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## SUSTAINABLE MOBILITY AS A PART OF AN OVERALL STRATEGY TOWARDS GREEN URBAN ECONOMY

### Abstract

This article creates a link between the general term of green urban economy and sectoral exemplification of sustainability in transport. The objective is to prove that a green city cannot exist without sustainable mobility and complex actions at different decision-making levels are needed. The authors start from discussing the terms of green economy, green urban economy, and sectoral sustainability. The genesis and development of the green urban economy concept including the sustainable transport in cities are analysed through literature reviews and critical assessment of policy documents, and both these issues are treated as interconnected and interdependent. Special emphasis is placed on determining the roles of policy makers at different levels (international, national, regional and local) equipped with appropriate policy instruments. As a case study at the local level, the development of electric cars (EV) in Norway is presented. The article argues that transport solutions can be recognised as essential elements at each level of interaction in urban policy and sustainable mobility solutions can determine the implementation efficiency of a whole green city package.

**Keywords:** green urban economy, green cities, sustainable transport, sustainable mobility

### Introduction

Sustainability as an approach started at the international level, moving progressively to national levels and finally returning the authority to local governments. In contrast, the green city seems to be a narrow term which can be investigated on a local perspective only. Nonetheless, nowadays both issues are interconnected

and interdependent. Sustainability is included in the green urban economy, but also microeconomic local policy instruments are transferred and translated regarding sustainable development. Roles of each policy maker at different levels (international, national, regional and local) are to respond immediately to advance climate change by using methods suitable for their communities. To achieve global goals of a transition to the green economy there is a need of support from all the mentioned levels and involving a variety of participants from many sectors to generate the most efficient sustainable solutions. One of the elements of the green urban economy is the sustainable mobility which often is treated as a target itself. In this article, the authors show a wider context of mobility in cities and prove that dynamic interrelations among different actors and sectors in urban areas are essential.

This article focuses on the transport sector from the perspective of the evolution the green urban economy concept. The objective is to prove that a green city cannot exist without sustainable mobility and complex actions at different decision-making levels are needed. The authors start with the theoretical background and discuss the terms of green economy, green urban economy and sectoral sustainability. Through literature reviews and critical assessment of policy documents, the authors analyse the genesis and development of the green urban economy concept including the sustainable transport in cities.

## **1. Attempts to define green economy**

Originally green urban economy derives from the green economy concept. There is no formal or official and precise definition of green economy in any mainstream theory of economics, although some organizations have attempted to define it. The United Nations Environment Programme describes green economy as a combination of human well-being, social equity, and environmental protection. This definition underlines public and private investments as a tool to reduce pollutions and minimise carbon emissions (UNEP, 2011). The Green Economy Coalition highlights the resilience role of the green economy which provides a higher quality of life within the availability of the Earth's resources (GEC, 2011). The International Chamber of Commerce links green economy to economic growth and protection of the environment (ICC, 2011). The United Nations Conference on Trade and Development has accentuated that a transition to a green economy requires a reduction in natural resources depletion, lower degradation of the environment due to economic activity (UNCTAD, 2011). The Danish 92 Group underlines the transformation process as a part of the green economy, including similarly to UNEP, the human well-being, and environmental protection. The definition places a particular focus on equity as a necessary criterion of green development (Danish 92 Group, 2012).

Additionally, the mission of one of the United Nations divisions (United Nations Department of Economic and Social Affairs – UNDESA) is to promote sustainable development. In their Guidebook to the Green Economy, 11 standards of the green economy have been specified as most commonly used. Firstly, the green economy

is a means for achieving sustainable development. Then, it should create green jobs. The green economy is resource and energy efficient and should respect planetary boundaries, ecological limits or scarcity. Also, integrated decision-making is used. The green economy measures progress beyond GDP using appropriate indicators. It is equitable, fair and just – between and within countries and between generations. It protects biodiversity and ecosystems and delivers poverty reduction, well-being, livelihoods, social protection, and access to essential services. Moreover, it improves governance and the rule of law. Finally, it will internalize externalities (UNDESA, 2012). Those principles point out the balance of all economic, social, and environmental dimensions of sustainable development.

As it is well described in the literature (e.g. Khor, 2011; UNDESA, 2012), there are several types of measures and policies to promote green economy in the context of sustainable development. The economic and social aspects of the value of natural resources should be recognized by local governments. Environmental protection should be a priority of the national politics, and nature-friendly activities should be promoted.

