



City of Turku

Climate and Environmental Programme 2009 - 2013

Background, Implementation and Monitoring

City of Turku Climate and Environmental Programme 2009 – 2013 Background, Implementation and Monitoring

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Programme Goal, Development Objects and Principles of Implementation

Background of Programme

City of Turku Climate and Environmental Programme is part of the programme structure approved by City Council for strategy period 2009 – 2013. The overall goal of the programme is sustainably developing and balanced Turku. The programmes belonging to the whole represent different elements of sustainable development – ecological, social and economic. The agreement between council groups is the basis of the programme entity. In accordance with the policy guideline made by the City Board in the preliminary stage and with the normative programme structure approved by the Council, the Climate and Environmental Programme includes the Climate and Energy Programme and Public Transportation Programme referred to in the agreement between council groups. For this reason, the programme and its thematic content and measures are broad and important.

The preparation of the programme has been guided by the impact of themes and measures from the perspective of climate and environmental protection, and definition in relation to the other programmes included in the programme structure. The agreement between council groups sets the goal of the programme to be control of the city's emissions cuts and energy saving. The programme has been drafted by a working group appointed by the city director. Based on the assignment of the working group, the programme in its part continues Turku's work in sustainable development and its commitments and outlines the continuing monitoring of sustainable development. Based on the assignment, also the measures contained in the appeal for the Baltic Sea between Helsinki and Turku have been included, and the working group has taken into account budgeting in accordance with sustainable development. Furthermore, City of Turku Environmental Strategy 2006 – 2009 has been a basis for the work, as applicable.

Turku has advocated sustainable development through long-term work and with good results, and has been internationally noted for its efforts (for example ICLEI Honorary Award 2006). The city signed the European Declaration of Sustainable Cities, the so-called Declaration of Aalborg, in 1996, joined the Cities for Climate Protection in 1998 and drafted its first Sustainable Development Programme in 2001. On March 29th 2005, Turku City Board approved the Aalborg Commitments that were drafted in 2004 and are more specific and stricter than the original declaration. On August 29th 2005 Turku City Council approved the Sustainable Development Programme for 2005 – 2008. The annual Sustainable Development Report monitors the implementation and status of sustainable development in the city through the indicators defined in the programme. Reporting has been developed together with other big cities in Finland ("sextet cities"). In December 2007, when the City Board approved the basic mapping in accordance with the Aalborg commitments, it also decided to set quantifiable goals for locally significant objects in connection with updating the Turku strategy, and on November 26th 2007, the City Council decided that Turku will adopt sustainable development budgeting so that the Sustainable Development Programme and Sustainable Development Final Accounts are linked to the budget process.

The agreement between council groups determines that during the spring of 2009 the possibility to adopt sustainable development budgeting in 2010 will be studied. On June 2nd 2008, the City Board decided that updating the Sustainable Development Programme for the years 2009 – 2012 will be done as part of updating Turku's strategy. The Aalborg commitments, as applicable, have been taken into account in the Climate and Environmental Programme. Some of the commitments are better suited to other programmes of the programme structure normatively approved by the City Council. Also sustainable development budgeting has been taken into account in the programme and efforts have been made to provide some guidelines for it.

Climate Policy Development

Progression of climate change and development in international and national climate policy make the city's Climate and Environmental Programme particularly topical. The climate is estimated to warm up faster than was estimated and the economic losses caused by climate change are estimated to be considerably higher than the costs of curtailing it. Efforts are made to sign a new international climate treaty at the Copenhagen Climate Summit in December 2009.

The goals and measures of climate and energy policy agreed in the European Union steer the drafting and implementation of Finland's climate and energy policy, and will influence the actions of municipalities.

These are the central goals in EU's Energy and Climate Strategy and in the decree proposals of the Commission:

- Increase of temperature should be limited to two percent in the long run, which requires cutting global greenhouse gases by 50% by the year 2050 from the 1990 level. This requires that the industrial countries cut their emissions by 60-80% by the year 2050.
- EU's greenhouse gas emissions are cut through a unilateral commitment by at least 20% by the year 2020 from the 1990 level.
- EU's goal of cutting is increased to 30% if an international agreement is reached in which other developed countries commit to equivalent emissions cuts and economically advanced developing countries commit to participate to an adequate extent in proportion to their commitments and capabilities.
- In the EU, the share of renewable energy sources is raised to 20 percent of end use of energy by the year 2020. The Commission has proposed that the obligation to further renewable energy within the EU is divided between the member states so that Finland's obligation would be to raise the share of renewable energy to 38% by the year 2020 (in 2005, the share in Finland was 28.5%).
- At the same time, EU's goal is to improve energy efficiency and thus decrease energy consumption by 20% by the year 2020 from the level that would be reached without new measures. Energy efficiency goal is normative.

In its third national climate and energy strategy Finland has given guidelines of measures for reaching the goals of European climate policy (Government Report to Parliament November 6th 2008). Reaching the goals requires cutting end use of energy and enhancing the efficiency of energy use especially in housing, construction and traffic. Increasing the share of renewable energy requires also powerful increase in the use of wood-based energy, waste fuels, heating pumps, biogas and wind energy.

Cities for Climate Protection

National Climate and Energy Strategy recognises that the operation of municipalities has great significance especially in planning land use and traffic, energy production and use, and organising community waste management. The strategy also presents that it is good to gather the municipal measures to curtail climate change into one entity, a climate strategy, and in steering the measures it refers to the commitments of Cities for Climate Protection and the coordination task of the Association of Finnish Local and Regional Authorities. The latest recommendation of the Association of Finnish Local and Regional Authorities (May 2009) for municipal measures were given by the board of the Association in September 2008 (Slowing Down Climate Change and Adaptation in Municipalities - Association of Finnish Local and Regional Authorities policies, Association Board September 29th 2008). Cities for Climate Protection and Association of Finnish Local and Regional Authorities' policies form the guidelines for climate protection measures of City of Turku Climate and Environmental Programme.

Implementation of five measures is expected of the municipalities participating in the Cities for Climate Protection:

- (1) inventory of greenhouse gas emissions and sinks of the area of the municipality,

- (2) drafting a forecast for development of greenhouse gas emissions for the next one and two decades,
- (3) setting goals for emissions cuts,
- (4) drafting a plan for cutting emissions and having the municipal council approve it (volume of emissions cuts, measures and order of their implementation) and
- (5) implementation of the plan, monitoring and reporting on it.

Drafting, approving and implementing the City of Turku Climate and Environmental Programme 2009 – 2013 also means updating the Cities for Climate Protection measures. In connection to the Aalborg commitments, Turku is committed to: developing and following strategic and uniform approach to alleviating climate change and rendering the greenhouse gas emissions to a sustainable level; including climate protection policy as part of energy, transportation, procurement, waste management and land and forestry policies, and increasing awareness of the causes and probable consequences of climate change and integrating preventive measures as part of the action policy concerning climate change.

Overall Goal and Development Objects

The overall goal of Climate and Environmental Programme is more profitable climate and environmental protection through the actions of the City of Turku and in cooperation with citizens' society and regional, national and international cooperation partners.

City of Turku Sustainable Development Programme 2005 – 2008 sets the climate protection goal of the city at cutting greenhouse gas emissions by 20% from the 1990 level by the year 2020. This overall goal is kept in force. The goal calculated per inhabitant means in proportion to current population prediction a cut of more than 30%, which corresponds to the greatest current climate negotiation goal of the European Union.

Monitoring the sustainable development in Turku has shown that greenhouse gas emissions have begun to decrease in the first decade of the 21st century. During the programme period 2009 – 2013, reaching the goals requires accelerating decrease in greenhouse gas emissions. By the year 2050, emissions need to be cut considerably more to curtail climate change.

This programme outlines climate and environmental protection measures in energy saving and production, public transportation and movement, procurement and logistics, waste management, water protection and biodiversity as well as in environmental education. These themes have been defined as critical focus areas already in the city environmental strategy 2006 – 2009 and the measures regarding them are either the mandate of the city or the city can significantly influence them with its actions. Climate and Environmental Programme also contains policies for developing public transportation in Turku and the measures of the Baltic Sea initiative.

The measures and goals of the city's energy saving have been defined also in the energy saving agreement signed with the state (Ministry of Employment and the Economy), and – concerning energy and heat production – in Turku Energy's Environmental Programme.

Decreasing emissions requires also condensing the urban form through zoning and regional cooperation. More detailed policies and measures for developing urban form are included in the Housing and Land Use Programme drafted concurrently with the Climate and Environmental Programme.

Preventing climate change and creating a low-carbon society mean significant opportunities for businesses in the Turku region. Seizing them is included in the policies of the city's Expertise and Businesses Programme.

The greatest emissions cuts of greenhouse gases through the measures in the programme are achieved by increasing the share of renewable energy in district heat and electricity production, enhancing energy efficiency in all operations and furthering sustainable transportation. Shifting to a low-

carbon operating environment of sustainable development is an extensive transformation process in which all the measures of the programme and participation of citizens' society have great impact.

Greenhouse Gas Emissions in Turku 1990 and 2007 and Cutting Goals 2020

Emissions in the table are defined based on consumption using the KASVENER model of the Association of Finnish Local and Regional Authorities and Finland's Environmental Administration. The latest available data is from 2007 (Source: VALONIA).

	Year 1990 (1000 t CO ₂ ekv)	Year 2007 (1000 t CO ₂ ekv)	Goal 2020 (1000 t CO ₂ ekv)	Change 1990-2020 (cut in percentages)
Emissions total	1703,61	1639,31	1339,24	- 21 %
Per inhabitant	10.70 (tCO₂)	9.35 (tCO₂)	less than 7.50 (tCO₂)	- 30 %
Popula- tion/prognosis	159.180	175.286	178.627 *	

Itemization of Greenhouse Gas Emissions in Turku 1990 and 2007

Emissions source	Year 1990 (1000 t CO ₂ ekv)	Year 2007 (1000 t CO ₂ ekv)
District heat	685,84	421,74
Electric heating	14,50	79,65
Detached heating	142,79	95,91
Other electricity	113,89	425,49
Other fuel	147,45	142,38
Traffic	499,99	446,60
Waste management	91,87	22,80
Agriculture	7,27	4,67
Industrial processes	0,00	0,09

More detailed itemization of emissions cuts according to the KASVENER model has not been possible due to the programme drafting schedule. The greatest estimated greenhouse gas emissions cuts in the programme period will be achieved through increasing the share of renewable energy in district heat production (from 22% to 50%) and in electricity production, through improving energy efficiency (national goal 9% by the year 2016, EU's goal 20% by the year 2020) and through furthering sustainable transportation.

** Cut per inhabitant also depends on the population development (here, the current population projection has been used, source: City of Turku Management Data System JOT).*

Principles of Implementation

The Climate and Environmental Programme is divided into themes each of which analyses in more detail the challenges and set development objects, as well as the goals, measures and indicator of the theme. The assessment of the programme, and monitoring and control of sustainable development are handled in the last chapter of the programme.

The central principles permeating all themes of implementing the Climate and Environmental Programme are:

- Synergy. The planned measures must support each other and the strategic whole of the city aiming at sustainable development.
- Integration. The measures of the programme concern several sectors; they are integrated into their operations and implemented together with internal and external partners.
- Regionality. Efficient climate protection requires regional co-operation. Energy production and consumption, waste management and transportation as well as developing the urban form are examined in regional cooperation.
- Continuous development. Implementation and impact of the programme is monitored and the programme updated annually in connection with the final accounts making an effort to improve operation and results. The sustainable development budget (for example EcoBudget®, ICLEI) can be used for this purpose.
- Networking. Programme is implemented through internal and regional networking. Expertise is enhanced, experiences shared and development synergy created through national and international networking.
- Expertise. The best available information and expertise - internal and external - is used in implementing the programme, and the City Research Programme is utilized.
- Economic efficiency. The programme requires economic resources but implementing it produces economic savings and maintains natural resources.
- Participation. Climate and environmental protection is a central goal of the entire Finnish society. The city works in cooperation with the citizens' society actively creating opportunities to participate.

