



NATIONAL SPATIAL PLAN  
ESTONIA 2030+



# REGIONAALMINISTRI VALITSEMISALA

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SISEMINISTEERIUM  
Estonian Ministry of the Interior

The National Spatial Plan was enacted by order No 368 of the Government  
of 30 August 2012

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Tallinn 2013

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# Introduction

The Estonia 2030+ national spatial plan is a strategic document aiming to achieve the expedient utilisation of space on the scale of Estonia as a whole. The national spatial plan is being prepared for the entire territory of the nation. It defines the policies and trends for the sustainable and balanced national spatial development. The purpose of the plan is to obtain spatial bases, informed by the specific character of the environment, for shaping settlement, mobility, national engineering infrastructure and regional development.

The objectives for the national spatial planning are up-to-date, and the activities related to them will continue also post-2030, as indicated by the title of the plan, Estonia 2030+.

The preparation of Estonia 2030+ was initiated by order No 32 of the Government of the Republic of 4 February 2010.

The completion of the Estonia 2030+ national spatial plan was coordinated by the Planning Department of the Estonian Ministry of the Interior. A plan is a collective creation, with its completion drawing on contributions by experts and officials in various fields, by county and local governments and by other interested parties involved and informed via the plan website and several public events.

The principal basis for the preparation of the national spatial plan included: Europe 2020 strategy for employment and growth; VASAB long-term perspective for the territorial development of the Baltic Sea region 2030+; previous Estonia 2010 national spatial plan; Sustainable Estonia 21 national strategy for sustainable development; and Estonian growth vision 2018 economic development scenarios.

The first national spatial plan, Estonia 2010, was completed in 2000. The Government of the Republic approved Estonia 2010 and the action plan for its implementation by Order 770-k of 19 September 2000. Annex 1 describes the impact of the previous plan on Estonia's spatial development. Ten years after its approval, the period regulated by the plan came to an end, and its action plan ceased to be up-to-date. Both the world around us and the situation in Estonia have changed noticeably. As a result, Estonia needs a new national spatial plan, in order to – in light of the changes – shape the balanced spatial planning of the nation and provide a point of reference and guidelines for updating county and comprehensive plans.

This national spatial plan does not replace any sectoral development plans; however, the accomplishment of the spatial objectives set in it requires that it be linked to sectoral and regional developments and policy measures. To this end, by agreement amongst the relevant state agencies, the plan sets a number of tasks. Their detailed solutions and implementation will be established in sectoral development plans and other national strategy documents.

The national spatial plan will provide a basis for the preparation of county and comprehensive plans.



# Major future trends impacting on the development of the nation



Given globalisation, all nations are affected by global and macro-regional factors that work their effect regardless of whether a nation itself wants it to or not. Future forecasts supporting policymaking rest on trends analysis based on the assumption that the nature of the main forces currently driving global development and of their interaction will not change overnight. Estonia has to consider global trends and EU policy as exogenous determinants. Paramount in spatial planning is both consideration of trends with a spatial impact and having a clear vision, including a strategy to achieve it.

## 1.1. Global trends

**Major global trends with a spatial impact include:**

1. The world economy's centre of gravity shifting to Asia;
2. Transition to a knowledge-based economy;
3. An ageing population;
4. Urbanisation;
5. Weather (climate) change;
6. Growth in the influence of environmental values;
7. Transition to the broad-scale utilisation of renewable energy;
8. Accelerating growth in the so-called green and silver economies.

The shift in the world economy's centre of gravity to Asia (specifically, to China and India) will transform the manner in which globalisation manifests itself geographically. In the international division of labour, industrial manufacturing will move to Asia; in the Western nations, services exports will grow. The new geography in the world economy will also generate new, large-scale, specifically shipping-enabled trade flows between, on the one hand, Asia and, on the other, Europe and the Americas. Rapid growth in the scale of the economies in populous nations and, accordingly, an immense increase in the numbers of and consumer demand by the global middle class will boost demand for natural resources. Presumably, tensions will arise between the supply and demand when it comes to food and energy, elevating prices in either commodity category.

In 1996, the OECD defined the knowledge-based economy as an economy directly based on the production, distribution and utilisation of knowledge and information. In a knowledge-based economy, the building and utilisation of knowledge play a central role in wealth creation. The fastest growth has been observed directly in information and communications technology (ICT), in research and development and in knowledge-intensive manufacturing and services sectors (for instance, aeronautic, chemical and pharmaceutical industries; design; architecture; technical services and the like) but also in the creative industry. This trend was observable as early as in the last decades of the last century in the most developed nations but now keeps spreading elsewhere, too.



An ageing population is universal in the world; however, in macro-regional terms the demographic situation remains diverse. At a time when the populations in the Western nations and Japan feature a negative natural population growth and an increase in the proportion of the elderly, many other nations have indeed seen their birth rates decrease yet continue to have plenty of young and working-age people. Pressure to migrate from there to the Western nations is helping the latter replenish their ranks of working-age people and alleviate the decrease in their populations; however, this is occurring at the price of the difficulties in the integration of the immigrants. An ageing population is increasingly burdening specifically the social systems in Europe and Japan and slowing down growth there.

Urbanisation is characteristic of the entire world. Nonetheless, this process has its particular features in regional terms. In the developed nations, migration features differentiation over the course of a person's life cycle: the young moving mostly into large cities and towns, families with friends into suburbs, and older working-age people and retirees more likely into the countryside. That said, migration is not always limited to the boundaries of one's home country. The young often go to study and work in metropolises abroad. The warm Mediterranean coast of Europe, by contrast, is evolving into a region consolidating the well-off retirees of various nationalities from all of Europe.

Climate change has been monitored by means of measurements for over a century. Identification of the increased concentrations of anthropogenic greenhouse gases as its cause has met with strong support from the international scientific community and the public at large. The harmful impact of climate change is considered to include, amongst other things, the increasing shortage in agricultural land and freshwater supplies in arid regions, which further exacerbates the foreseeable mounting tensions on the food market, also the increased frequency in storms and floods in coastal areas, and the rising ocean levels. It is expected that the Arctic coast will soon become navigable year-round, shortening the shipping routes between Asia, Europe and the Americas. Over the next few decades, however, the global economy will be subject to the significantly stronger impact of climate treaties and national climate policies, which aim to move towards a low-carbon world.

At the levels of individuals and citizen movements, the influence of environmental values is growing in the world primarily with the support of the Western nations. This is manifested by the fact that a clean environment, healthy diet and lifestyle – also called a green way of thinking in short – are valued more extensively than before. People following it prefer to consume organic food and consumer goods made from natural materials, use methods of natural medicine and green means of transport, and live in buildings that are made of natural materials and/or are energy-efficient, often outside cities and towns.

Preferential development of renewable energy is primarily a trend spreading in the Western nations due to the risk of climate warming. Apart from that, several nations are engaged in increasing the importance of nuclear energy and making conventional technology cleaner (for example, clean coal technology). Energy conservation is gaining importance increasingly as well.

The concepts of so-called green and silver economies generalise the future economy linked to novel





social commitments. The green economy comprises many business sectors, from renewable energy, building passive housing and recycling materials through to manufacturing electric cars and producing organic food. A large part of the green economy rests on biotechnology, many branches of which are only just being developed. The silver economy comprises products and services provided to the elderly to ensure that the extra life years are spent being healthy, active and secure.

## 1.2. EU policy

As a Member State, Estonia participates in the making of common EU policy and, by implementing it, discharges its obligations. In terms of spatial development, a major role is played by the environmental, energy, transport, agricultural, fisheries, maritime and foreign policies.

With its environmental policy, the EU leads the world in environmental conservation. The Union has created legal mechanisms for the continual promotion of environmental conservation, set specific objectives for meeting stringent environmental standards and created economic incentives for business operators and the public sector to develop green economy. The EU is a leader when it comes to the conclusion of global climate-policy treaties. Within the Union, a system for trading greenhouse-gas emissions is in place. Under the biodiversity policy, the European Commission in 2011 adopted a biodiversity strategy to 2020, which aims to stop the decrease in diversity and transition to a sustainable economic model. Development is in progress on a green infrastructure strategy (completion due in 2012) applying a consistent philosophy of preserving biodiversity and linking nature reserves.

The EU is also a world leader in developing a new energy policy. It has set the objectives of high energy security and a low-carbon economy. The main trends include creating a single market for electricity and natural gas in the Union, constructing single energy networks, improving the energy efficiency of technology, energy conservation, increasing the proportion of renewable energy, reducing dependence on external energy consumers and constructing alternative supply channels.

The transport policy of the Union promotes above all the free movement of individuals and goods, assuring the functioning of the single internal market. The priority of the white paper, “Roadmap to a single European transport area – towards a competitive and resource efficient transport system”, published by the European Commission in 2011 is improving mobility by 2050. This includes plans to reduce greenhouse-gas emissions by means of novel technological and logistical solutions by 60% by 2050 (compared to 1990). Attaining freedom from the use of fossil fuels is considered important. The transport policy spearheads the transformation of transport charges and taxes so that these reflect the total and external costs of the infrastructure.

The common agricultural policy of the EU impacts on spatial planning above all through the development of rural life, ensuring amongst other things the preservation of land in agricultural use and of security in food production. Given the dwindling employment in agriculture, the intention is to secure





a stable economic basis for rural life. The policy financially supports improving the competitiveness of agricultural production, maintaining agricultural land in a good condition, linking environmental objectives to agricultural production, and diversifying the economic basis of rural life. It could be said that the rural life policy offsets the prevalent trend of urbanisation.

The single fisheries policy of the EU impacts on spatial planning primarily in coastal areas. The policy supports creating sustainable economic, environmental and social conditions and the availability of food supplies. Maritime spatial planning is affected by the single maritime policy of the EU, currently undergoing development.

Of the foreign policy directions, primarily relations with Russia are of interest for us. The evolution of EU-Russian relations has not been steady. Nonetheless, there is a will to improve the relations in all respects, and this manifests itself across several dimensions in Estonia as well – specifically, in the growth of trade, in the resulting increased shipment volumes and also in the movement of people. Some major infrastructure projects are impacting on both EU nations and Russia. Nonetheless, the evolution of the relations going forward is difficult to predict.

### 1.3. Potential impact of the trends on Estonia's spatial structure

Global trends and EU policy impact on Estonia, materialising here through the prism of the local specific character. Various directions are altering the manner in which the society is operating and shaping the development of Estonia's spatial structure (settlement, infrastructures and the utilisation of land and waters), supported by the changed, updated needs of people and of the economy.

Analysis of the interaction between the main global trends and EU policy indicates that even though certain shifts may occur in Estonia's settlement structure, the spatial structure will remain broadly the same. The determinant trends include an ageing population, growth of the knowledge-based economy, urbanisation and the economic ascent of Asia. Various policy measures of the EU also have a major impact.

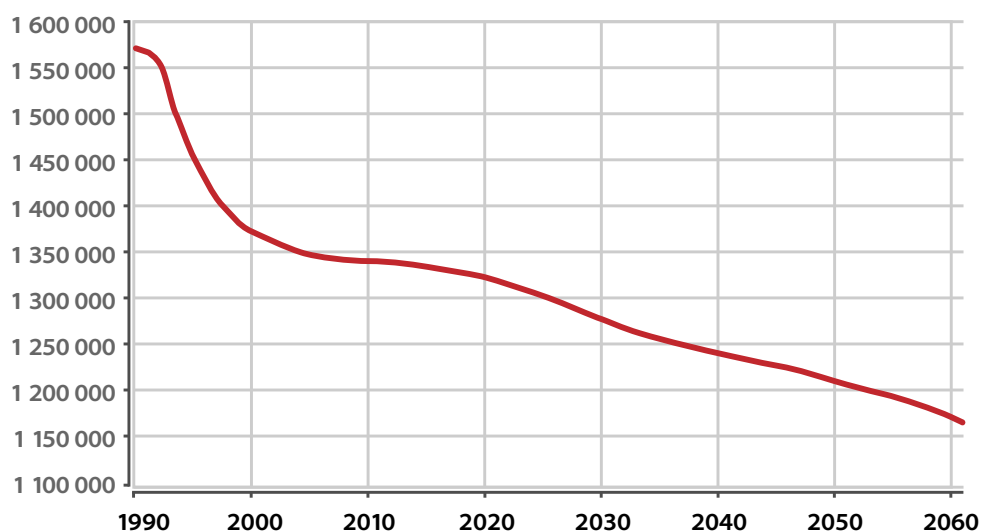
Under several forecasts, the ageing of the population is an unavoidable process in Estonia. It is being amplified by a moderately negative natural population growth. In light of current political attitudes, there is no likelihood either of an extensive immigration into Estonia to offset the natural decrease, as is the case in some nations in Western Europe. The proportion of the elderly is the lowest in Tallinn, Tartu and Pärnu, where immigrants are predominantly representatives of younger age groups. These trends may burden Estonia's social system and adversely affect the opportunities for its economy to grow. At the same time, prospects may improve for developing services for the silver economy, on which smaller towns may also contribute.





**Figure 1.** Changes and forecasts of the size of the population (Statistics Estonia).

Two decades of decrease in the size of the population has impacted on all of Estonia. Although the decrease of the population has decelerated in the past few years, it is continuing at a moderate pace.



Apart from an ageing population and a moderate decrease in the size of the population, slow urbanisation is likely to continue as well. Growth in the urban population is relative: its absolute numbers are not increasing significantly yet its proportion is being boosted by the decrease in the rural population. Urbanisation statistics are being distorted also by urban sprawl, since residents in new urban regions constructed beyond the limits of a city yet in its vicinity are classified as rural population. This way, urbanisation is moving covertly into the countryside, for villages that are new urban regions are suburbs by nature. On the other hand, urbanisation manifests itself also in increased work-related commuting by rural residents, as a result of which the urban lifestyle is spilling into the countryside.

