EU strategy for sustainable urban environment: challenges and opportunities

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“Our cities must be places where human beings lead fulfilling lives in dignity, good health, safety, happiness and hope.”

Habitat II, UN Conference 1996
Executive Summary

This thesis gives an insight into the strategy for sustainable urban development of the European Union and the challenges and opportunities related to it. The analysis and the main findings provide clearer overview on the urban characteristics and conditions that underline the building of sustainability in human settlements. The scope of the paper will extend from the basic sustainable strategy of the EU to real life examples of role-model cities in the Union (Athens, Greece and Stockholm, Sweden). There will be used the PESTEL combined with SWOT frameworks to outline the major challenges and opportunities, which are present in the selected cities. Cities’ results will be presented and commented at the end, but no comparison between the two cases will be conducted due to the specific geo-strategic location of them and considerable differences in historical and socio-psychological development of the countries they are located in. However, both countries (and cities particularly) share common sustainability goals since they are member states of the European Union and the results they show affect the overall EU strategy for sustainable urban development.

Delimitations: This paper focuses on two countries that are both members of the European Union and as such share the common targets and obligations for environmental sustainability. However, as analysis will show, they have very different paces of social, economic and environmental development. Thus, it is expected that they face different challenges and opportunities in achieving sustainable urban development. Hence, a comparison between the two countries is barely possible. Second limitation is that due to the fact that the results in the analysis entirely rely on statistical data available online, there is no single synchronization in the time of the data used in the different factors (e.g. some factors use data from 2009 and others from 2003). However, all data between states is synchronized by time, as figures are the latest available in the sources. Another limitation that has to be pointed out is the recent debt crisis that stroke Greece and would bring a whole new angle to the analysis. Thus, the events related to Greek recession are omitted from the analysis as they require a new topic to be added to the paper, which will not fit in the page volume requirement.

Structure: This paper is divided into four major sections (first and last sections are respectively Introduction and Conclusion). Section II focuses on the literature related to sustainable urban development on global and European level; Section III is dedicated to the methodology and introduces the PESTEL model designed for answering the research question of the topic, including further
explanation on its components. Section IV represents the results under the PESTEL framework for the two cities with explanations. Section V summarizes the main findings of the analysis and gives an answer to the research question.

In order to evaluate certain measures of sustainable development it is important to observe the fundamentals of sustainability, the main events and decisions that were made and the most crucial documents that were drafted. Thus, the first part of this paper is dedicated to the Sustainable Urban Development history and the processes that let European Union to undertake major steps towards sustainability in the urban environment. This part gives the reasons and the main ideas that stand behind Union’s decisions related to the building of sustainable urban environment. The events and the documents are ordered chronologically and gradually the topic shifts from global sustainable development to European sustainable strategy. That gives a harmonized link to the second part of the paper, which is focused on the methodological framework that will be used for the analysis of the cities. In the following section it is explained the PESTEL framework along with theoretical overview of each factor involved in the model. The model goes through all types of factors that PESTEL includes and gives detailed information on how they influence sustainable urban development. Furthermore, this model is used in the analysis of the two cities in the next section. Data on the cities or countries is derived from variable credible sources – local governments’ web sites, Eurostat, UN database, World Bank statistics, OECD statistics, etc. The results are presented with detailed explanations, given the main topic of the paper.

In Section V the results from the two analyses are summarized and evaluated through SWOT framework, as both frameworks (PESTEL and SWOT) are combined in a single table. Each factor is further evaluated by emphasizing the challenges and opportunities derived from the analysis. In the conclusion the basic findings on the topic are elaborated.
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1. **Introduction**

Currently, we live in a century of increasing globalization and urbanization as technologies provide better mobility to people, urban migrations increase and consequently human settlements become bigger, more populated and the number of megapolises is rising. These trends become challenging to the idea of sustainable development, since bigger cities are extremely resource demanding, pollution intensive and create prerequisites for unsustainable production and consumption. Thus, large cities appear to be crucial for developing global sustainability. Here arises a contradiction: on one site, cities’ development creates challenges for sustainability; on the other site, they have enormous potential for sustainable development by offering numerous opportunities for it.

Today, around 80% of the Europe’s population lives in urban areas. The high concentration of human activity on the limited area of cities determines their great importance for the EU strategy for sustainable development. Urban regions’ planning and management become inseparable part of the initiatives for environmental sustainability in the Union. The EU sustainable development strategy enlarged to an extent, where multiple environmental targets have to be accomplished by all of its members – regardless at which point they entered the Union.

**Problem statement:** After the big enlargements in 2004 and 2007, EU became a union of contrasts. On one hand, stand the old member states that have been developing in unity and prospered together, and, on the other – still developing countries that hide a lot of opportunities along with the obvious challenges they face. This creates complex task for the EU strategy for sustainable urban development. It has to be flexible in order to tackle all specifications of the regions and cities; persistent and patient, since these processes take time and require urban planning and management changes; result-oriented, so it can keep track on the progress, identify and eliminate flaws on time; and most importantly, it needs to be holistic, because sustainability idea involves all aspects and activities of human life.

The European Union has already identified the importance of cities (especially large cities) for the overall sustainable development in the Union. The next step is to include the cities’ development patterns in the common environmental targets of the Union. These targets need accurate and working strategy to address the environmental issues and establish sustainable development. To create such
strategy EU has to understand the weaknesses and the strengths of the cities, to eliminate threats and exploit the opportunities. This requires thorough analysis that includes many variables describing each city’s characteristics. In order to examine the full range of possible weaknesses, strengths, opportunities and threats (which are present in the Union) there will be analyzed two cities of high contrast – Athens and Stockholm. The conducted PESTEL analysis gives a comprehensive insight of all factors that have an impact on the sustainable urban development. In that way the local environment will be understood as a hole from sustainability perspective.
II. Sustainable urban development – literature overview

1. Historical evolution of sustainable urban development concept

The importance of sustainable development has been increasing dramatically throughout the last 20 years. More and more economies and organizations commence overcoming the resource-intensive model and implementing sustainability in their legal, social and operating structures. Yet, the idea implementation proved to be elusive and difficult¹.

However, the theoretical framework that encompasses sustainable development is been evolving ever since 1972, when the Stockholm Summit was held (organized by the United Nations). The 70’s and 80’s was a period of many international conferences and initiatives within the scope of sustainability. After the Stockholm Summit the idea of environmental safeguarding and the relationship between human development and the environment became an important issue in the discussions of the EU on the subject. The Brundtland Report from 1987² has put the fundamentals of sustainable development by clearing its concept and purposes. The focus of this report was the understanding of the sustainable development not only as environmental or economic development, but also as balanced spatial development. In this line of thinking significant influence have urban planning and management. Thus, urban development is central for a number of reports, conferences and programs at European, national and local levels. Hence in the 4th Environmental Action Program (1987-1992) of the EU it is included an integrated approach to urban environment.

Furthermore, the main urban problems were elaborated and discussed in the European Commission’s (EC) Green Paper on Urban environment. There was pointed out the need of integration of sustainability in urban planning and management, as well as the necessity of monitoring and evaluation of the environmental conditions in European cities. Therefore, in 1991 an Expert group on the Urban Environment was established to fulfill the necessities required by the Green Paper. Major task of the experts was to consider how environmental objectives would fit into the local land use strategies of the urban areas. This was the beginning of the development of EU strategy for sustainable urban development.

In 1992 a global summit on the questions of environment and development was held in Rio de Janeiro chaired by the United Nations. On this summit were discussed major questions of human development and sustainability, and some important documents were issued. One of them is the so-called Agenda 21, which represents a global action plan for sustainable development. The part concerning human settlements elaborates the link between cities’ development and environment. This Agenda plays crucial role in the EC commitment to sustainable development expressed in the goals set in Agenda’s Chapter 28 (the chapter is dedicated to “Local Authorities' Initiatives in Support of Agenda 21”).

Following these steps the 5th Environmental Action Program of the EU (1992-2000) integrates environmental policies into EU policy. In this program the sustainable urban development rises on a higher level of importance, and becomes one of the strategic objectives of the Union throughout the years. This was the starting point of an intensive promotion of initiatives, programs and actions that provide guidelines and strategies for sustainable urban development. Some of the main initiatives in the program were performing assessment and monitoring of the progress towards urban sustainability. In 1993 the European Environment Agency has issued a detailed analysis of the environment in fifty urban areas in the Union. The report, called “Europe’s environment – the DOBRIS assessment” and its update – “Europe’s Environment: The Second Assessment” from 1998, outlined the environmental problems across EU and called for immediate actions.

In order to follow up Agenda 21 on a local scale the International Council for Local Environmental Initiatives (ICLEI) establishes a Local Agenda 21 on the European conference on sustainable cities and towns in Aalborg, Denmark in 1994. The result of this conference is the Aalborg Charter providing the political commitment of the participating towns and cities to work towards sustainability. This charter gives guidelines for progress in sustainability and sets the indicators for policy making and target monitoring efforts in this direction. It also promotes the campaign for European sustainable cities and towns. The main goals of the campaign are encouraging and supporting the cities through long term strategic actions for achieving sustainability.

This campaign helped the implementation of the Local Agenda 21 overall Europe. The goals and the strategies for achieving them were reinforced by a second European conference on the sustainable development problems in cities and towns in 1996. This conference produced the Lisbon Action Plan, which emphasizes on the increasing local and national actions for achieving the
campaign’s targets. Later, in 1998, the European Commission demonstrated its involvement in these processes of growing importance of sustainable urban development by establishment of an Action Plan called “Sustainable urban development in the European Union: A framework for action”. The framework focuses on the importance of strategic assessment, planning and management for progress in urban sustainability.

On a global scale, UN organized a second conference on the questions of human settlements in Istanbul – Habitat II. It was held in 1996 and had the purpose of increasing public awareness on the problems of human settlements in the world. The basic mission was achieving urban environments “where human beings lead fulfilling lives in dignity, good health, safety, happiness and hope”. The participants in the conference confirmed their commitments to building urban sustainability.

Over the years the concept of sustainable urban development extended to spatial dimensions. The EU support programs and environmental policies have an important impact on the territory by changing the spatial structure and the land-use patterns of the regions, and giving new directions in their economic development. In this line of thoughts, in 1999 the European Spatial Development Perspective (ESDP) was approved. This document focuses on the spatial dimensions as inseparable part of the strategies for sustainable urban development.

In 2000 in Hannover was held the third European conference on sustainable cities and towns. One of its main purposes is the assessment of the progress achieved ever since the Aalborg Charter (1994). Conference also focuses on the managing, monitoring and evaluating of the progress towards urban sustainability in the cities that have signed the Charter. It was emphasized the importance of local sustainable development as sound foundation for sustainable society, which has understanding on the responsibilities linked to sustainable urban development.

Throughout the years the sustainable urban development has taken its place in the programs and policies of the EU. Currently, there are many initiatives that work in this direction and strategies that outline the path of urban sustainability in the future. In order to monitor and assess the programs progress there has to be set clear goals and adequate tools for measurement. Thus EU supports different researches in that direction. All projects related to this kind of activities are financed under a special program.

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2. EU strategy for sustainable urban development (2007 – 2013) – bringing theory into practice

One such program is the 7th Framework Program for Research and Technological Development (in short FP7). This program has a time span of seven years starting from 2007 until 2013. The budget of the program is over 50 million euro (€ 50 521 000) and will be allocated between four major objectives of the Union – Cooperation, Ideas, People, Capacities; and one specific program on nuclear research. The exact allocation of the budget is shown in fig. 1.

The idea of the framework is to put together all research-related initiatives of the EU. Each objective supports research actions in different directions with multiple projects related to them. Environmental and Energy issues are addressed by the Cooperation objective and have separate budgets for implementation. In the Energy area 2,3 million euro is dedicated to answer the challenges of Union’s dependence on oil and natural gas, the increasing demand for energy, the damages that energy production and consumption cause on the environment, particularly on climate change and air pollution. More specifically, in the short term these funds will give initial impetus towards a more ambitious objective, which is the transition to renewable energy in the long term. The Environment program is focused on the climate change, pollution and natural hazards; sustainable management of natural and man-made resources; technologies for environmental protection, observation and
restoration; Earth observation and forecasting tools for sustainable development. In this particular program several projects are dedicated to the sustainable urban environment issues.

2.1 HEREPLUS Project

Under these programs there are several projects that concern the sustainable development in urban areas – HEREPLUS, BRIDGE, SUME and TURaS are some of them. HEREPLUS (Health Risk in Urban Systems for Environmental Pollution Levels) is focused on the environmental pollution levels in urban areas and their effects on human health. The idea of the project is to develop risk maps relating human health with pollutant concentrations (O\textsubscript{3} and PM); improve the knowledge on the potential role of different urban vegetation; give guidelines to local authorities to establish urban-environmental measures; encourage the development of technology in environmental and health research.