## 2. Green urban economy and link to sustainable mobility

For the first time, the phrase “sustainability” was popularized by the United Nations World Commission on Environment and Development (WCED) in *Our Common Future* report of 1987 and sustainable development was defined as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (WCED, 1987). The report was quickly named in recognition of the WCED chairman and Prime Minister of Norway, Gro Harlem Brundtland.

A quite precise definition of sustainable urban development can also be found in the publication of Camagni. Here the term is defined as a process of synergistic integration and co-evolution among great subsystems (economic, social, physical and environmental), which guarantees the local population a non-decreasing level of well-being in the long term, contributing by this towards reducing the environmentally harmful effects (Camagni, 1998). The integration and cooperation of four subsystems are included here which should result in positive internal and external effects.

United Nations Agenda 21 underlined participation and cooperation of local governments as a determining factor for sustainable development (Agenda 21, 1992). After that, the objective that the realization of the green urban concept was not possible to achieve without contribution from local governments became a visible goal of the green urban economy concept. The term Green Urban Economy was brought to consideration in 2011 by ICLEI (Local Governments for Sustainability), which is a leading global network of over 1500 cities, towns and regions. In the new millennium, this is already a political and practice-oriented approach which combines the global importance of economic activity in city areas with cooperation with local governments in managing the challenges of the future development.

It involves the transformation of the governance process in the urban economies to the sustainable direction as well as more environmental and socially acceptable. When the green economy approach is integrated into all aspects of city building such as urban planning, transport, energy production, recreation, and finally water and waste management, the sustainability goals can strengthen the resilience process. The successful city politics needs to be more creative, develop a new way of thinking and making arguments, having correct accounting principles, indicators, as well as to research the reality. The green urban economy approach can be used to intensify effects leading to direct actions on the way to the sustainability. The city governments are supposed to coordinate policies and decisions and be fully equipped with strategies and planning abilities.

The green urban economy approach is associated with a shift to a cleaner economic activity leading to investments, working places and competitiveness. It is a development model which can secure sustainable economic growth, green jobs, resource depletion, and limit environmental degradation, pollutions, and greenhouse gas emissions (Ahmed, 2013). It is a more and more important concept in the environment of today's challenges to the future urban development in cities which are usually listed as the climate change, fight against air pollutions, limited supply of fossil fuels, etc. (cf. e.g. Ostiari, Vecchi, 2013). Therefore, it is justified to require and expect a positive impact of green city instruments implementation on the overall economic growth. It has to be mentioned that the understanding of responsibility for urbanization, as well as the complexity of economic and social development, draw the policymaker's attention to a variety of innovative and sustainable transport practices and technologies (AICGS, 2013).

The term of "sustainable transport" or the commonly used "sustainable or green mobility" refers to the accessibility of individuals and societies to the affordable and efficient choice of the transport mode with the environmental content condition such as reduction of emissions, noise, land use and recycling demand of its components. Sustainable mobility reduces the consumption of non-renewable resources as well as delivers cost-effective solutions to support green economic development (CST, 2002). Ardila-Gomez and Ortegon-Sanchez point out the importance of the urban mobility systems as a driving factor for economic development and a contributor to achieving improved standards of living of inhabitants. (Ardila-Gomez, Ortegon-Sanchez, 2016). Similarly, the OECD defines the economic sustainability of urban mobility as a value of increased accessibility that has been set up by transport accompanied by reduced environmental and social cost of the ability to move (UN-Habitat, 2013).

### **3. International dimension**

#### **3.1. The European Union perspective**

The European Union is most active for sustainable development goals and achievements at the international level in Europe. The EU considers the issue

of sustainable development as an objective that should guide its strategy for the coming years and should be reflected in any programs and activity. For the EU, sustainable development has proven to be an attractive and valuable idea because of its positive, long-term vision of prosperous and equitable society that is ensured of a better quality of life, also for future generations. It has become the idea of offering a vision of a cleaner, healthier and safer environment. Achieving this status requires both economic growth, adequate social and environmental policies of the EU and belief among the member states and traders that these policies are paying off. According to the European Commission, in the coming years a sustainable development strategy should become a driving force for institutional reform and changes in regulations. Sustainable development is going to bridge the gap between business and society. The European Union has consistently tried to involve the idea of sustainable development in policies and more and more areas: climate change and clean energy, sustainable transport, sustainable production and consumption, protection of natural resources and management, public health, and social cohesion, demography, and migration.

