, but certain social effects are nevertheless important here when developing this type of economy. These effects are, firstly, its impact on employment and, secondly, the potential effect on regional development, i.e. on reducing or obstructing the wide development gaps between large regions within the state⁹². The regions with development problems are, first of all, the more distant Southern periphery (especially South-east Estonia) and the Eastern region by Lake Peipus, but also the North-east Estonian region beset with restructuring problems.

We shall study the present and possible future impact of individual directions of green economy on employment and regional development. The following review is not based on previous special analyses and it is effectively a generalisation of the opinions of experts, who participated in the writing of the paper.

The production of biofuels and bioenergy in agriculture and organic farming

The above directions of green economy have all been launched in Estonia to different extent by now and receive state support (for details see p. 14, 26). Quite ambitious projects have been set up in some of the mentioned spheres, e.g. the production of biodiesel fuel, but it is yet too early to assess the efficiency of such projects. The production of biofuels (primarily rape) and organic farming concern the rural areas from the employment viewpoint, while the production of bioenergy is related to agriculture to a lesser degree than to major cities. The growing of short rotation forest (SRF) has not been considered especially efficient in Estonia since natural forests are abundant (see next item); there is an interesting option of using reed and hay for fuel, but the obstructing factor here is the absence of suitable technology. As for employment, biofuel and bioenergy would provide extra employment to rural residents rather than create new jobs (help to find employment during the months when the need for labour in agriculture is lower).

link: http://www.maheklubi.ee/upload/Editor/New%20Folder/mahepoll_eestis_2009.pdf

⁹² Although Estonia's territory is small, the development gaps between the wealthier regions (the capital area) and the backward regions are quite wide.

Organic farming, unlike the former sphere, can provide full-time jobs to people employed in it, but the question here concerns the amount. Organic farming is often viewed as a highly labour-intensive occupation, but this is certainly not correct in case of all its aspects (e.g. extensive cattle farming suitable for West Estonia and the islands).

Complex forest management and full use of logging and timber processing waste

This is an important sphere of green economy for Estonia, considering the high level of forestation of its territory and the great significance of the forestry and timber cluster in Estonia's economy. The measures of the **Forestry development plan until 2020**⁹³ have a potentially varied social and regional developmental impact.

The production of heating pellets from wood waste (sawdust) as well as the production of wood chips for fuel, which also create rural employment, will significantly expand. The plans for the building of new cogeneration plants by energy enterprises create an extra market for the use of wood chips. The Estonian forests have accumulated a significant reserve of unused timber in mature and overripe deciduous forests; its use for heating would help to improve the structure of logging as to species and to take advantage of the hitherto little-used high production potential of the deciduous forests. Using timber as a source of energy would also reduce the climate change as it would replace the fossil fuels. It is possible that forestry would accordingly be linked to the carbon credits scheme, which in turn would provide extra income to forest owners.

Making use of the non-timber resources related to forests – especially nature tourism – will also create extra jobs. The planned tax changes, which would serve as an incentive for the management for the quite numerous owners of small forests, will have a positive effect on the small forest owners' income, which will be especially noticeable for rural residents. There are plans of studying the development of a market of environmental values, where forest owners could offer environmental services.

Generally speaking, it can be concluded that the development of complex forest management contributes to improving living standard in rural areas with noticeable forests and thus balancing regional development.

Efficient management of oil shale mines and open-cast mines; recovery of former mining areas after their exhaustion

The restructuring of the economy of the industrial North-east Estonia, which was based on oil shale mining, processing and oil shale energy, is one of the greatest challenges of Estonia's regional policy. Oil shale mining in Estonia has already passed its apex as to volumes and attention is being concentrated on the finding of ways for more efficient use of the remaining deposits as well as on the recovery of former mining areas. According to the **Development Plan of the Estonian Electricity Sector until 2018**⁹⁴, the production of electricity from oil shale shall decline. At the same time the **National development plan for the use of oil shale 2008–2015**⁹⁵ foresees the opportunity of using the oil shale surplus to

⁹³ Link: <http://www.envir.ee/orb.aw/class=file/action=preview/id=1127812/MAK2020.pdf>

⁹⁴ Link: http://www.valitsus.ee/failid/Eesti_elektrimajanduse_arengukava.pdf

⁹⁵ Link: <http://www.riigiteataja.ee/ert/get-attachment.jsp?id=13058929>

energy production for the production of oil. The realisation of both directions of development will require considerable investments.