The project is already completed (From 2008-09-01 to 2011-05-31) and € 1 683 052 were spent on its implementation, as the EU coverage is € 1 399 836 or 83.2%. There were prepared risk models for Rome, Madrid, Dresden and Athens. These models were used in the drawing of an operational manual of the best practices for municipal managers, administrators and environmental agencies. The major outcome of the project will be the integration of the project results (manual) in the routine management practice of urban quality policies.\textsuperscript{4} HEREPLUS has an important implication on the urban sustainable strategy. It creates a path of environmental issues identification, examination and observation, methodology construction, modeling and results in policy guidance. Project life span is only 30 months but its results have an influence on urban environment regulation that goes beyond the short run effects.

2.2 BRIDGE Project

The BRIDGE project (Sustainable Urban Planning Decision Support Accounting for Urban Metabolism) works on the metabolic patterns of modern cities in terms of energy and resources inflows and outflows. Examination of these patterns will help for better understanding of the urban development and how can bio-physical sciences knowledge be incorporated in all steps of the policies’ creation cycle – from problem identification and policy design through to the implementation and ex-

\textsuperscript{4} Periodic Report – HEREPLUS: \url{http://cordis.europa.eu/fetch?CALLER=RESULINK_EN&ACTION=D&RCN=45347}
post evaluation stages. BRIDGE project is also completed (From 2008-12-01 to 2011-11-30) at total cost of € 4 101 983 of which EU contribution is € 3 100 000 (75.6%). The BRIDGE project brings together 14 organizations from 11 EU countries. As case study cities were chosen Athens, Helsinki, London, Firenze and Gliwice. This initiative gives research basis for urban development decision making taking into account specific environmental issues (energy, water, pollutants, carbon dioxide emissions). The state-of-the-art numerical models, elaborated in the project, allow simulation of different factors and testing potential or existing alternative sustainable solutions. These results are of great importance for sustainable urban planning, as they provide comprehensive and transferable indicators easily understood by end users (urban planners). This system of models and methods gives the opportunity to propose modifications on the metabolism of urban structures towards sustainability.

2.3 SUME Project

The FP7-funded project SUME (Sustainable Urban Metabolism for Europe) is focused on the reduction of the cities’ environmental footprint in terms of air pollution and climate change. The initiative researches special scenarios for selected cities (Vienna, Stockholm, Athens, Porto, Munich, Marseille and Newcastle upon Tyne) that will help in discovering the relationship between urban metabolism approach and urban spatial development. Moreover, it will give guidelines for restructuring existing urban systems in energy efficient and low carbon cities. The SUME approach takes into account each city’s specific characteristics and designs its unique model for further policy establishment or change. Project total budget is € 3 630 576 of which the EU funding is € 2 867 860 (79%). After its completion (on 31-10-2011) SUME gives complete and comprehensive answers to its main research questions: “How does urban form determine/influence resource flows in various urban systems?” and “How and to what extent can future changes on given urban forms (through planning and restructuring of cities) contribute to less resource consuming cities?”

Moreover, its results provide clear overview on the key agents that influence the urban system in different European contexts, and based on this, makes policy suggestions for environmental and metabolic urban solution. SUME project is of great importance for the EU strategy for sustainable urban development, not only because of the results it shows but also because of the enhanced communication between researchers, giving new impetus for future research and development activities in the field.

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2.4 TURaS Project

TURaS (Transitioning towards Urban Resilience and Sustainability) is another initiative under the FP7 program. Its main objectives are related to answering the challenge of European urban dynamics of unregulated land use (especially in socio-economically disadvantaged regions), citizens’ health and wellbeing. The basic objective of the project is to “to devise holistic transition strategies that are tailored to the needs of all stakeholders; strategies that are flexible, adaptive and applicable across urban regions and scales.”6 More specifically those are the most urgent environmental challenges of climate change adaptation and mitigation, natural resource scarcity and shortage, and unsustainable urban growth. TURaS is a project of great scale and involves 28 partners from 11 EU member states.7 Project starts on 1st of October 2011 and will be developed for five years. Project will account for mitigation of the socio-economic differences (between EU member states) effects on the sustainable urban development in the Union and at the same time will produce a resilient model for environmental policy changes.

To summarize, the sustainable development idea have evolved for a long period ever since the 70’s, going through a series of conferences and reports, establishment of commissions and other monitoring organs, and intensive strategy development. From global perspective sustainable development turns out to have different dimensions in the different regions of the world – the poorest countries are aiming to their survival and struggle with famine, health problems and mortality of their

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6 TURaS project official web site; http://www.turas-cities.org/challenge
7 TURaS partners list; http://www.turas-cities.org/partners
populations. For these countries sustainable development means provision of shelter, food, fresh water and healthcare for the citizens; for the developed parts of the world sustainable development have different perspective. These countries have reached high levels of natural resources exhaustion and pollution by maintaining sufficient lifestyle of their citizens. Thus, they have to overcome this by a major shift to a more sustainable consumption and production practices. These major differences between the developing and the developed parts of the world represent one of the biggest challenges in front of the sustainable development. Another great challenge for sustainability is the trend of intensive urbanization that shows up in the last century and is gaining momentum, especially in the last 20 years. In order to address this challenge on a local scale the EU begins a series of programs and projects that will bring light on the questions concerning sustainable development in urban areas. EU and EC are not entitled to interfere directly into the local (urban) governance, putting legislative requirements; however, they have more advisory function for the questions of sustainable development. Nevertheless, the programs and the projects they conduct and support on a local level bring important results by giving the needed financial support, professional guidelines and legislative suggestion for building sustainable urban environment.
III. Methodology

1. PESTEL Analysis

PESTEL is an analytical framework that combines different macro-environmental factors that has to be taken under consideration in creating and managing strategies. The abbreviation of the framework stands for Political, Economic, Social, Technological, Environmental and Legal factors, it can be also found as PESTLE framework where the factors are the same. Traditionally it is used as a tool in external analysis when conducting a strategic analysis or doing market research for businesses, it also can be used by organizations for strategic management of different projects. In the present paper the PESTEL framework will be used in a slightly different context. The main goal of the analysis will be identification of the factors that represent challenges or opportunities for the European Union strategy for sustainable urban development.

Currently EU is a combination of 27 different countries with different political economic, social, technological, environmental and legal environments, but all of them share common environmental and sustainability targets. In order to cover this complicated environment and at the same time to keep the narrow local scope of the urban environment there are selected two capital cities – Athens and Stockholm – as role models of the extreme differences in development that can be discovered in united Europe.

In the first section the PESTEL analysis framework will be explained and certain arguments on the used methods and factors chosen for the analysis of the sustainable urban development. Moreover, some questions will receive their answers: Which factors influence the sustainable urban environment? Why these factors are chosen? What variables describe them? How they influence the sustainable urban environment? In the next section the selected cases will be analyzed through the framework, and the last section will summarize the results.

1.1 Political environment

The P in the PESTEL abbreviation stands for Political, i.e. analysis of the political factors that influence the selected case. As mentioned before the PESTEL framework is mainly used for business market research, but in the present case it is used for strategy evaluation, which means that certain
factors that influence the urban environment and its sustainable development will be researched. The political environment refers to the state governance, rather than local city authorities. City authorities have already demonstrated their willingness to change by participating in the EU initiatives and projects, stated before, and allocating resources for their implementation. So, it is more important to observe the government characteristics that have influence on local urban environment.

The political factors that are chosen for this analysis are as follows:

- **Type of state government** – The type of the state government is chosen more for descriptive purposes, rather than as an influencing factor. It is necessary to mention it for the reader to get the full picture of the political state in the mentioned country;

- **Government stability** – government has to be politically stable for good decision making and continuity in policy implementation;

- **Degree of democracy** – the power of the society to decide is important for the sustainable urban development, since the sustainability idea concerns people directly by providing them clean and safe urban environment;

- **Corruption level** – corruption is important factor with negative impact on good decision making and policy establishment; corruption benefits minority welfare (few people that have paid for it) while neglecting majority will, i.e. decreases the degree of democracy;

**Government type:** As mentioned above the government type will be used only for descriptive purposes, as it has close to zero effect on the actual results in the analysis. More important are the processes of decision making, the levels of continuity between governments and the political will of the current government. Those political characteristics are covered by other factors.

**Government stability:** The government stability is a crucial factor for good decision making not only in the area of sustainable development. It is determined by rare and minor changes in leading parties or good continuity between old and new government; low likelihood that government will be destabilized or forced to resign; and, last but not least, voters’ approval\(^8\). High government stability means good political will, readiness and confidence to accept changes in the legislation concerning

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sustainability, good communication in government structures and between government and local authorities, which facilitates the processes of policy making and implementation. On the contrary, lower government stability often leads to political fights over power, low communication between government structures, uncertainty and bad decision making and negligence of sustainability issues as “this is not so important”. For the purposes of the research this variable will be observed by the composition of the parliament majority and minority, the shift of the government (at least one shift in government has occurred), as well as the occurrence of any unregulated changes in the government structures and riots (destabilizing factors).

**Degree of democracy:** The degree of democracy is a variable, which shows how large people’s power is to make changes in their state governance. Often this power is exercised in voting for president, government and parliament representatives, and different referendums on important subjects such as entering the euro zone or the European Union, etc. The inclusion of this variable in the current research might seem unnecessary due to the fact that all EU members has to attain certain level of degree of democracy to enter the union, but it is important since the level of corruption (explained below) significantly influence the democratic decision making in the country. Thus, both variables are needed to show a certain level of social power and political will.

So far, there is no single and universal measure of democracy that can encompass the full complexity of the concept. Nevertheless, there is an instrument which attempts to judge countries through a single standard in two categories – “Political Rights” and “Civil Liberties”. The assessment framework called “Freedom in the World” puts different scores (between 1 and 7) under each category and then estimates the average to bring the total result. Each component is estimated on the base of a checklist with questions concerning political rights and civil liberties (10 political rights questions and 15 civil liberties questions). The “Political Rights” questions are grouped into three subcategories: **Electoral Process** (3 questions), **Political Pluralism and Participation** (4 questions), and **Functioning of Government** (3 questions). The “Civil Liberties” checklist includes four subcategories: **Freedom of Expression and Belief** (4 questions), **Associational and Organizational Rights** (3 questions), **Rule of Law** (4 questions), and **Personal Autonomy and Individual Rights** (4 questions).\(^9\) Each question is

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[^9]: The full checklists and point system explanation can be followed in Appendix 1.
scored by raw points on a scale from 0-4. The final score is calculated and assimilated to a 7 point scale for both categories. The Scale can be followed in Table 1.\(^\text{10}\)

<table>
<thead>
<tr>
<th>Indicator/Scale</th>
<th>Identifying characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Political Rights</strong></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Free, competitive and fair elections are held. Citizens enjoy self-determination and minorities participate in the political process.</td>
</tr>
<tr>
<td>2</td>
<td>Factors, such as corruption, violence, discrimination, or foreign or military influence weaken the quality of democracy.</td>
</tr>
<tr>
<td>3</td>
<td>Some political rights exist, weakened by civil war, heavy military involvement, lingering royal power, unfair elections, and/or one party dominance.</td>
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<tr>
<td>4</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Political systems are ruled by military juntas, one party dictatorship, religious hierarchies, or autocrats.</td>
</tr>
<tr>
<td>7</td>
<td>Political rights are nonexistent due to extreme oppression.</td>
</tr>
<tr>
<td><strong>Civil Liberty</strong></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Populace enjoys freedoms of expression, assembly, association and religion; an established and equitable rule of law; and freedom from government indifference and corruption.</td>
</tr>
<tr>
<td>2</td>
<td>Deficiencies exist in three or four aspects of civil liberty.</td>
</tr>
<tr>
<td>3</td>
<td>Some civil liberties exist, marred by the presence of censorship, political terror and limits on freedom of association.</td>
</tr>
<tr>
<td>4</td>
<td></td>
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<tr>
<td>5</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Few partial rights exist, such as religious and social freedoms, expression and association are severely restricted, and political terror is utilized.</td>
</tr>
<tr>
<td>7</td>
<td>An overwhelming and justified fear of repression exists.</td>
</tr>
</tbody>
</table>

Table 1. Indicator scale for Freedom in the World assessment framework

**Corruption level**: Corruption represents a significant challenge for democratic state governance. It enforces individuals' interests before the population interests, which leads to corrupt practices in all spheres of public life and hampers the fair decision making. Moreover, it creates uncertainty and public mistrust, which causes suspicion to any innovation in policy making. Sustainability and environmental safeguard often mean higher additional costs for industries. In some countries those industries would prefer to pay little extra for avoiding environmental regulations, rather than occurring costs to conform to the rules. That usually is at the expenses of the public welfare.