Urbanisation is favouring Estonia's larger cities and towns. The prevalent directions of migration are tied to a person's life cycle: the young are moving primarily into the large cities and towns, families with children into suburbs, and older working-age people and retirees into the countryside. The attraction of the cities of Tallinn and Tartu – and to a lesser extent also Pärnu and the Ida-Viru conurbation<sup>1</sup> – is ensured by institutions of higher learning and growth in jobs related to the knowledge-based economy. Tallinn and the Ida-Viru conurbation may be given an additional impulse by the development of global logistics, specifically in conjunction with servicing trade flows bound for China and Russia. The impact of EU policy and environmentally conscious values help to improve the environmental and transport conditions in the larger cities and towns, making them more attractive as places to live.

<sup>1</sup> Kiviõli, Kohtla-Järve, Jõhvi, Sillamäe and Narva.

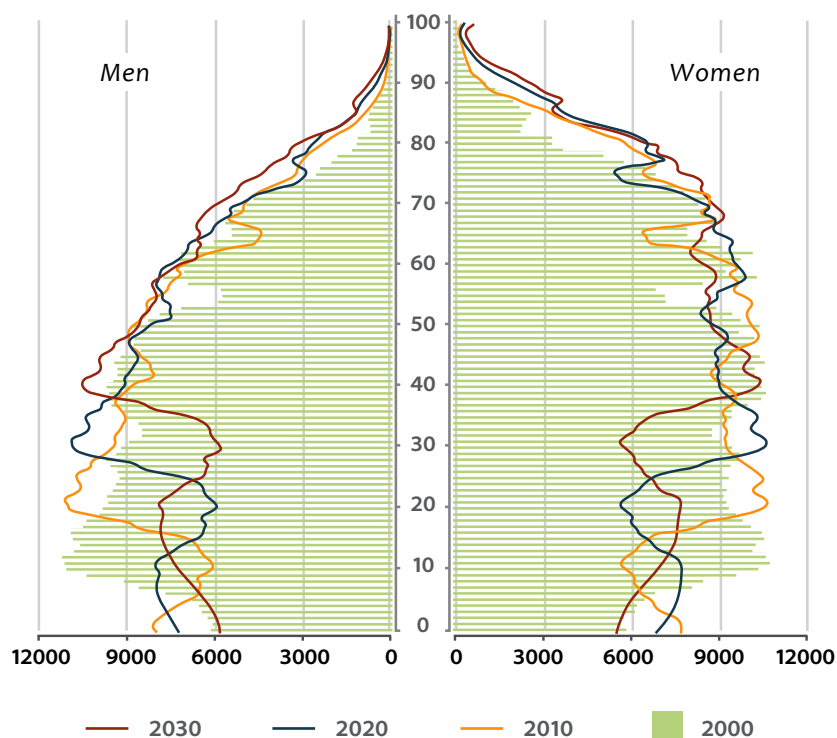


The industrial low- and medium-high-tech industrial bases of most county centres and other small towns is exposed to the strong global competitive pressure, originating primarily in Asia. This may create difficulties for entire counties, for their centres provide most of the jobs in the counties. The effect may be a decrease, to an extent, in the economic significance of county centres and other small towns. Mostly likely, their role as service centres will not change if the quality and multiplicity of services can be maintained.

The common agricultural policy of the EU and growth in the green economy but also a predicted rise in food prices will help to preserve rural settlement. This may shore up the economic base of rural life to an extent but will not create too many new jobs. Furthermore, the following may be presumed: return of fallow lands to active use, intensified use of land, improved overall appearance of scenery, increased income of rural residents, but also potentially increased agricultural pollution.

**Figure 2. Gender/age composition the population (Statistics Estonia).**

The ageing of the population is an unavoidable process in Estonia. Ageing also adds to the burden on the social-assistance system and is particularly noticeable in small towns and in rural areas.



The exodus of the young from rural areas continues; the elderly are returning from the cities and towns; increasingly, so-called environmental people are settling in the countryside permanently or





periodically. The proximity of rural areas to nature may prove attractive also for a certain number of people from other nations. The adoption of renewable-energy small-scale technology is improving facilities for living in villages on the periphery and on small islands.

Preservation of biodiversity, ecosystem services and sustainable utilisation of natural resources – highlighted in the environmental policy and strategy of the EU – are impacting on a number of areas of life, from nature conservation to the management and planning of traffic.

Transport and energy networks are being developed through national policy. As a result, a significant weight attaches also to the transport, energy and environmental policies of the EU, which convey to us the impact of global climate change.

In light of the European transport policy, it continues to be important to improve Estonia's linkage to the core areas of the EU, including the construction of a high-speed railway (Rail Baltic) linking the Baltic States and Finland with Central Europe. Across shorter distances, this railway will compete with air transport successfully. Servicing the new trade flows of Asia and Europe presupposes a technical base: port terminals and logistics centres. Estonia's competitive advantage will materialise only if it is combined with the simplicity and speed of transit. Current trends are making Estonia search for greener solutions, reduce the share of automobile traffic and increase that of public transport. Importance is attached to the adoption of rolling stock with new technological properties and control systems for smart logistics, integrated transport solution in cities and towns and the development of multimodal corridors between them. Of course, traffic safety is very important as well.

In the development of energy networks, the EU expects the construction of new external links for the electricity and gas markets to function. A shift toward wind energy may entail the need to adapt electricity networks also locally. The environmental and energy policies of the EU are pressuring Estonia to allocate resources to the preferential development of renewal energy. Accordingly, in the utilisation of land and waters, a shift may be predicted – towards the construction of wind farms, above all on the coast and off-shore. In this area, there may arise conflicts with objectives in terms of environmental conservation, various commercial activities (for instance, fisheries) and quality of life.

The impact of the evolution of EU-Russian relations on Estonia's spatial structure is largely uncertain; however, implementation of large infrastructure projects in the neighbouring region will clearly impact on all of Estonia (not just the areas bordering on Russia).

A clearly articulated vision helps to ensure the integrity and internal consistency of every development document, including a national spatial plan. It encapsulates that which is the most important and the achievement of which is sought. A vision should be, on the one hand, fairly ambitious, whilst, on the other, grounded, as it were, in reality, based on realistic assessments of the environment and the capabilities of the nation.

As a nation with a decreasing, ageing population, increasingly urbanised and in need of the reinforcement of its international economic competitiveness, we can contribute, via spatial planning, primarily to the improved functioning of the existing settlement system and infrastructure. A small nation can compensate for the smallness of its urban communities and the sparseness of its population by improving internal and external links. The proximity of the living environment to nature and its diversity, characteristic of Estonia, the plentiful supply of spare land suitable for living and a dense network of roads need to be developed into strengths that are consciously developed.

**The main development objective is to ensure that any settled location in Estonia is liveable.** This requires a high-quality living environment, good, convenient mobility facilities and the supply of essential networks. Based on this, the vision for Estonia's spatial development for 2030 is worded as follows:

**Estonia is a nation with a cohesive spatial structure, a diverse living environment and good links to the external world. Low-density urbanised space integrates compact cities, suburbs and traditional villages, valuing all of these lifestyles equally. The human scale and economic competitiveness of low-density urbanised space are provided primarily by an environment that is close to nature and a network of urban communities that are well linked.**

The vision is laid out in greater detail below. The concept of low-density urbanised space is intended to encapsulate a model of future settlement comprising cities and towns and rural urban communities in which suburbanisation, extensive work-related commuting and the prevalence of an urban lifestyle also in the countryside have, to a large extent, done away with the differences between town and country across social and economic dimensions whilst preserving differences in the physical environments. Low-density urbanised space combines the availability of high-quality services provided in cities and towns and an urban, mobile lifestyle with the advantages of living in the countryside. This is supported by a networked social and spatial organisation.

Spatial diversity and the specific character of regions in the nation provide people with the freedom of choosing suitable places to live and work and a compatible lifestyle. Our smallness and low-density settlement, thoughtful and green organisation of transport, and state-of-the-art innovative technological solutions provide us with a solid groundwork for preserving our specific character.



Placing a premium on the values of low-density urbanised space underlies the preservation of Estonia's settlement, the result of a centuries-long evolution, in today's world. **In this low-density urbanised space, both rural areas and cities and towns are functioning well.** Low-density urbanised space is the opposite of urban sprawl, where a city spills over its limits and does away with the spatial values of the city and its vicinity. In low-density urbanised space, both increasing the compactness of urban space and preserving the values of low-density settlement characteristic of Estonia are in the focal point of development, ultimately providing a high-quality and diverse living environment Estonia-wide.

**Compact, high-quality centres (cities and towns) with urban space provide the residents in their daily activity space<sup>2</sup> with services at good levels, jobs creating high added value and competitive education.** All these are readily available to the residents within their entire daily activity space. Cities and towns with their neighbouring hinterland drive regional development and are at the core of the areas of their impact. Opportunities have been created for people to meet, interact and work together on a daily basis.

Rural areas provide people with privacy of residence, the ability to cope regardless of external circumstances and a natural living environment. Agriculture and forestry focused on environmentally clean production provide more traditional jobs and ensure – along with well organised cultural and nature tourism – the preservation and sustainable utilisation of Estonia's man-made landscapes and green network. Access to jobs, services and educational institutions in centres and good data communications provide good opportunities also for the growing urbanised portion of rural residents. The preservation of viable settlement in the countryside allows the various resources of the nation to be utilised better.

Low-density space functions when good mobility facilities are provided. This allows people to merge their preferred living environment with a wide range of jobs, services and educational opportunities. To meet the increased mobility needs of people, the state has created sustainable and readily usable facilities.

Estonia's good links, in all directions, with the external world by air, across water and overland improve the position of Estonia's cities and towns in the international division of labour. The perceptible decrease in distances across space and time encourages international interaction and cooperation, noticeably broadening people's options in terms of work and leisure. Improved mobility facilities in all transport sectors contribute to much higher revenue being earned from international tourism. Sustainable, fast train services have created improved prospects for working with the centres in neighbouring nations.

<sup>2</sup> A substantive treatment of the concept is provided in subsection 3.3. "Ensuring the availability of jobs, educational institutions and various services by means of linkage within and between daily activity spaces".



**A sustainable regional public transport system employing flexible and smart solutions for sparsely populated areas, providing a smooth flow of life in the areas of its impact** People have a wider range of options, as fast and frequent connections bring within their easy reach also that which is on offer in other centres in Estonia's and provide access to Estonia's main gateways for international traffic.

**The availability of high-quality energy at acceptable prices ensures the development of entrepreneurship and facilities for living everywhere in Estonia.** National energy security is provided with diverse and sustainable energy production – renewable energy accounting for a large share of it – and high-quality external connections. Energy efficiency and conservation – preserving the good condition of the natural environment, reducing the fixed costs of living and entrepreneurship, and resting on technological solutions – are improving the competitiveness of the entire nation.

**Estonia is open to the sea.** The network of passenger, freight and small ports – one of the key factors in terms of the international competitiveness of the nation – is operating productively and is well-linked to the rest of the infrastructure. The efficient and sustainable utilisation of marine areas is important for the nation. By means of appropriate plans, a reasonable balance has been struck between utilisation for leisure, tourism, the conservation of bodies of water, national defence and commercial activities. Bodies of water and coastal areas, which serve as effective features of Estonia's landscapes and accentuate the specific character of space both in cities and towns and in the countryside, are enjoying active and sustainable public use.

## Balanced and sustainable development of settlement



Settlement is the spatial form of a society; to a large extent, the living environment of people, the economic environment of the nation and the competitiveness of its regions depend on its nature. A high-quality living environment means a wider range of options in terms of places to live, jobs and services as well as a clean natural environment, a well-constructed environment and sustainable development.

In striving to strengthen Estonia's international competitiveness and, at the same time, preserve settlement across the territory of the entire nation, the Estonian state is steering the development of settlement with plans, adhering to the policies of balance and polycentric development. This considers the changing needs of its economy and residents.

Ranging from large cities to individual farms in the periphery, the variety of living and economic environments in Estonia is great whilst its quality, in parts, leaves something to be desired. Whereas in cities and towns public space at good levels sometimes cannot be provided, in the periphery the availability of services and jobs has deteriorated and the economic environment does not favour most industries because of a dearth of both labour and local consumers.

Due to the low-density settlement and predominantly small urban communities in Estonia, improving the living and economic environments is closely tied to improving connections between the urban communities. In this day and age, places to live, jobs, education, services and holidays are given a new quality by modern information technology and innovativeness, which impact on and change the need to move and increase the diversity of options. The availability of up-to-date data communications networks Estonia-wide is one of the prerequisites for balanced spatial development. All this, however, is more likely to supplement rather than supersede the need for people to actually move. By reasonably encouraging daily and seasonal mobility, the low density of settlement and the smallness of urban communities may be compensated for in part. On the one hand, this increases the economic competitiveness of urban communities; on the other, it improves access to services (various e-services) and jobs (remote work) for people. The completion of a high-speed Internet network, aided by the EstWIN project, will see the construction of approximately 6000 kilometres of networks and the completion of connection points<sup>3</sup>. The construction of broadband infrastructure will employ primarily the corridors of some other infrastructure (highways).

High-quality living and economic environments have to be provided in both cities and towns and rural areas. To this end, a lot can be done by coordinating national and regional development plans with

<sup>3</sup> Development vision for the next generation of Estonia's broadband network (Eesti Lairiba Arenduse SA, 2009)





one another and by plans at various levels. Spatial planning across Estonia should be guided by similar policies. The state needs to issue guidelines, to better express public interest and ensure the quality of spaces in plans. These need to be developed and forwarded to state agencies and local governments responsible for planning.

### 3.1. Main objectives for shaping settlement

1. Shaping living and economic environments that are supported by the existing settlement structure and provide options.
2. Ensuring the availability of jobs, educational institutions and various services by means of linkage within and between daily activity spaces.

### 3.2. Shaping living and economic environments that are supported by the existing settlement structure and provide options

To accomplish this objective, the planning of the settlement system, the preparation of development plans and the placement of structures and agencies with a spatial impact need to consider the tasks at the various levels of the settlement system (desired specialisation and cooperation) both in national and broader international terms. Equally, the shaping of the local living environment in urban communities needs to consider general and level-specific policies.