As early as in 1997, in the Treaty of Amsterdam, the EU made the first step towards turning to the concept of sustainable development. The signatories of the Treaty of Amsterdam were the states forming the European Union, 15 countries belonging to the so-called "Old EU". Sustainable development became an overarching objective of EU policies. The agreement entered into force in 1999 and influenced all European policies, also in the context of sustainable development. The EU values such as freedom, democracy, respect for human rights and fundamental freedoms promoting the social aspect of sustainable development were defined. It can be therefore concluded that the social dimension of sustainable development was formalized and incorporated in the legal framework of the EU.

The Madrid Declaration became the groundwork for the following actions of the European Commission (Ignatowicz, Dołęgowska, 2014) which in November 1997 published *Energy for the Future: Renewable Sources of Energy, White Paper for a Community Strategy and Action Plan* with the assumptions previously published in *The Green Paper*. The strategy of the European Union for renewable energy was confirmed in the objective in *The White Paper* with the purpose to double the contribution of renewable sources of energy to the gross inland energy consumption within 15 years (i.e. up to 12% by 2010) (EC, 1997).

A primary meaning of the concept and principles of sustainable development was also recognized by the European Union in the Lisbon Strategy in 2000. All the three components: economic growth, social cohesion, and protection of environment became a purpose for achieving sustainable development. The strategic goal of the concept was to deliver the title of the most competitive economy in the world in 2010. The economy should become capable of sustainable economic growth, based on dynamic, modern and knowledge-based development. The agreement separated goals into two dimensions – economic and social. The environmental aspect was added at the summit in Gothenburg in June 2001. The Gothenburg declaration launched the first EU sustainable development strategy offering tools and objectives which can be used against the trend denying the idea of sustainable development

and referring to the need to change in the process of European strategies and policies to ensure mutual reinforcement of economic, social and environmental policy. The principal objective was to coordinate policies at the EU level to be consistent with the concept of sustainable development. It formed the core of the EU's policies towards sustainable development setting the key priority challenges for the period until 2010 which includes: climate change and clean energy, sustainable transport, sustainable consumption and production, conservation and management of natural resources, public health, social inclusion, demography and migration, global poverty and sustainable development challenges. The strategy was renewed in 2006 accenting the need for global solidarity and the importance of strengthening the work with partners outside the EU (EC, 2015).

The "Europe 2020 strategy for smart, sustainable and inclusive growth" was adopted in 2010 to accelerate the economic and employment growth. According to the climate change and the energy sustainability objective, greenhouse gas emissions will be maintained at a level of 20% lower than in 1990, 20% of the energy production should come from renewables and the energy efficiency should increase by 20%. The document also indicates the willingness of the EU to commit to a 30% reduction in greenhouse gas emissions by 2020. The targeting actions were presented on three mutually reinforcing priorities: smart, sustainable and inclusive growth. (Europe 2020, 2010). The key climate and energy targets defined in the EU to reduce its greenhouse gas emissions are set in the 2020 climate and energy package, the 2030 climate energy framework and the 2050 low-carbon economy strategy (EC, 2016).

Regarding sustainable transport in cities at the EU level, it has to be underlined that the European Commission and other EU institutions have been quite active. As a follow-up to the 2011 Transport White Paper "Roadmap to a Single European Transport Area", in 2013 the European Commission came up with an Urban Mobility Package, which is presented at the Web portal – Clean transport, Urban transport (EC, 2017a). This action is entirely justified since 70% of the EU population live in cities and the transport demand in the towns generates inefficient, unfriendly and harmful effects such as air pollution, congestion or noise emission. The central element of the Urban Mobility Package is the Communication "Together towards competitive and resource efficient urban mobility" (EC, 2013). Following the Communication, the concept of Sustainable Urban Mobility Plans (SUMP) (SUMP was included in the Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: "Together towards competitive and resource-efficient urban mobility" and foresees that plans are developed in cooperation across different policy areas and sectors, across different levels of government and administration and in cooperation with citizens and other stakeholders) and further actions of urban access and road safety regulations, deployment of Intelligent Transport System solutions in urban areas were set out. It is also worth adding that also the support of cycling and clean and energy efficient vehicles is evident in the current EU policy. Additionally, in 2017 a report was published which created a new dimension of green urban economy and concerned assessing and improving the accessibility

of urban areas. In this report, the focus is put on the problem of reaching goods, services, activities and destinations in urban areas (EC, 2017b).