Common Basic Functions and Organising

Responsibility for the implementation of the measures in the Climate and Environmental Programme is given for each theme in the programme. This section presents the responsibilities for the common basic functions in implementing the programme. A critical success factor for realising the programme is the commitment of the city's top leadership and the administrative sectors in implementing it and supporting this by adequate resource allocation. In accordance with the aforementioned approaches, resources and expertise are collected through internal and external networking, operations are integrated into the basic operation of each sector, synergy is sought after and economic saving is achieved through the programme entity.

Table of the responsibilities, schedule and indicators of the entire programme level:

Basic functions in accordance with the Cities for Climate Protection					
Measures	Responsible body	Schedule	Indicator	Resource need	Comments
1. inventory of (a) greenhouse gas emissions and (b) sinks of the area of the municipality,	(a) Environmental Protection Office / VALONIA (b) Municipal Property Corporation	2010	Inventorying complete	No new need	(a) KASVENER model (b) Is consultant / university cooperation needed?
2. Drafting a forecast for development of greenhouse gas emissions for the next one and two decades (2020 / 2030)	Environmental Protection Office	2010	Prognosis complete	No new need	
3. Setting goal for emissions cuts	City Council	2009	(a) cut in tons per council	No new need	Goal may need revising based on new infor-

			term (b) cut Cf. the cut path of the 30% goal		mation on climate and development of climate policy
4. Drafting a plan for cutting emissions and having the municipal council approve it (volume of emissions cuts, measures and order of their implementation)	City Council	2009 / 2011	Climate and Environmental Programme approval decision complemented / specified further	Resource allocation needed to programme coordination	Plan is part of Climate and Environmental Programme and needs examining and specifying annually
5. Implementation of the plan, monitoring and reporting on it.	City leadership, environment sector and programme coordination	2009 - 2013	Implementing measures of the programme	Resource allocation needed to programme coordination	Programme coordination organised for environment sector
Common functions supporting basic functions					
Measures	Responsible body	Schedule	Indicator	Resource need	Comments
Monitoring development of greenhouse gas emissions annually	Environmental Protection Office	Annually 2010-2013	Implementing monitoring	To be allocated to monitoring	Using KASVENER calculation model
Drafting sector-specific emissions cut plans	Sectors and corporations / VALONIA / Environmental Protection Office	2010	Completed plans	Climate network of contact persons in sectors	
In accordance with agreement between council groups (RSV) participating in regional cooperation in sectors relevant to climate protection	City leadership and environment sector	2009 - 2013	Completing regional structural study	Consultant (already resourced)	Coming regional structural study and tighter cooperation in the affairs of several sectors of the environment sector
Participating in drafting provincial climate strategy	VALONIA; sectors and corporations and Turku Energy Oy (environment sector leadership)	By end of 2010	Strategy completed	No new need	
Expertise and resources obtained through development work networking	Regional cooperation sextet cities Association of Finnish Local and Regional Authorities Union of the Baltic Cities ICLEI			No new need	
Organising in Turku a Climate and Sustainable Development Conference of Baltic Sea Cities	UBC and Environmental and City Planning Department	January 2011	Number of participants and coverage in Baltic Sea area	Financed separately by the state	Linked to Capital of Culture 2011 Upcoming also Nordic ministers' meetings

Kommentti [m1]: Onko tässä yj-sektori tulkittu oikein?

Energy

Goal and Bases of Energy Share

According to the KASVENER greenhouse gas emissions calculation model, Turku's biggest sources of greenhouse gases are energy production and traffic. This section of the programme focuses on factors to do with energy consumption and energy production. Climate impact of traffic and other factors are handled in other sections of the programme, and land use in a separate living and land use programme.

The main goals of energy share are improving the energy efficiency of the city's operations by 9% by the year 2016 (City Board Decision §740/2007) and increasing the use of renewable energy sources. Reaching the energy goals means also economic savings.

EU's guideline goal is to improve energy efficiency and thus decrease energy consumption by 20% by the year 2020 from the level that would be reached without new measures.

The energy service directive that entered into force in 2006 aims at 9% energy savings goal in the period 2008-2016 and an equivalent national goal has been set for energy efficiency. This concerns particularly the public sector and energy companies. In the operations of the City of Turku this means energy savings of 17.5 GWh. In Finland, these goals are to be reached through voluntary energy efficiency agreements. The City of Turku joined the municipal energy efficiency agreement among the first cities on December 4th 2007.

The agreement signed with the Ministry of Employment and the Economy gives guidelines to the operations of the City of Turku. The agreement obliges the city to act in an exemplary manner in furthering energy efficiency and use of renewable energy sources and in actively disseminating information of such measures and their results. In accordance with the agreement, the City of Turku drafted an Energy Efficiency Plan for the years 2008-2011 (City Board Decision § 658/2008) presenting the measures through which the goals are reached. The intermediary goals referred to in the agreement are 5.8 GWh for the year 2010, and 11.7 GWh for 2013. Part of the savings goals have been reached by early measures carried out before the agreement entered into force. In the City of Turku, these measures are for example ESCO (energy service company) agreements in which energy efficiency investments are made using the savings gained by them. The city rental housing companies and public transportation are excluded from the agreements; they have their own energy efficiency systems.

On corporate level, guidelines for goals have also been given in the environmental programme of Turku Energy. Turku Energy has set a 50% goal for the use of renewable energy sources in district heat production by the year 2020. Reaching this goal significantly cuts greenhouse gas emissions. In electricity, the goals of emission-free or low-emission production have been outlined in joint projects to be carried out with our cooperation partners.

Turku Energy has joined the Finnish Energy Industries' energy efficiency agreement, and it has its own plan for improving energy efficiency. In accordance with the plan, the end use of energy of customers is enhanced by nine percent and the energy efficiency of its own operation by five percent by the year 2016.

Emissions Trading

Turku Energy has a total of 13 plants and 26 emissions sources that are within the emissions trading system. Emissions trading is a central instrument and control mechanism of climate policy implementation. EU's emissions trading initially concerns carbon dioxide emissions (CO₂). Each production plant belonging to emissions trading gets an emissions permit and emissions rights. The plant must annually

give an account of its emissions to the Energy Market Authority and return the amount of emissions rights that corresponds to its actual emissions of the previous year.

If the emissions of the plant are estimated to be greater than the emissions rights it has, it must either cut its emissions or buy more rights in the market. If it is left with unused emissions rights, it can sell them in the market. This is a mechanism to guide the actors in the market to adopt production methods with lower emissions.

The Emissions Trading System of the EU obliges the member states to draft a national, company specific and plant specific plan for distribution of emissions rights for each control period. Due to modifying the production structure toward carbon-free production, Turku Energy is estimated not to have shortage of emissions rights in the control period 2008-2012.

In the EU Emissions Trading System's third phase / period (2013-2020) emission allowances in the energy sector will be gradually fully auctioned. In the electricity production and CCS (carbon capture and storage), 100 % of emission allowances will be auctioned starting from the year 2013. The Commission will publish the auction rules by June 30th, 2010. As to district heat, emissions rights will be gradually introduced into the auctioning system and they will be granted in lessening degrees until 2027.

City Corporation Development Objects in Programme Period

Energy consumption and traffic are the most significant causes of greenhouse gas emissions in Turku. These and other emissions sources can be impacted in all sectors. In energy saving, the City of Turku has done exemplary long-term work to further the energy efficiency of its own properties. The most cost-effective technical solutions have been implemented and the future energy saving can be reached mainly by changing the ways of operating. From the perspective of greenhouse gas emissions, the most significant factors are the energy procurement solutions of the Turku region.

In accordance with the policy adopted by Turku Energy, the use of renewable energy sources is increased for example by expansion of the Oriketo heat plant, by building a second wood chip heat plant and by expansion of the Kakola heat pump plant utilizing heat in waste water.

In electricity procurement, efforts are made to increase the electricity production of partnership companies. The share of wind energy is increased through wind power plant projects of Hyötytuuli Oy for example in Raahe and Pori. Hydroelectricity continues to be got from Svartisen partnership hydroelectricity plant.

The goal of Turku Energy's partnership company, Turun Seudun Maakaasu ja Energiantuotanto (TSME) is to utilize in addition to natural gas also waste and recycled materials in the cogeneration of heat and electricity. TSME is planning a CFB multiple fuel plant for cogeneration of electricity and heat by 2017 if natural gas does not become available in the region.

Objectives, Implementation and Verification / Indicators (Table)

Objective: improving energy efficiency (9% by 2016) (City Board Decision §740/2007)						
Part objective	Measures	Responsible body	Schedule	Indicator	Re-source need	Comments
Energy saving by city property users	monitoring annual energy consumption in city properties, feedback to users	Municipal Housing Corporation and Municipal Property Services	Annual report by end of February	Reached saving	Contact person entering consumption data in consumption ob-	Prior good results in visits, now no re-sources

	Implementing energy efficiency plan measures in sectors	Sectors and corporations	Annual report by end of February	Measures carried out	jects Choose persons in charge in sectors	
80% of properties energy reviewed	Required energy reviews made in city properties	Municipal Housing Corporation and Municipal Property Services	2010	Number of reviewed objects	budget funding for reviews	
	account of possibility to obtain energy certificates or equivalent for city properties	Municipal Housing Corporation and Municipal Property Services	2010	Account made		For example Display
Implementing energy efficiency measures	Implementing purposeful measures noted in energy review	Municipal Housing Corporation and Municipal Property Services	continuous	saving effect of investments made		
	using energy efficiency investments in use, such as SCO agreements	Municipal Housing Corporation and Municipal Property Services	continuous	Number of ESCO agreements		
	developing new operating models to improve energy efficiency for ex. through projects	Municipal Housing Corporation and Municipal Property Services, HALOKE	continuous	new projects		
	Giving personnel information and training to work energy-efficiently	All sectors and corporations	continuous	Number of persons trained	Training funds	VALONIA can do training
	Participating in annual energy saving week	All sectors and corporations/Turku Energy/VALONIA	Week 41	Number of sectors participating		
Improving energy efficiency of end-users	Giving energy efficiency guidance to inhabitants, organisations and companies in the region	Turku Energy/VALONIA	continuous	Number of contacts and events		
	Active communication on city's energy efficiency measures internally and externally	Municipal Housing Corporation and Municipal Property Services	continuous	Newsletters about energy efficiency		
	Drafting municipal building code for energy efficient construction		2010	code implemented		Taking into account renewable energy sources in building permits
40% of new houses low-energy houses	advise to house builders on low-energy building	Building Inspection Office	continuous	Share of low-energy houses	Resources in communication and material	
Energy efficiency in procurement	energy efficiency and renewable energy sources are noted in public procurement	HALOKE	continuous			
	Calculating the impact of energy-efficient procurement in energy efficiency	to be defined (and resourced)	continuous	saving gained		
	replacing street lighting with energy efficient	Turku Energy / Municipal Proper-	continuous	Number of replaced lights	funds for replacing	Availability of

	solutions	ty Corporation				mercury-vapour lamps after 2009
Increasing district cooling	extending district cooling network	Turku Energy	continuous	expanding network annually		
extending energy efficiency agreement	City corporation actors not included in energy efficiency agreement participate in energy efficiency agreements of their sector	For ex. city rental housing companies	2010			Turku Energy has joined
	Updating energy efficiency plan for 2012-2016	Municipal Housing Corporation and Municipal Property Services	2011			
Objective: Increasing use of renewable energy sources						
Part objective	Measures	Responsible body	Schedule	Indicator	Resource need	Comments
50% of district heat procurement renewable by 2020	Increasing the share of renewable energy in total procurement of district heating	Turku Energy	Updated annually	Percentage of renewable energy sources of energy procurement		
	Expanding Oriketo bio heat plant by a second 40MW boiler	Turku Energy	2011	Commissioning of new boiler		
	Reserving lot of land for second wood chip heating plant	Turku Energy	2009	Lot reservation		
	Testing wood pellet use in mobile heating plants	Turku Energy	2010	Quantity of wood pellet used/a		
	Planning expansion of Kakola heat pump utilising waste water	Turku Energy	2010	Tender		
	Advise to house builders and renovators on uses of renewable energy	Building Inspection Office/ Municipal Property Corporation /VALONIA	continuous	renewable energy sources in building permits		
	Mapping of renewable energy source potentials in city properties outside of district heating and in suitable areas	Municipal Housing Corporation and Municipal Property Services	2011	Potentials mapping done		
	renewable energy in use in city properties outside of district heating or to be built outside of it	Municipal Housing Corporation and Municipal Property Services	continuous	Increase in use of renewable energy sources		
	Furthering extension of district heating network	Turku Energy	continuous	expanding network annually		
	Furthering the possibility of single-family houses to join district heating	Turku Energy	continuous	Number of single-family houses joined		
Increasing use of re-	Implemented in electricity procurement	HALOKE	In next tender	Quantity of CO ₂ saved	May raise electricity	

newable energy sources to 100% of city electricity consumption-					price to some extent	
Objective: Supporting measures by administrative sectors						
Measures	Responsible body	Schedule	Indicator	Resource need	Comments	
Creating network of eco support persons for the city	Sectors and corporations, VALONIA	continuous	Number of trained eco support persons	Resources in training and network maintenance	This measure mentioned also elsewhere in programme For example City of Helsinki has a total of 250 eco support persons in different offices	