#### 3.2.1. Settlement structure and its evolution

**The long-term evolution of settlement in Estonia is characterised by several major structural changes:**

1. Looking at the location of the population, the role of cities and towns has increased noticeably over the decades, correspondingly at the expense of a decrease in the total size of the rural population. Rural locations outside cities and towns have increasingly come to resemble towns in terms of their economic structure, lifestyle, appearance and other features – one may even speak of rapid growth in urbanised (urban) areas;
2. Between World War II and the late 1980s, Estonia's population saw the proportion of towns in the northeast of Estonia grow dramatically, whilst that of the city of Tartu decreased;





3. During the Soviet era, rapidly growing agricultural central urban communities (mainly the current small towns) became the main group of urban communities;
4. As a result of long-lasting concentration, at this moment one Estonian county (Harju County) is inhabited by more than one third of Estonia's population and produces more than one half of Estonia's gross national product.

Mostly, however, the settlement system has been rather stable: proportions of cities and towns with respect to each other (capital – regional centres – county centres – towns) have remained nearly the same over three-quarters of a century. Status in the settlement hierarchy has remained unchanged, and the indicators of share within the entire settlement system have moved by just a few percentage points.

The overall directions in settlement going forward are predicted to include moderate multi-level concentration in Estonia's settlement system and moderate dispersal within urban areas (at the expense of suburbanisation and the development of satellite urban communities).

It is the above that the spatial planning of the settlement system needs to consider. That said, the planning in question is not so much one that examines the development conditions for individual urban communities but rather one that addresses links between (typological) settlement groups and regions.

All in all, it may be said that Estonia's current settlement system attained its shape as a result of a long evolution and that for the society is neither necessary nor feasible to overhaul the existing structure. The Estonia 2030+ national spatial plan

Estonia continues to strive for nationwide balance in the settlement system, above all through the network of county centres, for towns and rural urban communities are unable to provide enough sufficiently diverse jobs or services for their residents whose education levels and requirements with respect to their standard of living are increasing in step with the wishes of the national population overall. Due to the unavoidable changes in the population, many rural urban communities and towns will be dwindling also in the near future, with the number of service facilities there possibly decreasing as well. Given these circumstances, the preservation of settlement in towns and rural areas will need to be supported by better linkage with county centres and other larger cities and towns within daily activity spaces (see subsection 3.3). In this, mainly improving the county-level organisation of public transport will be of help – it will need to supplement and partly supersede the growing automobile traffic. Promoting transport will be complemented by the provision, supported by the state, of high-speed data communications connections, various e-services and remote-work facilities across Estonia.



The strategy of linkage with cities and towns is not appropriate for supporting the preservation of settlement in the periphery, including on small islands or in the areas of the national border. Nonetheless, in those areas, too, permanent settlement will need to be preserved by means of appropriate regional policy measures – this is presupposed by the considerations of national defence and the provision of security of the entire national territory. Agreeing and ensuring a reasonable level of quality in public and private services will remain one of the main issues. For Estonia, keeping its periphery habitable is feasible, for in those areas only an estimated couple of per cent of the population will be located there also in the future.

### 3.2.2. National and regional competitiveness

Tallinn is the centre of Estonia's economic life, Estonia's gateway (particularly across the sea and by air) and its main tourist destination. Tallinn has to develop qualitatively and functionally, although not at the expense of the rest of Estonia; it has to develop its urban functions and take on new tasks, preferably with an international weight. Tallinn needs to evolve into an internationally attractive centre in the Baltic region – this is a necessary condition for the development of all Estonia.

Internationally, working with Helsinki (Finland) is particularly important for Tallinn. The close economic, cultural and tourism links between the two cities are a good point of departure for shaping twin cities functioning in a more coordinated manner, which needs to be expressed also in the spatial planning of the cities. The international position of the so-called Helsinki twin cities would be much stronger and visible than would that of either city separately.

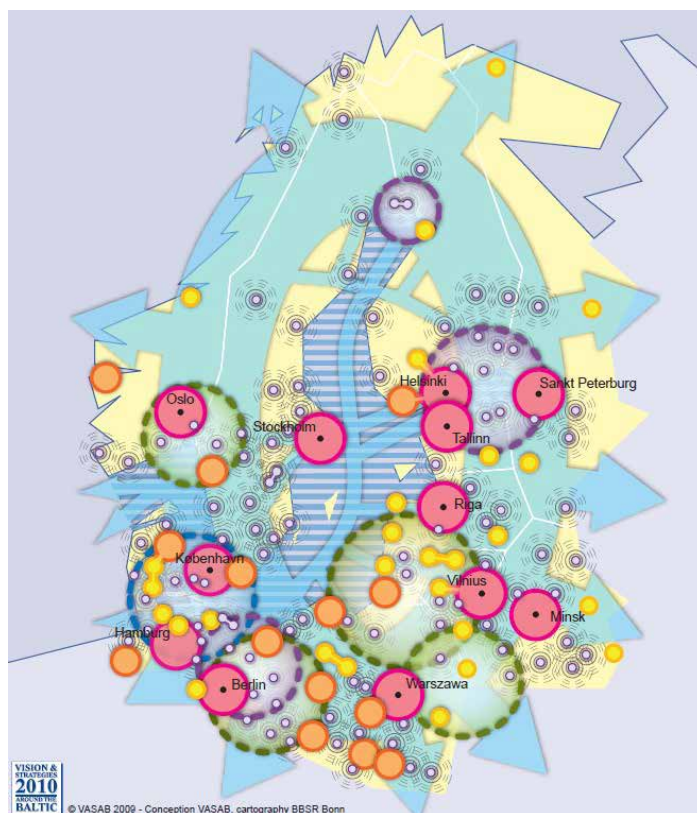
For both Helsinki and Tallinn, relations with St Petersburg (Russia) and the triangle of cooperation the cities form are very important. Joint activities largely depend on Russia's attitude; however, options for it need to be kept open by the Estonian state. Closer cooperation with St Petersburg may also spur the cities and towns in Ida-Viru County to new development. For Estonia, Stockholm and Riga are also important centres. For the cooperation with St Petersburg, Stockholm and Riga, mobility facilities in Tallinn and between the cities need to improve significantly.

Next to Tallinn, Tartu is Estonia's second centre whose hinterland reaches beyond county boundaries. In Tartu, conditions need to be created to enable the realisation of the potential for knowledge-based development and finding a place in the international division of labour. Tartu will balance Estonia's settlement system also in the future by being the recognised centre of the southeast of Estonia. In order to strengthen its international competitiveness, it makes sense for Tartu to take advantage of its position within the Tallinn–Riga–Pskov triangle and work with those cities. This requires international mobility facilities that are faster, more diverse and more stable than to date.





**Figure 3.** Long-term perspective for the territorial development of the Baltic Sea region 2030+ (VASAB).



Estonia, Finland and St Petersburg make up a single functioning area of cooperation. In terms of research and development and knowledge-based services, both Tallinn, the capital, and Tartu, evolving into a large city, stand out – the former a gateway to the world, the latter as a developer of global cooperative relationships. The function of the other cities and towns is to act as regional development centres, providing their residents and hinterlands with quality services.

The viability of Estonia's territory beyond the immediate hinterlands of Tallinn and Tartu will be determined by the success of county centres and a city or town functioning as the economic driver of its hinterland. To be successful, it is no longer enough to provide services to one's own hinterland; an important role is played by specialisation – the ability to find a place of one's own in the international division of labour as well. Good examples include Otepää, Viljandi, Pärnu and Kuressaare. Fully developing and exploiting specialisation based on local know-how is very important and requires, amongst other things, the creation of appropriate conditions in multilateral partnership relations (state, local government, research and development agencies, private business and others) also by means of the spatial planning of cities and towns.



Particularly in terms of international competition, cooperation is important between those cities and towns and regions specialising in one sector (for instance, the cooperation of Viljandi, Kuressaare and Haapsalu in tourism) or supporting one another (for example, winter sports in Otepää and Haanja, cooperation of industrial cities and towns in Ida-Viru County and the like). In the border regions of Europe, with low-density settlement and cities' and towns' hinterlands cut off by national borders, development has been promoted through cross-border cooperation. In Estonia, this policy may be implemented first and foremost in the case of Valga and Valka (Latvia). Preferably, in the future these twin towns will function in a more coordinated and linked manner, also by coordinating their spatial planning. Moreover, it would be good to find common ground to cooperate similarly with the other regions in northern Latvia.

### 3.2.3. Quality of the living environment

The local living environment depends on the jobs and services provided both locally and in the immediate vicinity, directly linked to the role and specialisation of a given urban community within the settlement system. It also depends on the local spatial organisation, to which the bulk of attention will be devoted here.

The planning of **cities and towns** and other larger settlements needs to preserve their compactness, make their internal structure denser and restore to active use any previously unexploited land. Estonia's cities and towns are mostly small. In the urban centres at least, the focus should be on the development of a public urban space that is high-quality, aesthetically and architecturally enjoyable and provided with a close network of service facilities.

Bodies of water (including the sea) are an essential element in the internal structure of cities and towns. Waterfront areas need to be valued and opened up. In order to increase opportunities for the utilisation of bodies of water, public points of access to the bodies of water may be created, and the banks of the bodies of water may be naturally linked up to the rest of areas that are in open and public use.

Networks of green areas within cities and towns need to be linked to the green areas, woods and other natural areas in the vicinity as well as to leisure and sports areas outside the cities and towns. This is needed above all in the vicinity of the large cities (Tallinn and Tartu). Whilst the functioning of the green network is not disrupted elsewhere, in the cities and towns more attention needs to be focused on valuing and preserving the integrity of the ecosystem and on preserving and improving the cohesiveness of the green network.



Apart from increasing the density of cities and towns, new construction areas – primarily other larger settlements with their social infrastructure in the immediate hinterland of cities and towns – need to be identified. Utilisation may also exploit areas immediately outside cities and towns, where linking up to technical infrastructure is easier. The creeping of dense settlement into areas (conservation areas, core areas and corridors of networks of green areas, valuable agricultural land and the like) valuable in any other sense should be avoided.

In terms of the availability of services, jobs, educational institutions and so on, an important role is played also by the network for light vehicles, which links larger urban communities with their immediate vicinity and provides better access.

In general, settlement should not be shaped through one-off decisions. If individual detailed plans fail to be linked, their implementation will result in urban sprawl in the vicinity of the larger cities and towns. Because of that, the quantity of planned residential or commercial areas may, in some regions, markedly exceed the actual need, with the development of both technical and social infrastructures possibly being overlooked. In the vicinity of the larger cities and towns, this manifests itself in, amongst other things, a dearth of places at schools and kindergartens; the building-up of green areas, leisure areas and fertile agricultural land; and in the lack of public transport facilities. Local governments need to take responsibility for shaping the local spatial development through comprehensive plans, more than they have to date, and, if necessary, void any detailed plans whose implementation will not provide sustainable development or the quality of the living environment. The objective should be set of shaping settlement more consistently, which may be done by means of up-to-date comprehensive plans.

The planning of the living environment in rural settlements needs to consider the fact that ever fewer people there are involved in conventional agriculture or forestry. Many other types of jobs have come about, such as accommodation, hospitality and tourism services, remote work and various green farms; an increasing proportion of the workforce engage in daily work-related commuting between town and country. A number of people have settled in the countryside; they value privacy and a natural environment and may also promote local life, but their lifestyle and activities are often urban. The number of country homes of mostly city-dwelling people keeps growing, with the period of time they are lived in becoming longer too. In a word, people living in the countryside are increasingly urbanised – in terms of their thinking, behaviour, employment and so on. Therefore, the planning of rural areas needs to consider new types of communities.

Over recent decades, the availability of services in rural areas has clearly decreased. The situation has been exacerbated both by companies' decisions to close locations of their operations (post offices



and others), the state's decisions to scale down the network of state agencies and – as a result of the decrease in the size of the population – the insufficient number of users for small service centres (closure of schools and the like).

It is understandable that rural areas cannot provide the same range of services or jobs as cities and towns; however, all of Estonia can be kept alive, and no new areas should arise without permanent settlement. Above all, this risk is faced by the periphery. To preserve permanent settlement, all rural locations need to have a public network of roads fit to drive on year-round, the opportunity to connect at reasonable cost to an electricity network and a high-speed data-communications network, and the availability of drinking water. A person should be able to receive key services in her/his vicinity in an expedient manner and have access to the county centre by public transport every day. The set of issues surrounding the availability of key services<sup>4</sup> has been addressed in-depth in the thematic plans for social infrastructure in the counties, which need to be considered as well.

### 3.3. Ensuring the availability of jobs, educational institutions and various services by means of linkage within and between daily activity spaces

A person's basic needs, which impact on the shaping of settlement and – seen more broadly – space are related to the availability of a place to live, a job, education, services and leisure facilities. The spatial behaviour of people is further affected by mobility facilities, the diversity of options and other factors.

Estonia's low-density urbanised space breaks down into daily activity spaces, where the working-age population are constantly moving along the route of: residence – work place – daily services. Whereas in 2000 approximately 120 000 engaged in commuting daily, in 2010 they numbered as many as 160 000, thus increasing by more than 30%.

To date, the state has not engaged in the purposeful shaping of daily activity spaces. Daily activity spaces and the connections between them, however, should become the tool to manage the long-term development of settlement during the next planning period; on this basis, Estonia's low-density urbanised space of the future will be shaped. These areas need to be considered in the preparation of county and comprehensive plans, the planning of the public transport system and the

<sup>4</sup> Social-infrastructure thematic plans initially treated as services the provision of pre-school education (childcare), primary education, basic education and secondary education; the work of a family physician; sale of medicinal products (pharmacy); and the activities of a social centre (community centre) and county centre. To these were added services provided by a bank, day centre, library, public Internet access point, stadium, culture centre, community centre, sports grounds, sports hall (gym), rural-municipality government or postal office and also the sale of stable goods (shop).