### **3.2. Environmental management standards**

The International Organization for Standardization (ISO) which was established in 1996 in Geneva (Young, Dhanda, 2013) is the world's biggest developer and publisher of international standards. ISO provides a set of environmental standards that a company is obligated to meet, known as the Global Green Standards (Maltzman, Shirley, 2011), energy management standards ISO 50001, ISO 45001 for occupational health and safety or ISO 37100 standards for sustainable cities and communities.

There are over 200 ISO standards for energy efficiency and the use of renewable energy technologies. The range of energy management systems such as ISO 50001:2011 can be adopted to building sectors, for the energy efficiency assessment or reduction of energy use. Implementation ISO standards for transport can contribute to the reduction of emissions and fuel utilization. ISO standards for renewable energy technologies apply to managing the energy performance by organizations. The environmental management standards ISO 14000 contribute to the environmental pillar of sustainability for private and public bodies to meet climate change challenges.

Supporting standards like ISO 14001 focus the requirements for the implementation of environmental management system (EMS) to achieve competitive advantage through resource efficiency improvement and reduction of waste. Like the other ISO 77 standards, this standard refers to the LEAN of total quality management concepts for continual improvement, here applied to the organization's system and environmental issues. According to ISO, the benefits of adopting ISO 14001 include such issues as compliance with statutory and regulatory requirements, employee engagement increase, company reputation improvement, attainment of strategic business aims, higher environmental performance and a variety of competitive and financial advantages such as efficiency improvement and cost reductions (ISO 14001, 2015).

The other standards from the ISO 14000 family concentrate on environmental challenges related to climate change, greenhouse emissions, as well as audits, communications, labelling, performance evaluation and life cycle assessment. ISO 14020 is responsible for environmental labels and declarations in the form of a statement, symbol or graphic design to indicate the environmental interaction of the organization's activity, product or services. ISO 14031, 14034 and 14063 correspondingly evaluate the environmental performance, technology and communication. ISO 14040 and similar standards contain principles and framework for the implementation of the life cycle assessment (LCA). LCA is one of environmental management techniques which assist in identifying possible application areas for potential environmental aspects of products, provision of information, choice of indicators and marketing. ISO 14064 and similar standards provide guidelines and requirements for quantification and reporting of greenhouse gas emissions helping to promote the proper environmental business as well as energy

management in organizations. There are also a variety of standards under development to advance climate change and to provide new methodologies and guidance for organizations (ISO, 2017).

From a sustainable city perspective, there are just four published standards following six criteria in the development phase. The most common standard, ISO 37100:2016, is referring to municipality or local governments organizing the definitions in the context of sustainable development, as well as it is correlating with the infrastructure and other complementary objectives. It is especially the standard, ISO 37101:2016, published in May 2014 (ISO OBP, 2017) that undoubtedly contributes to the implementation of sustainability and resilience in a community's strategy to advance interaction of economic, social and environmental areas. ISO 37101 underlines the role of dialogue and cooperation with all the concerned parties to help the community to progress towards sustainable development plans, strategies, 82 programs and projects or services. The standard applies to all types of communities and responds to whole or partial implementations of sustainability in communities. ISO 37120:2014 focuses on the social pillar of sustainable development – city services and the quality of life. This standard provides requirements and indicators for measuring the technical and functional performance, safety and efficiency of the technologies used, as well as improvement of services rendered to all inhabitants of the community (ISO News, 2015). The primary objective of the ISO/TR 37121:2016 standard is to provide an inventory of the existing guidelines and approaches on sustainable development to contribute to the implementation of ISO 37120.

One of the other ISO standards, ISO 20121:2012, can also be mentioned for managing sustainable events. The standard was published in 2012 and contains practical requirements and guidance for planning and organization of public events, such as conferences, concerts, sports competitions to avoid negative economic, social and environmental impacts (ISO news, 2012).