Climate and Environment-Friendly Moving

Structure of section

The section of the Climate and Environment Programme called Climate and Environment-Friendly Moving is divided into two parts. First, we handle broadly the challenges and measures of moving in accordance with sustainable development, and then present the **public transportation programme in accordance with the agreement between council groups**. In accordance with the policy drafted by the City Board and City Council, the Public Transportation Programme is included in the Climate and Environment Programme. This chapter discusses the climate issue from the perspective of both the functionality of the entire city area and the operations of the City Concern.

The goals for moving and its environmental impact have been drafted in the City of Turku Sustainable City Traffic Plan drafted in 2005-2007 with the help of international benchmarking assessments. The frame of reference for the assessments was the sustainable city traffic planning model created by a group of experts of the European Commission. The goals correspond to the goals in earlier strategies of the City of Turku, and national and EU-level goals for sustainable development.

The public transport development in programme period 2009-2013 consists of council-level decisions concerning the implementation of public transportation and various practical measures to ensure the operating prerequisites of public transportation and to develop the public transportation system. Decisions need to be made on what kind of public transportation system Turku will have in 2020, what kind of service level is offered in public transportation in different parts of the city and what kind of development measures are needed in order to reach the target system of 2020. Negotiations of the regional public transportation organisation have already been started and the decision on the system is important for reaching the goals of the programme.

Urban form has a decisive impact in the need for mobility and choice of means of transport. The development goals and measures concerning urban form and land use are presented in more detail in a separate Housing and Land Use Programme that is part of the programme structure approved by the City Council for 2009-2013.

Long Term Goals

The main goal is to increase the use of sustainable means of transport in relation to other means of transport. The goal of public transportation is to offer fluent, pleasant and affordable means of transport both in the City of Turku and in the Turku region. The quantities of travel in public transportation increase thanks to improved service level and faster public transportation. Zoning supports the use of public transportation and other sustainable forms of transport. Long-term goals are presented in more detail below.

1. Prevention of greenhouse effect:
 - The traffic carbon dioxide emissions of the entire city area decrease by the year 2020 by at least 20% from the 1990 level.
2. Development of means of transport distribution
 - In Turku, the share of travel by private car is at the most a third and the share of walking, bicycling and public transport is two thirds by 2030.
 - Travel by bicycle per inhabitant increases by at least 50% from the level of 2006 and the quantity of travel on foot per inhabitant remains at least on the level of 2006.
 - The travel quantity in public transportation must increase by 2% annually in the period 2010-2030. Therefore, in 2020, the quantity of travel must be 24% greater than in 2009.
 - The increase in traffic from the urban area to the centre of Turku is in public transport.

3. Sustainable urban form and decreasing the need of transportation
 - The share of population and jobs in parts of city offering high service level to walking, bicycling and public transport increases.
4. Environmental impact
 - Emissions of air pollutants impacting quality of air generated by traffic decrease.
 - The Noise Prevention Programme sets goals for noise prevention. Noise guideline values are not exceeded in new building projects. The number of inhabitants exposed to noise values exceeding the guideline values decreases.
5. Quality of life
 - By 2020, the incidence of traffic accidents resulting in personal injuries decreases further by 40% from current level.
 - Travel for work, school or studying on foot or by bicycle increases further.
 - Traffic safety of walking and bicycling is so good that defective traffic safety does not limit walking and bicycling.
 - Traffic environment is as free from obstacles as possible. There are no obstacles to accessibility of services in commercial centres, residential areas and work places.
 - Equal transport opportunities are offered to different age and population groups.

Compatibility of transport needs and climate goals

In November 2008, the government has given the parliament a report on long-term climate and energy strategy. According to it, the emissions from traffic are currently about 18% of all the greenhouse gas emissions of our country. About 90% of the traffic CO₂ emissions originate from road traffic. A total of 60% of road traffic emissions originate from private car traffic and 23% from truck traffic. More than third of private car traffic is generated by travel of those living in large urban areas.

According to the report, efforts to reach the national goals are improving fuel efficiency of vehicles, increasing the use of alternative fuels and energy sources in transportation, increasing information and training of users and utilising taxation of energy and vehicles. Urban sprawl is prevented through urban form planning to achieve a concise structure of municipal and regional centres where closeness of residents, work places and services decreases the need of transportation. Prerequisites and competitiveness of public transportation and lessening dependency of private cars are presented as central goals of planning of urban areas.

The land use and service solutions already previously made in Turku result in formidable challenges for the transportation system. Sprawled land use solutions are already now putting pressure on the increase of private car use. The attraction of walking, bicycling and public transportation is currently not sufficient to steer traffic growth toward sustainable modes of transport. To avoid the negative environmental, economic and social impact we must assess the means to interrupt the current trend of especially decentralized land use and increased use of private cars.

In Turku, passenger traffic research has been done in the years 1997 and 2008. The share of pedestrian traffic of all travel in the area was 38% in 2008 (+1% growth from 1997), the share of car travel was 52% (+1.5%) and the share of public transportation 8% (-3%).

According to passenger data, the quantity of travel on public transportation decreased from 2001 to 2006 by about 13%, i.e. by nearly 2.9 million trips. In the period 2006-2008, the quantity of travel has stayed at just under 20 million trips per year.

The development to reach the strategic goals of Turku does not only depend on the City of Turku. It requires that the state and the other municipalities in the region participate in developing land use and traffic systems on common basis. Alone, Turku can develop attractive land use and internal pedestrian and bicycle traffic and public transportation connections.

Traffic Planning

Development Objects in Programme Period

The means to achieve sustainable city traffic are emphasis on regionalism, reassessment of land use solutions and large investments in pedestrian traffic and public transportation. The development in the distribution of means of transportation must be impacted by offering competitive and feasible alternatives to the use of private cars. In this, the means of traffic planning are the improvement of the service level of public transportation and the circumstances of walking and bicycling through building and improving pedestrian lanes and parking conditions. Especially in the centre of the city, the various means of transportation must be prioritised so that people's mobility can be ensured.

In the programme period 2009-2013, the city centre bicycle lane network must be completed so that it serves the most important locations such as schools and sports facilities. Bicycling and walking should be developed through approving a special programme defining the measures and operating methods with which the desired shares of means of transport can be reached. The programme should be approved during the programme period and funds should be allocated to it to ensure continued methodical development.

Safety and pleasantness of the city centre must be enhanced so that it maintains its attractiveness as a residential area and as an environment for businesses and offices. Cutting the environmental disadvantages, such as noise, emissions and accidents, is central in this. Speed of traffic impacts all of these. Lowering the speed limits in the centre and residential areas is a crucial way of preventing traffic disadvantages.

Making the environment accessible to handicapped persons is also a relevant part of developing the city centre. If the appeal of the city centre weakens and operations are dispersed, an ever decreasing share of travel can be done by sustainable means of transport and car-dependency increases. Regulating the availability and price of parking spaces is an efficient way of impacting the means of transport distribution of commuter traffic to the centre.

Steering movement is a relatively new way of operating in Finland; it influences people's habits and increases awareness of different ways of moving. Drafting traffic plans of work places and making traffic guides are practical ways to guide movement. Establishing a regional traffic control centre is the first step in this work. The centre is responsible for furthering sustainable traffic and drafts the regional steering strategy. Citizens' campaigns for sustainable traffic are continued and developed during the programme period.

Traffic data, i.e. measuring the quantities and shares of different means of transportation and movement must be increased and monitoring of traffic accidents enhanced. Traffic noise account in accordance with EU standards must be done in 2012 and noise prevention plan in 2013.

It is also important to assess the development plans and plans influencing the operation layout of all administrative sectors of the city and their impact in traffic need, means of transport, traffic safety and need for public transportation in order to ensure that the overall impact is positive and in accordance with the goals of the environmental programme.

Objectives, Implementation and Verification / Indicators (Table)

This table presents only the goals and measures connected with traffic planning. The development goals and measures concerning urban form and land use are presented in a separate Housing and Land Use Programme that is part of the programme structure approved by the City Council for 2009-2013.

Objective: sustainable development of means of transport distribution in Turku (Share of pedestrian traffic and public transportation in Turku over 55% in 2013 and over 66% in 2030)					
Measures	Responsible body	Schedule	Indicator	Resource need	Comments
In areas with congested traffic modes of transport are prioritised as follows: 1) Walking, bicycling and public transport 2) Necessary cargo transport 3) Vehicle traffic for running errands 4) Commuter traffic by private cars for work and study not prioritized	Environmental and City Planning Department	starting 2010	Development of mode of transport distribution Share of pedestrian traffic and public transport in Turku: more than 55% in 2020; more than 66% in 2030	Produces significant saving, requires investment in sustainable modes of transport	
Establishing Turku centre bicycle lanes	Environmental and City Planning Department, Municipal Property Corporation		Establishing bicycle lanes	Investment 2.5 – 4.5 MEU	
Approving Development Programme for Walking and Bicycling that defines main network for walking and bicycling and its planning principles	Ykl, City Board		Realisation of development programme (funding)	Programme drafted in BUSTRIP project 2 MEU /a for realisation of projects	Accessibility to handicapped persons integral part of realisation and maintenance of walking and bicycling network
Participation in establishing regional traffic control centre	Environmental and City Planning Department, VALONIA			Requires personnel resourcing 2 – 3 person-years	Ministry of Transportation examines traffic service centres and their funding
Realising projects furthering sustainable traffic and citizens' campaigns for sustainable traffic	Environmental and City Planning Department and VALONIA		Realizing planned projects Personnel's participation in annual To Work By Bike contest		For example ROLLING and PUBLIC TRANSPORT projects, To Work By Bike contest, Thousand Choices per Year, European Mobility Week and Carless Day
Objective: Sustainable movement of personnel					
Measures	Responsible body	Schedule	Indicator	Resource need	Comments
Furthering adoption of employment-based travel tickets and bicycles and cutting employment-based parking	All sectors and corporations		Number of employment-based travel tickets and bicycles	Using resources freed from parking	For example employment-based bicycles and bus tickets
Compensating carbon dioxide emissions caused by concern personnel air travel	All sectors and corporations				
City furthers introduction of car sharing	Environmental and City Plan-		Number of car-sharing cars	Savings in car purchase and	Cars used in work driving, also lei-

companies by becoming a car-sharing customer	ning Department, HALOKE, All sectors and corporations			parking costs	sure use possible
Communication about sustainable traffic part of normal training, communication and participation procedures of councilmen, personnel and inhabitants	VALONIA, regional partnership			Small additional expenses	
Drafting a plan for commuter traffic guidance in Turku region	VALONIA		Distribution of modes of transport in commuter traffic in work places before/after	Requires additional resources for planning	
Furthering teleworking opportunities in the city	All sectors and corporations		Share of teleworking		
Furthering electronic services and meetings	All sectors and corporations		Quantity of e-service opportunities Quantity of electronic meetings		
Objective: Improving quality of life and managing environmental impact					
Measures	Responsible body	Schedule	Indicator	Resource need	Comments
Establishing traffic safety group in the city with representatives from all sectors	City director appoints		Group meetings	Meetings a few times annually	Cf. safety plan
Drafting necessary accounts of the impact of sectional strategies and plans impacting operation layout in moving and traffic safety	All sectors and corporations		Drafted accounts and their use in decision-making	Drafting the impact assessment needs additional resources and attention in scheduling	Cf. safety plan
Furthering traffic safety of school yards and neighbourhoods	Environmental and City Planning Department and Education Department				
Mapping traffic noise in City of Turku region Drafting noise prevention programme	Environmental and City Planning Department, Municipal Property Corporation	2012	Number of inhabitants in noise areas of traffic routes	Programme drafting costs, noise prevention costs	Noise account in accordance with EU's noise directive must be drafted in 2012
Lowering vehicle speeds in the centre and in residential areas Traffic environment is modified to favour safer driving speeds	Ykl, City Board, Municipal Property Corporation		Decreased incidence of traffic accidents, cuts in noise, air pollutants and climate emissions	Planning affordable, realisation costs	

Public Transportation Programme 2009-2013

Goal of Public Transportation Programme

Efficient and attractive public transportation is an environmental factor and an appeal factor for the City of Turku and the entire urban region. On May 26th 2008 in § 331, the City Board has approved this public transportation development goal: the public transportation travel per inhabitant is 50% greater in 2030 than it currently is (10 million trips more).