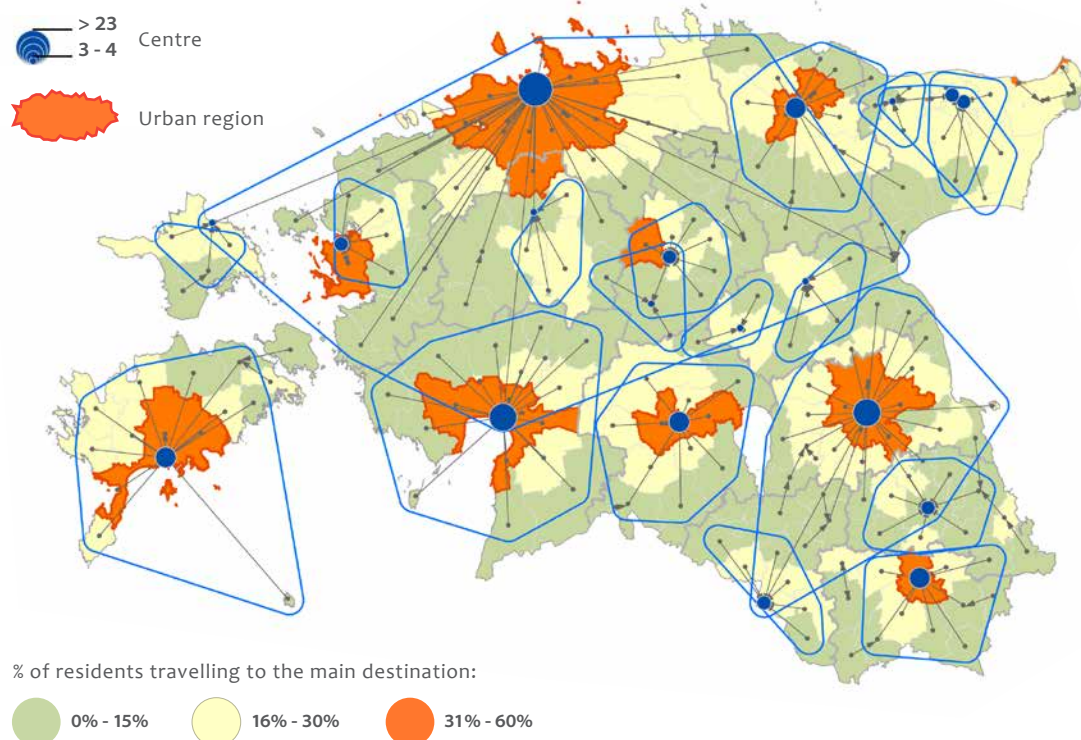
promotion of the cooperation of local governments. The extent and size of daily activity spaces are specified in county plans and regional development strategy. Impact on the development of an daily activity space on the whole should also be one of the criteria considered when EU aid is allocated.

### 3.3.1. Bases for distinguishing daily activity spaces

Areas in the daily commuting of people may be distinguished at more than a few levels. Based on various types of services and jobs, the areas diverge in size – from the service range of the local shop to the territory of the entire nation (in case of very specific services or jobs).

**Figure 4.** Centres, urban areas and centres' hinterlands identified based on the place of residence and the anchor points of working time (University of Tartu).

Based on mobile positioning, 19 major daily activity spaces emerge in Estonia.



In 2010, the Chair of Human Geography and Regional Planning of the University of Tartu organised a study using the method of mobile positioning; its results suggest that in Estonia county centres are





the main hubs for commuting. County centres are taken include, besides official administrative centres, also some other cities and towns for which a commuting range emerges. Most jobs, educational institutions and service have become concentrated in the centres.

Accordingly, the definition of daily activity spaces is based on the centres identified using the method of mobile positioning and the hinterlands of those (15% of the residents travel daily to the main destination, or the centre, and back). They are distinguished primarily on the basis of daily key travel related to work or education. The number of centres has been reduced based on secondary travel (outside working time), which largely reflects the pattern in the consumption of services.

Commuting ties a city and its immediate hinterland into a single socio-economic whole. The core of the area where commuting is particularly intensive is often termed the urban area. The above larger hinterland is the (city's) daily activity space.

According to a study commissioned by the Estonian Ministry of Social Affairs from the Centre for Applied Social Sciences (CASS) of the University of Tartu, 71% of people going to work in Estonia predominantly spend up to 30 minutes travelling to work. Within this interval, the centre is still readily available every day. Thus the radius of daily activity spaces defined this way is currently estimated at approximately 30 kilometres on average. Of course, the pull of urban areas of various sizes varies, as a result of which the daily activity spaces of large cities and towns are also more expansive.

As indicated above, the next level also has areas and centres smaller than the daily activity spaces depicted in Figure 5; however, their importance decreases both in terms of the provision of jobs and services.

The current daily activity spaces cover most of Estonia but not the entirety of its territory. Hence, separate measures need to be developed for those areas outside the daily activity spaces.

### 3.3.2. Evolution of daily activity spaces

Studies suggest that the daily work-related mobility of Estonia's residents has increased over the past twenty years. There has been an increase in both the mean distance between one's residence and working place and the proportion of commuting between various administrative units amongst the workforce and the entire population. Most likely, the rate of increase in the number of commuters will decelerate, whilst the process itself will continue.

Looking at the current trends and the experience of other nations, it may be suggested that the next





20 years will see the continuation of the increase in the role of the services sector within Estonia's economy, of the concentration of services and educational institutions (also as a result of the implementation of the plan to reorganise the network of schools) and of the decrease in jobs outside the centres.

**Figure 5. Daily activity spaces in Estonia in 2030.**

Daily activity spaces, with their centres in the cities and towns in counties currently, will increase somewhat in the future. This will be influenced by increasing mobility and processes in the relocation of jobs, educational institutions and services.

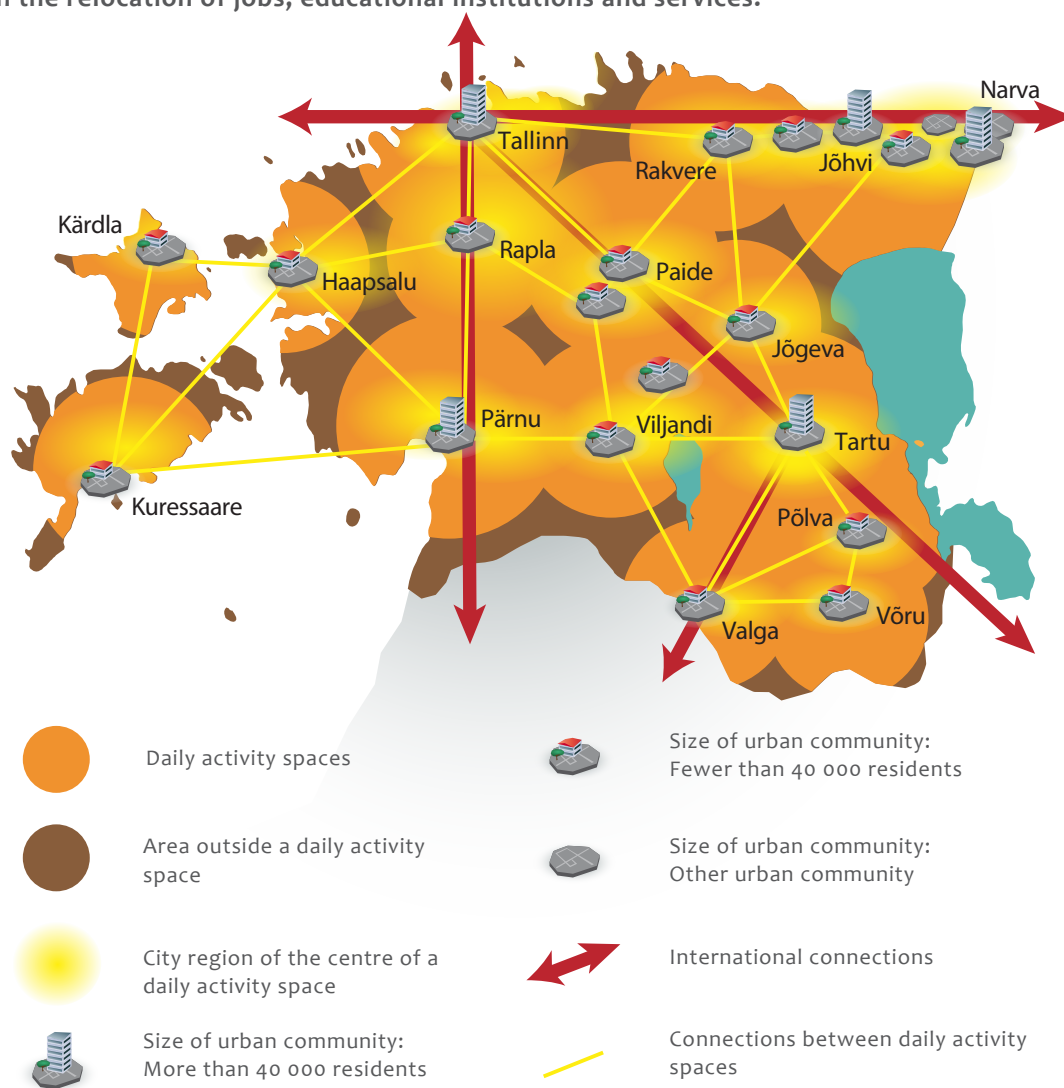


Illustration: Veiko Veski

The 2011 study by CASS indicates that the remoteness of a working place is a very or mostly important factor when choosing a working place for 74% of men and 89% of women. This means that in the future daily activity spaces cannot be enlarged infinitely. The maximum time appropriate for travelling to work is under 45 minutes in 69% of cases.



Presumably, the radius of daily activity spaces can be increased over the coming 20 years from 30 to 40 kilometres thanks to the increased mobility of people due to better roads and higher-quality public transport. This will allow people to reach their working place still within half an hour (mean travelling speed of 80 kilometres per hour). The pull of large cities and towns (more than 40 000 residents) is bigger, and here a radius of 50 kilometres should be allowed for – particularly since the mobility of labour with superior qualifications needed in knowledge-intensive specialist jobs in the centres is above average.

To an extent, daily activity spaces may be increased by expanding employment options offered in the centres. This will be furthered by the specialisation of a centre and the identification of a niche of one's own in the labour division internationally or within Estonia. The sustainable development of an area depends on the availability of a certain critical number of white-collar jobs (normally presupposing higher education) within half an hour of travelling time. Their lack or disappearance also decreases blue-collar jobs in an area. Improvement in the quality of services in the centre of the range also expands daily activity spaces. This aspect should be supported by a regional innovation system by means of which appropriate development strategies may be developed and the creation of new jobs with higher added value may be promoted at companies.

In the future, the centre of a daily activity space will no longer be the city itself but its urban area encompassing both the centre (one or several) and any satellite urban communities and vicinity closely linked to it, where 50% of the workforce travels daily. In 2030, such urban areas in Estonia might number 15: Haapsalu, Ida-Viru conurbation<sup>5</sup>, Jõgeva, Kuressaare, Kärdla, Paide-Türi, Põlva, Pärnu, Rakvere, Rapla, Tallinn, Tartu-Elva, Valga, Viljandi and Võru.

### 3.3.3. Linkage of daily activity spaces

Estonia needs to focus on strengthening horizontal links between urban communities and enabling better mobility for residents. Already, approximately half the active population are working beyond the boundaries of their home local government. Considering the daily mobility needs of people is a central issue in the shaping of settlement.

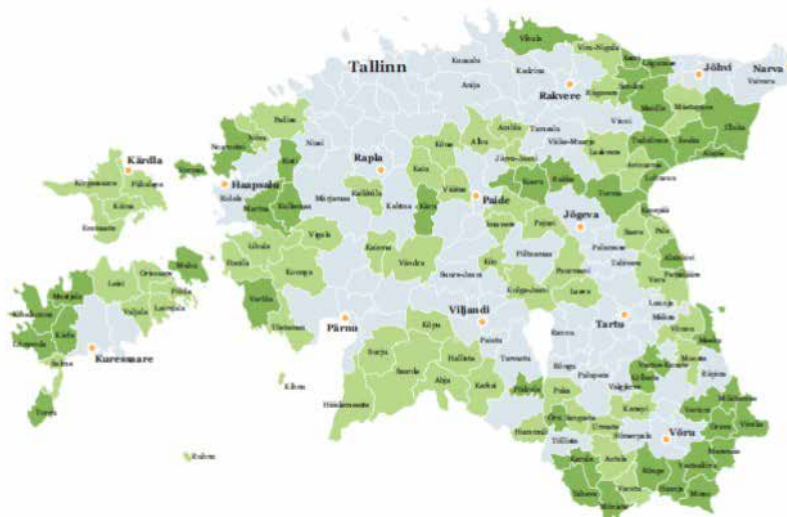
Cohesiveness within daily activity spaces is a prerequisite for matching places to live and work, people interacting more intensively, stimulating the local economy and expanding options for spending one's leisure time and for studying. With this, people will have more options in terms of places to work and live, whereas companies will have available to them a larger and more diverse workforce. With stronger cohesiveness, daily activity spaces may be expanded. Larger daily activity spaces help to reduce regions that are at risk of peripherality or that are peripheral (Figure 6).



Due to the decreasing population, the promotion of development and transport organisation need to be centred on daily activity spaces, which will help to increase the efficiency of the activities of working-age people. This policy needs to become the point of departure for infrastructure development and transport organisation. The objective is not to force people to engage in more mobility more but rather to make their mobility more efficient and sustainable (for example, by replacing cars with public means of transport). The shaping of the regional transport network should be guided by the needs of daily activity spaces.

**Figure 6. Estonia's local governments.**

Non-peripheral rural municipalities (light blue) named on the map have groups of villages linked weakly to their centres (“Estonian human resource report”: [http://www.kogu.ee/public/Eesti\\_Inimvara\\_Raport\\_IVAR.pdf](http://www.kogu.ee/public/Eesti_Inimvara_Raport_IVAR.pdf)).



● Peripheral local governments      ● Local governments with risk of peripherality

In urban areas, the functioning of cities and towns and their immediate hinterlands (suburbs and satellite urban communities) in conjunction needs to be ensured. Due to internal cohesiveness, the need for public transport is different (more frequent) in urban areas than outside them. When it comes to the availability of services, jobs, educational institutions and so on, a big role is played also by the network for light vehicles that links public space.

Next to the internal cohesiveness of daily activity spaces, their reciprocal linkage and their functioning in conjunction must not be neglected either. Connections between daily activity spaces are not



needed not so much for ensuring the daily mobility of people but rather for promoting diverse cooperation relationships and for generating the related economic, cultural and social synergies. The reciprocal linkage of daily activity spaces is primarily based on a network of public transport at a decent level.