The renovation of the energy blocks of the Narva power stations, largely for complying with ecological standards, will be continued and building of 1-2 new blocks based on a new more efficient and less polluting incineration technology will be carried out. This is an extensive and long-term (approx. 10 years) construction programme having significant employment impact. For increasing oil production establishing a number of new plants is foreseen that provides both temporary a large number of construction jobs and later permanent manufacturing jobs.

The recovery of former open-cast oil shale mines by reforestation has a sufficiently long history in Estonia, more than forty years. It can be presumed, however, that the recovery of the former mining areas will become a much more extensive activity in the next few decades. It will include, besides the reforestation of the former open-cast mines, the use of ash gathered in the oil shale ash dumps, the restoration of water management in mining areas, the construction of wind farms in the power stations' ash deposit fields etc.

The new landscapes forming after finishing of mining offer, *inter alia*, opportunities for economic activities like tourism and sports. Examples of such development are in place – Kohtla thematic mine park and museum⁹⁶ and Kiviõli venture tourism centre⁹⁷. The artificially created mountains in the generally flat Estonia could be used for downhill skiing, while the exhausted Aidu open-cast mine is planned to become a venue for international rowing competitions. Such potentially large-scale activities could have a significant effect on employment and regional policy.

So, it can be concluded that restructuring of the oil shale cluster towards greener activities has remarkable positive social and regional impacts offering new employment opportunities in construction, oil production, tourism, recreation and other activities while power generation from oil shale and respective employment is going to reduce.

Introduction of new environmentally friendly technologies in energy production and gas and water supply

Two areas of renewable energy production deserve attention – wind farms and waste-based energy plants.

Although the future patterns of Estonia's energy production are still largely open, as was pointed out previously, wind energy has developed quite rapidly in recent years and this development seems to be set to continue. In spite of the trend that wind farm locations are mainly in periphery areas (the islands, North-east Estonia), the business does not contribute remarkably to social and regional development of their surroundings. Wind farms themselves do not create local employment and do not generate remarkable permanent revenues for local people as the companies owning the farms come from outside and mostly do not rent but buy the land.

⁹⁶ Link: <http://www.kaevanduspark.ee/>

⁹⁷ Link: <http://www.tuhamagi.ee/>

Several projects for the production of energy from waste are in progress. Due to the highly mechanised production process their employment is quite small. In addition, since the waste incinerating for energy occurs in the major cities that are also the primary consumers of the resulting heat), social and regional impact of this kind of activity is small.

The most remarkable employment impact connected with new energy technologies can be achieved in a number of Estonian companies involved in production of wind generators. Only a few of them are situated in peripheral locations.

As for gas and water supply, the biggest employment and regional effects are available only during the construction/reconstruction period of gas and water pipelines. The permanent employment created is very small as no new large gas or water networks are planned.

New technologies

A sphere of key importance for Estonia in the nearest period will clearly be the **production of shale oil** and the related technologies. Estonia possesses original know-how in this sphere and several enterprises, including the state-owned Estonian Energy are currently engaged in its development. In comparison with the use of oil shale directly for heating as it is now dominating in Estonia the production of fuel oil would result in greater value added to the mineral resource, it would increase the level of useful product extraction and also reduces waste. Moreover, this would not be a local sphere of business, but an international one, which possesses significant potential, especially when considering the rising cost of oil in the world market. Since Estonia's experience in the development of oil production technology is advanced at the international level, this presents a great chance for a breakthrough to international economy⁹⁸. New technologies, should they prove efficient, could be sold to many countries possessing oil shale resources and being interested in their use. However, it would be necessary to adjust the technologies to the specifics of the oil shale resources of different countries.