In accordance with the policy guideline made by the City Board in the preliminary stage and with the normative programme structure approved by the Council, the Climate and Environmental Programme includes the Public Transportation Programme referred to in the agreement between council groups. The goals of the Public Transportation Programme are based on for example the Public Transportation Programme 2005-2008, Turku Sustainable City Traffic Plan, agreement between council groups, regional PARAS public transportation cooperation and inter-municipal cooperation in technical sector and current national and EU legislation as well as legislation that will be implemented in the near future.

For several years already, Turku region has been one of the Finnish regions where the use of private cars increases fastest. The goal of the Public Transportation Programme is to stop this development and increase the share of public transport in modes of transport. Air quality in the centre and pleasantness can be improved by improving public transportation, and traffic congestion can be lessened.

The agreement between council groups in Turku for the term 2009-2012 notes the following about public transportation: "The goal in developing the urban environment is to condense and defragment the urban form and lessen the need for traffic and use of energy. Developing pedestrian traffic in the centre of the city is a crucial project as well as the decision on a Public Transportation Programme including both the starting of regional bus traffic with neighbouring municipalities and assessing the impact, costs and realisation possibilities of light rail transit and decision-making by the end of 2010. "

A central goal in long-term development is that the City of Turku decides in 2010 at the latest what kind of public transportation is desired for Turku in 2020. Furthermore, the city must begin to plan and implement the steps to reach these goals. In the best case scenario, decisions are made together with neighbouring municipalities.

Objective:

The goal of public transportation is to offer fluent, pleasant and affordable means of transport both in the City of Turku and in the Turku region. The quantities of travel in public transportation increase thanks to improved service level and faster public transportation. Efficient zoning makes good public transportation possible.

High-quality public transportation system supports the city and municipal centres' position as vibrant meeting points and service centres for inhabitants.

Short Analysis of Operating Environment and Change Factors

The quantity of travel on public transportation decreased from 2001 to 2006 by about 13%, i.e. by nearly 2.9 million trips. In the period 2006-2008, the quantity of travel has stayed at just under 20 million trips per year. On a weekday morning in the winter, the quantity of travel is about 80,000.

Tender-based traffic began in the year 2000. Price level was lowered and equipment improved. As a result of the first rounds of tenders, busses fulfilling the Euro II norm were introduced in Turku's local traffic. The new norm and the CRT filters cut significantly especially the quantity of exhaust gas particles. Currently, most of the equipment fulfils the Euro III and Euro IV norms. The particle emissions

have dropped by more than 90% and nitrogen dioxide by more than 50% in this decade. In the newest tenders, the equipment is buses fulfilling Euro V norms. The quantity of nitrogen dioxide is cut further.

In the coming years, the environmental friendliness of local traffic can be further enhanced by hybrid busses and busses using bio gas. Hybrid busses significantly decrease fuel consumption and emissions. Furthermore, they decrease traffic noise because they use electric motors when starting from the bus stop.

All local traffic in Turku is using by low-floor busses.

A total of 85% of local traffic is tender-based. Turun Kaupunkiliikenne Oy is a limited-liability company owned by the City Concern; it began its operation on January 1st 2009. Kaupunkiliikenne has a contract for managing transportation in the years 2009-2013 and it does not participate in public transportation tenders. The purpose of the city-owned transportation company is to level the possible price hikes of tender-based transportation and to be used for pilot projects.

Changes in the cost index of bus transportation change the purchase costs of public transportation. For example increases in the wages of bus drivers and in fuel prices impact the index. Bus transportation cost index influences directly the purchase costs of public transportation.

A great challenge in public transportation is the fragmentation of the urban form of the city and the region. Sparsely populated areas and long trips make public transportation expensive, and do not allow the desired service level to be offered. For years, the Turku city region has been one of the regions where the use of private cars has increased most; this is seen in the development of public transportation travel quantities. Zoning has a considerable impact in the operating requirements of public transportation.

Matkamäärät – travel quantities

tuhatta matkaa – thousand trips

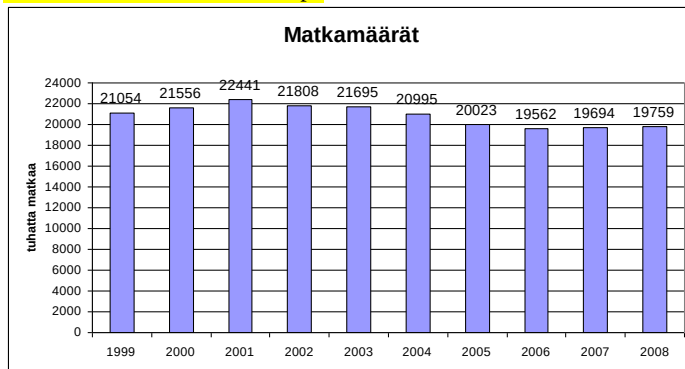


Figure 2. Development of travel quantities in local transportation in 1999-2008.

Regional cooperation in public transportation has an important role in the programme period 2009-2013. EU decree on service agreements concerning public transportation and the Finnish Public Transportation Act completing it enter into force on December 3rd 2009. Within a ten-year transition period, the new laws change the way of organising regional public transportation. For the urban region, common public transportation is a desirable solution because it allows enhancing considerably the appeal of public transportation in the urban area and thus cutting traffic congestion. Efficient public transportation is also a factor in competitiveness and the environment.

Public transportation needs active cooperation within the city, between the municipalities of the region and with the state. Speeding up public transportation is necessary so that it can attract more customers and genuinely compete with the use of private cars. Speed also cuts transportation costs. Current slowing down of public transportation requires additional busses to maintain same bus frequency, and the annual cost of each bus is an average 200,000 Euros.

According to KULKURI study, about 12% of people in Turku are sworn users of private cars not likely to be persuaded to use public transportation (Source: Voltti 2007, Ministry of Transportation Publication 9/2007). More than half of the adult inhabitants in Turku are mixed-users of private cars and other modes of transport, and considerable increases in the overall travel quantities of public transportation can be obtained by increasing their use of public transportation even only sporadically.

Objects of Development in Public Transportation in Programme Period 2009-2013

The public transportation development in programme period 2009-2013 consists of council-level decisions concerning the implementation of public transportation and various practical measures to ensure the operating prerequisites of public transportation and to develop the public transportation system.

Decisions on developing the public transportation system

1. Decision on public transportation system in target year 2020
 - City Council decides on the public transportation system in 2010
 - The decision proposal in accordance with the Turku Public Transportation 2020 account is that a priority bus system is chosen as the public transportation system but so that zoning is steered toward the requirements of the light rail transit proposal and central routes can later be turned into light rail transit routes.
2. Decision on a development programme for 2010-2020
 - City Council/ City Board decides on a long-term development programme containing steps to carry out and budgets annually from the year 2010 to the year 2020.
 - In the future, receiving state public transport subsidy for large cities requires drafting a long-term regional development plan.
3. Decision on regional organisation
 - During 2010, negotiations are carried out with the regional ticket municipalities for establishing a regional organisation
 - City Council decides on establishing a regional organisation for the part of the City of Turku
4. Decision on the level of services of public transportation in different parts of the city
 - The new Public Transportation Act obliges all municipalities to determine their public transportation service level by the end of 2011.
 - Service level determination is done jointly for the urban region.
 - City Council decides on the service level in different parts of the city and the decision guides the practical planning and use of resources of public transportation.

The aforementioned decisions guide the measures listed below. The goal of accessibility is followed in all measures and efforts are made to achieve cooperation in the urban region.

Ensuring Prerequisites of Public Transportation and Developing Public Transportation System

- A. Minimising the need for transportation by planning land use; linear city model for residential and work place areas
 - Zoning steers toward high-rise buildings or dense supplementary single-family house construction in a linear model on the central axis and in the vicinity of regional centres. Regional services are centralised in the centre or in focal points of traffic.
 - Significance of the Housing and Land Use Programme is crucial

- a public transportation plan is always drafted in connection to the master plan and especially the component master plan
 - the existing city plans are implemented in the best possible order considering the functionality of the public transportation system
 - Making light rail transit and priority bus route reservations
 - Increasing the appeal of city centre. Public transportation enhances the vibrancy of the centre and a vibrant centre enhances the appeal of public transportation. 30.2% of customer visits in the centre are made by bus (Source: Bustrip / Mylly research 2003). Hub of local transport must remain at Kauppatori market place.
- B. Speeding up public transportation and establishing the priority routes
- Establishing rapid and frequently trafficked public transportation priority routes is begun in accordance with the Development Programme 2010-2020.
 - When replacing traffic light fixtures, priority in traffic lights is given to public transportation
 - Public transportation lanes and public transportation streets are established in accordance with the Development Programme 2010-2020.
 - Public transportation sector installs additional real time information screens as the priority route is being established
 - Establishing smooth connections between local, regional and long distance transportation
 - When establishing each priority route, park and ride opportunities are created especially for bicycles. Central stops are made accessible to handicapped persons
- C. Branding and communication of public transportation
- Clarifying the information, for example route maps and route search software
- D. Considering public transportation in service network studies
- Sectors and corporations contact the public transportation department when planning changes in the service network. Decisions aim to ensure services to the citizens in ways that are feasible for the economy of the city.
- E. Extending public transportation routes across municipal borders
- Local transportation routes can be extended across municipal borders already before a public transportation organisation is formed whenever an agreement is reached with the neighbouring municipalities and crossing is possible based on the transportation agreements.
- F. Sustainable transportation service centre in Kauppatori
- As the renovation of Kauppatori proceeds, a service point is created that would sell tickets and give information about public transportation, and serve as an information point for other sustainable transportation. The service point can also give tourism information and guidance in transportation.
- G. Enhancing appeal of public transportation in commuter traffic
- developing the system for employment-based commuter tickets for city employees and others
 - State must change legislation concerning employment-based commuter tickets
 - Appeal of private car use is lessened by charging a fee for city employee parking. The decision is significant for the city also economically.
- H. Long-term funding of public transportation
- City Council ensures funding for long-term development of public transportation in accordance with the Development Programme. Development also requires funding from the state. Tying city subvention level to the total index of bus transportation so that index increases are not directly impacting the fees.
- I. High-quality servicing of public transportation routes and stops
- Prioritising priority routes and problem points in winter maintenance of public transportation routes and stops

- Managing lights and cleanliness of stops.
- J. Improving environmental friendliness further by equipment requirements
- Public transportation department requires fulfilling Euro IV and Euro V environmental standards in the main circulation of equipment
 - Hybrid busses are piloted in local transportation. Public transportation department decides on possible use of hybrid busses in tender-based transportation. Use of bio gas is examined.
- K. Ease of payment
- Efforts are made to adopt electronically distributable and checkable ticket products. Adopting a joint disposable pass application together with Turku Touring which can be loaded with public transportation services as well as other services for tourists. Target year for realisation is the year 2011 when Turku is the Capital of Culture.
 - Along with the NFC mobile phone application the so-called mobile phone ticket selection is expanded to single tickets. Loading bus passes with bank cards on the bus is eliminated. This is due to the banks' EMV norms; its implementation would cause considerable costs to public transportation and it would slow down the payment transaction and lengthen stopping times. Replacing the system and encouraging customers to use the internet for loading the pass. For the time being, loading the pass on the bus using cash money remains available.
- L. Utilizing city-owned Turun Kaupunkiliikenne Oy in production of public transportation
- Turun Kaupunkiliikenne Oy can be used in possible public transportation pilot projects.