Improving mobility of people and goods is important both nationally and in terms of linking Estonia with the external world. Transport is a support system that enables the preservation of settlement and the utilisation of space.

Transport systems need to be structured in a manner that ensures the facilities for living and the reduction of distances in time and space in the greenest manner possible across Estonia. The main task is to ensure the availability of jobs and services also where settlement density is low, by means of creating frequent, convenient and sustainable mobility facilities in the necessary directions at the appropriate times. Any solutions are to be guided by the daily mobility requirement and combine various mobility modes.

In the EU transport policy, importance is attached to the improved merger of the formerly national-centred networks into a single EU network and to the external connections of the EU to other nations. Due to the growing transport flows, the depletion of infrastructure volumes and the exacerbation of security and environmental problems, the EU wishes to make its transport system more efficient and sustainable.

Providing Estonia with better links to the external world is one of the main prerequisites to increasing the nation's competitiveness. Fast and frequent connections to the rest of the world will bring Estonia closer to important centres across space and time, create opportunities for cooperation and provide new development paths for the entire nation.

The planning of transport networks for Estonia as a small nation strongly affected by its external links and transit should align mobility facilities and needs at the local, regional, national and international levels, addressing these networks in an integrated and linked manner. Developing fully international transport corridors will also make it possible to increase the nation's internal cohesiveness and regional balance. For this, that which is the most important for the nation – new air, water and land infrastructure, to be reconstructed – needs to be defined.

Estonia has been a nation with a rapid proliferation of cars, and any changes in this indicator are difficult to predict for the next few years. Therefore, it would be expedient to identify solutions to alleviate the adverse effect of car usage. Environmental requirements and the development of technology are changing the utilisation of passenger vehicles – less polluting means of transport (electric, hybrid cars and others) are gaining popularity, and the need to promote state-of-the-art solutions (for instance, smart transport systems (ITS)<sup>6</sup>) for organising traffic is increasingly important.

<sup>6</sup> Smart transport systems combining advanced information-processing applications, communications, technology are management strategies that improve the safety, capacity and efficiency of a transport system.



When mobility facilities for people are expanded and their convenience is increased, it is very important to link various transport modes – this is an important prerequisite for the development of the economy.

## 4.1. Main objectives for shaping the development of transport

1. The availability of services, educational institutions and jobs is provided by the linkage within and between daily activity spaces by means of sustainable transport modes.
2. Fast, sufficiently frequent and convenient connections are provided to the external world.
3. Various transport modes are utilised in a balanced manner, considering the specific character of regions.

## 4.2. The availability of services, educational institutions and jobs is provided by the linkage within and between daily activity spaces by means of sustainable transport modes

In the functioning of Estonia's low-density urbanised space, the role of transport is paramount. In Estonia's settlement system, fast, affordable, high-quality, convenient and safe connections need to be provided within daily activity spaces and between various centres. It is the meeting of the daily mobility requirements of people that is of central importance.

Based on the sizes and geographic locations of centres, mobility facilities need to be planned with various emphases, considering the specific character of transport modes and the efficiency of their functioning – various measures need to be implemented in areas outside cities and towns and in areas with low-density settlement.

### 4.2.1. Ensuring the cohesiveness within daily activity spaces

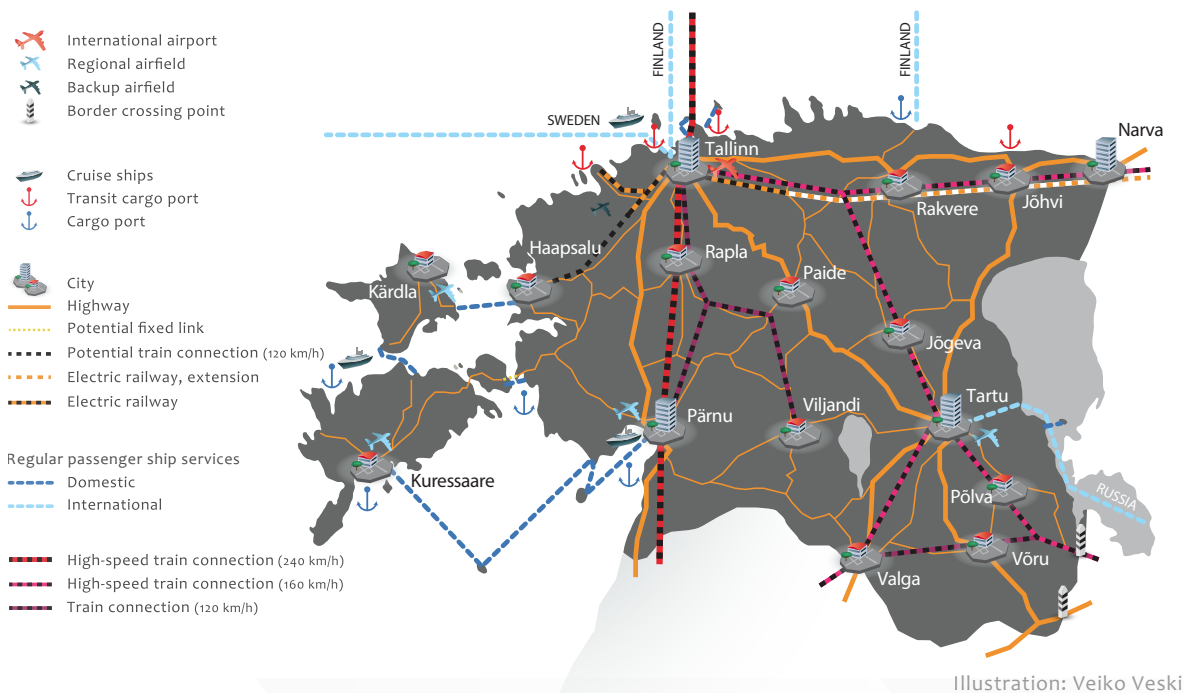
Regional and intra-urban public transport has a key role in linkage within daily activity spaces. This public transport increases employment options for people on the local labour market yet also develops the centres, increasing their labour potential and decreasing the structural mismatch between





**Figure 7.** Basic structure of the transport network in Estonia in 2030.

The backbone of Estonia's transport network is provided by railway services of a significantly improved quality. In the provision of external and internal connections, the role of harbours and airfields is important as well.



labour and jobs in a region. Specifically, public transport provides the mobility of those user groups who are unable to use cars or who, as service improves, are actually willing to travel by public transport rather than by car.

The network of **bus services** needs to be structured so that it provides frequent, fast and reliable connections between places of living and working, educational institutions and service agencies within an daily activity space, whilst being linked with other transport modes (such as rail transport).

Regional and local bus services, including within cities and towns, also need to provide **student transport**, the routes and volumes of which match the development of the network of schools. In the future, student transport needs to have stronger links to the rest of the local demand for transport (for example, services are operating also when schools are not in session). In rural areas, student transport needs to be shaped into the backbone of local public transport.

Mostly, the better functioning of bus services can be ensured by means of organisational measures to help and shape the network of services, align service schedules, introduce new designs for structuring the network of services (for example, demand-based public transport) and make the ticketing system more state-of-the-art and more convenient (for instance, a single ticket nation-wide).





Apart from regional bus services, at times **railway services**, too, have a role to play in linkage within an daily activity space. In this respect, the **electric railway** in the Tallinn area is particularly important, and clearly there is going to be a need for it additionally over the coming decades. The new trains to be purchased over the next few years (starting in 2012) will improve the quality of this service and its attractiveness for the consumer.

Growing mobility needs, rising engine fuel prices and increasingly stringent environmental requirements are creating an increased need for public transport. Creating the conditions for its development is consistent with the policies of sustainable transport of the EU and a prerequisite for the preservation of settlement and the provision of living facilities in Estonia.

The quality and usability of public transport services will continue to depend on state support also in the future.

Insofar as transport within an daily activity space mainly services low-density settlements, it has to be ensured that the nation's main connecting, secondary and local roads are properly fit to be driven on and safe year-round (see subsection 4.2.3). Utilisation of **passenger vehicles** needs to be linked to public transport more (for instance, park-and-ride systems).

#### 4.2.2. Provision of mobility facilities in urban areas

Replacing passenger vehicles with **public vehicles** is paramount in cities and towns and peri-urban areas, that is, in urban areas, where the objective is to alleviate the effects of car dependence – time lost due to traffic jams, a deterioration in the state of the environment or risks of traffic safety or environmental disasters. Whereas in most urban areas this function is performed primarily by bus services, in Tallinn electric transport (trams, trolleys, and electric trains) merit preservation and development as well.

The better functioning of public transport will be provided by the network and schedules of services being aligned with the daily mobility demand of people and by the improvement in the quality and convenience of service by means of a well-functioning ticketing system and better linkage between various transport modes.

When it comes to linkage between cities' and towns' internal structure and the peri-urban areas, improvement in the situation of **light traffic** (pedestrian, bicycle and the like) is important. It would be expedient to join pedestrian and bicycle paths into regional networks. The network for light traffic should link larger residential areas to working places, hiking trails, sports facilities, educational institutions, other places (shopping centres, city centres and others) where services are provided and





spare time spent and major transport hubs (train and bus stops and others). Networks for light traffic that are used actively need to be usable year-round.

In the context of the linkage of various transport modes, there emerges the important issue of the development of secure **parking facilities** on a sufficient scale at major public transport stops (railway stations and major bus stops). This would allow bicycle and passenger-car vehicles to be better aligned with public transport facilities.

### 4.2.3. Provision of mobility facilities for low-density settlement

In an area with low-density settlement, choosing appropriate transport solutions is very important. If possible, preference should be given to the combined use of passenger and public vehicles.

Inevitably, **private transport** (including travel by automobile) will remain the main transport mode for low-density settlement also in the future, which will impose requirements of its own on the quality of local road networks, traffic safety and organisation. The EU climate and energy policies may necessitate changes for the taxation of transport (polluter/user pays principle). In this event, mobility-related costs must remain affordable in rural areas, where public transport is insufficient and the utilisation of a passenger vehicle is indispensable.

At the same time the quality of **public transport** may also be improved in sparsely populated areas. Depending on demand, efficiency can be increased, too: by using the appropriate type of bus (replacing large buses with smaller ones on routes with few passengers) or adjusting the service schedule, applying alternative solutions (altering the route, schedule or vehicle of a bus service) in case of rapidly changing demand, preferring flexible (pre-bookable public transport) instead of scheduled services or other smart solutions.

### 4.2.4. Reciprocal linkage of daily activity spaces

In the reciprocal linkage of daily activity spaces and providing mobility facilities between larger centres in mainland Estonia, **railway services** have an important role. Its potential is illustrated by the fact that as much as 80% of Estonia's population are living in the vicinity of the existing railway routes (see Figure 8). This suggests that the utilisation of railway services could be increased significantly.

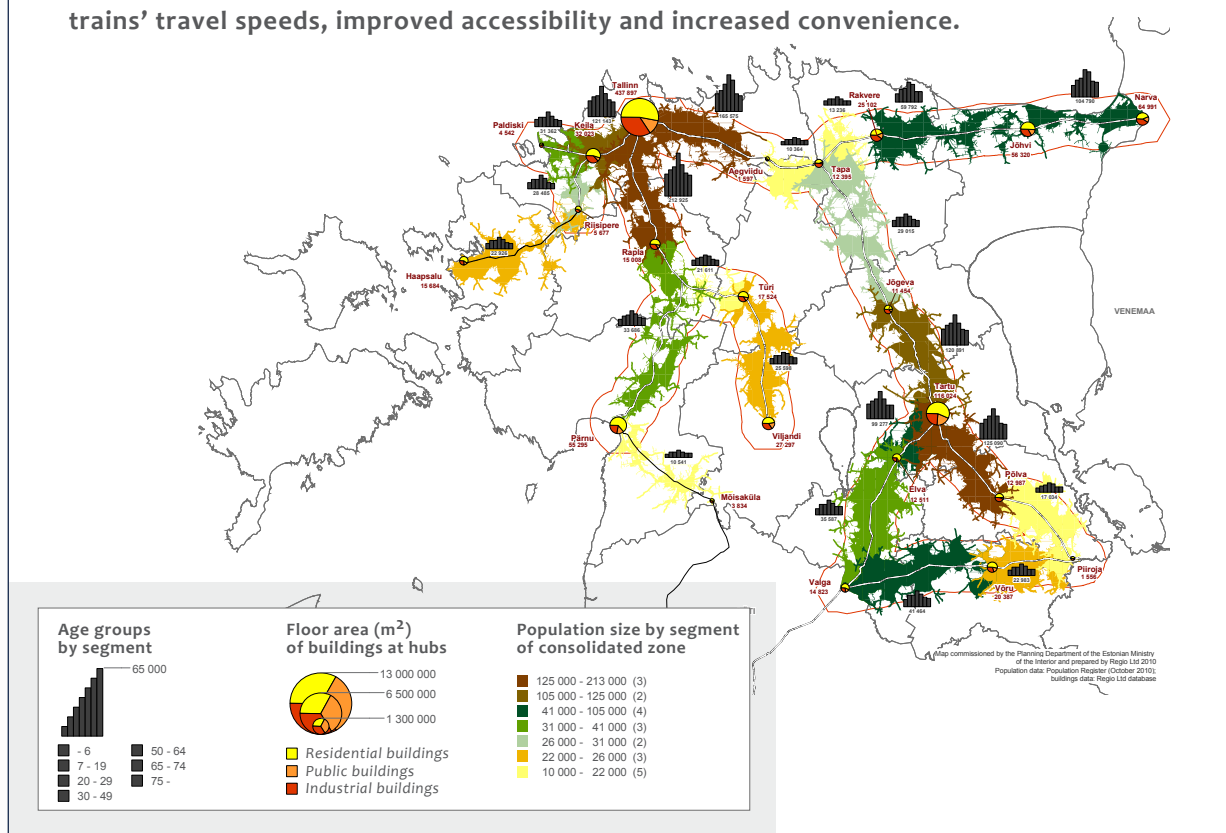
Railway services are the only national mobility mode by means of which distances across space and time may be reduced significantly. On roads, speeds cannot be increased to the same extent or as safely. Railway services at a technically good level allow travel speeds of 120 to 160 kilometres per hour, time-efficient travel (including to work on a daily basis) or long-distance travel. In addition to



speed, convenience and safety of travel are important as well. Regional railway services need to operate on the Tallinn–Pärnu, Tallinn–Viljandi, Tallinn–Tartu–Valga/Koidula, Tallinn–Narva and Valga–Koidula routes. High-speed (limited stops) inter-urban services ought to be combined with slower routes serving smaller urban communities. Around Tallinn, local railway services primarily rest on electric railways.