The implementation of oil production is bringing along two effects. Firstly, the effect resulting from Estonia's breakthrough to international high-technology business and the potential profit from this. It can be presumed that this profit could be used for wider modernisation of Estonia's energy industry. Secondly, the local effect, which concerns North-east Estonia. The latter would mean firstly new employment provided by the oil plants to be set up in North-east Estonia (despite it being a process technology the number of emerging jobs could be estimated in hundreds)⁹⁹ and secondly ensuring continued employment in the mines of the same region, where the production volumes would probably be severely reduced if oil shale were used only by the power stations. Success of the oil production

⁹⁸ The question arises whether the development and use of oil shale technologies can actually be considered green economy. If we maintain that the use of oil shale as energy fuel is spreading in the world anyway and its use as a source of oil is, compared to the use for heating power stations, not only more economical but also more nature-friendly, we believe that the answer to the question would be positive.

⁹⁹ It can be presumed that the emerging oil production capacity would be greater than required by Estonia's domestic consumption; the oil plants in Estonia would partly perform the role of test production, technology demonstrators for foreign customers.

scenario would probably create high technology jobs (researchers and engineers) in NE Estonia as well as in capital Tallinn.

The use of oil shale as raw material for other chemical industry is presumably a promising way of use, but progress in that sphere has not yet reached the preparation of production stage, which would allow estimating the size of the resulting social and economic effect.

New technologies in **timber industry**, which allow for more efficient use of timber, would certainly be important for Estonia, considering the high significance of the timber cluster in its economy, but not only because creating some specific new jobs, but because they would help our export-oriented timber and furniture industry enterprises survive in international competition. Since these enterprises are relatively widely dispersed all over Estonia, they and their employment play an important role in the evenness of regional development.

The export of timber houses for assembly and full timber furniture has been typical of Estonia's export in the past decade. This business niche is based on the people's desire for a natural living environment and serves as an additional argument for viewing it as green economy.

Sustainable transport

The transport sector has significant impact on economic growth, social development and the environment. The development of transport is a basic condition for ensuring sustainable development; moreover, transport has an important social function – meeting people's need for mobility. Taking into account the scope and importance of the transport sector, The Transport Development Plan 2006-2013¹⁰⁰ and the Public Transport Development Programme 2006-2010 were approved by the Riigikogu.

Comprehensive use of railways for the transport of passengers has become a central issue in Estonia's movement towards more sustainable transport model. The share of rail passenger transport has declined in the past decades, while the increasing need for mobility has been met by the use of private cars and buses. Besides the greater pollution and the threat of jamming the roads this trend poses a problem due to the high vulnerability of the car and bus transport to the rather likely future rise of fuel prices, which could pose a significant obstacle to commuting to work for the less wealthy people.

At the initiative of the Ministry of Economics and Communications and with the backing of the EU support funds, new passenger rolling stock, which meets modern comfort standards, has been ordered from foreign manufacturers so as to promote rail travel. Its introduction will create premises for the popularisation of rail traffic among the public. But since Estonia is rather sparsely populated and the number of inhabitants is low, a breakthrough in the structure of passenger transport would require the ensuring of several premises all at once, e.g. competitive ticket price in comparison with other modes of transport, traffic density and the suitability of the trains' timetable (especially for travelling to work and back); while the railway operator's ability to ensure this, unless we presume very high state subsidies, would in turn depend on crossing a critical threshold in the number of passengers.