Objectives, Implementation and Verification / Indicators (Table)

Objective: Making decision on developing public transportation					
Measures	Responsible body	Schedule	Indicator	Resource need	Comments
Decision on public transportation system 2020	City Council	2010	Decision made		Account ready 6/2009
Decision on a development programme for 2010-2020	City Council	2010	Decision made		Based on choice of public transportation system 2020
Decision on regional organisation	City Council, municipalities in the region	2011	Decision made		Negotiation request sent to regional ticket municipalities 5/2009. State funding and legislation have impact.
Decision on the level of services of public transportation in different parts of the city	City Council	2011	Decision made		New Public Transportation Act requires definition of service level Made jointly with other municipalities of the urban region.
Objective: Minimising transportation need, enhancing appeal of city centre					
Measures	Responsible body	Schedule	Indicator	Resource need	Comments
Efficient land use, Kauppatori remains hub of public transportation	Environmental and City Planning Department/ Kila				Significance of the Housing and Land Use Programme is crucial
Objective: Priority routes, speeding up public transportation					
Measures	Responsible body	Schedule	Indicator	Resource need	Comments
Establishing priority routes begins in accordance with	public transportation department	Annual measures	Cf. list of measures	significant but public	City Council decides on development pro-

development programme 2010-2020	ment, Environmental and City Planning Department, kila, state	starting 2010	in development programme	transportation streets bring savings	gramme 2010-2020
Public transportation traffic light priorities	Public transportation department, Environmental and City Planning Department, kila	2010-2012	share of prioritised traffic lights	requires resources	
providing park and ride facilities	Environmental and City Planning Department, kila, Public transportation department	In accordance with implementation of priority bus system	Number of bicycle parking facilities	requires resources	Part of priority bus system
Branding and clearer communication of public transportation	Public transportation department				Part of priority bus system
Objective: Service network and public transportation working together					
Measures	Responsible body	Schedule	Indicator	Resource need	Comments
Sectors inform public transportation department and negotiate before deciding on service network	Sectors	Continuous process		Positive effect on city economy and services of citizens	
Objective: Improving inter-municipal services of public transportation					
Measures	Responsible body	Schedule	Indicator	Resource need	Comments
Local routes crossing municipal borders	Neighbouring municipalities, public transportation department	To be agreed			
Objective: Enhancing appeal of sustainable transportation					
Measures	Responsible body	Schedule	Indicator	Resource need	Comments
Sustainable transportation service centre in Kauppatori	Environmental and City Planning Department, kila, public transportation department, VALONIA, Turku Touring	According to Kauppatori renovation schedule	realisable plan		
Objective: Increasing share of public transportation in commuter traffic					
Measures	Responsible body	Schedule	Indicator	Resource need	Comments
Developing employment-based commuter tickets	State, human resource centre, public transportation department	2010	Number of users of employment-based commuter tickets	Positive effect	Product and marketing can be improved but state legislation gives essential framework
Charging fees for city employee parking	City Board/City Council			Positive effect on city economy	Steers toward use of public transportation and saves money for

					the city
Objective: Long-term funding of public transportation					
Measures	Responsible body	Schedule	Indicator	Resource need	Comments
Long-term funding of public transportation for measures listed in development programme 2010-2020 and to prevent index-induced lapses in services	City Council, state	Continuous process	Ticket price development in relation to cost-of-living index	Significant	
Objective: High-quality servicing of public transportation routes and stops					
Measures	Responsible body	Schedule	Indicator	Resource need	Comments
Prioritising priority routes and problem points in winter maintenance	Infrastructure Corporation, Transport Administration	Continuous process			
Objective: Further developing environmental friendliness of equipment					
Measures	Responsible body	Schedule	Indicator	Resource need	Comments
Tenders require equipment fulfilling Euro IV and V norms	public transportation department/jlk	continuous	Share of busses fulfilling Euro IV and V norms	Included in the price	Implemented in current tenders
Piloting hybrid and/or bio gas busses in local transportation and deciding on their use in tender-based transportation	Public transportation department, Turun Kaupunkiliikenne Oy	Starting 2010		Additional cost per bus about 80,000 Euros	
Objective: Developing user-friendly ways to pay					
Measures	Responsible body	Schedule	Indicator	Resource need	Comments
Electronic tickets, mobile phone tickets, possible loading automats	Public transportation department	2010-2013		requires resources	

Procurement and logistics

Objective

The Government approved the principle decision on sustainable procurements on April 8, 2009. It presents the objectives for the use of public resources and the required actions taken to reduce green-houses gases, waste amount and chemicalisation of the environment, as well as to promote the sustainable use of natural resources and environmental-friendly innovations. The target is to reduce material consumption and detrimental environmental impacts during the entire lifecycle of a product or service. The principle decision of the Government acts as a recommendation for the municipalities.

The Procurement and Logistics Centre recognises its own role and takes responsibility, in particular for the determination of the procurement target in terms of joint procurements, following the principles of sustainable development. The procurements of the city must be ecologically, socially and economically sustainable. To determine and evaluate sustainable procurements and assess the costs and impacts during the entire lifecycle of the procurement requires specific knowledge of the sector and the requirements imposed by the Procurement Law. To increase this knowledge in the City of Turku presents a challenge in promoting sustainable procurements in different municipal administrations and the Procurement and Logistics Centre.

Operating environment and drivers of change

The role of the Procurement and Logistics Centre is currently restricted to competitive tendering. The procurement appropriations are included in the budgets of municipal administrations, and therefore the needs of the administrations and the economics framework must be taken into account in determining the procurements. The Procurement and Logistics Centre will, however, comment on the determination of the supplier's qualification requirements and the comparison standards for the procurement target and offers. In terms of material procurements, taking charge of the order-delivery process and minimising of transportation events support the consideration of the principles of sustainable development in the operation of the city.

The biggest obstacles for increasing the ecological sustainability of the procurements are the lack of support from the management and the lack of practical tools. The criteria applied must not discriminate against the suppliers or service producers. It is also important to determine the economic risks since tightening the quality criteria (e.g. environmental impacts) may lead to a price increase. Mapping the markets prior to publishing the request for tender is important, and the Procurement and Logistics Centre will put special focus on this. The leading officeholders and decision-makers must commit to taking the principles of sustainable development into consideration in the procurements and to require their use in all tender requests. The lack of ready models for competitive tendering and definitions of appropriate criteria presents a challenge for competitive tendering of the procurements.

Including the products and services in accordance with the principles of sustainable development in the contracts of the city does not guarantee a successful result, i.e., a decrease in energy consumption. The user has a significant influence on the energy consumption of the equipment. Consequently, a training designed for the end users will be determined in the tender requests, which is necessary to gain all advantage.

Targets, implementation and verification / indicators

As per the guidelines in the principle decision of the Government, Turku commits to taking the principles of sustainable development into consideration at least by means of the following:

- **Electricity procurement;** as in the existing electricity procurement contract, a specific proportion is reserved from the procurement entity, which must be produced using renewable energy sources (refer to the targets of the energy section above). The next contract period begins on January 1, 2012. The contract in force at the moment is formulated so that four percent of the entire purchase amount is produced by wind.
- **Sustainability will be increased in the procurement of food supplied for food services.** Vegetable or seasonal food will be served in kitchens at least once a week by 2010 and at least twice a week by 2015. The aim is to increase the use of organically produced food.

The procurement contracts for food supplies require that the packaging materials must be reusable, recyclable, or disposable by burning. The use of PVC in packaging materials is prohibited. The tenders must include a document of the packaging of the products and possible actions to reduce the amount of waste produced by the packaging materials.

- **Internal transportation and the need to use a car will be reduced by 10 percent by 2013** e.g. by centralising the internal transportation in the city. The centralisation of logistics functions in the Procurement and Logistics Centre in 2009 provides a better opportunity to appropriate use of the fleet of vehicles and minimisation of the kilometres driven. Centralised management of the fleet of transportation vehicles and transportation will reduce overlap in transportations and traffic in the city centre. The city drivers will receive training of economical and anticipatory driving style by 2013.

In addition, the cooperation with the supplier will be enhanced to minimise the number of separate transportation events. The distribution system, driving days, logistics arrangements and the delivery to the customer are agreed separately with the suppliers. It will also be discussed whether it is possible to reduce the number of location-specific transportation events e.g. by combining the transportations with another supplier so that the requirements related to the delivery time and reliability are fulfilled.

- Fuel consumption, carbon dioxide emissions and impacts of polluting emissions from **the procured vehicles** are taken into consideration during the competitive tendering process. Specific emissions categories are required. Alternatively, the procurement of a hybrid or electric car is assessed.
- **Transportation service contracts;** the city provides several different transportation contracts (meals, moving services, chartered transports, waste management, school transports), which allow the determination of criteria related to the age of the fleet, energy efficiency and emission norms. We require that the contracted drivers take the course in economical and anticipatory driving style.
- **Energy-consuming equipment;** the Energy Star criteria will be used, as applicable, e.g. for the procurement of computers, AV equipment and copying machines. In connection with these procurements, the lifecycle costs will be examined at least to some extent, and the material used in the GreenLabelsPurchase projects will provide tools for this purpose. When renting machines and equipment, special attention is paid to their age.
- Product-specific power consumption rates in standby and off mode provided on the basis of the Ecodesign Framework Directive are used as unconditional requirements in applicable procurements.

Management of household and comparable waste and material efficiency

Objective

The objective of the city is to reduce the amount of waste generated in its operations, as well as the procurement need and to increase the number of ways of how to utilise waste. Essential methods are improving the efficiency of equipment and material reuse as well as energy utilisation of material recycling and waste. The target is also to decrease the impact of waste management on the climate, e.g. through increasing the separate treatment rate of biodegradable waste and through eco-efficient implementation of transportation logistics.

Brief analysis of the operating environment and drivers of change

The City of Turku has for a long time been a pioneer in the utilisation of waste based on source separation. The collected useful waste is delivered for the use of the industry to replace pure raw materials. Burnable waste will be converted into energy for the need of district heating at the waste incineration plant in Turku.

The national waste plan approved in 2008 emphasises the prevention of waste generation, recycling of materials and placing biodegradable waste in some other location instead of a landfill. According to the plan, not more than 20 percent of municipal waste should end up in landfills in 2016. 50% should be recycled as material and 30% of municipal waste should be directed to energy recovery. According to a rough estimate, 30 percent of the municipal waste in the Turku region will be utilised as material in 2009 and 50 percent as energy. Approximately 20 percent of municipal waste ends up in a landfill.

Development outlines/targets for the city group in the programme period of 2009-2013

By the end of 2009, the city will draw up an action plan for 2010-2020 together with the neighbouring municipalities for the cooperation between the waste policy and waste management in the Turku region. The plan will outline the regional target level of waste management and the methods to reach that level. The alternatives for separate collection of waste will be evaluated in the action plan through a so-called lifecycle examination. The action plan will also examine the means to prevent waste generation and to enhance related communication. The target is to take into account the impacts of the total reform of the waste law under preparation and submit it to the municipalities for approval at the beginning of 2010.