### Figure 8. Potential of railway services (Regio AS).

The potential of railway services is significant: approximately 80% of Estonia's population are living in the vicinity of railway routes. Although not all of them prefer railway services, significantly more passengers could be brought on the railways by means of trains' travel speeds, improved accessibility and increased convenience.



The option of restoring the Tallinn–Haapsalu(–Rohuküla) line should be retained. Because of that, it is not a good idea to destroy railway embankments, divide land under railways into lots or turn it over for permanent use for some other purpose that might interfere with it being used for railway services later.

Making railway services competitive presupposes targeted and consistent investments in the updating of the infrastructure and rolling stock as well as organisational measures to simplify the utilisation of trains. New electric trains will begin plying Estonia's railways in 2012 and new diesel trains in





2013/2014. By then, new, user-based service schedules will have to have been developed, laying the groundwork for ensuring sufficient passenger numbers on the trains.

Railway services make it possible to substantially reduce passenger traffic, which is polluting, poses a higher risk of danger and burdens roads, across longer distances. At the same time, the good repair of highways and the smoothness and safety of travelling on them are important, too. The development of highways needs to be viewed in an integrated manner, together with the development of the railway network.

In regions and in instances where inter-urban services cannot be provided with trains or where their services are insufficient, inter-urban **bus services** will retain their important role in linking daily activity spaces.

The national **highway network** is dense, with no need for new main roads. Due to the requirement to increase mobility and ensure safety, however, there is a need to reconstruct existing road segments and construct some new road segments and crossing facilities along the corridors of the main roads. Construction on main roads should not draw disproportionate resources – there is an equal need for investment in main connecting and secondary, in order to ensure that the roads are fit to drive on and safe.

Focus needs to be directed on improving the quality of the highway network and ensuring the safety of traffic. As a result, it is the safety of traffic that needs to be the main incentive for developing the road network.

Based on the forecasts made and on the risk levels of traffic, planning is in progress for international highway routes from Tallinn to Narva and Tartu (and on to Luhamaa and Koidula, respectively) and from Tallinn to Pärnu (and on towards Ikla) (Via Baltica). By-pass roads around the larger centres (Tallinn, Tartu, Pärnu and Narva) are also of major national importance. Plans establish the location of the routes and reserve the land needed for their completion. In terms of international highway connections, the new road bridge crossing the River Narva is important for Estonia. The Jõhvi–Tartu–Valga highway (Via Hanseatica) is seen primarily as an international tourism route.

In the provision of connections to Estonia's islands, both **air** and **ship services** will remain important. Regular, frequent air and ferry services between the islands and the mainland need to be preserved. To improve the accessibility of Saare County, the state may decide to construct a bridge permanently for a permanent connection across Suur väin Strait, which would reduce the time of crossing for road vehicles. It is important to continue to provide connections to small islands with permanent settlement.



## 4.3. Fast, sufficiently frequent and convenient connections provided to the external world

For the sake of the competitiveness of the Estonian national and international cooperation, it is vital to provide the best possible, frequent international connections and to reduce distances across time and space. This is also very important for communications between Estonia's larger centres, for by cooperating they will attain a better international position and expand their opportunities to develop. In terms of Estonia's international passenger services, sea transport is the most developed; by contrast, there is a lot of room for growth in the areas of air and particularly railway transport.

The development of international routes will improve the odds for the regions along them to receive investments, see economic growth and cooperate regionally. At hubs along international transport corridors, logistics can be constructed to provide added value, create new jobs and so on. The location of large logistics centres needs to be planned via county and comprehensive plans.

The main hub for Estonia's external communications will remain in Tallinn, which is linked to other regions in Europe via air, ship, railway and road connections and by means of telecommunications and data communications networks; however, also here there is a lot of untapped potential.

### 4.3.1. Connections to destinations farther away

In the furtherance of Estonia's connections to destinations farther away, the emphasis is on the development of **international air traffic**.

The international Lennart Meri Tallinn Airport is Estonia's main air-transport hub, its most important international air gateway. It provides flights to major airports in the neighbouring region offering connections; also, there are direct flights to several strategically important centres in Europe. In 2011, Tallinn Airport handled approximately two million passengers but is ready to receive many more people. Tallinn Airport enjoys a location close to the city centre. The airfield has the potential to increase the number of international flights and expand the range of destinations. For that reason, all of Estonia's residents need to be provided with the best possible access to the services of Tallinn Airport. This presupposes better linkage between the airport and public transport within Estonia as well as adjustments in travel schedules.

The utilisation of the airfield at Ämari as a backup airfield for the international airport in Tallinn needs to be made possible. The Ämari airfield can be used also for freight transport. This development





would coincide with national-defence objectives. The creation of a railway link to the Ämari airfield could be considered. Road links to the airfield – given the current outlook – are sufficient.

The development of Tartu as an important centre for innovation and research also requires regular international connections. In the future, it may be possible perhaps to open new regular services to destinations farther away. The current situation of the airport would favour this kind of development. Whether and where planes will be taking off from Tartu in the more distant future will depend on demand.

It needs to be possible to operate international air connections also out of the other major airfields (Pärnu, Kuressaare, Kärdla and others). The volume of flights will depend on demand. The quantity of international flights will likely remain modest or seasonal and not impact on the overall picture of air connections in Estonia. The airfield in Pärnu is important also for the performance of national-defence functions. The roles of this and other airfields will be specified in the national-defence concept.

The potential of the port and airport in Tallinn could be better exploited if Tallinn were to become more of a start and/or end point for **sea cruises** (with passengers departing or arriving predominantly by air) than to date. Cruise ships are received also by a port in Saaremaa. The port in Pärnu could hold the same potential.

### 4.3.2. Connections to destinations nearby

To provide international connections to destinations nearby, the coming years will see the biggest emphasis laid on the development of fast, convenient and frequent **passenger train services**. When it comes to destinations at short and medium-long distances, fast train services provide competition and an alternative to flights. Studies have shown that a high-speed train has the clear potential to replace air services within a radius of travel of up to 2.5 hours. If it is up to 1.5 hours, as many as up to 85% of air passengers are willing to opt for the train.

Shortly, thematic plans will need to select the location of a modern, high-speed north-south railway route (Rail Baltic). A train travelling south along the most linear route possible at a top speed of 240 kilometres per hour would carry people with speed and comfort to Riga (approximately two hours), Kaunas, Warsaw and on to Central or Southern Europe or the so-called core regions of Europe. This will enable not only the residents of Estonia but also tens of millions of Europeans to come to Estonia and travel on to the Nordic nations or Russia. Rail Baltic is also very important in terms of freight transport. Active freight transport is the prerequisite for the long-term profitability of this railway.



**Figure 9. Change in distances across time and space in Europe (K. Spiekermann).**

Distances across time and space are reduced by well-organised railway services. Unless Estonia improves its railway connections to the core regions of Europe, our relative distance will increase further, and we will turn into the periphery of Europe.



The entrance and route areas for the prospective Helsinki–Tallinn railway tunnel has been recorded in the plans at Estonia’s end, and the possibility for the construction of this connection needs to be preserved. The tunnel would enable Rail Baltic to be linked to Finland’s railway network and to the international railway corridors originating there.

The speed, frequency and convenience of passenger train services need to grow in all the directions important for Estonia. In the future, the maximum permissible top speed of trains will need to be increased to up to 160 kilometres per hour on the Tallinn–Narva–St Petersburg, Tallinn–Tartu–Pskov and Tartu–Valga–Riga routes. As a result, travel time will be less than 1.5 hours from Tallinn to Narva or Tartu and less than 2 hours from Tartu to Riga. As early as in late 2011, the maximum permissible top speed on these routes was 120 kilometres per hour (within Estonia). Effectively, the Tallinn–Tartu–Valga–Riga route is part of the first stage in the construction of Rail Baltic<sup>7</sup>, which will link all three of the Baltic states again to the core region of Europe by railway by 2015.

Good linkage between train services and other means of public transport and enabling slower rolling stock to travel on the same route are important. For this, railways with two pairs of tracks or appropriate by-pass facilities will likely need to be built for the main directions of travel. They are needed most on the Tallinn–Tartu route. With respect to the Tallinn–Narva route, the possibility of electrification of the railway services needs to be considered, since there is already an electric railway on the Russian side. Apart from speed, sufficient frequency in the movement of passenger trains needs to be ensured as well.

<sup>7</sup> The first stage of Rail Baltic is not to be equated with the Rail Baltic high-speed regular railway being planned for the direct route.





International **passenger ship services** have clustered in the capital. The Old City Harbour in Tallinn handles more than eight million passengers annually (2011) but is ready to receive 1.5 times more. Regular sailings operate from Tallinn to Helsinki, Marienhamn (Åland), Stockholm and, from April 2011, also to St Petersburg.

If desired, regular connections by passenger ship could be organised also out of the harbours of Paldiski, Sillamäe and Kunda. Moreover, depending on demand, (seasonal) sailings could be offered on the Pärnu–Kuressaare–Riga route. Planning is under way for routes between Kunda and Kotka (Finland) and between Tartu and Pskov. On the Kunda–Kotka route, the ship does not need to sail through the territorial waters of Russia, as it did on the Sillamäe–Kotka route, which made the travel time too long. The route could spur tourism in the northeast of Estonia to development. The Tartu–Pskov route, too, holds great importance for the tourism sector.

Flights operating out of **airports** (Tallinn, Tartu and Pärnu) on the Estonian mainland to main destinations nearby, which are linked by railway, may be replaced with high-speed, frequent train services. The situation is somewhat different for Kuressaare and Kärdla, where the volume of international flights will likely remain modest and/or they will be operated seasonally. With the increased popularity of flying smaller aircraft, smaller airfields, too, will become important. It is important to ensure their accessibility.

### 4.3.3. Freight transport and transit

One of the drivers of Estonia's development is international freight transport. Providing transit and logistics services is a great export opportunity for Estonia. A location on the east coast of the Baltic Sea provides opportunities to channel both west-east and north-south trade flows. Efficient utilisation of marine space and connecting ports to other infrastructure is one of the main factors in improving Estonia's international competitiveness, enabling it to participate in trade between Russia, Asia and Europe.

The cargo ports (particularly Muuga) with their railway and road connections in the Tallinn area are an important **transit and logistics hub**. The high-potential harbours of Paldiski and Sillamäe need to be involved in international transport more than to date.

The capacities of the harbours of Muuga and Sillamäe are yet to be fully exploited. Since most of the necessary infrastructure in the ports of Muuga, Paldiski and Sillamäe has been completed, exploiting already planned areas in the said ports or in their vicinity is important for the nation. Exploiting land in the immediate vicinity of ports needs to consider both the outlook for expanding the ports and any disturbing factors (noise, transport flows) originating in the ports. Since changing the location of a





port is costly and complicated, the construction of new residential areas in the immediate vicinity of a port needs to be avoided.

A number of **harbours** with a good export potential remain untouched by international transit flows. The harbours of Pärnu, Virtsu, Roomassaare and Kunda could improve the competitiveness of the local economies and export or import goods important for those regions. Moreover, options could be considered for fully developing the freight transit potential of the port in Saaremaa.

Goods entering or leaving ports should be transported preferably by **railway** (particularly across longer distances); however, good connections of the ports to the **highway network** are needed as well. Due to Estonia's smallness, domestic freight transport by railway is expedient only on a few routes, as a result of which its brunt is still borne by road vehicles.

For the ports of Paldiski to develop and for risks internal to Tallinn to decrease, it is well worth preserving the southbound by-pass railway route. The need for the by-pass will become particularly great if there is a desire to significantly increase the trade flows passing through the ports of Paldiski. Consideration needs to be given to even further options for re-directing freight transport by railway around large cities and towns (for instance, Tartu). If needed, appropriate by-pass routes could be planned for this in county plans.

On Estonia's coastline there is a chain of small harbours (including marinas), optimal from the national point of view, to link islands to the mainland and further direct links to foreign nations for tourism. Such a chain will help to ensure an economic base for the islands and coastal areas. In developing small harbours, it is expedient to merge various purposes (fisheries, tourism, recreation and so on). Small harbours meshing with services provided in their hinterlands generate synergies that improve the opportunities for tourism to develop. It is very important to provide good access to small harbours – both those on the sea and on small bodies of water.

#### 4.4. Various transport modes are utilised in a balanced manner, considering the specific character of regions

In urban areas, terminals linking various transport modes, allowing people to find the public means of transport they need readily and quickly, are turning into essential infrastructure components. Such hubs are particularly important in larger centres, where they are able to connect various mobility modes.





A terminal at Ülemiste, planned for Tallinn, holds an important position, providing a great opportunity to connect international and regional air services; international and national train services; inter-urban, regional and local bus services; and intra-urban services (trams and busses). Improvement is also required in planning transport solutions of various types in the area of Tallinn's Old City Harbour. For this, international ship services could be connected with train services and local public transport and – via the latter – with the future terminal at Ülemiste.

Construction of terminals combining various transport modes needs to be considered also in Tartu, Pärnu and Ida-Viru County (trains, long-distance busses, local public transport vehicles and connections to airfields). The same policies need to be adhered to also at other transport hubs.

In terms of Estonia's habitability, it is important for energy infrastructure to be available for people and manufacturing.

A sustainable and reliable energy system ensures the smooth functioning of the economy and daily life. In this regard, both the sustainable and efficient location of energy-production units and well-functioning gas and electricity connections nationally and to external networks are important.

Energy is a very important sector in the nation's spatial development. Energy supply is a precondition for economic competitiveness. Energy is needed for manufacturing, providing services, making residential areas work and the like. Energy keeps the transport running, used by people for getting around and transporting goods from one location to another.