\(^{10}\) Source: [http://payson.tulane.edu/courses/shd/fall01/M1/Dem/fhouse.htm](http://payson.tulane.edu/courses/shd/fall01/M1/Dem/fhouse.htm)
and jeopardizes the full meaning of democracy. Thus, higher levels of corruption mean more difficulties in environmental policy establishment and implementation, slower processes of sustainability building, and thus, poor results out of great resource investment in sustainable urban development.¹¹

As corruption practices are concealed and difficult to follow, there is no precise indicator for corruption measurement and comparison between countries. However, certain processes that can be observed shed some light on the level of corruption in the public sector and give data for building the so-called Corruption Perceptions Index (CPI). The index uses proxies of corruption for creating its measurement; those proxies are third-party surveys of public opinion on the subject. Thus, the index gained significant amount of criticism as being imprecise and low quality of data. Nevertheless, since the public opinion and trust is important for government stability and policy establishment, the index fits into the present analysis’ purposes. The CPI scale uses numbers from 0 (Highly corrupt) to 10 (Highly transparent). The methodology for CPI calculation is different every year, as the amount of data sources increases. Currently, for the calculation of the CPI 2011 results there have been 17 independent sources used¹².

### 1.2 Economic environment

“E” stands for the Economic environment analysis. The economic environment appears to be one of the most important components in PESTEL especially in the current topic of sustainable urban development. Unlike the political analysis, which concerned the country’s politics and overall state political environment, the economic environment analysis will focus only on the economic patterns in the selected cities, as they have their own unique characteristics that partly reflect the country’s economic status. Macroeconomic factors such as employment/unemployment rates, average salary and living standard are important variables as they influence the demographic specifications (population, migration, economic activity, etc.) of urban regions. The factors that have influence on the sustainable urban development are as follows:

- Real GDP proportion – the contribution that the selected city has in the country’s total GDP (real);


¹² Full list of sources can be followed in Appendix 2.
• The unemployment/employment rates in the city – data will be compared and explained within the country records;

• Average household income and perception of poverty – shows the economical power of individuals and households combined with the degree of poverty perceived as problem in the city;

**GDP proportion:** The economic growth (expressed by growth in GDP) is being generated through natural resources exhaustion. One of the latest UNEP reports\(^\text{13}\) states that the economic growth needs to take a new path of green economy rather than business-as-usual route. That, according to the report, will increase GDP growth rate even more than traditional scenario, and it is expected that by 2050 the green GDP annual growth will overpass the convenient GDP one by 0.5\(^%\)\(^\text{21}\). However, the economic growth is still unsustainable and has rather negative impact on environment. Thus, it is important to observe the city’s part in the country’s GDP composition, to follow the impact this growth will have on the building of sustainable urban environment.

**Unemployment rate:** Big cities are usually more attracting than the countryside because of their “unlimited opportunities”, thus large amount of people move to them to find occupation and improve their living standard. The concentration of inhabitants in big cities creates pressure on the environmental framework of the city. High unemployment rates in the rural areas force a lot of people to leave their settlements and move to cities. This misbalances the distribution of resources, as concentrates resource depletion and pollution on limited space in cities whilst leaving rural regions with no opportunities for development (skilled work force goes to big cities, investments are concentrated in developed regions, people experience worse living conditions, etc.). Moreover, the uneven distribution of population leads to working capital inefficiencies, as some people do not exercise their specialties, but rather choose less qualified job to cover their expenses. The high employment in big cities is result and cause of high unemployment in the rural areas. Therefore along with unemployment and employment rates in the selected cities it is necessary to observe the level of urbanization (urban population as percentage of total population of the country) in the countries they are located. This will show to what extent the high employment rate in the selected city causes the mentioned above problem with disproportionate distribution of human capital.

Household income and poverty: Higher household income means better living standard of the citizens. Along with other benefits this higher standard brings to the society, it has positive effect on the attitude of people towards sustainability. This can be proven by shifting the scope of the Maslow hierarchy of needs towards a more sustainable attitude (it is shown in fig.3). Although a psychological model, the Maslow pyramid can explain to policy makers at which level people start to think of the sustainable development of their society and physical environment. Governments have the power to take responsibility on the first basic levels of the pyramid by providing decent living to their citizens in safe and secured environment. In that way citizens can move to the higher levels in the Maslow hierarchy where their own qualities and society play the crucial role. In the highest position stands “self-improvement” where people start to think of their own development and contribution to the society and the planet.

![Maslow pyramid of needs adjusted to sustainability](image)

Fig. 3 Maslow pyramid of needs adjusted to sustainability; Source: Author

The household income has to be placed in the lowest level where the basic needs have to be satisfied. Thus, a higher household income (above the minimum for normal living) would mean that people can more easily reach the top level of Maslow hierarchy. However, very high household income might also have opposite effect by encouraging more unsustainable consumption patterns
(high resource use, pollution from personal vehicles, etc.). Therefore, it is important to observe other factors that give more information on consumption behavior of citizens.

### 1.3 Social environment

The social patterns have important role in sustainable development understanding and acceptance. The concept of sustainability is new and unfamiliar to most of the people, but still all of them have opinion on the subject. In sustainable urban development it is crucial that everybody has contribution to the mission by changing his/her own everyday habits. It always been difficult to change someone’s opinion and it is even more difficult to change people’s habits. For that reason, communication, knowledge and good will have the main role in this task. In order to encompass them in this analysis there will be used some characteristics of the society that appear to be important in sustainable idea acceptance and involvement:

- Demographic data on the selected cities – population density is an indicator for the total human activity pressure on the urban environment;
- Education level – knowledge and awareness on the subject will ease the communication of the main goals and means of achieving of sustainable development in urban areas;
- The level of involvement in social activities and volunteering – this is a good indicator of the good will of the population; (results are based on country figures);

**Demographic information:** Basic population data of the city environment is an important indicator of human activity and environmental footprint on a given territory. In the cases of urban development the human activity is concentrated on a limited area which creates high pressure on the environment. Population growth and the high urban population density represent significant challenge towards sustainable urban development. As written in Agenda 21 (Chapter 5) the “[r]apidly growing cities, unless well-managed, face major environmental problems. The increase in both the number and size of cities calls for greater attention to issues of local government and municipal management”. Thus, the city population and more specifically, population density (per./km²) have to be taken into consideration in the present analysis. Agenda 21 (Chapter 7) also identifies the fast urban population growth as another challenge for sustainable development. Usually, the urban framework develops slower than human migrations and is not prepared to bear the pressure of the large amounts of “users”
it hosts. The fast urbanization requires quick identification of the major environmental impacts and adequate measures for these impacts mitigation. This often is related to huge investments in research and support of different urban and rural development strategies.

**Education:** Education is important for an easy and right understanding of sustainable development practices and their benefits to individuals and society as a hole. The higher is the level of education and the public awareness of environmental issues the bigger is the probability of people to change their lifestyle to more sustainable practices. In itself traditional higher education has no power to attract students’ attention towards environmental issues and sustainability, but it creates prerequisites for better understanding. As logical it is, currently a paradox exists between the educational level and unsustainable consumption – the most educated nations in the world leave the deepest ecological footprints by high consumption rates per capita. This creates a more complex challenge towards sustainable urban development – to bring up education without increasing the demand for resources and creation of waste and pollution. Thus, the first program of Agenda 21, Chapter 36 concerns the reorientation of education towards sustainability. This is noted as critical for “achieving environmental and ethical awareness, values and attitudes, skills and behavior consistent with sustainable development and for effective public participation in decision-making.” However, the program aims to address the global sustainable challenges, whereas in some countries education is a problem of illiteracy and in another this issue reaches higher levels where the quality of this education turns out to be a problem.

**Social activities involvement:** The level of involvement in social activities and volunteering are characteristics of the society that indicate a good will and willingness to help. “Both volunteering and social activism are important strategies for fostering people’s participation in social change and human development.” Moreover, they show indirectly that people believe their contribution matters and feel able to make a difference to the world. This belief is important for the idea of sustainability, since society is the driving force of the change towards sustainable development and the sooner this is understood the better the results will be. The UN Volunteer Program identifies volunteering as a powerful tool for promoting social change in all parts of the society. It has the power to draw

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politicians’ and societies’ attention towards the most important problem of human development and environmental issues. Volunteering and social activities participation “can also prompt personal transformation, whereby individuals change their beliefs, perspectives and day-to-day behaviors once they have developed new awareness or understanding about a particular situation.”

Therefore, volunteering and participation in social activities, expressed as percentage of the population, have their place in the social environment analysis of the selected urban areas.

1.4 Technology and R&D

Over the last century we have been witnesses to two major “ages” in technological development – the so called “Age of Oil, Electricity, the Automobile and Mass Production” (1930–1970, approximately), and “The Age of Information and Telecommunications” (1970–2007, approximately). Technological progress has played crucial role for human development, therefore a large amount of resources was invested in technology development. These “Ages” caused serious environmental impacts that humanity faces today and will face in the future. Thus, the next age is predicted to be the one of the Environment technology, Nano- and Bio-technology and healthcare. This far, technology has always followed and solved the problems of the human development at the expenses of nature, now for the first time it has to take a different path by answering the environment calls at the expenses of human efforts. Already, technology is developing different solutions to cope with air pollution and energy issues, and a lot of scientific researches are conducted in the field of sustainable development. The FP 7 program itself has its main purpose within research and technological development. Technological progress turns from extreme resource “consumer” into a necessity for smooth shift to sustainable development. In order to observe the technological environment influence on the sustainable urban development certain factor has to be taken into account:

- Government spending on R&D – this factor will indicate the overall efforts on developing new technologies and researches and the innovativeness of the country;

Government spending on R&D: Currently large proportion of the research and development is dedicated to sustainable development. Different scientific examinations and observations have a main

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goal to solve the major questions of sustainability. As stated before future technologies will focus on environment, bio and nano-solutions and healthcare. Therefore, it is important that developed societies invest financial and human resources in this research and development initiatives. The government spending on R&D will show the country’s individual contribution to the task FP 7 has set – gaining knowledge for better decision making and policy establishment. The larger is the proportion of GDP dedicated to Science R&D the biggest is the contribution and the highest are the concerns about creating knowledge capacity for environmental problem solving.

1.5 Environment

Urban environmental health has different dimensions that reflect and react to all activities of the citizens. As mentioned before the high concentration of population on a limited space is a prerequisite for higher levels of air pollution and waste, and higher consumption of resources. This exposes the urban environment at higher risk (compared to other parts of the country) of public health problems caused by inadequate household water and sanitation, and indoor air pollution, natural environment hazards, extra-urban impacts on ecological surrounding, heavier environmental burden on regional areas. The impacts of urban citizens’ activity have larger scope and spread over other regions, settlements and people. Therefore, urban environment has to be observed, controlled and the negative impacts of the human activity have to be mitigated. This can be achieved through careful examination of the current state of the environment and an adequate urban planning. There are several factors that affect the urban environmental status:

- Air quality – amounts of CO₂ and other GHG emissions in the air composition, as well as PM10 concentrations; (data is on a local scale);

- Transport – of greatest interest is the number of citizens’ personal vehicles that commute every day, as it is the most unsustainable way of transport in the urban areas;

- Waste levels – the amount of waste that is accumulated in landfills, recycled or processed to incinerator;

- Energy consumption – energy efficiency and renewable energy consumption;
Air quality: Almost every activity in our daily life results with some sort of air pollution – all types of transport and production result in CO₂ and other GHG emissions. The pollution on urban areas is even more and covers the whole city areas, as in some megapolis levels of dust and different gases in the air reaches levels at which it gets highly toxic and harmful for human and environmental health. Hopefully, in Europe this kind of air pollution levels are extraordinary and unfamiliar, but nevertheless air quality in some parts of the Union is significantly lowered. Those are, usually, cities with high population density and heavy traffic. Traffic and industrial pollution account for most of air pollution in urban areas, thus the air quality variable can be partly explained by the following transport variable expressed in the number of registered vehicles per 1000 inhabitants. In order to evaluate the air quality in the selected urban areas there will be used the amounts of CO₂ and NO₂ emissions and the PM10 particles per cubic meter (PM10 – particles of 10 millimeters in size).

Transport: As mentioned before transport has important role in the air quality levels, especially in cities where traffic is more intensive, distances are longer, inhabitants are more (and with private vehicles), and public transport supports larger fleets. There are different types of transport used in the cities: some of them, like cycling and walking, are very sustainable and cause no harm on the environment, others like car driving are comfortable but highly unsustainable and inefficient (as for the transportation of maximum 4 people a large amount of GHG and PM10 is emitted), somewhere in the middle stands the public transport – buses cause pollution but are very efficient as they transport a lot of passengers (up to 100 – 150 people), trolleys, trams and metro drive on electricity and they cause no direct harm on the air quality (indirectly some air pollution is caused in the electricity production processes). Therefore, in the transport factor will be used the number of registered vehicles per 1000 people, as most harmful and less efficient type of transport and will be analyzed the efficiency of the public transport.