Targets, implementation and verification / indicators (table)

Target	Measures	Responsible party	Schedule	Indicator	Resource requirement	Comments
The proportion of digestion or composting of the amount of biodegradable waste is 10% in 2016	In connection with regional waste strategy work, different alternatives for bio-waste treatment and collection are examined (lifecycle examination)	TSJ (Turku Region Waste Management) & Environmental and City Planning Office	2010	Waste flow examination (proportion)		
The proportion of domestic composting of biodegradable waste is 5% in 2016	Small-house residents will be informed	TSJ (Turku Region Wastewater Management), Environmental and City Plan-	2016	Waste flow examination (proportion)		

		ning Office				
The proportion of material recycling is 30% in 2016	Source separation and collection methods are developed through updating the waste management regulations	TSJ (Turku Region Wastewater Management) & Environmental Protection Office	2011	Waste flow examination (proportion)		
	The useful waste network is renewed	TSJ (Turku Region Wastewater Management) & Environmental Protection Office	2011			
The proportion of energy recovery is 45% in 2016	Preconditions for the energy recovery of waste are maintained and increased (e.g. placing the company manufacturing biofuels in Turku)	Environmental and City Planning Office, Municipal Property Corporation, Turku Region Development Centre	2013	Waste flow examination (proportion)		
The maximum proportion of landfills used for waste placement is 10% in 2016		TSJ (Turku Region Waste Management)	2016	Waste flow examination (proportion)		
The regional waste strategy and action programme are completed and approved by the municipalities	Establishment, management and approval of a work group	Environmental Protection Office	2010			
Increase the utilisation of landfill gas	The gas collecting network is expanded and enhanced in Topinoja	TSJ (Turku Region Waste Management) and Turku Energia (Turku Energy)	2013	The amount of utilised gas vs. the amount of freely released gas		
Prevent waste generation and enhance waste utilisation	Implementation of measures in accordance with the waste strategy	City/Environmental Protection Office/TSJ (Turku Region Waste Management)	Until 2020	Development of waste amount in the city		
Reduce the amount of paper waste and the need for material in the city group	The City Board establishes a work group to examine increased optimisation of equipment use, joint use and flexible working method (telework, meeting technique)	City Board, IT activity	2010	Creation of an action plan		
The consumption habits of the city residents become more sustainable and the amount of waste produced in the city decreases	City residents are encouraged towards sustainable consumption and prevention of waste generation	Communications centre and Valonia	on-going		marketing resources	KELAA project (sustainable consumption and quality of life 2008-2011)

Water protection and the Baltic Sea state

Objective

The target is to reduce the impacts of the city on the state of water systems in terms of groundwaters, inland waters as well as the ocean area, and to carry out reconditioning measures to improve the state of water systems or the groundwater state. The target is to maintain or improve the state of the water systems. The most important target is to influence on the state of the Baltic Sea without ignoring the promotion of water protection measures in other water systems.

The most essential measures of the city include taking care of efficient purification of municipal wastewaters at the Kakola wastewater treatment plant, carrying out the measures presented in the action programme of the cities of Turku and Helsinki for the Baltic Sea challenge, in the storm water programme of the city, in the development plan for water management in the city and in the protection plans for categorised groundwater areas.

Another target is to take care of the state of inland waters in the city area and pay special attention to the distinct characteristics of Lake Kaskeranjärvi and the measures performed there.

Brief analysis of the operating environment and drivers of change

Significant improvements have occurred in the state of the water systems during the previous decades. Since the 1960s, the state of the offshores and straits in the ocean area has improved along with the municipal wastewater treatment but the general eutrophication of the water systems has caused deterioration in the state of the water systems in the other water areas in the Archipelago Sea as well as in the inland waters. EU's Water Framework Directive and the water management plan for the Archipelago Sea drawn up on the basis of the Directive provide a framework and targets for the ecological and physical-chemical state by 2015 per each water system and area.

Development outlines/targets for the city group in the programme period of 2009-2013

The city will enhance the implementation of the water protection measures, for example, by means of the action programme of Turku and Helsinki for the Baltic Sea Challenge. The programme contains eight tasks: reducing point source loading (improving the city's sewage network), reducing diffuse loading (reducing the agricultural loading and wastewater emissions in sparsely populated areas), dredging of contaminated sediments, reducing wastewater emissions in shipping and boating, conducting international cooperation for the environment, supporting research projects and the operation of the Protection Fund for the Archipelago Sea, as well as increasing overall awareness.

The city's storm water programme defines the principles for the treatment and management of storm waters. The water management development plan determines the expansion of the wastewater and storm water sewage network. The city will carry out the expansion of the sewage network in accordance with the plan.

The measures related to the state of the groundwater areas are carried out in accordance with the protection plan for the groundwater areas, which includes a risk assessment and an action programme.

The treatment measures for Lake Kaskeranjärvi are implemented according to the programme produced by the advisory committee of Lake Kaskeranjärvi.

The action programme for the Baltic Sea Challenge was approved by the City Board in 2007. The development plan for water management is currently being updated, and will be completed during 2009. The storm water programme will be discussed by the City Board and Council in summer 2009. The protection plan for groundwater areas will be completed in 2009. The city will also continue active op-

eration in the Pro Archipelago Sea cooperation project and aims to create and implement new projects to improve the state of the Archipelago Sea.

Targets, implementation and verification / indicators (table)

Target	Measures	Responsible party	Schedule	Indicator	Resource requirement	Comments
Decrease the load caused by storm waters at a wastewater treatment plant	Preparing a plan for storm water treatment	Municipal Waterworks Corporation, Municipal Property Corporation, Environmental and City Planning Office	2009		existing	already completed
Enhance the preconditions for wastewater treatment at the Kakola wastewater treatment plant	Increased renovation of sewage network Minimisation of wastewater overflows Introduction of a mixed sewage system fee	Municipal Waterworks Corporation	on-going	km/year overflow m ³ /year and the proportion of overflows from wastewaters		
Decrease the load on water systems caused by agriculture in the fields owned by the city	The fields owned by the city are changed into example fields in terms of the agricultural water conservation measures	Municipal Property Corporation	2009-	wetland areas, sedimentation basins, submerged dams (quantity)		
Decrease wastewater emissions in sparsely populated areas	The sewage network is developed and expanded into more important areas in terms of water conservation The cities encourage the foundation of wastewater associations or cooperative societies The city reconditions the wastewater system of the real estates in sparsely populated areas by 2010 Reporting and advising	Environmental and City Planning Office and Municipal Waterworks Corporation Environmental and City Planning Office Municipal Facilities Corporation Environmental and City Planning Office	2009- 2009- 2009-2010	km of sewage network / increase in the number of residents within the sphere of the sewage network pcs of properties in sparsely populated areas		
Reduce the impacts on water systems caused by	Establishment of regional treatment	Harbour	-{}-2009-	m ³ of dredged,		As the harbour expands into

dredging	and landfill sites for contaminated sediments		2009-	contaminated areas		Pansio, the masses are processed in the basins created during the quay work.
Decrease wastewater emissions from ship traffic and boating	Further development of harbour fees supporting low emissions The possibility to produce shore power in a harbour Increasing the number of places for emptying holding tanks	Harbour Harbour Municipal Property Corporation	2009- 2009-2012			
Improve and recondition the state of Lake Kaksjerranjärvi	Treatment measures for Lake Kaksjerranjärvi: aeration, chemical treatment of ditchwaters, biomanipulation, etc.	Environmental Protection Office	2009-	Phosphorus content in surface water and oxygen content in groundwater		
Preserve small-scale water systems and improve their state	Mapping of small-scale water bodies, implementation of the measures in the storm water programme	Environmental Protection Office, Planning Office, Municipal Property Corporation, Municipal Waterworks Corporation				
Preserve and improve the state of groundwaters	Preparation of a protection plan for classified groundwater areas and implementation of the measures in accordance with the plan	Municipal Waterworks Corporation, Environmental and City Planning Office, Emergency Services	2009-			

Conservation of natural diversity

Objective

The objective is ecologically sustainable city planning, which takes into account the conservation of natural diversity in all operations of the city. The aim is to guarantee the residents a healthy, comfortable and inspiring living environment with a green belt and a conservation area network maintaining and conserving the natural diversity as a central attraction, which also serves as a significant carbon sink.

Brief analysis of the operating environment and drivers of change

On-going expansion of the city structure and densely built-up areas in accordance with the target of sustainable development easily cause detrimental changes to the city nature. Green belt areas in a natural state wear out as a result of increased recreational use and the environment and organism species become impoverished. The special characteristics of the areas vanish as their surface area is critically reduced. Densely built-up areas immediately surrounding the conservation areas produce a threat to the sufficiently large areas required for diverse organism species.

Development outlines/targets for the city group in the programme period of 2009-2013

In land use planning, it must be taken into account that the built-up areas are surrounded by sufficiently extensive, continuous recreational areas in the neighbourhood. This will contribute to the comfortability of the areas and increase their attractiveness. To ensure ecological sustainability, the conservation area reservations must include such important locations in terms of their natural values, which will form a continuous network together with the green belt areas. Sufficiently wide outdoor recreation parks and ecological passageways serving the diversity of nature are also included in the green belt network. Ecological functionality of the network secures the special characteristics of the living environment important for the organisms.

An essential procedure is also the finishing of the green network plan, which is being prepared by the Environmental and City Planning Office. The plan contains valuable natural locations as well as essential attractions in terms of the landscape and recreational use. The establishment of natural conservation areas indicated in the plans and mapping of protected nature types increase the functionality of the conservation area network of the city.

The treatment measures of the protected nature types maintain the important structural characteristics of the environment in terms of natural diversity. A significant part of these nature type locations is situated in the recreational areas near the residential areas, which are also subject to the need of other environmental care.

Bird conservation in wetland areas is an essential part of the management of these central conservation areas, which has been conducted in cooperation with the hunting clubs in different projects.

Targets, implementation and verification / indicators (table)

Target	Measures	Responsible party	Schedule	Indicator	Resource requirement	Comments
Supplementing the natural conservation areas to correspond to the preservation of natural diversity	Preparation of presentations for the preservation of areas indicated with a SL marking in the plans (SL = natural conservation areas founded by virtue of the natural conservation law)	Environmental Protection Office, Municipal Property Corporation	2010	Realisation of preservation decisions	existing	
Preservation of protected nature types and their special characteristics in terms of natural diversity	Mapping of nature types and preparation of treatment plans	Environmental Protection Office, Municipal Property Corporation	on-going	number of targets / year, ha/year	existing	
Securing the preservation of valuable natural monuments in terms of landscape conservation and natural diversity	Mapping of the locations as part of the green network plan, preparation of conservation decisions	Environmental Protection Office, Environmental and City Planning Office	on-going	Realisation of preservation decisions	existing	
Prevention of all disturbing factors threatening the preservation of the diversity of the avifauna in shore and wetland areas	Regulation of the population of new wild animals (mink, raccoon dog) and crow birds, supervision of dog discipline, reporting and joint supervision in cooperation with the hunting clubs	Environmental Protection Office	on-going	Results of the hunting to exterminate the species	existing	
Securing the preservation of the living surroundings important in terms of natural diversity and the comfortability of the residents	Checking of the green network plan in terms of valuable natural locations (especially shores and small-scale water bodies)	Environmental Protection Office, Environmental and City Planning Office	2010-2011	completed	existing	

Environmental education and increasing environmental knowledge

Objectives

"Environmental education, education on sustainable development is educational activity for people of all ages with the target to change the values, knowledge, skills and the operations of individuals and societies in accordance with the principles of sustainable development."

Environmental awareness means that the people are aware of different environmental aspects and take these into account in their decisions regarding the operations as well as in their choices. A person or society responsible for the environment aims to operate in the best possible way in terms of the environment, and in accordance with the possibilities provided by their own competence and operating environment.

The target is to increase the environmental knowledge and responsibility of the children, the youth and the adults through environmental education and awareness.