By shaping settlement and entrepreneurship and making decisions concerning transport, energy consumption can be influenced to a large degree. Until energy conservation does not become an effective policy objective and a binding requirement, Estonia will likely see energy consumption grow moderately over the next few decades.

Documents shaping the development of Estonia's energy sector in the coming few years – “National action plan for the energy sector to 2020”, “Development plan for Estonia's renewable energy to 2020” and “Development plan for Estonia's electricity sector to 2020” – **highlight the following points:**

1. a structural shift in energy consumption towards the utilisation of energy sources (electricity) of a qualitatively higher level;
2. openness of the energy market;
3. more stringent environmental constraints concerning air pollution (SO<sub>x</sub>, NO<sub>x</sub>, CO<sub>2</sub>, PM<sub>10</sub>, PM<sub>2,5</sub>) and also the utilisation of water and land;
4. decentralisation of energy production.



## 5.1. Main objectives in the energy sector

1. The development of electricity-production capacity needs to focus on supplying Estonia with energy. New energy-production units need to be positioned efficiently and sustainably.
2. Options for supplying Estonia with energy need to be expanded by creating external connections with energy networks in the Baltic Sea region.
3. The need to avoid any unwanted impact on the climate, achieve a higher share for renewable energy in the energy supply, ensure the implementation of energy-efficient measures and decrease the environmental impact of energy production.

## 5.2. The development of electricity-production capacity needs to focus on supplying Estonia with energy. New energy-production units need to be positioned efficiently and sustainably

In the current circumstances, Estonia is able to ensure its full supply of electrical energy. In terms of energy security, the objective for Estonia to be able to produce all its required electrical energy itself will remain also into the future. This does not mean that we should be constantly producing all of the required energy ourselves but that we should be able to do so in extraordinary circumstances.

Looking at the Baltic Sea region, Estonia has no advantage in the production of cheap energy in the long term. It needs to be considered also that the production of electrical energy is an activity with a relatively low added value yet with a great environmental impact. Thus, the objective for energy production is to obtain energy first and foremost for Estonia itself, rather than for exporting.

To date, electricity production in Estonia has mainly drawn on oil-shale energy, which will not be competitive in the long term (for example, due to the increase in environmental charges). For energy-security and environmental considerations, it is not expedient to have any one fossil source of energy to account for such a high proportion of a nation's energy balance, as this entails risks related to the security of supply, the energy market and the environment. Accordingly, there is a need to boost the share of other energy sources and develop infrastructure in order to trade more extensively with the other EU member states in the energy sector. In the longer term, Estonia will need various new types of energy-production units to cover its own consumption; these will need to be planned and built efficiently and sustainably.

To ensure its energy security, Estonia will benefit from an increased focus on more decentralised,



regional energy production – in addition to oil-shale energy. This will improve the overall energy security and allow local energy resources (solar, wind, biomass and Earth heat) to be exploited better. Also, more decentralised energy production and exploiting of local resources will create long-term jobs in towns and rural areas. As this is relatively costly, a reasonable balance needs to be struck between decentralised energy production and concentrated large-scale manufacturing.

More than in the past, integrated energy-production solutions need to be introduced, combining several energy sources and enabling the co-generation of heat and electricity. In the future, a significant quantity of energy will be produced at co-generation plants at de-centralised locations, utilising local resources (including biogas).

Some of the most important sectors where energy-production capacity is based on local renewable resources are wind energy and bio-energy. Wind energy is characterised by short-term and seasonal changes in production capacities, not always coinciding with variability in consumption; however, given Estonia's good wind potential, vigorous development is very likely to continue in this sector in the near future, which presumably may involve also marine areas.

Energy generation at wind farms presupposes the availability of ways of offsetting it. For this, strong connections to external networks and a network of rapid-response compensation plants or storage plants need to be developed.

Estonia's western coastal waters are suited for the construction of offshore wind farms. Based on the result of investigations conducted for the identification of suitable areas and given the specific character of every individual region, offshore wind farms may be planned via county plans, providing the wind farms with sufficient distance from small islands, preserving heritage and nature-conservation assets, and migration corridors and habitats for species. The construction of offshore wind farms needs to consider national-defence interests. Thematic plans need to be based on an integrated approach to balance the interests of various sectors in the utilisation of offshore and coastal areas.

Specifically, due to the natural conditions and national-defence requirements, Estonia's northern coastal waters, Lakes Peipsi and Võrtsjärv are not suited for the construction of wind farms.

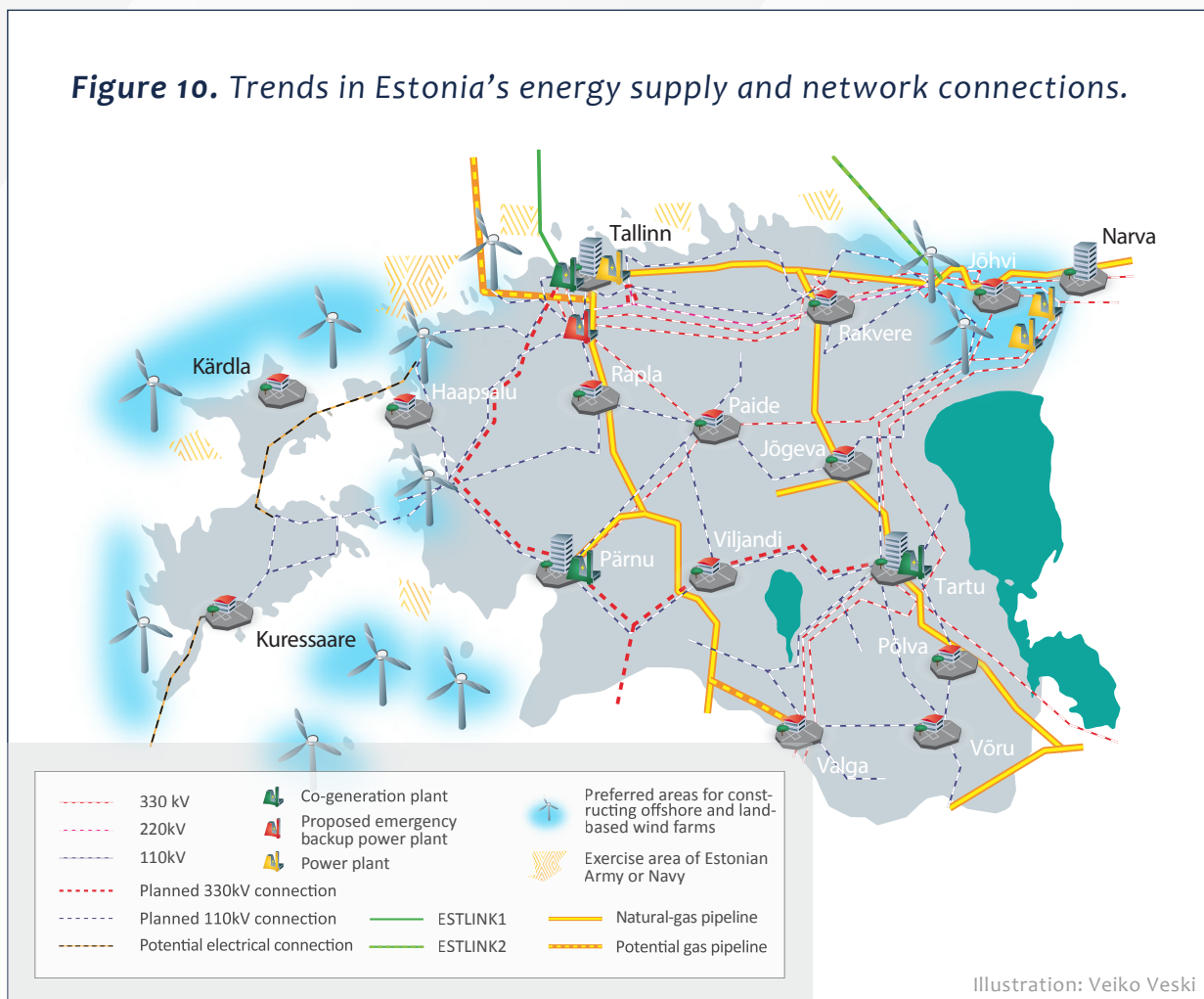
On land, the construction of wind farms should target first and foremost former mining areas, other areas remaining outside active human use and areas permitting wind energy to be utilised in integrated solutions. On land, preference should be given predominantly to the construction of smaller and medium-size wind farms (up to 20 wind turbines), permitting energy production and its fluctuation over time to be distributed better.





There are particularly plentiful opportunities for constructing land-based wind farms in the former mining areas in Ida-Viru County, where the wind potential is satisfactory and social conflicts and nature-conservation constraints are fewer. To develop this region, another air surveillance radar needs to be installed for national-defence purposes, which would mitigate the current constraints on the location and height of wind turbines.

**Figure 10. Trends in Estonia's energy supply and network connections.**



Growth in opportunities to produce bio-energy will be furthered by exploiting biomass in heat and electricity production on a broader scale, creating favourable economic conditions for exploiting biofuel (including biogas) and increasing its utilisation in the transport sector.

The diversification of the energy portfolio needs to focus above all on boosting the contribution from local fuels.

It is very important to improve the facilities for storing energy. Estonia needs to be active in investigating storage methods and implementing the relevant technology. For the purposes of a broader



utilisation of local resources and the development of micro-energy, priority is with the increased utilisation of smart grids<sup>8</sup> and the creation of the appropriate infrastructure in households for consolidating excess energy into a single grid. This will also support decentralised energy production. Allocating resources to smart grids will produce the best result in economic terms if the technology needed for it is developed in Estonia.

At the moment, it is economically efficient and conceivable in terms of energy security to utilise turbine power plants running on natural gas primarily as emergency backup plants or for producing peak energy. As units producing basic energy, they will be feasible only after an additional supply source is created – for instance, the construction of an LNG (liquefied natural gas) terminal in Estonia (in Paldiski or Muuga) or the connection of our natural-gas network to a single network shared with the neighbouring nations. Biogas with a purity matching Estonian-produced bio-methane could also be supplied into the general gas network.

One of the future trends in energy might be the construction of a nuclear power plant on the north coast of Estonia. If it goes forward, the location of the nuclear power plant will be selected based on dedicated investigations, planning and an environmental impact assessment. A county or thematic plan will need to be initiated. Before a nuclear power plant is constructed, the risks of a major accident and its impact on settlement in Estonia and its neighbouring nations will need to be assessed.

The productivity of a nuclear power plant will clearly exceed the needs of the internal market, as a result of which the state will need to weigh up seriously the expediency of the investments to be made, the load that will impact on external connections, security of supply, risks, dependence on a single producer and so on. At the same time, the cost of the disposal of nuclear waste is not known. In a critical situation, the nuclear power plant may entail a major risk and the need for an extensive evacuation of residents.

Currently, heat energy is being produced from local fuels (wood, peat and other biomass) or imported fossil fuels (gas, liquid fuels and coal). Although the consumption of fossil fuels will remain significant in larger urban communities in the near future, the share of heat energy produced from local fuels and waste (rubbish, wastewater and others) will increase. In areas with water-filled mine shafts, near bodies of water and in areas with shifting groundwater, it would make sense to consider utilising Earth-heat pumps for supplying the heat needs of urban regions.

To increase the efficiency of the utilisation of heat energy, settlement structure, the compactness of urban regions and multi-functionality need to be kept in mind. Considering these features will supply



the heat-energy requirement year-round and enable the co-generation of heat and electricity. The planning of the settlement structure needs to preserve the existing distance-heating networks near compact urban regions and favour their construction in larger new urban regions in order to utilise an efficient mode of the co-generation of heat and electricity.

In the area of engine fuels, Estonia currently depends on imports. To an extent, this will remain so over the next few decades. The dependence could be reduced by preferring more energy-efficient mobility modes and vehicles and also by producing engine fuels from oil shale, oil or biomass. Producing fuel in Estonia is important also in terms of energy security, as this would be the nation's strategic energy reserve. There are plans to convert oil shale for the chemical and fuel industries and use it for energy production on a more limited scale. Presumably, the share of fossil engine fuels will decline in the transport sector also thanks to the spreading of greener means of transport (electric, hybrid cars and the like) and, to an extent, the utilisation of biodiesel and ethanol. Biogas, with good production potential in Estonia, cannot be underestimated as an engine fuel. In the future, biogas can be used in public transport vehicles (buses).

### 5.3. Options for supplying Estonia with energy need to be expanded by creating external connections with energy networks in the Baltic Sea region

The strong linkage of the energy networks in Estonia and the Baltic Sea region is important both for the security of supply and energy security but also in terms of providing Estonia's residents with energy at the most affordable prices.

The development of transit linked to energy networks and sources (electricity, gas, liquid and solid fuels) needs to consider the capabilities to import and export energy. This means that Estonia's ports need to be able to import liquid and solid fuels and to ship out and receive liquefied-gas and LNG tankers. Worth considering is the connection of the natural-gas networks of Estonia and Finland via, for example, a transnational pipeline originating in Paldiski.

Good connections to the electricity networks in neighbouring nations are very important for Estonia. This will provide two-way energy transit and good opportunities for the buying-in, transit and export of energy. This way, Estonia will be able to provide its public with electricity prices that are the same as or even better than in the Nord Pool area.

The first DC connection to Finland (EstLink) has been created, and another is under construction. In





the longer term, connections could be created to Sweden and a third Estonian-Finnish connection could be constructed, which would above all provide an opportunity to sell the output from offshore wind farms. In the next few years a new AC high-voltage connection to Latvia will be added, and the more distant future may see a connection to Latvia via a submarine cable. There are plans for a synchronous link between the electricity networks of the Baltic States and the EU. Since Estonia is planning to join the Central European synchronous area, the network connection to Russia needs to be made controllable. For this, converter plants need to be constructed at the national border.

The continual updating of the electricity networks needs to occur at intervals of approximately 30 years. In urban communities, the main grid and distribution network need to be converted to underground cables, whereas in areas outside urban communities, the share of overhead and underground cables needs to be increased, and the overhead lines need to be updated. To improve the security of supply, a 330 kV ring network (Tallinn–Narva–Tartu–Pärnu–Tallinn) will be created over the next few years. A potential trend is seen in the replacement of the existing 220 kV with a 330 kV line. To ensure the security of supply on islands and to exploit local renewable energy sources, a high-voltage ring line connecting the islands of western Estonia with the mainland will need to be constructed, in order to enable offshore wind farms to be better connected to the network.