Waste: Waste represents a great challenge for urban environment not only from ecological point of view, but also from planning and organization stand. In the most developed countries a certain regulation on the waste amount is established as recycling is largely preferred and encouraged. However, there are other waste management practices, far from sustainable, which are present in the large cities in Europe – accumulation in landfills or unregulated disposal. These practices lead to intended pollution of land that can be used in more efficient way, natural hazards of ground water pollution and spread of diseases, air pollution (incinerator burning), etc. Recycling is a more efficient way of waste processing by returning the materials back in the initial stage of material usage. There
are limited types of materials that can be recycled – glass, metal (tin), paper, plastic. A lot of packages might seem recyclable but in fact they combine different recyclable materials that cannot be separated and recycled. Thus, it is not only important to have legislation to the consumers but also on the producers of packages in order to have well harmonized and working recycling system. That is a difficult task and needs good planning and a lot of administrative work as well as public will and business approve. In the context of the present analysis there will be observed the total annual amounts of waste (per inhabitant) in the cities, as well as the percentages processed to recycling, landfills and incinerators.

**Energy efficiency:** Energy is the basic resource of all economic activities and its use accounts for most types of environmental pollution\(^\text{18}\). Energy is a specific asset – it cannot be created or destroyed, it can only be transformed, that determines the complexity of the ecological problems it causes if not managed properly. Thus, sustainable results in the energy sector require twofold actions – lowering demand and encouraging sustainable supply methods\(^\text{18}\). Energy efficiency is perceived as energy saving at consumer and industrial level. It plays crucial role in the EU sustainable strategy and in the multiple initiatives and projects related to sustainable urban metabolism. The high concentration of energy consumers (individuals and businesses) in the urban area is a precondition for higher energy demand and a requirement for better energy supply network. Therefore, sustainable consumption patterns in big cities are important for energy efficiency and sustainable development. The amount of energy consumed on an annual basis per inhabitant will give a starting point for further analysis on the energy supply/demand balance that includes the types of energy supply (sustainable and unsustainable). Thus a higher consumption does not automatically mean unsustainable, but rather needs an additional check on the energy supply methods. However, lower consumption is better in the sense that people probably have saving energy habits (taut by other factors, such as energy price, lower incomes or additional taxation). Nevertheless, for the present analysis energy consumption and energy supply methods are of greater importance, therefore they are included in the cities examination in the next section.

1.6 Legal environment

Legal apparatus can be a powerful tool for sustainable development building. It can put regulation or other legal barriers to unsustainable practices, impose taxes or penalties to pollution, give incentives for altering consumers’ choice or producers’ methods. All of these are in the power of law, but with some complications. Law is not a simple system of rules, all rules need to be in certain consensus with each other, when a new law is enforced it might make other law useless or inefficient. Thus policy makers have to be very careful when create law proposals and enforce new regulations. Some measurable characteristics of country’s legislation have influence on the sustainable development building:

- Bureaucratic quality – the bureaucracy efficiency determines the policy making and implementing process; the lighter is the procedure on accepting the changes, the sooner the results;

- Environmental tax and regulations – this is hard to measure, but examples of good practices can give better results of sustainable development;

Bureaucracy performance: The bureaucracy is a concept that usually gets negative sense as cumbersome and slow administrative procedures that make citizens’ contact with authorities an unpleasant and tedious task. It is actually the core structure of the public sector and as smooth and efficient it works the higher quality of work it produces. Therefore, the investigation on the public sector quality is important part of the legal environment with which individuals and businesses collide in their everyday life. The bureaucracy is also important for the sustainable urban development since it plays crucial role in the policy implementation. The research on bureaucracy is difficult and complex task, although if precise results can be very useful feedback for public administration. European Central Bank and the World Bank make one of the few attempts to compare public sector efficiency internationally, however “the indicators for administrative performance are defective”19. Van de Walle’s arguments are that the factors included in the research are very few and imprecise and important factors have been omitted. However, these flaws are corrected by the Institute of Public Administration (IPA) Ireland. In the “Public Sector Trends 2011” there are 16 factors/indicators used

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19 Van De Walle, S., 2005 “Measuring bureaucratic quality in governance indicators”, Paper for the 8th Public Management Research Conference, Los Angeles, USA
for country’s comparison.²⁰ In the third section of the report, the author evaluates and compares the EU15 governments under five different criteria:

- Bertelsmann Stiftung management index 2011 – a measurement of executive capacity; numbers in the report are for 2011;
- Steering capability – does the government have strong steering capabilities? – government capabilities in relation to communication and coordination of policy and strategy;
- Policy implementation – does the government implement policies effectively?
- Institutional learning – does the government adapt to internal and external developments?
- Accountability

All registered scores take amounts from 0 to 10 as ten is the highest score and means the best performance in the category. In the current analysis there will be presented and country’s scores (of the selected cities), an average score will give the total bureaucracy performance. The public sector performance reflects the policy implementation efficiency and thus the better is the performance the higher is the efficiency. Effective policy making and implementation is a crucial part of the sustainable urban development, as most of the changes will occur in the legislative system of the local governments and authorities. As capital cities and leading role models in their countries, the chosen urban areas have even bigger importance in the processes of policy implementation and management.

**Environmental taxes:** Taxes are products of the legal system that express economically the use of resources’ value, in other words they translate resources’ value to the society into monetary value. Therefore, they have economical effect on individuals’ and businesses’ accounts and can trigger certain behaviors and actions for lowering their amount. This “educational” effect is in favor of sustainability as ecotaxes can achieve environmental impacts mitigation, or at least the polluters will pay for the damage they cause. Of course it is preferable that no pollution occurs at all, thus there are suggestion for revision of the pollution allowances (such as the Emission Trading System in the EU) in order to maximally reduce the total amount of pollution. However, at this stage pollution is a fact.

²⁰ Boyle, R., November 2011, “Public Sector Trends” Research paper №6, Institute for Public Administration.
and cannot be reduced to a zero. For that reason, there are many different regulations on environmental footprint expressed in monetary terms:

✓ In the transport – ecotax on vehicles (at purchase and usage level); fuel taxes expressed in the price per litter;

✓ In the waste management – waste tax; recycling subsidies; hazardous waste management taxation;

✓ In the production and manufacturing – air emissions and pollution taxes; reductions and subsidies for filters mounting;

✓ Penalties on unregulated natural resources usage and/or pollution;

In the following analysis there will be presented some successful practices in the field of environmental taxation, as examples of good legislative actions for sustainable urban development.
IV. Method applied – PESTEL Analysis of Athens and Stockholm

1. Two cities of major contrast – Stockholm (Sweden) and Athens (Greece)

Athens and Stockholm are very different in political, social and environmental aspect. They demonstrate how in a community with high environmental standards and high involvement in environmental problem solution, such as the European Union, can persist striking differences in development and growth patterns, and more important, in the evolution process towards sustainability. Athens and Stockholm are chosen not only for the distinct differences they have, but also for the purpose to present models for these development differences. There are many countries that develop more or less in the same way and with the same paces as Greece and Sweden and they share the same challenges and opportunities towards sustainable development. In order to achieve overall sustainable development, the EU has to understand each one of them. Thus, an analysis has to be conducted in order to understand that kind of regions and give an idea how to approach these expectations.

As different as these two cities are, they share some common characteristics/features:

✓ Both are the biggest cities and capitals of EU member states – Greece enters the Union in 1981; Sweden joined in 1995;
✓ Both countries are OECD countries in the High Income Class;
✓ Both cities participate in various EU projects related to sustainable urban development;

However, outweigh the similarities. Thus, the following analysis pays particular attention to them. Each city’s/country’s profile is elaborated separately and the results are explained in an overall conclusion.
2. Athens (Attica, Greece)

Special Note: Before conducting the analysis an important note concerning the latest events in Greece has to be made. The recent crisis that stroke Greece and destabilized its economical, political and social lives, is not taken under consideration in the present analysis. Although, serious and important the effects of these events on the Greek economy and development, require a much deeper and complicated analysis, which is rather a whole new topic for a different paper and cannot fit in the page limit for this paper. Therefore, the debt crisis in Greece will not be included as factor in this analysis, but rather it will have its effects in some of the figures from the years 2010 and 2011 (crisis begins in December 2009).21

2.1 Political environment

1. Government type – Greece (Ελληνική Δημοκρατία – Hellenic Republic) is a “Presidential Parliamentary Republic” according Greek constitution form 1975. The head of the government is the Prime Minister and the head of the state is the president. The legislative power is shared between the Hellenic parliament, the government and the President. Most of the political power is in the hands of the Prime Minister and the cabinet, whilst the president has more representative functions. In Greece people have the obligation to exercise their right to vote for the parliament representatives, while the parliament in turn votes for the president. The total number of seats in the parliament is 300 and the leading party needs 151 places to form a majority. The election term for members of the parliament is four years term and the president’s mandate is for five years.22

2. Government stability – on the 10 of March 2004 the New Democracy party took over the Greek governance after a long period of the Panhellenic Socialist Movement (PASOK) party dominance (1993 – 2004). The New Democracy had two consecutive mandates and in 2009 the PASOK party took again the leading role in Greece until November 2011 when the Prime Minister George Papandreou resigned forced by the circumstances around the Greek debt crisis. His place was taken by the independent politician Lucas Papademos. A coalition was formed between PASOK, New Democracy and the Popular Orthodox Rally (ΛΑ.Ο.Σ - LAOS) to take the ruling of the country and handle the crisis. This is the first time since 1990 when a coalition runs the Greek government. The

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coalition is characterized by significant separation – at the beginning (October 2009 – November 2011) the Hellenic Parliament was composed by 5 parliamentary groups, but after repeated expulsions and resignations the number of the parliamentary groups increased to 11. A summarized data on Greek governments for the period of interest (2004 – 2011) can be followed in Table 3.

<table>
<thead>
<tr>
<th>Period</th>
<th>Term</th>
<th>(1) Leading Party and (2) Opposition (№ of places in the Parliament)</th>
<th>Prime Minister</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004 – 2007</td>
<td>1</td>
<td>(1) New Democracy (165) (2) PASOK (117)</td>
<td>Kostas Karamanlis</td>
</tr>
<tr>
<td>2007 – 2009</td>
<td>2</td>
<td>(1) New Democracy (152) (2) PASOK (102)</td>
<td></td>
</tr>
<tr>
<td>2009 – 2011</td>
<td>1</td>
<td>(1) PASOK (160) (2) New Democracy (91)</td>
<td>George Papandreou</td>
</tr>
<tr>
<td>2011 – Now</td>
<td>1</td>
<td>(1) PASOK (131) (2) New Democracy (63) (3) LAOS (89)</td>
<td>Coalition Lukas Papademos</td>
</tr>
</tbody>
</table>

Table 3. Greek governments (2004 – Now); leading parties and opposition

To summarize, the political stability of the Greek government is characterized by long periods of one majority party ruling. However, under the recent events the political stability of the country is weakened and that is reflected in separatism in the parliament and inability of the government to address the conflicts that arise with the crisis. However, Greek government is characterized by a low differentiation in the parliament group, i.e. few political parties hold seats in the parliament and there are strong majorities in the leading and the opposition parties (as it is shown in table 3). This allows firm political position and prevents political fights over power to outbalance the general parliament obligations and functions. From environmental and sustainable development perspective, the political stability from the period before the Greek debt crisis shows sound and strong-willed government patterns, which have the ability and the power to make decisive steps towards environmental policy making for sustainable development in the country. However, in which aspects of Athens citizen’s life these steps will be more efficient, is a question of further analysis.

3. Degree of democracy – The degree of democracy is evaluated through the “Freedom in the World” framework mentioned in Section III. This framework evaluates by two categories “Political Rights” and “Civil Liberty”. The Freedom House report on the degree of democracy in Greece for 2011\(^4\) shows the following results:

<table>
<thead>
<tr>
<th>Status:</th>
<th>Free</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freedom Rating:</td>
<td>1.5</td>
</tr>
<tr>
<td>Civil Liberty:</td>
<td>2</td>
</tr>
<tr>
<td>Political Rights:</td>
<td>1</td>
</tr>
<tr>
<td>Freedom of speech and press:</td>
<td>Free; Provisions in the Constitution; Some limits remain, concerning publications that incite fear, violence, and public disharmony, as well as on publications that offend religious beliefs, are obscene, or advocate the violent overthrow of the political system.</td>
</tr>
<tr>
<td>Freedom of Religion:</td>
<td>Free; guaranteed by Constitution; Greek Orthodox Church is preferred and receives government subsidies; Some religious minorities find it difficult to establish houses of worship.</td>
</tr>
<tr>
<td>Freedom of Assembly:</td>
<td>Free; guaranteed by Constitution, protected by the government;</td>
</tr>
<tr>
<td>Judiciary system:</td>
<td>Independent</td>
</tr>
</tbody>
</table>

Table 4. Freedom in the World results, Greece 2011.