Guidelines of environmental education in the teaching and educational activity of Turku

Environmental education starts already **at daycare**. In the early childhood educational plans of several daycare centres, the significance of environmental education is emphasized. The environmental education at daycare is based on concrete actions. They make small excursions to the surrounding environment, observe the changes occurring in nature and pay attention to several small things in everyday life, such as the sorting of waste and the saving of electricity.

In the national curriculum for basic education, environmental education plays a significant role. The curriculum for basic operation states that "the target is to educate environmentally aware citizens, who are committed to a sustainable way of life". The school must teach future thinking and the building of the future for ecologically, economically, socially and culturally sustainable solutions. **In the curriculum of the City of Turku**, a student is encouraged to act to the benefit of the sustainable future of his own surroundings by emphasising the natural geographical location of Turku and the district, as well as the cultural environment in terms of environmental values. Essential issues are the operating methods following the principles of sustainable development and the use of experts outside the schools, such as the services of the Tammenterho Nature School. The school implements the targets and contents of the Environmental Path project.

The curriculum of the upper secondary schools states that "teaching follows the principles of positive environmental values and sustainable development and analyses the changes in the natural and cultural-historical environment of Turku. The relationship between the people and nature, the growth of population, the development of technology and economic growth are examined in teaching from an ecological perspective.

Turku Vocational Institute offers the young and adults vocational basic and further education in the fields of commerce and food services, technology as well as health and wellbeing. In the curriculum section for all students studying in the vocational basic education programme in all different fields, the promotion of sustainable development is emphasised as a key skill in lifetime learning. The vocational studies for each degree emphasise the working and operating methods typical for the specific field, which follow the principles of sustainable development. The students are encouraged to save energy, prevent the generation of waste and minimise the environmental risks.

Turku University of Applied Sciences offers education to develop working life and entrepreneurship, research and development work and overall development of the organisations. The University conducts extensive research and development in the fields of climate and environmental protection. The

Turku University of Applied Sciences is also the first university in Finland to develop its operation based on social responsibility reporting. Following the principles of sustainable development and social responsibility promotes the basic tasks of the schools and regional influence.

The **educational programme for sustainable development** at the Turku University of Applied Sciences is an extensive educational entity, including the studies of technical information related to the natural sciences and environmental protection as well as mankind and social sciences, economy-related information and the principles and methods of environmental planning. The students can create good connections to the working life through training, project works and a thesis already during the studying period. Environmental issues are dealt with globally so the students will be capable of operating in an international context.

A foundation for the knowledge of the nature, for adopting sustainable ways of consumption and operation and for having the nature as a hobby is created at home and school but also in the youth and leisure time activities. **The Youth Work Centre** of the City of Turku implements basic tasks for the youth work determined by the Youth Law, which include supporting of the growth and independence of the youth, promotion of active citizenship of the youth, social strengthening of the youth as well as improving the growing and living conditions of the youth. The main theme is supporting the growth of the children and the youth in a positive manner.

Brief analysis of the operation environment and the drivers of change

The significance of sustainable development/environmental education is increased considerably within the decision-makers and different parties. The documents controlling the management of the state and municipality more than often emphasise the significance of sustainable development and environmental education in the upbringing and education.

In 2006, two national documents were approved to increase and develop environmental education. **The strategy and execution plan 2006-2014 for the upbringing and education promoting sustainable development** prepared by the committee for sustainable development sets a national framework for environmental education and presents significant challenges for the development of cooperation at a regional and local level. Essential targets are, for example, to strengthen local cooperation between educational organisations and other parties and to prepare a sustainable development programme for all educational organisations by 2010. By 2014, 15% of daycare centres, schools and educational establishments must have an external symbol or certificate of their work for sustainable development. The document of **Sustainable Development in Education 2005-2014** published in the same year by the Ministry of Education follows the same outlines in its targets, concentrating mainly on the promotion of the work for sustainable development at schools and in educational establishments. The Youth Act, which is the basis for municipal youth work policy, was renewed in 2006. According to the new law, the youth work and policy belong to the tasks of the municipality and include, for example, environmental education of the youth. The Youth Act is an essential basis for the Finnish Government's Child and Youth Policy Programme 2007-2011. One of the targets in the programme is that "every child and young person grows into a responsible citizen committed to the sustainable way of life and is aware of the significance of his own choices for the wellbeing of himself and the others". He is conscious of the environment and understands the connection of his consumption habits to the diversity of nature.

In the **Southwest Finland Environmental Strategy and Programme 2006-2012**, increasing environmental education, promoting environmental awareness and increasing the interaction and cooperation in environmental issues have become a central focus area. Environmental education is extensive, multi-field activity with people of all ages as the target group. The objective of the programme is to increase environmental awareness and responsibility among the people of all ages. **The Agenda 21 Action Plan of Southwest Finland 2007-2010**, whose implementation is the responsibility of **Valonia**, also regards the increasing of environmental education and awareness as target-oriented activity for the people of all ages.

Regional cooperation in the field of environmental education and networking

An essential task of the **umbrella group**, founded in 2008, **for cooperation in the field of environmental education in Southwest Finland** is to make environmental education better known at a local level and to find new resources for the implementation of environmental education. The establishment of the group is based on the need to increase the local knowledge and regularisation of environmental education. The umbrella group consists of regional parties, which can point out the significance of environmental education in their own organisations and therefore enable regional resources for environmental education. The umbrella group was founded for 2008-2012 and the environmental programme of Southwest Finland 2006-2012 is used as a guideline in the operation of the group.

Development outlines/targets for the city group in the programme period of 2009-2013

1. The nature and environment school operation has expanded and the programmes in the Environmental Path project are included in the curriculums of schools. The daycare and the youth work sector can also use the services of the nature and environment school.

Approximately 2,500 pupils participate annually in the nature school activities organised by the City of Turku in the Ruissalo Nature Centre **Tammenterho**. The nature school organises a few courses for adults as well. The Tammenterho nature school has an important role in the **Environmental Path project** launched by the Educational Board and the Environmental Protection Office, which will be implemented in 2009-2010. The project will be financed by the development fund for educational environment granted by the Finnish National Board of Education. The Environmental Path projects allows each pupil in Turku between the 1st and 6th grade to participate in one programme/event during the semester, which involves environmental education and the promotion of ecologically sustainable lifestyle and the knowledge of the nature. Four upper-level pilot schools will also be involved in the first stages of the project.

The Tammenterho nature school has one permanent employee as an environmental instructor. The workload of the nature school has increased considerably due to the Environmental Path project. The opportunities to visit schools or daycare centres have decreased even further. Increasing the resources in the nature school activity by ½-1 man year would secure the availability of the nature school activity more comprehensively in terms of the schools and would enable an increase in the use of the nature school services by the youth work sector and daycare.

2. The programme work for sustainable development expanded into all teaching and educational organisations. By 2013, 30% of the daycare centres and educational establishments will carry a Green Flag or other external symbol for the work for sustainable development.

The Green Flag is a national environmental programme and sign used at schools and in daycare centres, which depicts the contribution made for environmental education when striving for a lifestyle, which follows the principles of sustainable development. The crucial part of the Green Flag is the participation of the children and the young, the decreasing of environmental load and commitment to continuous improvement.

The basis of the environmental certification of the schools is their environmental criteria, which examine the activity of the schools as a whole from the perspective of management, teaching and maintaining functions. The certification and the use of criteria are suitable for the use of comprehensive and upper secondary schools, as well as for vocational and other educational establishments.

Four schools and four daycare centres in Turku are involved in the Green Flag environmental education programme. None of the schools in Turku has an environmental certificate for schools. In the youth work sector, a few units work for the programme of sustainable development. To increase the Green Flag activity and other systematic work for sustainable development, it is important to invest in supple-

mentary education of the educators and other staff on sustainable development. Furthermore, the practices for the municipalities to contribute to the costs caused by the certificate must be developed. For example, the costs of the environmental projects (e.g. the Green Flag participation fee) could be transferred from the units (daycare centres and schools) to the municipal administration.

3. The skills in the environmental education/education of sustainable development in daycare centres, educational establishments and the youth work sector have strengthened. The instructors and educators will apply the methods of environmental education in the educational work conducted in their own units and organisations.

The teachers and educator have a key role in promoting environmental education. Environmental education is encouraged to be increased in the organisations working with the children and young people. For the organisations in the field of education and teaching to increase the methods of environmental education in their own work, further education is required to initiate them into the use of different environmental education methods and to provide tools for the implementation of sustainable lifestyle in their own work community.

4. The different units of the municipal administrations have people trained for sustainable development, who work as support persons for other employees and stay actively in touch with each other through the network of sustainable development.

The City of Turku has excellent opportunities as a service organisation to influence on the increase of the awareness on sustainable development and environmental knowhow among the residents of the municipalities. To give a good example as a workplace and a service provider, education and guidance are required on different practices of sustainable development, such as the saving of energy, sustainable procurements, decreasing the amount of waste and recycling. The support persons trained in sustainable development for the workplaces will work as experts in their own units. The networking of the support persons provides an opportunity for the exchanging of experiences, problem solving and peer support.

5. Cooperation between the municipal administrations of the City and other educational establishments, companies and non-governmental organisations is close.

In addition to the cooperation between different administrative sectors, the municipality needs cooperation between the education and the industry and commerce, as well as research and development work. The collaboration of the City and the industry and commerce with the universities and the universities of applied sciences is also important. Using the students in the field as experts of sustainable development gives an opportunity to implement the city's research programme and to increase the number of new researches. All procedures require strong cooperation and networking between the companies, the industry and commerce, the organisations and the city.

Targets, implementation and verification / indicators (table)

Target: The nature and environmental school activity covers more extensively the daycare and the youth work sector in addition to the schools.					
Measures	Responsible party	Schedule	Indicator	Resource requirement	Comments
The programmes in the Environmental Path project are included in the curriculums of the schools	Educational Board and Environmental Protection Office	Startup 2010	Number of children participating in the activity	Half-day work contribution of the nature school teacher is added	
Nature school services are increased for the daycare and youth work sector		Overall target 2013			

Target: The programme work for sustainable development has expanded, 30% of daycare centres and educational establishments have a Green Flag or other external sign for the work for sustainable development					
Measures	Responsible party	Schedule	Indicator	Resource requirement	Comments
Education related to the sustainable development programmes is increased Training and information sessions on the Green Flag programme and the environmental certificate of the educational establishments are organised The units and persons in charge are provided with an opportunity to focus on the issue	Teaching sector, municipal social administration, youth work sector, Valonia	Startup 2010 Overall target 2013	Number (proportion) of Green Flag schools and daycare centres	The implementation of the Green Flag programme produces cost savings as the amount of waste and consumption of energy and water are reduced. Startup costs EUR 250-500/unit/year.	Unit-specific startup costs are transferred from the educational establishments and daycare centres to the municipal administration
Target: The skills in the environmental education have strengthened. The teaching and educational organisations provide the children and the young with environmental education on a regular basis.					
Measures	Responsible party	Schedule	Indicator	Resource requirement	Comments
Supplementary education on sustainable development is offered to the organisations in the fields of teaching and education. Courses in the means and methods of environmental education are organised for the people working with children and young people	Teaching sector, daycare, youth work sector	Startup 2010 Overall target 2013	The number of employees participating in the training	The use of substitutes, if required, as the teacher and other employees participate in the training.	Part of the training is available without a separate fee (e.g. through Valonia)
Target: The knowledge of the employees in municipal administrations of sustainable development has strengthened and cooperation between different units has increased.					
Measures	Responsible party	Schedule	Indicator	Resource requirement	Comments
Support persons for sustainable development are trained for the different units in municipal administrations	Central administration, municipal administrations and business firms, Valonia	Startup 2011 Overall target 2013	The number of trained support persons	Resources provided during follow-up	The network of sustainable development as a basis
Target: Cooperation with the municipal administrations, educational establishments, companies and non-governmental organisations of the city is dense					
Measures	Responsible party	Schedule	Indicator	Resource requirement	Comments
Cooperation between different fields is increased through differ-	Central management		The number of cooperation events		

ent theme seminars and discussion forums			The number of theses ordered by the city		
Training opportunities and research subjects are offered to the stu- dents in the field and the city research pro- gramme is implement- ed					

Follow-up, indicators and budgeting for sustainable development

Objective

The objective of the follow-up of the environmental programme is to ensure the execution of the programme and the implementation of related targets. For the follow-up of the environmental programme, a specific system needs to be created to ensure the execution of the programme and the implementation of the targets through education and regular internal audits.

