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JOURNAL

OF SUSTAINABLE DEVELOPMENT

SPECIAL ISSUE





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Journal of Sustainable Development

Volume 1, Issue 4

1 - 80 pages

Skopje, Macedonia

October, 2012

ISSN 1857 - 6095

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UDC 332.146.2:334.722]:338.45(497.7)

GREENING OF THE MACEDONIAN PRIVATE SECTOR WITH KEY FOCUS ON THE INDUSTRY¹

Todor Milchevski, MBA²

Abstract

This paper presents broad analysis of the greening of the Macedonian private sector, with key focus on the industry. The reason for considering mainly the industry is that it has largest impact on the Macedonian economy, positively or negatively. Green growth is a comprehensive issue with different aspects and only those with most relevance to Macedonia are discussed in this paper.

The issue of greening the private sector can be analyzed from two aspects, from the perspective of the government and the support it can provide and from perspective of the private sector. The first aspect grasps the government's efforts to create enabling environment for the companies to go green, while the second one elaborates the efforts for green growth undertaken by the private sector itself. The

¹ This paper was prepared by Todor Milchevski during his two month appointment in the World Bank in Washington, working on the Green Growth program for Macedonia. The findings, interpretations and conclusions expressed herein are those of the author and do not necessarily reflect the view of the World Bank Group, its Board of Directors or the governments they represent.

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first aspect is shortly presented in this paper and is mainly focused on the idea that the authorities should have more subtle role when it comes to greening the private sector in Macedonia. The private sector is the one that needs to invest in its own greening, however a push is needed, and this should be authorities' role. This paper for most part focuses on the second aspect and what is happening in the private sector in terms of achieving sustainability, efficient and optimal use of resources, as well as opportunities that may emerge from pursuing a green agenda.

Key words: greening, green, environment, industry, private sector

JEL classification: Q01 - Sustainable Development

Contents

I. Introduction	9
II. The two sides of the Macedonian industry.....	14
II.1 Contribution of the industry to the Macedonian economy.....	14
II.2 Environmental performance of the Macedonian industry	17
II.2.2 Energy commodities' utilization	19
II.2.3 Energy efficiency	20
II.2.4 Air pollution	24
II.2.5 Technology	28
II.2.6 Soil contamination	28
II.2.7 Water use.....	30
II.2.8 Waste	32
III. Renewables (clean energy sectors).....	33
IV. Diversification	38
IV.1 Diversification of the economic activities.....	38
IV.2 Resources diversification and eco – efficiency	41
V. Awareness.....	46
VI. Environmental standards.....	50
VII. Greening supply chain	55
VIII. Demand driven private sector based on government spending (Green Public Procurement)	60
IX. Environmental obligations caused by regulations.....	64
X. Outlook and conclusion	67

GREENING OF THE MACEDONIAN PRIVATE SECTOR WITH KEY FOCUS ON THE INDUSTRY

I. Introduction

The concept of decoupling is one of the key challenges the world is facing. Is it possible to grow while carrying for the environment? Many professionals and organizations are trying to answer this question and there are always pro and contra arguments. What is important to understand, is that no one should even ask that question anymore, but should rather think of ways how to do it. Thinking green while performing economic activities is a must, it is a necessity, it a call for "having" a future.

Considering green does not necessarily means making costs, but also saving resources and money, achieving higher productivity and profitability. Michael Porter and Claas van der Linde (1995) argue that improving environmental performance by the companies could lead to higher competitiveness.

The issue of green growth has so many aspects that one can argue its scope. According to the United Nations Environment Programme, green economy results in "improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities" (UNEP 2010). To put it more simple, they say that green economy is the one that is resource efficient, low carbon and socially inclusive. The World Bank in its publication called "Inclusive Green Growth: The Pathway to Sustainable Development" (2012) calls for green growth, a "growth that is efficient in its use of natural resources, clean in that it minimizes pollution and environmental impacts, and resilient in that it accounts for natural hazards and the role of environmental management and natural capital in preventing physical disasters". The focus has already shifted to economic growth that is environmentally sustainable. The

OECD (2011) has developed their own definition of green growth, stating that it “means fostering economic growth and development while ensuring that natural assets continue to provide the resources and environmental services on which our well-being relies”³. In 2011, the United Nations Industrial Development Organization (UNIDO) turns to the issue of greening by preparing the document called “Greening Industry”. With this document they try to encourage the private sector to take its role in the pursuit for sustainability. According to UNIDO “green industry promotes sustainable patterns of production and consumption i.e. patterns that are resource and energy efficient, low-carbon and low waste, non-polluting and safe, and which produce products that are responsibly managed throughout their lifecycle”.