In the report it is also mentioned that Greece has still problems with: corruption (e.g. major scandal concerning five former ministers from the New Democracy party accused in fraud and breach of duty); acts of violence by left- and right-wing extremist groups; and racial intolerance in the society.

4. Level of corruption – The level of corruption in Greece appears to be high, on all levels (judiciary, executive and legislative). In each annual Freedom in the World report there are mentioned cases of corrupt practices in the country. However, there is a measurement tool for the perceived level of corruption, which is used for direct comparison across countries – the Corruption Perception Index. Index shows results on a scale from 0 to 10, as 0 is highly corrupted and 10 is “clean/transparent”. On this index Greece scores 3.4 for 2011\(^5\) and ranks 29\(^{th}\) among European countries on transparency. At

this level the public sector in Greece is perceived as highly corrupted and holds low levels of transparency and accountability. This is a prerequisite for serious disapproval from the society and the EU and directly affects policy making and implementation in all aspects including environmental legislation.

2.2 Economic environment

1. Economic growth – The percentage of country’s GDP that is generated in the capital Athens is 49.9% (2008)\textsuperscript{26}. This result combined with the percentage of the country population that lives in Athens (47%, see next paragraph), shows that the economic activity in the capital region (Attica) is relatively high compared to the other parts of the country. The economic activity (expressed in real GDP\textsuperscript{27}/human-created capital numbers) accounts for a depletion of the natural stock, which is seen as an income to the country national accounts, but in fact is depreciation to the environment.\textsuperscript{28} Hence, the capital area of Greece accounts for a large proportion of the natural stock depletion (the actual proportion number is unknown, as it depends also on activity type/industry sector). On the other site the high productivity of the region makes it attractive for investments and can significantly improve the living standard of the citizens.

2. Unemployment rate – as mentioned in the previous section, unemployment rate and the level of urbanization (proportion of population living in cities and proportion of population living in the selected city) demonstrate and explain the human capital distribution in the country. Significant differences in the average country record and the selected city records on the unemployment rate, give serious assumptions on the inefficient use of human resources. The unemployment rate for the period 2007 – 2009 in Greece is 8.6\%\textsuperscript{29} and the Athens (Attica region) unemployment rate for the same period is 7.6\%\textsuperscript{30}. These data show a difference of 1\% between the capital city and the country, the difference is relatively low but both figures are significantly higher than the OECD average figures (for the same period) – 5.7\% unemployment.\textsuperscript{31}

\begin{footnotesize}
\begin{itemize}
\item \textsuperscript{26} Source: \url{http://www.investingreece.gov.gr}
\item \textsuperscript{27} Real GDP is the nominal GDP adjusted to price level (inflation).
\item \textsuperscript{28} Chapter 22, Tietenberg, T. and Lewis, L., \textit{Environmental and Natural Resource Economics}, 8\textsuperscript{th} Edition, Pearson 2009
\item \textsuperscript{29} Source: World Bank; \url{www.data.worldbank.org}
\item \textsuperscript{30} Source: National Statistical Service of Greece; \url{www.statistics.gr}
\item \textsuperscript{31} Source: OECD Statistics; \url{www.stats.oecd.org}
\end{itemize}
\end{footnotesize}
population) live in the capital city Athens (3,257,213 people). This shows a relatively equal distribution between rural and urban regions but a huge concentration of urban population in the capital city – highly disproportionate distribution among cities. This creates prerequisites for development difficulties not only in the rural areas but also in the urban areas outside the large capital region Attica.

3. Household income – as mentioned above, the household income is of great importance for individuals’ perception of sustainability. Theoretically, once attained the needed income for decent living people develop their social life and start participating in more causes and think of sustainable development. Greece is in the high income category of OECD. That means that the average household income is above the world’s average ($12,276 PPP), however the country median income is slightly below the OECD one.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Greece</th>
<th>OECD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median household income in $ PPP (2007)</td>
<td>15,758</td>
<td>19,229</td>
</tr>
<tr>
<td>% of people below medium income after taxes and transfers, latest year</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Below 40% of medium income</td>
<td>5.4% ($6,303.2 PPP)</td>
<td>6% ($7,691.6 PPP)</td>
</tr>
<tr>
<td>Below 50% of medium income</td>
<td>10.8% ($7,879 PPP)</td>
<td>11.1% ($9,614.5 PPP)</td>
</tr>
<tr>
<td>Below 60% of medium income</td>
<td>17.8% ($9,454.8 PPP)</td>
<td>17.7% ($11,537.4 PPP)</td>
</tr>
</tbody>
</table>

Table 5. Household income annual amount and distribution.

These data show that nearly one fifth (17.8%) of Greek population find difficulties to maintain a standard of living in the higher income class in the world.

On local basis the perception of poverty as a problem in Athens is important indicator as it gives realistic inside into the issue of poverty directly from the affected party – Athens’ citizens.

Source: [www.data.worldbank.org](http://www.data.worldbank.org) ; Data are based on equivalent household disposable income, after taxes and transfers.
The citizens’ answers clearly show that poverty is perceived as problem in the city. On the synthetic index (all “agree” answers, 0-100) 85.2% of city population agree on the statement. This result is rather high and places Athens among the cities with highest perceptions of poverty in Europe. Poverty appears as a great challenge for sustainable development since people have to satisfy their basic needs first (as displayed on the Maslow hierarchy) and then move to social activities such as volunteering and commitment to environment and society.

2.3 Social environment

1. Demographic information on Athens – the population of the Athens on World Bank records is 3,252,252 people for 2009. Athens is also one of the EU cities with highest population density per km$^2$ – 1 110 (calculated by author$^{35}$). This large population and high density put a lot of pressure on the urban environment and infrastructure. The problem with the population density is identified in the SUME project as one of the major challenges towards sustainable development of the region.

2. The Educational level – in country figures, according to the World Bank data for 2009 the literacy rate for adults above the age of 15 is 97% which is relatively high compared to the world score of 89.3%. However, there are different levels of education as the top levels bring the most value to individuals and society. In the higher levels of the International Standard Classification of Education (ISCED) of the UNESCO used for Eurostat statistical data there are 22.9‰ students in the ISCED 3-4 level and 28.9‰ in the ISCED 5-6 level in Athens for the period 2003 – 2006. Comparing to the country levels – 34.1‰ and 30.7‰ respectively – capital city results are significantly below in the lower level and slightly below in the upper level. This is an indication that most of the migrations to

---


$^{35}$ Calculation: Population/Region Area (km$^2$) = 3 525 525/2928.171 km$^2$ = 1110.67 per./km$^2$
the city are related to employment seeking rather than education. Another statistic shows the percentage of students not completing their compulsory education (compulsory education is until the age of 15) – on country level the proportion is 17.3% for the same period, whilst in Athens the percentage is much higher – 33.4% (one third). In general the educational level of the population in the country is good, but the not completion records from the capital city are alarming serious challenges for the sustainable development of the city.

3. Level of involvement in social activities and volunteering – social activities and volunteering include many different types of activities such, as donating and helping churches, participation in political groups, recreational groups, etc. For the purposes of the topic not all of them will take place in the analysis, hence the following categories are used – charitable organisations, helping others and other groups or organisations\(^{36}\) (as they include environmental organisations, civil right groups, neighborhood associations, peace groups, etc). In the category “Helping Others” Greece score 19%, which means that during the year (2006) 19% of the population have helped at least once to someone (activities in this category include: “cooking for others, taking care of people in hospitals or at home, taking people for a walk, shopping. It excludes any activity that a respondent undertakes for his/her household, in his/her work or within voluntary organizations.”\(^{37}\)). In the next category “Charitable Organisations” Greece scores 3.3% and in the category “Other Groups or Organisations” – 5.6%. These results are relatively low as some countries in the EU27 score much higher. The reason for this low score is not clear as the report cannot identify any clusters in the data; however the results have an impact by showing the willingness of the population to contribute to society welfare and environment.

2.4 Technology and R&D

1. The government expenditure on R&D shows the commitment of the country to the technological development and the attempts to provide more innovative and sustainable technologies to business and society. The expenditure on R&D is calculated as proportion of the GDP, in Greece this proportion is 0.60%\(^{38}\) for 2007. The GDP of Greece in 2007 is € 215.152\(^{39}\) bn. Thus the total expenditure on R&D is € 1.226 bn. This percentage is significantly lower compared to the EU27

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\(^{36}\) The categories are included in the “Social Participation Report”, Eurostat 2006  
\(^{38}\) Source: Eurostat; http://epp.eurostat.ec.europa.eu/  
\(^{39}\) Source: National Statistical Service of Greece; www.statistics.gr
average one for the same year – 1.85%\textsuperscript{40}. Lower expenditure on R&D is lowering the benefits for the society and the environment from innovative and more efficient technologies in all spheres of life. This also affects negatively country’s competitiveness for foreign investments and EU subsidies that are very important for progress in sustainable development.

\textbf{2.5 Environment}

1. Air quality – human activity has significant impact on the air quality especially in areas where the population density is considerably high. A major amount of pollution is caused by vehicles. The concentration of PM10 (solid particles in the air of 10 millimeters) is distinctive for air pollution in big cities, and if higher it represents a real threat for human and environmental health. Thus, there is annual standard in the EU for the average concentration of PM10 – 40μg/m\textsuperscript{3}. The average concentration of PM10 in Athens in 2001 is 75.5μg/m\textsuperscript{3}, which is much higher than the accepted value and imposes serious risk for citizens’ health\textsuperscript{40}. Another air quality measurement is the CO\textsubscript{2} emissions (in metric tons) per capita. As one of the most emitted greenhouse gases, the CO\textsubscript{2} is also a “product” of almost every human activity and its concentrations play crucial role for the climate change and global warming. Thus EU has strict regulations on the CO\textsubscript{2} emissions that each member state is allowed to emit. The amounts in the country for 2007 are 8.8 metric tons per capita, whilst in Athens it is slightly higher – 10.4\textsuperscript{41}. The reason of this difference is the high population density and intensive traffic in the city, combined with other types of consumption and production.

2. Transport – as mentioned in the previous point the transport is one of the biggest emitters of GHG. However, there are different types of transport and not all of them are unsustainable. In the SUME Working Paper 1.2 the public transport in Athens is described as very efficient (in 2001) with a metro network and rapid connection to the airport. However, the passenger loads on the different types of transport experience a significant increase (up to 53.8\%, See Table 6). This requires further improvement of the public transport network in order to answer the challenge of population densification in some parts of the city.

\textsuperscript{40} Chaloulakou, A. et al, 2003, “\textit{Measurements of PM10 and PM2.5 particle concentrations in Athens, Greece}”, Elsevier, Atmospheric Environment, Vol. 37, Issue 5, Pg. 649–660
\textsuperscript{41} Source: UN Data, \url{www.data.un.org}
Efficient public transport is an important part of sustainable urban development strategy, but personal vehicles that are used every day by citizens represent the real challenge for the environment. The number of registered vehicles in Athens for 2009 is 663.5 per 1000 inhabitants, which is considerably higher than the country records – 455.8\textsuperscript{43}. These records combined with the high amount of people and density in Athens represent serious challenge for the sustainable development in the region. Thus, the suggested strategy for improvements in the public transport network is an important decision for lightening the traffic in the area and increasing the air quality.

3. Waste – the waste management is an important part in city development especially in areas with high population. In cities’ large amount of waste is generated every day and needs to be processed in the most sustainable way. In the city of Athens two types of solid waste processing are applied – landfill accumulation 90\% and recycling 10\%. The total amount of solid waste collected in the same period is 0.4 tons per inhabitant\textsuperscript{44}. This indicates weak waste management system; the landfill accumulation creates numerous environmental and human health hazards and is strongly undesirable for sustainable urban development.

4. Energy efficiency: The European Environment Agency keeps records on the energy efficiency in EU and some parts of the world. Throughout the period 1990 – 2008 the energy consumption change (in terms of household final consumption) in Greece is positive by 52\%, this means that the total consumption for the period has increased. This result is rather high compared to EU27 result for the same period: 6.6\%. In the household final electricity consumption the trend seems similar with 80\% total increase for the period compare to EU consumption of 32\%.\textsuperscript{45} In terms of

\begin{table}[h]
\centering
\begin{tabular}{|c|c|c|c|c|c|}
\hline
Year & Bus & Trolley & Electric railway & Metro & Tram & Suburban \\
\hline
2005 & 390 & 84 & 120 & 170 & 13 & 3.0 \\
2008 & 420 & 92 & 150 & 190 & 20 & 3.5 \\
\hline
Change % 2005-2008 & 7.6\% & 9.5\% & 25\% & 11.8\% & 53.8\% & 16.6\% \\
\hline
\end{tabular}
\caption{Loads (millions passengers/year) per transport modes\textsuperscript{42}}
\end{table}

\textsuperscript{43} Source: OECD, www.stats.oecd.org
\textsuperscript{44} Data is for 2003-2006, Eurostat.
\textsuperscript{45} Source: European Environmental Agency, www.eea.europa.eu

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renewable energy use Greece scores 7.9% out of total consumption for 2009, to compare, the national target for 2020 is 18% (See Appendix 3).