## **4. National and local dimension**

### **4.1. National and local government responsibilities**

The government can use two primary policy instruments: direct regulations and market instruments. Direct regulations operate on the principle of command and control and include standards, licensing, state environmental regulations, plans, and covenants. On the one hand, traditional regulatory instruments can contribute to reduction of emissions, however, on the other hand, they involve high monitoring and enforcements costs due to the complexity in the establishment of environmental standards. Markets mechanisms and other economic/fiscal instruments have an indirect influence through the price mechanism and shift the cost of environmental pollution to the polluters. The local governments can presuppose the use of subsidies, taxes, using public procurement as a method of control, establishment of new policies, as well as other regulations to stimulate behavioural

change and to improve the urban environmental quality (Rasul, 2013, cf. Young, Dhanda, 2013). A combination of the tolling of congested roads and bridges, higher fees per unit in the community (electricity, water, waste) and community education campaigns can be effective in promoting the green practices (Johnston et al., 2013). Cities can reduce costs and increase revenue by leasing governmental facilities for renewable energy installations. Furthermore, energy efficiency initiatives can provide high-quality jobs as the sector expands. Driving recognition campaigns can also be used to encourage and reward companies and individual residents for green actions. It has to be added that instruments regulating the transport sector are only one of the measures which should be included. The important issue is to achieve policy goals through involving different areas and sophisticated instruments.

The urban mobility systems are adverse to economic, social and environmental dimensions of sustainable transport. From the economic point of view, it counteracts traffic congestion and has acceptable infrastructure costs reflected by more flexible and adjusted customer fares. Sustainable transport reduces mobility barriers and the traffic accident risk in cities, neutralizes the loss of time and land, and above all, creates green jobs and other economic benefits for society, final users or others associated with transport improvements. The social role of sustainable transport focuses on the health impact on humans, liveability, and safety and ensuring mobility opportunities for all groups in communities. Finally, from the environmental perspective, sustainable mobility reduces noise, smog and urban sprawl in cities. The green mobility change also counteracts the depletion of natural resources, and specifically, the air, water, habitat pollutions (Litman, Burwell, 2016, Newman, Kenworthy, 1996).

According to the OECD, the climate policies and regulations concerning the sustainable transport infrastructure can be intensified by reforming and making adjustments in the 64 domestic regulatory frameworks, establishment of strategic goals, creation of marketing and financial incentives and, last but not least, optimization of the use resources along with intensification of the green behaviour promotion (OECD, 2013). Sustainable public planning influences not only the choice of efficient green transport, but additionally ensures a better quality and accessibility of mobility facilities for all inhabitant groups regardless of their health condition or social status (Lopez-Ruiz et al., 2013).

Ensuring public access to the green form of transport is a daunting task for a city which wants to become sustainable (Kabani, Kabani, 2013). The discussion about the planning of sustainable transport and urban mobility systems usually starts with the standard non-sustainability components in transport such as limitations of the conventional petroleum resources, the issue of congestion in urban corridors and the level of mobility. Therefore, consideration is given to greenhouse gas emissions and their effect on the global warming and the adverse impacts of urban air quality problems as well as the number of motor vehicle accident fatalities and injuries, and finally, the loud noise and its harmful consequences to human health (Black, 2010). The change of the non-sustainable way of thinking and transferring the urban mobility to become more accessible, efficient and environment-friendly involves both technological innovations and socioeconomic development (Serna et al., 2016).

Lopez-Ruiz points out an additional challenge for sustainable urban mobility planning that is hard to make green and optimize. It refers to the structure of city logistic and distribution services such as retail and delivery business, catering, construction improvements and waste collecting, requiring freight transport services (Lopez-Ruiz et al., 2013).

Kennedy et al. have specified the local government responsibilities for sustainable transport by including the establishment of region-wide mobility plans, administering the urban design, infrastructure governance, finance management, price control, responsibility for monitoring and reduction of vehicle emissions as well as urban freight mobility and support of the local economic development (Kennedy et al., 2005). Wheeler suggests a reduction of the traffic volume in cities by providing the following solutions: sustainable urban policy changing or development to support green transport modes, establishment of alternative mobility priorities (pedestrian-friendliness, bicycle planning and development of the public transport infrastructure in form of bus rapid transit or light and heavy rail systems), redesign of transport pricing to include both economic, social and environmental expenses, green transformation of people's performance and lifestyle to minimize a high degree of mobility lead (Wheeler, 2013). Additionally, Newman points out the city planners' use of the density tool to provide reasonable solutions to public transport (Pearson et al., 2014). Black suggests using a combination of public policy measures and technology as a solution to resolve the non-sustainability problem in transport. There are a variety of methods that can be adopted including constraining the transport demand by application of taxation, subsidies and encouragement through education programs at national, multinational and global levels. It can be quite useful combined with technology improvements in the development of alternative fuels such as the use of hydrogen, vehicle design as well as the appliance of electric and hybrid motors or intelligent transport systems (Black, 2010). Vehicle fleets can also be upgraded by downsizing, rightsizing, the use of green procurement or efficiency improvement. Downsizing involves reductions in the number of old vehicles and at the same time encouraging employees to walk, ride a bike, use car-sharing (car pools) or public transport services. Rightsizing, as well as green purchasing, involves fossil-fuel prioritizing and a practical choice of vehicles to the assigned tasks. Finally, improvement of operational efficiencies is about the economically and cost efficient use of vehicles (Johnston et al., 2013).