¹⁰⁰ <http://www.mkm.ee/tr/>

The potential social effect from the development of train traffic would not be confined to the transport sector, but would equal to the reduction of domestic time and space distances for the residents of areas covered by train traffic at an acceptable cost. This is especially important for the people residing outside major cities and their immediate hinterland by ensuring them access to workplace, which are concentrated in major cities, especially in case the rising fuel prices would make cars and buses a too expensive option for daily commuters. The potential social effect of the promotion of rail traffic in Estonia would concern, dependent on the location of the train lines, the areas like the capital region (links of the towns and settlements in Tallinn's hinterland with the capital), the impact area of the Tallinn-Narva railway (links between Tapa, Rakvere, North-Eastern Estonian cities, especially the Kohtla-Järve agglomeration and the city of Narva), the impact area of the Tallinn-Tartu-Orava railway line (incl. improved link between South-east Estonia and Tartu). Although the above impact area covers a smaller rather than larger share of Estonia's territory, it concerns a number of areas significant from the territorial policy viewpoint (NE Estonia, SE Estonia). In case a direct rail link between Tallinn and Latvia's capital Riga would be built in the future across Pärnu or Viljandi, the impact area of the potential social effect would be expended to West Estonia, although the main motive for the potential construction of this railway would only be international (improved link between the Baltic states and possibly Finland with Central Europe by express train) rather than regional political in the domestic sense.

In a longer perspective the transformation of the passenger transport in Estonia's capital Tallinn into rail-centred (by the construction of high-speed tram lines, which would form a backbone network for the city and its hinterland's transport system) could become a major move towards sustainable transport.

New solutions and sustainable technologies in the reconstruction and building of housing and infrastructures, activities related to energy saving

A large amount of the housing stock and various infrastructure facilities (heating and water supply networks etc.) constructed in the Soviet period has still survived in Estonia. These buildings and facilities as a rule are not energy sparing and require, due to their physical and/or moral aging, extensive renovation or replacement by more ecological solutions. The Estonian government has been supporting such activities (for details see pp. 32-34). Therefore this sphere is involved in very extensive construction programmes, which have reached only the initial stage of realisation. Due to the above considerations this sphere is offering significant employment, both regarding less and more complicated (the development of technical solutions suitable for reconstruction and improvement) work. Energy certification and energy auditing provide a related niche employment requiring specialised training. Most of the employment related to the renovation of the old buildings and technical networks is concentrated in the vicinity of the buildings and systems requiring renovation, i.e. the major cities. As for the regional politically critical areas, this employment is important for the North-east Estonian industrial region.

The designing of new ecologically advanced technical infrastructures and housing (passive houses, energy-saving houses) and the experimental production of the same is a prospective business opportunity for firms possessing the sufficient competence and innovative potential. Such solutions, besides being provided for the domestic market, can also be exported, but one has to expect strong competition in this popular business sector. Due to the knowledge intensity of the sphere (incl. additional opportunities for cooperation with universities) it can be expected that the jobs related to these activities would be concentrated in the two or three major cities of Estonia.

Nature tourism and farm tourism

Estonia, unlike the more densely populated Central and Western Europe, possesses a significant amount of natural environment and landscapes suitable for rest and recovery from urban life. Therefore the above spheres of activity have great prospects in Estonia, both for servicing the domestic and foreign tourists. Firms have gathered extensive experience in these areas during the past decade or more, specialising in farm tourism, nature hikes, kayaking, forest camps for children, hunting tourism etc. Although the presence of picturesque landscapes is a great advantage in such spheres, nearly every county in Estonia can offer something to visitors and a clear majority of the counties have listed nature and farm tourism as prospective and expanding activities in their development plans.

Although the income and employment related to nature and farm tourism cannot be compared to that provided by international mass tourism, they can fully compare to other spheres of green economy. This sphere provides the population with part-time employment as well as certain amount of full-time jobs. This sphere is highly positive from the regional development viewpoint as the activities are dispersed all over the country and the untouched peripheries hold an advantageous position, while they as a rule experience problems with providing employment and income to the residents.