To summarize in both criteria energy efficiency and renewable energy use (as part of the solution towards energy efficiency) Greece needs better results in order to reach the common European targets for sustainability in energy and to advance in sustainable urban development.

2.6 Legal environment

1. Bureaucracy quality – the quality of the public administration is of great importance for the policy implementation and management. In the last publication of IPA on the public administration quality in almost all performance indicators Greece achieves the lowest scores among the EU15. Only in “Accountability” the score of France is lower. The results are as following46:

- Bertelsmann Stiftung management index 2011 – 5.12 (of 10)
- Steering capability – 4.1 (of 10)
- Policy implementation – 3.8 (of 10)
- Institutional learning – 4.5 (of 10)
- Accountability – 4.9 (of 10)

These results show that the public administration creates additional challenge towards sustainable development in the country and needs to improve its performance and efficiency in order to contribute to sustainability progress. Especially important for sustainable development is Policy Implementation category; where Greece scores are rather insufficient and performance is way below the average for a country of EU15(See Appendix 4).

2. Environmental legislation – legislation is important for implementation of the sustainable urban strategy. Different legislative forms have the power to change unsustainable patterns in production and consumption. In the case of Greece the energy efficiency measures and waste

recovery/recycling are tasks of top priority in environmental legislation. The following list gives some of the legislative initiatives proposed in Greece and inspired by the EEA:

- Polluters Pay principle in the Program (Law 2939/2001) for the recycling of waste tires, end-of life vehicles, waste electrical and electronic equipment (WEEE), waste batteries and accumulators and waste oils.

- Action Plan for energy conservation in urban/commercial housing for the period 2010 – 2015 – energy conservation measures will be encouraged and financially supported.

- Encouraging of the purchasing of new resource efficient vehicles by facilitating the withdrawing out of the market the old and unsustainable vehicles and giving incentives to the buyers by reducing taxes for the usage of more fuel efficient vehicles.

Environmental taxes are also a great example of sustainable legislative practices with direct effect on the society. The table below gives the percentage revenues from environmental taxes in Greece:

<table>
<thead>
<tr>
<th>Environmental Taxes (2009)</th>
<th>% of GDP</th>
<th>Percent of total revenues of taxes and charges</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy</td>
<td>1.19%</td>
<td>3.94%</td>
</tr>
<tr>
<td>Transport</td>
<td>0.78%</td>
<td>2.58%</td>
</tr>
<tr>
<td>Pollution/Resources</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1.98%</strong></td>
<td><strong>6.52%</strong></td>
</tr>
</tbody>
</table>


The environmental taxes in the transport sector are slightly higher than the average for EU27 in both categories (% of GDP and % of all taxes). This is reflection of the increasing problem with air pollution and heavy traffic in the country and especially in the capital city Athens. The lack of legislation on pollution and resources depletion is a significant drawback and has to be corrected as at least some penalties are introduced for excess air pollution or hazardous waste, for instance.

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3. Stockholm (Sweden)

3.1 Political environment

1. Government type: Sweden (the Kingdom of Sweden) is a constitutional monarchy. The head of state since 1973 is King Carl XVI Gustaf. He exercises no political power and has no participation in the political life of Sweden\(^{48}\). However, he is the representative of the country as a whole, and as such performs mainly ceremonial duties and functions. The real political power is in the hands of the government and the parliament, which represents the people. The head of the government is the Prime Minister, every time a Prime Minister appointment occurs it is considered as a change in the cabinet. Cabinet changes do not follow elections, but rather elections decide on the distributions of the parties in the Parliament. Thus a Prime Minister and the cabinet he is leading do not change regularly every four years. Prime Minister is appointed by the speaker of the Riksdag (Swedish Parliament) and approved by it as a whole. The parliament representatives are elected every four years by the Swedish people, so people’s vote affects indirectly the appointment of the Prime Minister. The places in the parliament are 349\(^{49}\).

2. Government stability – the government stability in Sweden in terms of continuity is provided by the rare changes in cabinet determined by the mandate of the Prime Minister. For the period of 1996 until now there has been only one change in the cabinet. In the period of 1996 – 2006 head of the government was Göran Persson. He was also the leader of the Social Democratic Party. In 2006 the Social Democratic Party received little voters’ approval and after this defeat Persson resigned as leader of the party and head of the cabinet. His place was taken by the leader of the Moderate Party Frederik Reinfeldt who is Prime Minister up to now. For the period of 16 years (from 1996 until 2012) only one change in the cabinet has occurred. However, the changes in the parliament composition were more, since Swedish people vote for representatives every four years. The following table shows Swedish parliamentary parties with the percentages of the votes in the respective election years\(^{47}\).

\(^{48}\) Source: Swedish Constitution; \(\text{http://www.riksdagen.se/en/}\)
\(^{49}\) Source: Swedish Parliament; \(\text{http://www.riksdagen.se/en/}\)
Table 8. Voters’ approval (in %) on the elections for parliament representatives in Sweden (1998 – 2010)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Democratic Party</td>
<td>36.4</td>
<td>39.9</td>
<td>35</td>
<td>30</td>
</tr>
<tr>
<td>Moderate Party</td>
<td>22.9</td>
<td>15.3</td>
<td>26.2</td>
<td>30</td>
</tr>
<tr>
<td>Center Party</td>
<td>5.1</td>
<td>6.2</td>
<td>7.9</td>
<td>~10</td>
</tr>
<tr>
<td>Liberal Party</td>
<td>4.7</td>
<td>13.3</td>
<td>7.5</td>
<td>~10</td>
</tr>
<tr>
<td>Christian Democrat</td>
<td>11.8</td>
<td>9.1</td>
<td>6.6</td>
<td>5.6</td>
</tr>
<tr>
<td>Left Party</td>
<td>12</td>
<td>8.3</td>
<td>5.9</td>
<td>5.6</td>
</tr>
<tr>
<td>Green Party</td>
<td>~5</td>
<td>~5</td>
<td>~5</td>
<td>7.3</td>
</tr>
</tbody>
</table>

The political structure of Sweden allows changes in the parliamentary composition by giving people the right to choose their representatives in the governance of the country; and at the same time keeps the main decision makers (the Prime Ministers and their advisors) unchanged. That gives political continuity in the governance and a longer visionary period for the main exercisers of political power. In other words, unlike the system of constant changes of the Prime Ministers with the changes in the parliament, this one allows the “governors” to work for long run results instead of giving short run solutions hoping to secure another mandate. The Swedish government system provides the necessary governmental approach to conduct the needed policy changes, in order to build a holistic governmental approach to sustainable development on national and local levels.

3. Degree of democracy – the Freedom in the World report from 2011 reports high freedom scores on the two categories – Civil Liberty and Political Rights. The country also demonstrates strong profile in all sub-mentioned liberties – Press, Religious, Assembly, Racial, etc. Although, there are reported some problems with refugees that began in 2007 when the reunification of refugees family members is no longer allowed.50

### Table 9. Freedom in the World, Sweden 2011

<table>
<thead>
<tr>
<th>Status:</th>
<th><strong>Free</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Freedom Rating:</td>
<td>1</td>
</tr>
<tr>
<td>Civil Liberty:</td>
<td>1</td>
</tr>
<tr>
<td>Political Rights:</td>
<td>1</td>
</tr>
<tr>
<td>Freedom of speech and press:</td>
<td><strong>Free</strong>; Provisions in the Constitution; Most of the press receives government subsidies independent of the political or ethnical character of the press.</td>
</tr>
<tr>
<td>Freedom of Religion:</td>
<td><strong>Free</strong>; guaranteed by Constitution; All churches receive government subsidies, although the national religion is Lutheran.</td>
</tr>
<tr>
<td>Freedom of Assembly:</td>
<td><strong>Free</strong>; guaranteed by Constitution, respected in law and in practice;</td>
</tr>
<tr>
<td>Judiciary system:</td>
<td><strong>Independent</strong></td>
</tr>
</tbody>
</table>

Along with the other liberties Sweden is presented as the global leader in gender equality and public administration transparency. In the degree of democracy the country shows very good results and has the highest scores in the index.

4. Level of corruption – as mentioned in the Freedom in the World report the corruption level of Sweden is among the lowest in the world. On the scores for 2011 in the CPI Sweden ranks 4 on transparency in the world with 9.3 out of 10 points, which mean highly “clean” in terms of corruption. This gives the public administration the image of just and transparent and is a prerequisite for high efficiency in the public affairs.\(^{51}\)

#### 3.2 Economic Environment

1. Economic growth – Stockholm accounts for 42% of the total GDP of the country for 2010.\(^{52}\) This means a high proportion of economic activity concentrated in one city with relatively small proportion of country’s population (explained in the next section). This implies efficiency in terms of productivity – less human capital produces higher amount of created capital (GDP). From investment point of view this productivity makes the region very attractive for investments and if managed...

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\(^{51}\) Source: Corruption Perception Index; [http://cpi.transparency.org/cpi2011/results/](http://cpi.transparency.org/cpi2011/results/)

\(^{52}\) Source: [www.investinstockholm.com](http://www.investinstockholm.com)
properly it can lead to sustainable practices of GDP generation. The dimensions of proper management for sustainable urban development are a matter of further analysis presented in the following sections.

2. Unemployment rate – the average unemployment rate in Sweden for the period of 2007-2009 is 7.3% and in Stockholm for the same period is 4.8%\(^{53}\). This is a very high difference between the capital city and the country, especially as the Stockholm record is lower than the OECD one (5.7%)\(^{54}\) and the country one is higher. The difference can be explained by two other factors. From one side the capital city offers more job opportunities on the other site only 16% of the Sweden’s population live in the capital city\(^{55}\), so this lower unemployment rate have little effect in the computation of country’s average record. The level of urbanization in Sweden is considerably high – 84.6%\(^{57}\) which is typical for low- and middle-income nations where people cannot find prospects in their rural settlements\(^{56}\). The case of Sweden is different – the climate of Sweden does not allow much farming and agricultural activities in most parts of the country (rural areas are characterized by agricultural use of land, rather than industrial). The proportion of urban population living in Stockholm (18.9%) is relatively small, which means a proportionate distribution of human capital in urban areas in the country. This allows efficient distribution of the work force and good opportunities for development in the regions outside the capital district.

3. Household income – Sweden is in the high income class of OECD countries and keeps relatively high income scores which can be seen from the median annual household income of the country which is higher than the OECD one. Moreover, the Eurostat indicator for people at risk of poverty (poverty threshold 60% of the median income for the country) shows 15% for 2010 which is way below the EU27 average of 23.5%\(^{57}\).

\(^{53}\) Source: Eurostat
\(^{54}\) Source: OECD Statistics; [www.stats.oecd.org](http://www.stats.oecd.org)
\(^{57}\) Source: OECD Statistics; [www.stats.oecd.org](http://www.stats.oecd.org)
<table>
<thead>
<tr>
<th>Variable</th>
<th>Sweden</th>
<th>OECD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median household income in $ PPP (2007)</td>
<td>22 889</td>
<td>19 229</td>
</tr>
<tr>
<td>% of people below medium income after taxes and transfers, latest year&lt;sup&gt;58&lt;/sup&gt;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Below 40% of medium income</td>
<td>3.9% ($ 9 155 PPP)</td>
<td>6% ($ 7 691.6 PPP)</td>
</tr>
<tr>
<td>Below 50% of medium income</td>
<td>4.8% ($ 11 444 PPP)</td>
<td>11.1% ($ 9 614.5 PPP)</td>
</tr>
<tr>
<td>Below 60% of medium income</td>
<td>16.4% ($ 13 733 PPP)</td>
<td>17.7% ($ 11 537.4 PPP)</td>
</tr>
</tbody>
</table>

Table 10. Household income annual amount and distribution in Sweden and OECD<sup>59</sup>

Obviously poverty is not a great challenge for the society since the percentage of the people at poverty risk is low and the 60% threshold is relatively high (See Table 10). To make further assessment the perception of poverty in the capital city of Stockholm shows the following results.