Additionally, the aim is to monitor the implementation of the concept "Sustainably developing – well-balanced Turku" in the City of Turku, which is the guideline of the entire programme, through separate reporting of sustainable development. This general follow-up of sustainable development is carried out in cooperation with the six cities through the reporting of sustainable development already established during the previous council period. The follow-up of general sustainability is carried out under the environmental programme mainly in terms of ecological sustainability. As for the other parts of the follow-up, responsibility must be taken by the cross-administrational sector in the municipalities.

Analysis of the existing operating environment

EU's Environmental Directive and the Finnish Law oblige the authorities to provide the citizens with information on the state of the environment. The City of Turku has reported on the state of the environment regularly since the 1980's. In the 2000's, the reporting has to some extent been included in the report on sustainable development, in which the environmental issues are connected to a larger context, giving a general idea on the state of our living environment and the factors and consequences affecting it.

The indicators of sustainable development in the City of Turku have been determined in the sustainable development programme (May 29, 2005) for 2005-2008. Most of them have been approved as comparison indicators for the joint use of the six cities (Espoo, Helsinki, Oulu, Tampere, Turku and Vantaa). The first comparison report on sustainable development in the six cities was published in 2008 with the title of "Sustainable development indicators of the six cities 2004-2006". This follow-up work has been extensively recognised both domestically and internationally.

The City Board approved the basic survey required by the Aalborg Commitments on December 17, 2007 and decided that the subsequent phase of the commitments, i.e. setting measurable targets for sustainable development, will be carried out in connection with the updating of the Turku strategy. The commitment requires that the implementation of these targets must be monitored and reports of the implementation must be provided on a regular basis.

The City Council decided on November 26, 2007 that the City Board will draw up a presentation of the transfer to the budgeting of sustainable development in connection with the budget preparation of 2009 so that the sustainable development programme and the accounts will be integrated into the budgeting process.

Challenges / Identification of development targets

The indicators of sustainable development in Turku have not mainly been tied to measurable targets, as they aim to give a general view of prevailing development trends and function as a basis for citizen and political discussions and as a support for decision-making. A strategic, target-oriented and rational management system would also require measurable targets with time limits (cf. Aalborg Commitments) and a system, through which the implementation of the targets and procedures would be continuously followed.

The already made political decisions require setting of measurable targets for sustainable development in accordance with the Aalborg Commitments during the updating of the Turku Strategy, as well as the

monitoring of the implementation of these targets and the transfer to the budgeting system of sustainable development. The implementation of all these measures would require an extensive and open preparation of the strategy package by the entire organisation and interest groups, in which the themes of the Aalborg Commitments would be divided under different execution programmes. The schedule set for the programme work presents a challenge for the high-quality preparation work and the setting of measurable targets.

The setting of the targets for the currently prepared programme package needs to be specified in connection with annual updates to correspond to the setting and monitoring of the targets required by the Aalborg Commitments, so that the prepared obligations and decisions can be fulfilled. Transferring to the budgeting system of sustainable development requires creating a follow-up system, which covers the entire programme package, and the integration of the system into the budgeting process.

Follow-up execution

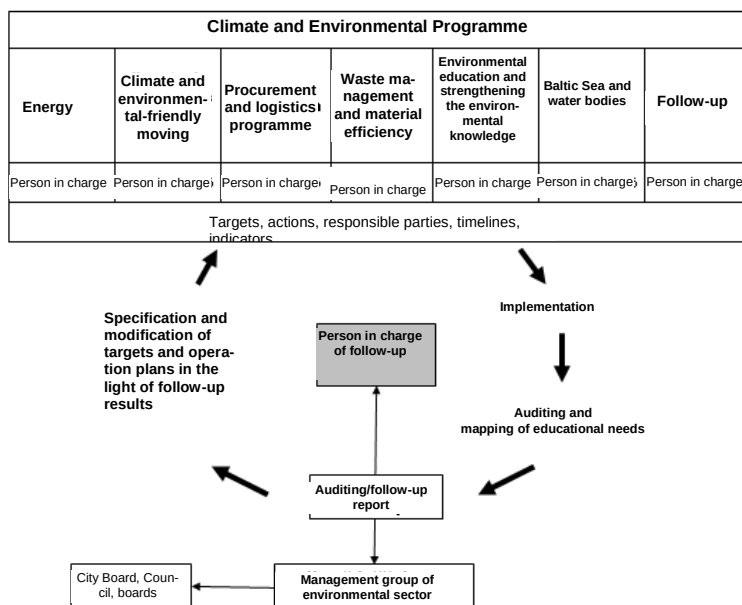
The follow-up is divided into three parts.

- 1) Annual/continuous follow-up of the implementation of the targets determined in the Climate and Environmental Programme in the light of the indicators set for the follow-up programme
- 2) General follow-up of sustainable development in the community, which is based on the already completed cooperation with the six cities. A report will be prepared every two years (or less frequently) and development trends will be added to the Internet on an annual basis.
- 3) Budgeting for sustainable development on an annual basis in connection with the budget follow-up.

Eco-support persons will be trained to support the follow-up and execution in all municipal administrations.

1. Follow-up of climate and environmental programme

The Climate and Environmental programme is divided into several theme-specific procedural entities (partial programmes), each of which includes individual targets and procedures for implementing them, along with the responsible parties, time limits and indicators. Ensuring the implementation of the procedures and reaching of the required targets within the limits of the sustainability criteria require a functional follow-up system with sufficient resources. A person in a quality manager type role is needed to run the system. The task of this person is to ensure the implementation of theme-specific procedures through internal audits in accordance with the appended diagram and to continuously examine the need for education to make sure that sufficient skills and knowhow are available for the execution of the programmes. This helps to ensure that the procedures will be implemented in practice instead of just writing them on paper and that new, more efficient ways to achieve the targets can be searched for together. The person in charge will prepare a follow-up report on the basis of the audits, which will be delivered to the required political bodies to keep them informed. On the basis of this, the targets and procedures will be specified and supplemented regularly, as required.



Target: To create an execution and follow-up system for the Climate and Environmental Programme					
Measures	Responsible party	Schedule	Indicator	Resource requirement	Comments
To establish a programme work group	City Mayor	2009	group set	working time	On the basis of the preparation group, cross-administrational
To allocate a programme coordinator or team	Deputy Mayor of environmental sector	2009	coordinator/team indicated	fund-ing/working time	
To create an auditing and training programme	Coordinator/team	2009	programme ready	working time	
To perform the audits and surveys of educational needs in accordance with the programme	Coordinator/team	2010	completed	working time	
To report to the programme work group	Coordinator/team	As of 2010	reported	working time	1-3 times per year
To report to the political bodies	Deputy Mayor of environmental sector	As of 2010	reported	working time	once a year
To organise training, as required	Coordinator/team	Continuously	arranged	Depends on the required education and the amount of it	External instructors are used, as required
To update the partial programmes (theme-specific)	Persons in charge of the programmes	Annually	updated		Updated more often, if required

2. Follow-up of sustainable development

Sustainable development is determined as the guiding principle of the Turku strategy package. This requires the organisation of the follow-up of sustainability in the activity of the city organisation and the municipality on a general level. As for ecological sustainability, the follow-up must be carried out in cooperation with the six largest cities in Finland through the reporting of sustainable development established during the previous council period. As for social and economic sustainability, the follow-up requires more extensive, cross-administrational responsibility than before. The reporting could be carried out less frequently than every year, for example every two years. Data collection and the publishing of the development trends of the selected indicators for sustainable development via the Internet must be organised annually. A cross-administrational work group is established for the follow-up. To support the implementation of the follow-up and sustainability principles in practice, eco-support person are designated and trained in the municipal administrations.

Target	Measures	Responsible party	Schedule	Indicator	Resource requirement	Comments
A report of sustainable development in Turku is published every other year (by utilising the cooperation between the six cities)	A cross-administrational reporting group is established	Central management	2009	Group designated	Working time	Can be part of the programme work group mentioned above
	Indicators for sustainable development are determined for 2010-2013	Designated work group	2009	Indicators determined	Working time	
	Data collection, reporting and publishing are organised	Designated work group	2010	Data collection, reporting model and report completed	Working time and makeup and printing costs	
200 climate and eco-support persons are trained to implement the sustainability criteria in practice in the municipal administrations	Eco-support persons and a person responsible for the organisation of their training are designated	All municipal administrations and business firms/City Board	2009	Support persons and persons in charge designated		
	An adapted training programme is prepared for Turku on the basis of the existing models	Person in charge of eco-support person activity/VALONIA	2010	Training programme prepared	Person's work contribution	
	Implementation of training of 200 eco-support persons	Person in charge of the eco-support activity/VALONIA	2013	200 eco-support persons trained	Person's work contribution	

3. Transferring to the sustainable development budgeting system

According to the programme work assignment, "the programme structure supports the decision made by the City Council on the budgeting in accordance with sustainable development". Accordingly, the budgeting of sustainable development should be carried out on the level of the entire city organisation, and it should be based on the system covering all the eleven execution programmes in its final extent.

Transferring to the sustainable development budgeting system requires more extensive and longer-term preparation than has been possible within the framework of the programme preparation. The aim is to fit the budgeting for sustainable development, the reporting on sustainable development and the comparison work of the six cities for sustainable development together, as applicable, during the programme period 2009-2013. In this connection, it should also be noted that the management system in question will not replace or technically change the actual economic budget or budgeting process, but creates a synchronised process in terms of the schedule on the side of it, which is used to set targets, as well as follow and control the influences of the city on the environment and sustainable development.

The budgeting for sustainable development can be carried out by taking into use the EcoBudget concept of the network of the cities for global sustainable development (ICLEI), which is also defined in UN's HABITAT programme and by the global federation (UCLG, United Cities and Local Governments) as a tool to promote sustainable, social and ecological development of the cities.¹ The concept was developed in cooperation with the cities and has provided good experiences all over Europe. EcoBudget is an environmental and sustainable development management system, which has been developed for the use of the cities and which resembles their budgeting process. The system allows the setting of targets in accordance with the scheduling of the budget cycle and following the ecological effects and the influences of sustainable development in the city's operations, as well as budgeting and following the effects of the city's operations on natural resources, such as the climate.

The Integrated Management System (IMS) compatible with EcoBudget can also be used to support the development work. IMS was launched by the secretariat of the Union of the Baltic Cities for environmental and sustainable development in cooperation with ICLEI and other European partners. The budgeting for sustainable development can be created in the early phase for the themes covered by the Climate and Environmental Programme. During the development work, the new CHAMP project shared by the Union of the Baltic Cities, ICLEI and the Finnish Federation of Municipalities can be used as a support, which aims to promote the execution of the climate-related targets in municipalities and offer support for the introduction of management systems, which are in compliance with sustainable development.

Participation of the citizens and interest groups

The Climate and Environmental Programme was mainly prepared by officials. The basis for the preparation and programme has been the long-lasting work for sustainable development in the City of Turku. The participation of the citizens and interest groups has been implemented in several ways. Due to schedule-related reasons, it has not been possible to arrange corresponding participation in terms of the preparation of the Climate and Environmental Programme. However, the participation of the citizen society is essential for achieving the targets of the programme in the operations of the city and in terms of extending the targets to the surrounding society (which, for example, drew the attention of Marko Joas, Professor of Public Administration in Åbo Akademi, who gave an expert opinion on the programme).

A participation system will be developed for the implementation of the Climate and Environmental Programme. The system will be included in the programme during the first update in 2010.

¹ Shared launch/publishing of EcoBudget during the ICLEI general meeting on June 13-19, 2009.