To sum up, a brief assessment of the social effect of green economy in Estonia:

- The spectrum of spheres of green economy, which are addressed in Estonia and which provide certain economic and social (primarily employment) effect besides ecological, is quite broad;
- Some of these activities and the resulting effects tend to concentrate in the major cities, others are predominately related to agricultural and natural areas; no clear distribution pattern of the centre-periphery type can be identified.
- The green economy spheres as a rule have not brought along large-scale creating of new jobs and no such effect can be forecast for the near future. An exception could be the processes related to the restructuring of oil shale and energy production in North-east Estonia (expansion of shale oil production instead of oil shale burning in power stations, reconstruction of the power stations, recovery of former mining areas for new functions), in which cases the creating of a significant number of new jobs can be presumed. Yet that

region would have to consider certain reduction of traditional employment caused at least partly by attempts to improve the ecological situation.

- In the agricultural and forested areas and Estonia's peripheries (if we omit the North-east Estonian industrial region from the latter definition) the green economy activities are primarily important for the population as sources of extra income. They would provide few new full-time jobs, but allow the balancing of the seasonal nature of agricultural production by offering part-time employment and extra income. The development of these areas could prevent the migration of the population from the peripheries.

CONCLUSIONS

The summarizing and analysis of policy documents during the compiling of this report allows for the making of the following general conclusions:

- Activities in Estonia take place, although with varying intensity, in practically all spheres traditionally viewed as related to green economy: organic farming, bioenergy, energy efficiency related activities, sustainable transport etc. Considering the specific circumstances of Estonia the activities of primary importance are the various measures for more environmentally friendly and economical energy sector, the development of methods and technologies for more efficient and less environmentally harmful use of the most important local mineral – oil shale, and more complex and economical use of the forest resources;
- These and other spheres of green economy offer huge opportunities for the Estonian enterprises undergoing restructuring, which was hastened by the international economic crisis. In some cases these opportunities are related to the so-called green export (e.g. the export of more environmentally friendly and efficient oil shale processing technologies) and participation in wider international value chains of green production (e.g. the already operating participation of several Estonian companies in the production of components for wind generators).
- At least 15 national level sectoral development plans and other strategic documents presently concern green economy in Estonia. The more significant ones are the following: the Estonian Renewable Energy Development Plan until 2020 (which is currently in progress), the Estonian Rural Development Plan 2007–2013, the Organic Farming Action Plan 2007–2013 and the plan for its implementation, the Development Plan 2007–2013 for Enhancing the use of Biomass and Bioenergy. The measures through which the state supports the development of green economy or creates premises for it are the investments in infrastructure, measures related to production technologies, measures for the improvement of the corresponding awareness and the various types of financial support to companies. The support opportunities available via the EU structural funds play a very important role.

- A more general basis for the green economy activities in Estonia is provided by such broader strategies as Sustainable Estonia 21 and The Estonian Environmental Strategy 2030. However, these documents have been formulated from the aspect of a general ecological or sustainability-based worldview rather than directly advancing green economy. Therefore they can be viewed as documents creating background for green economy yet they contain few statements, which would concern it directly. A strategy paper immediately concerning green economy is the Development Plan of Environmentally Friendly Economy, yet this document is predominantly a collection of targets and positions already previously expressed in various sectoral plans (Estonian Energy Sector Development Plan until 2020, Transport Development Plan 2006–2013 etc.), rather than an independent strategy document. Besides it does not cover all the spheres of green economy. Therefore it has to be admitted that present-day Estonia possesses a body of policies pertaining to green economy, not very closely related to each other, but not green economy as a strong and coherent political focus. The situation may be changed by the document Estonia 2020 currently in progress, which will perform the role of Estonia’s national strategy in linking to the completed Europe 2020 strategy of the EU.
- Besides the ecological and economic impacts the development of green economy in Estonia will also provide a social impact in the form of additional employment and income, which is partly evident in agricultural areas (e.g. in case of organic farming and nature tourism), partly in the cities. However, most of the spheres of green economy would not provide major additional employment, being frequently limited to seasonal/part-time work and related opportunities for extra income. As an exception can be seen the various activities of the energy sector’s modernisation and changing the profile of oil shale mining as well as adapting the former mining areas for new functions, which concern the North-east Estonian industrial region and which would provide a significant amount of new employment opportunities, although these would have to compensate for the lost “old” jobs.