![Perception of poverty in Stockholm 2011](image)

<table>
<thead>
<tr>
<th>Strongly agree – 8.1%</th>
<th>Somewhat agree – 39%</th>
<th>Somewhat disagree – 30.8%</th>
<th>Strongly disagree – 14.2%</th>
<th>No answer – 7.9%</th>
</tr>
</thead>
</table>

Fig. 5 Perception of poverty in Stockholm 2011

All in all on the synthetic index (0 – 100) 47.1% of the population agrees that poverty is problem in the city. This perception of poverty is relatively low compared to other cities in the regional yearbook that have “agree” percentages over 85 (Athens 86.6%; Brussels 85.9%; Budapest 89.7%)<sup>60</sup>.

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<sup>58</sup> Source: [www.stats.oecd.org](http://www.stats.oecd.org); Data are based on equivalent household disposable income, after taxes and transfers

<sup>59</sup> Source: [www.stats.oecd.org](http://www.stats.oecd.org)

3.3 Social environment

1. Demographic information on Stockholm – the population of Stockholm officially is 1,981,263 people in 2009 with population density of 303.9 people per km². This is rather normal density for a large capital city with the specifics of Stockholm – city consists of several islands surrounded by water bodies. This determines the scattered distribution of the city population with high concentration in the only one center (Stockholm has still mono-centric plan) and long distances between the different residential parts and the central part. These extraordinary geographical characteristics create issues of transportation distances and efficiency.

2. Educational level – as a capital city Stockholm has a high concentration of higher level education institutions, i.e. universities, academies and specialized science institutes. This can be followed in the data on students in the higher educational levels in the country and in the capital city. In the ISCED 3-4 level the proportion is 63‰ in the country against 53.8‰ in Stockholm, in the higher educational levels ISCED 5-6 the proportions are 43.2‰ and 61.7‰ respectively. These results show much higher proportion of students in the highest educational levels in Stockholm. That leads to the conclusion that the capital city is a preferred destination for taking higher education. The percentage of students not completing their education is 10.7% for the country and 12.2% for Stockholm. All in all the educational level in the capital city is good with high proportion of students in the highest educational levels. This brings high benefits to the society and to the process of sustainable urban development.

3. Level of involvement in social activities and volunteering – social activities and volunteering have special place in the current analysis, except purely statistical data these numbers represent people’s good will and commitment to society welfare and the sustainability idea as a whole. In the case of Sweden the following data is collected on the three categories that take place in the current analysis: “Helping Others” – 36.3%; “Charity” – 11.7%; and Other Groups and Organizations” – 24.6%. Swedes show a high participation in volunteering activities and stand among the highest scores in the Union. This shows great dedication and support to the society they are part of. This solidarity is very important for the sustainable development on country and local scale.

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61 Source: Eurostat, Urban Audit
62 Source: Eurostat
63 All data is retrieved from Eurostat, Urban Audit; data figures are for the period 2003-2006.
3.4 Technology and R&D

1. Government expenditure on R&D – in 2007 the government expenditure on R&D in Sweden is relatively high with 3.4% of GDP compared to the average of 1.85% in the EU27. This is a large amount of public investment in the technological progress of the country since the GDP for the same year is equivalent to € 353.646 bn., i.e. the total amount spent on R&D is € 12.02 bn. This high investment has positive effect on the development of more efficient technologies in all spheres of human progress including energy, environment and pollution. The high expenditure on R&D is initiated by the overall objective of Sweden to solve the major environmental problems of the country within one generation, without triggering negative impacts on the environment outside the country.

3.5 Environment

1. Air quality – the annual average concentrations of PM10 in Stockholm for the period 2007–2009 is 16.7μg/m³. This concentration is much lower than the EU accepted threshold of 40μg/m³, and has not been exceeded in more than 2 days during the year for that period. The reasons for these low concentrations are not only the low population and density, but also some specifics in the citizens’ lifestyle concerning transportation. The concentrations of the CO₂ in the country for the same period are 5.4 metric tons per capita which is slightly higher than the concentrations in Stockholm – 3.6. The reason for this unusual difference is the strategy for decreasing the GHG emissions in the city and the initiatives related to it. Local government authorities work in close cooperation with local businesses and citizens to promote and engage in the climate change program that the city has undertaken. These results in significant decrease of the CO₂ and other GHG emissions compared to the rest of the country and the EU.

2. Transport – Stockholm faces unique transport challenges bred by the specific geography of the region. The central area of the city is characterized by efficient and regular public transport, at the same time public transport in the suburban areas has poor interconnections with the central transport

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65 Source: Eurostat
67 Source: Eurostat, Urban Audit
68 Source: UN Data; [www.data.un.org](http://www.data.un.org)
69 Data on local emissions and environmental initiatives is retrieved from the official web site of the city of Stockholm – [www.stockholm.se](http://www.stockholm.se)
network. Therefore, most of the suburban inhabitants commute by car to the city. This is shown by the percentage of households possessing personal vehicles divided by suburbs in Table 10:

<table>
<thead>
<tr>
<th>Suburb:</th>
<th>% of households with car</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outer Suburb Nord</td>
<td>91</td>
</tr>
<tr>
<td>Inner Suburban Nord</td>
<td>87</td>
</tr>
<tr>
<td>Other Center Nord</td>
<td>74</td>
</tr>
<tr>
<td>Inner Nord</td>
<td>60</td>
</tr>
<tr>
<td>Inner South</td>
<td>61</td>
</tr>
<tr>
<td>Other Center South</td>
<td>72</td>
</tr>
<tr>
<td>Inner Suburban South</td>
<td>86</td>
</tr>
<tr>
<td>Outer Suburb South</td>
<td>87</td>
</tr>
<tr>
<td><strong>Stockholm County</strong></td>
<td><strong>78</strong></td>
</tr>
</tbody>
</table>

Table 11: Proportion of suburb households owning a car in Stockholm County

However the trend in the latest years is increasing for the passengers of the public transport in exchange of travelers by car. This pattern is pronounced in the years after 2007 when the Stockholm congestion tax is introduced for restriction of large amount of vehicles entering the central areas of the city. This is also expressed in the total amount of registered vehicles in Stockholm County compared to country records. In Sweden for 2009 the registered private cars are 462 per 1000 inhabitants against 369.8 in Stockholm for the same period. This result is positive for the Stockholm’s program for lowering carbon emissions – numbers are low not only compared to country data but also compared to other metropolitan areas in EU (Brussels – 485.8; Lazio, Italy – 676.7; Centre, France – 503.9).

3. Waste: Waste management plays crucial role in sustainable urban environment, especially in large metropolitan areas where a lot of people with their everyday activities accumulate great amounts of solid waste. The total amount of annually collected solid waste in Stockholm for the period of 2007 – 2009 is 0.5 tons per inhabitant. The waste management treats around 25% of this solid waste by recycling, 73.5% are used for district heating by processing through incinerator and the rest 1.5% are

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71 Source: Eurostat, Urban Audit
73 Source: Eurostat, Urban Audit
biologically treated. Through these methods no landfill accumulation is created and pollution risk for
the environment is maximally reduced. Moreover, waste is efficiently used as heating energy
generator. The efficiency of this waste processing system is also determined by citizens’ will to
recycle and the producers’ agreements for fully recyclable packaging.

4. Energy efficiency: As mentioned before the energy efficiency is understood as decrease in
energy consumption. The European Environmental Agency (EEA) reports the total change in final
energy and electricity consumption per person throughout the period of 1990 – 2008. For Sweden the
trend is negative change of 6% for final energy consumption and 5% in the electricity consumption
(also negative). These trends show a decrease in the final energy and electricity consumption which is
positive in terms of efficiency, especially in times when consumption of all types is increasing. This
can be proved by the EU27 total change in household final energy consumption per person, which for
the same period is positive by 6.6%; and by the electricity consumption, which is also positive with
32%. On energy type criterion Sweden scores 50.2% renewable energy consumed for 2009, which
already exceeds the Sweden’s target for 2020 of 49% (See Appendix 1). This score is also much
higher than the EU 2020 goal for 20% renewable energy consumed in the Union. This progress is
remarkable for the country and the Union as renewable energy is one of the main prerequisites for
sustainable future.

3.6 Legal environment

1. Bureaucracy quality – the quality of the public administration in Sweden is quite good
according to the latest research paper of IPA concerning public sector. In the different categories
Sweden’s scores are as following:

- Bertelsmann Stiftung management index 2011 – 8.65 (of 10); and it is the highest score
  among EU15;
- Steering capability – 7.8 (of 10)
- Policy implementation – 8.3 (of 10)
- Institutional learning – 9 (of 10); highest score among EU15
- Accountability – 8.2 (of 10); highest score among EU15

74 Source: Stockholm Municipal, www.international.stockholm.se
75 Source: European Environmental Agency, www.eea.europa.eu
76 Boyle, R., November 2011. “Public Sector Trends” Research paper №6, Institute for Public Administration
In all categories Sweden keeps high performance scores, as some of them are top scores in the sample of EU15 countries (See Appendix 4). Bureaucracy quality is rather important for a good backbone of every sustainable development strategy. The public administration performance of Sweden allows fast and smooth policy making and implementation and gives Sweden’s sustainable development strategy the needed operational support for better results and positive citizens’ attitude.

2. Environmental legislation – the Swedish Environmental Code is the main piece of law concerning environment safeguard in the country. It enters into force in 1999 and since then it has been constantly updated. In order to monitor and execute the law there has been established the so called Environmental Court. The Environmental Code covers nature preservation, pollution and other activities that are harmful to environmental and human health, protection of biodiversity and natural resources. On a local scale, in Stockholm, the congestion tax is powerful tool for reducing the vehicles flow to the central areas of Stockholm. This tax has also huge environmental effect by reducing air pollution caused by vehicles in the city. Environmental taxes are important legislative instrument for encouraging sustainable practices and suppressing the unsustainable ones. The following table shows the amount collected from different types of environmental taxes as percentage of GDP and of total taxes collection:

<table>
<thead>
<tr>
<th>Environmental Taxes (2009)</th>
<th>% of GDP</th>
<th>Percent of total revenues of taxes and charges</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy</td>
<td>2.28%</td>
<td>4.86%</td>
</tr>
<tr>
<td>Transport</td>
<td>0.53%</td>
<td>1.13%</td>
</tr>
<tr>
<td>Pollution/Resources</td>
<td>0.01%</td>
<td>0.03%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>2.82%</strong></td>
<td><strong>6.02%</strong></td>
</tr>
</tbody>
</table>


The percentages are higher in the Energy sector, which is reflection of the Sweden’s ambitious objective to increase energy efficiency and encourage renewable energy consumption. Environmental taxes also have the power to shift the tax burden from citizens (income tax) to unsustainable consumption or production practices (taxes in energy, transport and production sectors). With well balanced tax system Sweden (and other countries as well) can encourage sustainable practices in production and consumption, provide better living for people and suppress unsustainable activities.

77 Source: Swedish Environmental Protection Agency; [http://www.naturvardsverket.se/en/In-English/](http://www.naturvardsverket.se/en/In-English/)

78 Source: Stockholm Municipal, [www.international.stockholm.se](http://www.international.stockholm.se)
V. Results – Challenges and Opportunities for Sustainable Urban Environment

The results from the analysis made in the previous section show in a structured way which are the weaknesses, strengths, opportunities and threats for sustainable urban development in the two cities. After precise evaluation the results of the analysis are presented below with integrated SWOT framework:

<table>
<thead>
<tr>
<th>PESTEL factors</th>
<th>Athens</th>
<th>Stockholm</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Political:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>✓ Government stability</td>
<td>questionable</td>
<td>strength</td>
</tr>
<tr>
<td>✓ Degree of democracy</td>
<td>threat/challenge</td>
<td>opportunity</td>
</tr>
<tr>
<td>✓ Corruption level</td>
<td>threat/challenge</td>
<td>opportunity</td>
</tr>
<tr>
<td><strong>Economic:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>✓ GDP proportion</td>
<td>opportunity</td>
<td>opportunity</td>
</tr>
<tr>
<td>✓ Unemployment rate</td>
<td>weakness</td>
<td>strength</td>
</tr>
<tr>
<td>✓ Household income</td>
<td>weakness</td>
<td>strength</td>
</tr>
<tr>
<td><strong>Social:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>✓ Demographic info</td>
<td>weakness</td>
<td>strength</td>
</tr>
<tr>
<td>✓ Educational level</td>
<td>questionable</td>
<td>opportunity</td>
</tr>
<tr>
<td>✓ Volunteering</td>
<td>weakness</td>
<td>strength</td>
</tr>
<tr>
<td><strong>Technology and R&amp;D:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>✓ Government spending on R&amp;D</td>
<td>threat/challenge</td>
<td>opportunity</td>
</tr>
<tr>
<td><strong>Environment:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>✓ Air quality</td>
<td>weakness</td>
<td>strength</td>
</tr>
<tr>
<td>✓ Transport</td>
<td>opportunity</td>
<td>opportunity</td>
</tr>
<tr>
<td>✓ Waste</td>
<td>weakness</td>
<td>strength</td>
</tr>
<tr>
<td>✓ Energy efficiency</td>
<td>threat/challenge</td>
<td>opportunity</td>
</tr>
<tr>
<td><strong>Legal:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>✓ Bureaucracy quality</td>
<td>threat/challenge</td>
<td>opportunity</td>
</tr>
<tr>
<td>✓ Legislation</td>
<td>opportunity</td>
<td>opportunity</td>
</tr>
</tbody>
</table>

Table 13: Summary of the PESTEL analysis results with an integrated SWOT framework
In the table above are summarized the results from the conducted analysis. All the factors are evaluated through the prism of urban sustainable development. Thus, factors that concern country’s development are external factors and cover the Threats and Opportunities categories. The internal factors are the city’s own characteristics which can be its Strengths or Weaknesses. All factors have “challenging” or “chance/opportunity” character, which will be discussed further.