## 5.4. The need to avoid any unwanted impact on the climate, achieve a higher share for renewable energy in the energy supply, ensure the implementation of energy-efficient measures and decrease the environmental impact of energy production

In energy production to date, fossil fuels have been very important. Given the increasing stringency of environmental requirements and attitudes spreading in society, minimising the utilisation of fossil fuels needs to become an important objective for energy supply within Estonia.

To this end, the planning of new urban regions and the reconstruction of the existing ones need to plan for a more extensive utilisation of local energy sources. For energy production, mainly only wind, solar, biofuel, Earth heat and biomass can be used. Allowance should be made for the opportunity and need for constructing new onshore or offshore wind farms, for it is by means of wind turbines that Estonia's good wind potential allows a significant portion of electrical energy to be produced. The utilisation of wave energy may, on a limited scale, be expedient only in the west and northwest of Estonia.





The sustainability of the society will be increased by energy-efficient solutions that reduce spending on energy and the environmental impact resulting from energy production. Energy conservation requires the conscious planning of settlement to be energy-efficient, the systemic implementation of energy-conservation measures in buildings, preference for public transport and so on.

High potential for energy conservation is tied to increasing the energy efficiency of buildings, which will cut the heat-energy requirement by 30 to 60% and decrease demand for electrical energy by up to 20%. Requirements for the thermal resistance of buildings need to be made much tougher. More than in the past, resources need to be allocated to the development of low-energy or nearly-zero-energy buildings. Although Estonia has few energy-intensive industries, the potential for energy conservation needs to be exploited also in the manufacturing sector.

In the area of engine fuels, high-energy savings are provided by cohesive and user-centric public transport. The public transport system needs to be of such a good quality that people will prefer it to driving. The planning and development of new residential areas and working places needs to consider roads vehicles, stops and other elements for public transport vehicles. It is even more efficient to prepare plans, increasing the compactness of urban communities, so that the daily mobility requirement of people would be reduced. It is energy-efficient to better connect peri-urban areas by means of a network for light vehicles and to preserve and increase the density of the existing settlement instead of creating new settlement.

## Cohesiveness of the green network and the preservation of valuable landscape features



The EU biodiversity strategy to 2020 adopted in 2011 within the framework of the EU biodiversity policy, the resulting green infrastructure strategy currently undergoing development, “Estonia’s environmental strategy to 2030” and a nature-conservation development plan to 2020, about to be completed, are documents that will determine Estonia’s choices in planning and steering the utilisation of its territory and natural resources over the next decade. In terms of planning, the green infrastructure strategy is particularly interesting, as it presupposes – in addition to reciprocal coordination amongst various policy areas – an integrated planning process as one of the main tools for planning and implementing green infrastructure.

The green infrastructure strategy aims to preserve or re-create a system of functioning green areas and facilities that are cohesive and sufficiently compact at various geographical levels, enable species to migrate and adapt to climate change, enrich the living environment of people, and support ecosystem services and benefits. Although the definition of green infrastructure is likely to be clarified shortly, under the definition of the relevant expert committee of the European Commission it is a strategically functioning network consisting of nature and green areas, landscape elements, ecosystems and green facilities. Green infrastructure encompasses forests, natural grasslands, semi-natural biotic communities, wetlands, rivers, coastal areas, parks, eco-ducts, manmade wetlands and so on. The structural elements of green infrastructure are core areas, corridors, buffer areas and green facilities at various geographical levels, which are predominantly defined as a green network in Estonia already now.

The green infrastructure strategy is due for completion in 2012. It emphasises the need to combine the objectives with such EU areas as biodiversity policy, water policy, maritime and coastal policy, regional policy, agricultural policy, transport and energy policy, climate-change policy, urban policy and resource-efficiency policy.

Green infrastructure supports the functioning of ecosystems, preserving and creating conditions that provide such ecosystem services as clean water, air, productive ground, biodiversity, attractive leisure areas and so on. As a result, it indirectly supports the economy and communities and provides a vital contribution to the natural mitigation of and adaptation to climate change.

Over the past years, a great deal of work has been done to define green infrastructure – one of the





sub-topics of the thematic plan for the counties, “Environmental conditions guiding settlement and land use”, was the green network. The boundaries of and the conditions for the utilisation of the network and its components have been in comprehensive plans subsequently adopted by the rural municipalities. The planning of the green network in Estonia took on an integrated approach, insofar as the functioning of the network was viewed in concert with settlement and technical infrastructure, in order to identify points of conflict and provide solutions for ensuring the cohesiveness of the green network. Thus, the green network is a planning measure to improve the situation of nature conservation and the opportunities for sustainable development. This balanced point of view needs to be adhered to in planning technical infrastructure and mining mineral resources also going forward.

**Figure 11.** National-level core areas and corridors in Estonia’s green network.

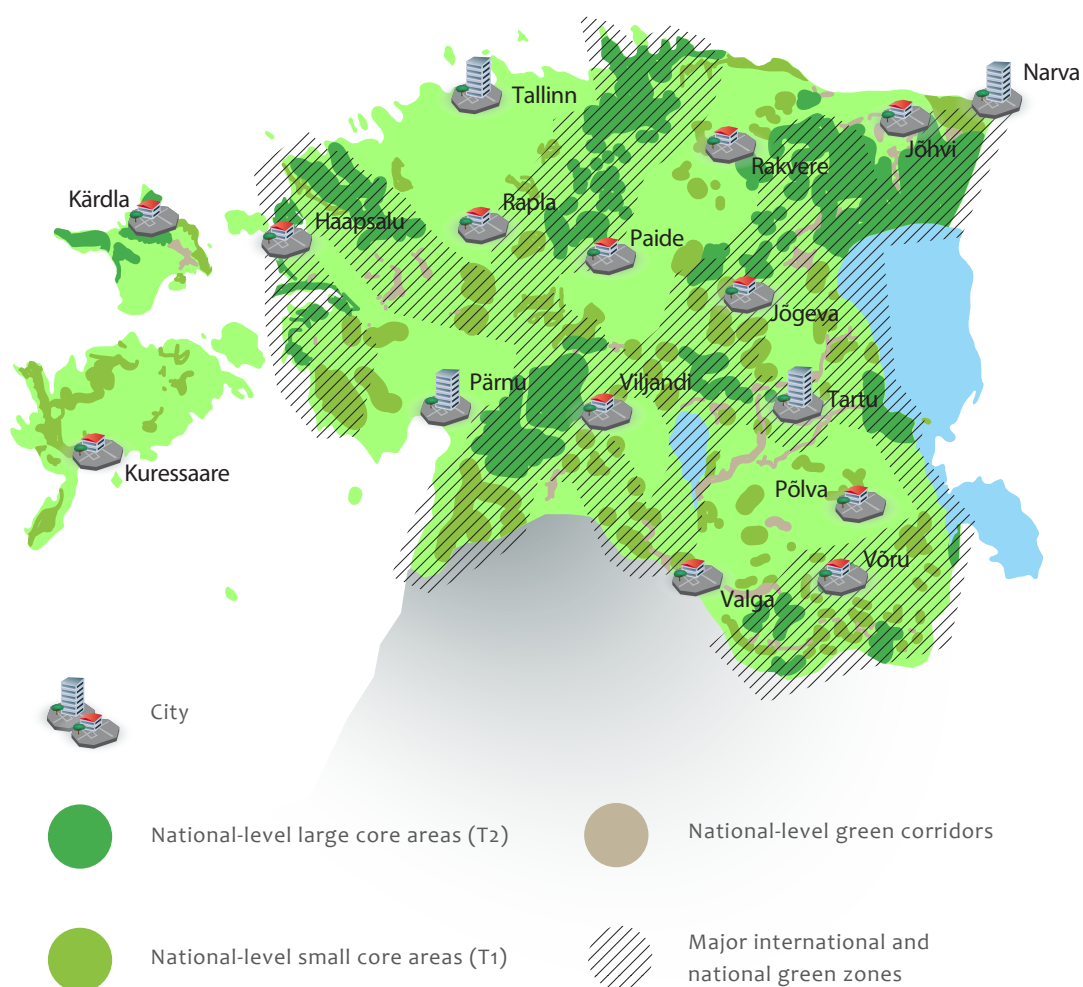


Illustration: Veiko Veski



The current structure, cohesiveness and proportion of the green network in Estonia and its counties may be considered good. The network of internationally and nationally important core areas and the corridors connecting them is based on the generalisation of the results of counties' thematic plans. The proportion of national large core areas is most noticeable in Ida-Viru and Lääne Counties and it is the lowest in Rapla and Valga Counties, with Saare County having none at all. Small core areas at the national level are there in all the counties. Where there are no large core areas, the small core areas are more important, and the planning of the utilisation of space needs to allow for their preservation. More important than increasing the core areas is the preservation of the existing ones.

Figure 12 shows the most important core areas and corridors that make up the main network in Estonia and link our green areas with the corresponding structures in neighbouring nations. Large and small national core areas are complemented by county-level green structures linking them into a single network. The integrity and functioning of the large structures in the national green network has to be ensured, or else it will be impossible to preserve also the finer local structure. Because of that, the construction of large technical-infrastructure sites via large structures should be avoided in general. The extent of large core areas must not decrease very much (more than 10%). Where large sites needed for the functioning of the state are being planned for the core areas of the green network, cohesiveness within and between the core areas needs to be ensured. Mining mineral resources needs to ensure this by land restoration or identifying replacement areas.

Particular attention needs to be directed at regions where the density of large structures in the green network is lower and cohesiveness is at risk (for instance, in Central Estonia).

The objectives of the green network need to be considered when catchment areas' water management plans, forestry management plans and the like are prepared and when environmental, agricultural and planning activities (including the planning of national infrastructure) are organised.

It is important for the green network to link well with current protected areas, forming an uninterrupted system that contributes to the preservation and functioning of the conservation areas, the migration of species and so on. The majority of the Natura land areas are within the green network defined in county plans. The green network captures more than 95% of the Natura 2000 areas in ten counties, it captures approximately 90% of the Natura 2000 areas in three counties, three-quarters in Võru County and approximately 60% in Valga County.

Listing the green network as protected is neither expedient nor needed in Estonia. This would call into question the preservation and development of settlement in the rural areas and conflict with the objective of the green network and the policies of integrated spatial planning. Generally, measures in





county plans to preserve the green network are sufficient (if needed, they may be augmented in the vicinity of large cities); however, comprehensive plans need to devote more attention to specifying their boundaries and the conditions for their utilisation.

The emergence of the subject matter of green infrastructure as the focal point of attention in the EU demonstrates that the conditions of utilisation and recommendations set out in the current thematic plans need to be adhered to in new county plans too, in order to ensure the continuity and functioning of the green network. More than anywhere else, the green network needs to be reviewed in Valga County, where the Natura areas were defined after the completion of the county thematic plan. In the other counties, too, the role of the green network needs to be double-checked in the course of the updating of the county plans. Attention needs to be directed at the ecological cohesiveness of the green network.

The preservation, conservation and sustainable utilisation of valuable landscapes partly contribute to the objectives of the functioning of the green network, for they include, amongst other things, natural value, semi-natural biotic communities and the like. Measures to preserve and utilise valuable landscapes (including traditional agricultural landscapes) referred to in the counties' thematic plans need to be considered when new plans are prepared.

Conditions need to be developed to ensure the definition, demarcation and preservation of landscapes that define the Estonian identity. This definitely presupposes a review of the county governments' previous relevant lists, descriptions and conditions.



## Implementing the plan

The Estonia 2030+ national spatial plan will be implemented by means of long-term consistent adherence to the objectives and policies set out in the plan. In this, at least, the most important process is into which shape the spatial structure of the society, at its various geographical levels, will be steered.

Since the national spatial plan itself is too general as seen from the point of view of the county and local levels, its implementation will include reviewing and updating county plans, considering the spatial development needs and the specific character of the regions of the nation. If needed, county plans will be prepared as thematic plans to address a given issue. Also, the preparation of comprehensive plans for rural municipalities or cities and towns will be based on the policies in the national spatial plan.

Everywhere, spatial planning needs to be guided by similar policies. Therefore, national guidelines will be developed, aiming to express public interest and improve the quality of space, adhering to the policies of energy efficiency and sustainable development that county and local governments need to consider when preparing plans.

Spatial development trends with an international dimension reflected in the national spatial plan will be taken to an international level in transnational planning, sectoral or regional cooperation.

Important trends impacting on space are generally long-term and can be implemented nationally only by coordinating and influencing various sectors. National policy is implemented on the basis of relevant sectoral development plans, considering duly the objectives and policies of the national spatial plan. The success of the implementation of this plan hinges to a very large extent on the transport, energy, environmental, fisheries and agricultural policies; however, there is a particularly close link between the national spatial plan and regional policy – based on the spatial bases for steering regional development nationally and the general directions, as defined in the national spatial plan, the regional development strategy shapes the more detailed policies and time-specific objectives, measures and activities for influencing and supporting regional development.

In accordance with the Planning Act, an action plan for the implementation of the plan has been prepared as an annex to the national spatial plan. This covers all the main national sectors on which the achievement of the objectives of the plan depend and which have been agreed with the relevant partners. The action plan does not plan resources, specific interim results or deadlines – these tasks have been left to those preparing sectoral development plans. Under the action plan, progress towards the achievement of the objectives of the national spatial plan will be monitored at the level of axes and individual activities. If needed, the action plan may be updated and supplemented.





Under subsection 29 (2) of the Planning Act, the Minister for Regional Affairs provides an overview of the implementation of the national spatial plan to the Government of the Republic within six months of the elections to the Riigikogu.

Progress concerning the action plan for the implementation of the plan is discussed at a session of the Government of the Republic at least once every two years, at the proposal of the Minister for Regional Affairs. At a cabinet meeting, the Minister for Regional Affairs presents information about the implementation of the national spatial plan and its action plan, making proposals, if needed, to supplement or amend the action plan.