The most useful tool for the local governments wanting to apply the green improvement for sustainable transport in a practical policy context is the use of integrated indicators to address the environmental and climate challenges related to city mobility (TØI, 2012). The World Business Council for Sustainable Development (WBCSD) has developed a sustainable mobility planning tool with 22 indicators to analyse and improve the city's current situation and develop policy and infrastructure solutions regarding sustainable urban mobility. Indicators cover the following areas of global environment, economic success, quality of life and finally the mobility system performance (WBCSD, 2015).

## 4.2. Electric cars (EV) in Norway – case study

Despite the adverse weather conditions combined with the varied topography and long distances around the country, Norway becomes an actual leader of electric vehicles deployment and consequently has achieved the highest number of electric cars *per capita* compared to other nations. The aim of the sustainable mobility policy in Norway is to increase the growth of passenger transport in urban areas by using public transport, bicycles, and walking support. Norway has defined targets for reducing greenhouse gas emissions for various sectors and the cost of it. For the transport sector, various incentives are taken to increase the proportion of an environmental and climate friendly fleet and the use of electric vehicles (Figure 1).

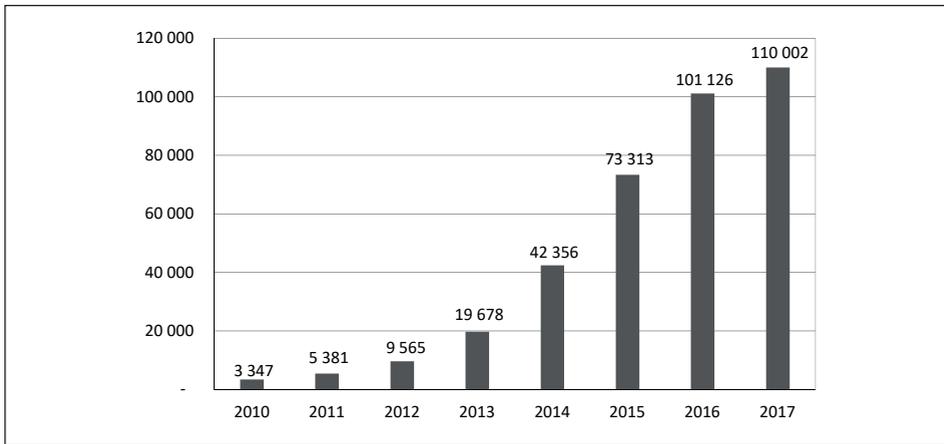


Figure 1. Electric car stock in Norway (as at 31 March 2017)

Source: (Norsk elbilforening, 2017)

Numerous challenges relative to the transport sector electrification in Norway need to be characterized. The first of the potential large development challenges is a large need of finding financing sources for the charging infrastructure expansion. As at 10.07.2007 there are 2116 charging stations and 9365 charging points in Norway in total (NOBIL, 2017), and when it is compared to the growing number of electric vehicles, it leaves the possibility of providing better available public charging stations around the country. There are also identified charging challenges in areas with apartment buildings, where the concentrated numbers of dwellings do not allow a direct connection of the car to an electric socket and require a special infrastructure of charging points. In addition to the infrastructure problems, other challenges are related to the limited range of electric cars that motivates buyers to keep another gasoline or diesel powered car in the household. A large number of electric vehicles using collective lanes causes congestion problems for the public transport and results in the loss of revenue of ferry operators, parking companies, etc. The final challenge refers to the supporting electric cars purchase which runs counter to the stimulation of public transport share and combined with the phasing out incentives can lead to marked disturbances (Figenbaum, Kolbenstvedt, 2013).