Political factors:

✓ **Government stability:** in the two cases government stability is external factor that affects the sustainable development of the city. In the case of Athens it is evaluated as questionable due to the latest events that have destabilized the country. Nevertheless, in the analysis was noted that with good political will government stability can be restored and is able to become an opportunity for progress in sustainable development. The case of Stockholm proves this by strong government stability that supports and enforces sustainability not only in the capital city but also in the whole country.

✓ **Degree of democracy:** the degree of democracy is also an external factor that can represent opportunity or threat to sustainable urban development. In the case of Greece the degree of democracy is lowered by corruption and racial intolerance. This has an impact on Greece’s overall development, including the sustainable development. Corruption’s negative effect can be diminished by more stringent measures against corrupt practices on all levels of public administration. Unfortunately, latest events proved that Greece cannot do this by its own and would need external monitoring and guidance from EU. Sweden, on the other hand, has very high result on degree of democracy, demonstrating not only freedom in all traditional aspects (religion, ethnos, press and speech, justice) but also gender equality leadership. This is serious indicator for solid public administration, which works in the name of people and for people.

✓ **Corruption level:** Corruption is another external factor that can be serious threat to sustainable development. As mentioned before, corruption is one of the greatest challenges for sustainability in Greece. The analysis showed that the country keeps one of the highest scores in perceived corruption index. Corruption is seen as serious threat not only to sustainable development but also to overall progress in the country. Thus, it is strictly monitored and heavily criticized by the European Anti-Fraud Office (Office de Lutte Anti-Fraude, OLAF). Sweden scores very high in government transparency, and is practically “pure” in terms of
corruption. This reflects on population approval and thrust in the system and the government, which is important for promoting sustainable development among citizens.

Economic factors:

- **GDP proportion**: the GDP proportion is partly an external factor as it depends on investment in the city and of course is calculated on the basis of country’s GDP. Here for both cities higher proportion of generated human capital means more opportunities for growth. If managed properly it can also mean more opportunities for sustainable development and even green growth in the future.

- **Unemployment**: the unemployment rate in the city is its own characteristic and as such can impose weakness or strength. As stated in the previous section, higher unemployment causes inefficiencies in human capital distribution. Furthermore, the disproportionate distribution of people causes concentration of human activity in the limited area of cities at the expenses of abandoned rural areas that suffer from lack of means and opportunities for development. In the case of Greece and, particularly, Athens both of the above mentioned situations are present in the analysis’ results: high unemployment and concentration of population in the capital city. This represents significant challenge for the Athens’ urban area and directly affects the other regions in the country. Thus, the conclusion for Greece and its capital is that the unemployment rate and the disproportionate distribution of population are serious weakness which puts challenges in front of sustainable development in the capital city and the country. The case of Sweden is very different. The unemployment rate in the capital city is relatively low and combined with fair distribution of the population creates more efficient human capital employment and more prospects for sustainable development.

- **Household income** is another external factor as data in the analysis is on country records. However, household income combined with the perception of poverty in the selected city can be regarded as weakness or strength in the city profile. In Greece the household income is relatively low and combined with the perception of poverty in Athens, which is rather high, gives the full picture of Athens citizens’ income status. These results represent rather a weakness of the city and raise a challenge towards sustainable development. In Sweden the household income is rather high and even the people with incomes lower than the median one have normal living standard (which is above the OECD median household income). Moreover,
the perception of poverty as a problem in Stockholm is rather low compared to many other cities in the EU. Higher living standard usually means higher consumers’ activity and unsustainable consumption practices, but if educated properly, savings in consumption and sustainable consumer’s practices can diminish the negative footprints on the environment.

Social factors:

✓ **Demographic information:** cities’ demography is an internal factor based on statistical data on population and population density. In Athens the high population density represents serious problem for the urban environment and puts very high pressure on the infrastructure of the city. This is a great challenge towards sustainable urban development given the consumption patterns of the citizens, transport modes, waste management and other factors that will be further explained. In Stockholm the total population and population density do are relatively low and rather represent advantage for the city to progress in sustainable development. However, this result has to be combined with other favorable factors to have a full beneficial effect on urban environment.

✓ **Educational level:** education represents a great opportunity to develop knowledge and consciousness on environmental sustainability. The status on Athens citizens’ education is questionable due to the unclear data on the higher educational levels. On one hand literacy in the country is relatively high but on the other the percentage of students who do not complete their basic education is relatively high. If managed well (by giving incentives to population for improving educational status) education can create a lot of opportunities for development; well educated citizens contribute to environment and society with their actions, knowledge and skills. In Stockholm the educational background of the citizens is quite promising –data shows higher amount of students in the upper educational levels compared to country’s figures. Higher education is popular as giving more prospects to the individual and the society. Thus, in the city (and the country) education proves as creator of opportunities for sustainable development.

✓ **Volunteering and social activities:** this factor represents the individual willingness to help others and participate actively in the common missions of the society. It can be treated as both external and internal factor, although, figures are from country data, because high social commitment can be strength and opportunity and the lack of it can represent weakness and
challenge for sustainable urban development. In Greece citizens show low levels of involvement in volunteer activities and contribution to charity. This result can be both, consequence and reason: consequence of low income, low trust in society and government, low consciousness and knowledge; and it can be a reason for slower and more difficult progress in sustainable development, caused by citizens’ ignorance. The scores in Sweden are much different; people show more commitment to society welfare and environment. This again can be regarded as consequence of the higher living standard, better education and stronger belief in society and government, and a reason for faster progress in sustainable development.

Technology and R&D:

- **Government expenditure on R&D** is an external factor, which determines the government’s investment in innovative technologies, some of which are in the field of sustainable development. In the case of Greece the expenditure on R&D is rather insufficient compared to the EU average. This can be an impediment for sustainable development in the sense that green technologies and researches do not receive enough financial support. In Sweden the expenditure on R&D is much higher than the EU average and gives more opportunities and incentives for development of innovative sustainable solutions.

Environmental factors:

- **Air quality**: Air quality can be a factor with significant impact on human and environmental health and at the same time is a consequence of human activity. Air pollution has negative effects on environmental and human health and thus there are certain acceptable levels above which it gets hazardous dimensions. Air quality in Athens proves to be very poor and represents certain risk for human and ecological health. The reason for this poor quality is the high population density daily unsustainable transport usage, and unsustainable consumption and production practices. Thus in Athens air quality is marked as a weakness and can be a good indicator for unsustainable human activity. In Stockholm air quality is rather good with low PM10 concentrations and CO₂ emissions. This is prerequisite for better urban environment and indicates more sustainable management of the human activities that take place in the city.

- **Transport**: transport is important part of cities’ life and is narrowly connected to the other environmental factors (e.g. air quality and energy efficiency). Big traffic tends to be the biggest
challenge for metropolitan areas not only from environmental point of view, but also from citizens’ perspective. Thus, an efficient public transport in important part of traffic relief and environmental health. For both cities transport is seen as opportunity to decrease private cars usage and hence the air pollution, heavy traffic and energy consumption. In Athens an efficient public transport is more than necessary; it can be a huge part of the total progress towards sustainable development. Air quality in the city is alarming and requires immediate actions, such as the metro network building in 2004. Public transport needs to be improved by more sustainable modes and efficient network that is convenient for the citizens and will serve as incentive to “leave the car in the garage”. In Stockholm the situation is similar, public transport needs to be improved in the remote areas in order to encourage citizens to use it more often and avoid driving to the central parts of the city. Another good measure for restricting vehicles concentration in the center is the congestion tax which is observed in the legal part of the analysis.

✓ **Waste**: waste generated in the city area is an internal factor, which represents weakness or strength of city’s profile for building sustainable urban environment. In Athens the total amount and processing methods of the solid waste are serious weaknesses and challenges for sustainability. The amount of solid waste processed to landfills is enormous and create real risk for human and environmental health. This type of waste handling indicates weak waste management and poor system of processing. The example of Stockholm gives a better solution to waste accumulation problem by reusing large amount of it for energy generation, also a large proportion of the solid waste it is recycled which is the most sustainable way of processing. The waste management system of Stockholm is not very complicated to execute, but rather requires high investments for building waste processing facilities (e.g. incinerators and recycling centers) and good will from citizens and businesses to make it work.

✓ **Energy efficiency**: energy efficiency is measured on country figures, and as such should be regarded as external factor to sustainable development in the urban areas of Athens and Stockholm. The overall results are influenced by citizens’ behavior (the used variables are expressed as consumption per person). Renewable energy is regarded as factor that brings many opportunities for energy efficiency, as a great part of sustainable development. In Greece the trend in energy and electricity consumption is upward, which means no saving on energy and increasing consumption throughout the years. The values of energy and electricity
consumption change are rather high and put a serious challenge towards sustainability in the country and in the most populated city – Athens (presumably most consumption occurs there). The trend in renewable energy gives certain opportunities to cancel out some of the energy efficiency weaknesses. Thus, renewable energy targets have to be followed strictly and if possible overmatched. In the case of Sweden, renewable energy has reached a very high level in terms of consumption, and already the results demonstrate a strong will to exceed the target for 2020. The trends in energy and electricity efficiency are also optimistic by showing a downturn in total household consumption in the country (results are much lower than the EU average, which still shows positive trend in energy and electricity consumption).

Legal factors:

✓ **Bureaucracy quality:** public administration quality is a matter of country government and thus it is an external factor, which influences the sustainable development in the selected cities. In Greece the bureaucracy quality is deeply influenced by the high levels of corruption in the country. Thus, on all criteria Greece’s scores are low and public administration’s work is rather a challenge to policy making processes and sustainable development than smoothing and speeding it up. Thus, the low efficiency of public administration represents a threat to sustainable urban development in Athens. In Sweden the quality of the bureaucracy is rather high and contributes to the progress of the sustainable development on all levels in the country (including the sustainable urban development of Stockholm). Thus, in Sweden public administration efficiency gives a lot of opportunities to sustainable development.

✓ **Legislation:** legislation is powerful tool for bringing sustainability into action. If managed well it can have immediate results and create a working policy framework for sustainable development. In both cases there are examples for legislation that works for sustainable development on national and local basis. Thus, it is noted as opportunity for both cities. EU has no rights to enforce changes directly in the local legal system and municipal management (in these cases Athens and Stockholm municipal law), but has the power to inspire and encourage such changes through different funds and projects.
VI. Conclusion

The European Union has already taken decisive steps in its sustainable development strategy, by setting goals and targets to follow, by establishing assessment and monitoring structures to the process, and by launching initiatives that encourage and support sustainable development practices on a local (urban) level. However, adding new member states to the single framework of targets (represented by the Union), adds more variables to the equation and more complications and challenges, as well as opportunities to the solution.

The results from this paper show that there is still long way to go before reaching sustainable development. There are multiple complications to be involved in the solution, which is rather dynamic and versatile than straight and static. Hence, there is no single right strategy to be followed but many individual strategies that need to be combined and integrated in order to work in unite symbiosis. Challenges need to be transformed into opportunities, weaknesses – into strengths, and good practices have to be continued and developed.

Although no comparison is made between the two cases, they are on different poles in terms of sustainable development. Stockholm and Athens demonstrate the full range of challenges and opportunities, which the EU strategy for sustainable development has to cope with. On one hand is Stockholm, a capital city of an EU country with high responsibility and commitment to environmental safeguarding, where sustainability is top priority for the government and the society. On the other hand is Athens, a capital of another EU member state, which has many issues related to political and social stability, where top priorities are rather making up the EU requirements than following government strategy.

The conducted analysis gives several recommendations and conclusions based on the collected data. From country perspective, in Greece corruption is the main issue that put challenges in front of sustainable development. This is the starting point in resolving all other issues related to economic, social and the environmental state of the country and the capital city. As the example of Sweden shows, transparent governance ensures public and EU trust, facilitates the communication between local and state authorities and supports the overall development of the country. However, from city perspective, the measurements that have to be taken are more concrete and concern the practical site of city planning and management.
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