Due to the success of the Norwegian electric car policy, the purchase of electric vehicles has become economically feasible and their use attractive. Moreover, electric cars get a positive reputation and continuing political interests for better incentives in widely populated cities with the ambition of electrification and decarbonisation of the transport sector as well as reducing local air pollutions.

Fiscal incentives that are worth mentioning support purchasing and using electric cars as well as combine state, municipal and local incentives. State incentives refer to tax exemptions on car purchase and sale (value-added tax and registration fees), lower annual driving fees and tax benefits for a company car and increased travel allowance. Municipal and local incentives respond to the benefits for electric cars users such as permissions to use collective lanes in cities, reduced or no parking charges in public parking spaces in city centres, no road tolls, several free ferry rides and tax exemptions. Free of charge public charging points are also available (Holtmark, Skonhøft, 2014, Ioannides, Wall-Reinius, 2015).

The effects of such government support actions are attracting customers motivated mainly by economic and environmental factors. Since electric vehicles have a competitive price, they are sold both to private individuals, businesses, municipal authorities and institutions.

## 5. Business dimension

While the customer awareness about the climate change is growing, the corporate environmental responsibility is becoming increasingly important. The most important role in promoting the green lifestyle is played by sustainable choices made by companies and organizations. It creates a variety of possibilities for all businesses wanting to improve their environmental performance. Companies realize that a combination of production and environmentally friendly products can increase profits, so they adopt a range of marketing strategies including green marketing, eco-product promotion as well as environmental management systems to advance sustainability in their activities.

From the business perspective, some benefits of including sustainable activities can be listed. First of all, the brand attribute such as product differentiation and producing environmentally friendly goods and services can lead consumers while making their purchases. Tanner and Wolfing Kast examine the motivation of choosing green products. They suggest that the positive consumer purchase behaviour is stimulated by concern for environmental protection, fair trade, local products, and availability of action-related knowledge and discouraged by time barriers and shopping frequency (Tanner, Wolfing Kast, 2003). From the financial perspective, there is a possibility of cost cutting as well as reductions in waste and energy use. A company's value can increase by building green structures instead of those of a conventional type. Senge points out the importance of a company's leadership role as a way to influence policy developments and the direction of future regulations. By making responsible environmental investments, businesses can change the image and brand and take the social responsibility globally (Senge, 2008).

In the strategic level, companies can choose to use one of the three basic business approaches. The first of them contains the core of the corporate function, innovation, as an instrument to develop new and preferable products. It can assist in eco-efficiency by various strategy options such as reduction of packaging, reuse, and recycling of materials, minimising the use of resources and greening the production and distribution to become more efficient. Redesign of products and greening the supply chains can contribute to saving money for both customers and manufacturers and make conventional business operations more sustainable. The second marketing approach reflects the client's and the company's choice in promoting green consumption. By selecting and using, customers can choose sustainable products. On the other hand, companies stand for responsible production, marketing, and advertisement. Finally, the last approach includes choice editing as a way to impact the consumption and supply patterns and the way to lead customers and companies to sustainable decisions (WBCSD, 2008).

Green marketing has become one of the most important key factors in business strategies for companies wanting to incorporate environmental protection into strategic marketing planning. The use of marketing tools such as project management, green advertising, and eco-labelling can help to influence the consumer behaviour and contribute to the realization of sustainable practices. MacDonough and Braungart point out the opportunity to incorporate two principles in project management: planning of minimization of environmental impacts (running projects more and more efficiently), and including monitoring and controlling of the environmental impacts while greening the organization. (MacDonough, Braungart, 2002). Green advertising accentuates attributes such as recyclability, composting, and reduction of pollution and underlines the product's environmental friendliness. (Manrai et al., 1997). The use of "eco-labelling" helps to identify products as "green" and environmental friendly (Joshi, 2004) what allows making production and consumption more sustainable (De Boer, 2003). Eco-labelling stimulates the environmental friendly innovation using consumer willingness to pay more for green products (Dosi, Moretto, 2001).

Eriksson suggests that according to that logic such idealistic customer behaviour can replace the environmental regulations (Eriksson, 2004). To become more sustainable, companies should also introduce green innovation as a target for their business strategy and a part of corporate vision (GreenBiz Staff, 2008). By using market research and surveys in all activities, companies can examine customer preferences and make references to green products and services. Eco-design 5 is an approach used to integrate ecological aspects in product design as well as in the entire life cycle of a product (Hora, 2016). Johansson analyses 20 primary factors contributing to the implementation of Ecodesign in product development and organizes them into 6 categories such as management, customer relationships, supplier relationships, development process, competence, and finally motivation. Acknowledging the following factors can be advantageous when becoming more environmentally conscious in the development of competitive products. The primary role of management is to provide support to product development actions. The second area, the customer's and the supplier's involvement contributes to efficiency and proper

focus on consumer needs. Finally, the motivation and competence are connecting factors for linking the remaining areas in the product development process (Johansson, 2002).

According to Ginsberg and Bloom, there are no comprehensive environmental marketing strategies that will solve all the dilemmas associated with the customer's choice of green products over other less environmentally friendly ones (Ginsberg, Bloom, 2004). Companies should seek for a competitive advantage using accurate models of environmental marketing and choosing the direction towards sustainable development (Karna et al., 2003). The green approach can also be used in the construction industry by building green buildings, in transport with a concept of green mobility and use of, for example, electric vehicles, or including production of energy from renewable sources in the energy supply sector. The objective is to achieve a larger efficiency in the use of resources with the same economic output. Local governments establish policies and provide supporting programs to other organizations and corporations. The manufactory produces wind turbines or solar panels which can be installed. Community organizations promote green project planning and management in the working environment.

The meaning of greening the supply chain is to make effort to save money and the environment. According to Young and Dhanda companies should consider the following areas: facility design, logistic and transport, and green procurement (Young, Dhanda, 2013). These areas are closely connected with sustainable mobility objectives.

Table 1. Greening the supply chain

Area and types of activities		
Facility design, equipment, systems	Logistics and transport	Green procurement
<ul style="list-style-type: none"> <li>• Installation of green energy-efficient installations to prevent energy loss</li> <li>• Use of renewable sources of energy</li> <li>• Use of more efficient conveyor systems</li> <li>• Keeping on maintenance to avoid inefficiencies</li> <li>• Use of automated storage, retrieval and transport systems to minimize trade-off energy costs</li> <li>• Use of warehouse management systems (WMS) to reduce transport distances and energy costs</li> <li>• Shift to reusable packaging, containers, and pallets.</li> </ul>	<ul style="list-style-type: none"> <li>• Strategic choices for a greener supply chain</li> <li>• Cooperation of suppliers and retailers to achieve cost efficiencies</li> <li>• Centralized locations of warehouses to provide maximum shipping potential</li> <li>• Use of truck routing software to keep efficiency</li> <li>• Use of alternative fuel such as biodiesel</li> </ul>	<ul style="list-style-type: none"> <li>• Green procurement policy</li> <li>• Choice of green products</li> <li>• Communication of green criteria to suppliers</li> <li>• Measuring performance using supplier scorecards</li> <li>• Supplier evaluation</li> <li>• Green certifications, standards, codes of conducts, scorecards</li> </ul>

Source: (own elaboration based on Young, Dhanda, 2013)

As presented in the table, logistic and transport solutions which are crucial to affect the company's carbon footprint should be redesigned to be more efficient and to avoid environmental impact. Furthermore, the reduction in energy costs is essential regarding the facility design, equipment and warehouse systems. Effective use of resources frees up the capacity for alternative initiatives. More companies should establish green procurement policies in their strategies and choose intentionally green products. Cooperation with suppliers needs to be strengthened to accommodate sustainable supply chains. These interrelations prove that sustainable transport, directly and indirectly, determines the real and practical implementation of the green city concept.

## Conclusions

The concept of the green urban economy does not mean just one simple idea and only objective of the economic policy but incorporates a broad range of social and economic instruments at the levels of international guidelines, state policy, local government, and business. Transport solutions can be recognised as essential elements at each level of interaction. Even more, sustainable mobility solutions often determine the implementation efficiency for a whole green city package. To achieve these goals every citizen and decision-maker should be included (cf. e.g. Daley et al., 2013). Establishment of cooperation between city governments, businesses, employers, institutions, neighbourhoods, households, and individuals is essential and indicates the biggest challenges for green cities. Including incentives and regulation in a city's policy stimulates cooperation with other parties as well as inspires or requires a behavioural change. Stable cooperation in achieving green practices and solutions can have a powerful influence on the city's development and green business practices. Partnerships support the establishment of a sustainable transport infrastructure and services and help to create relationships to overcome financial challenges.

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