Before going into the topic of green growth, it is important to make clear distinction between green and greener (products, technologies, sectors etc.).

The “green” is part of green growth’s very narrow scope, referring to clean technologies, renewable energy etc., while the “greener” has more broad scope and mainly refers to reducing the environmental impact from the activities being carried out. With the reference to go “greener”, what is meant is the companies to take responsibility for their impact on the environment and to contribute to sustainable future.

This paper elaborates three key points, with an attempt to put accent mostly on private sector led initiatives:

1. *The lack of diversified economic structure in Macedonia is a constraint that can be transformed in an opportunity for greening.* When looking at the private sector, the industry and especially the manufacturing industry has to be smartly considered. Its contribution is very high, but at the same time the resource use intensity is very high as well. In terms of the industry, there are only few companies that need to be reflected. Their existence is important both in terms of contribution and consumption. Even though the lack of diversified economic

³ Towards Green Growth, Organization for Economic Co-operation and Development, 2011

activities contributing to the country's economy is not good, a positive result can come out of it. That is to say, it would be easier to work with these several stakeholders and jointly achieve to reduce the environmental impact, as well as increase their resource efficiency.

2. *The private sector has the responsibility of greening its own activities and should be taken accountable for it.*
3. *The authorities need to provide a push for the private sector into greening, they have to create enabling environment so the private sector can go green.*

The research model in this paper is based on primary and secondary sources of information. Extensive desk research of the available literature from recognizable organizations and authors was used such as research papers, publications, reports etc. In order to come up with most accurate data, a number of relevant statistical databases were used. In addition, plenty of stakeholders were contacted as primary sources of information.

The paper uses descriptive as well as explanatory approach attempting to emphasize interrelated aspects of the Macedonian economy relevant to its greening. In addition, comparative analysis is used to contrast the greening of the private sector in Macedonia in relation to other relevant countries. For visualization purposes, much of the data is presented using different types of charts and other forms of visual aid.

The definition of green growth and its elements with respect to the Macedonian case is not an easy task considering that as stated before, it seems that the aspects of green growth have not been agreed upon yet. Different organizations look at different scope of green growth. This paper is focused on the Macedonian private sector alone. Key accent is given to the industry, based on its importance to the Macedonian economy which is quite higher compared to the other sectors. When thinking about green growth of the Macedonian private sector, in this paper we consider the following aspects:

- *Environmental performance of the Macedonian industry (energy efficiency, use of renewable sources of energy, air pollution, water pollution, waste etc.)*
- *Resources diversification and eco – efficiency*
- *Awareness*
- *Environmental management system*
- *Greening supply chain*
- *Demand driven private sector based on government spending*
- *Environmental obligations caused by regulations*

There are many written materials that have been produced about Macedonia and are relevant to green growth⁴. In the past few years, Macedonia has made significant administrative efforts for preparing a strategic framework as a basis for green growth. In 2009, a Strategy for Energy Development in the Republic of Macedonia until 2030 was adopted, while in 2010 two more important strategies were adopted: Strategy for Improvement of the Energy Efficiency in the Republic of Macedonia until 2020 and Strategy for Utilisation of Renewable Energy Sources in the Republic of Macedonia by 2020. These documents provide comprehensive analysis of the current situation in the energy sector with multiple forecasting scenarios. All of the administrative documents that have been prepared, not just the strategies, are a good start, however work is yet to be done and appropriate results are expected. The government with its policies can provide significant support to the greening of the private sector. There are number of measures that the authorities can undertake such as green public procurement, subsidizing activities related to green growth, trade facilitation of green inputs and outputs, tax incentives, public recognition of the environment friendly companies, raising the awareness for green issues, increased investments in eco – innovations etc. In addition, the government can assist just by proving options to the private provide sector in terms of diversification of the resources available. Currently, the private sector is troubled with lack of alternatives for usage of

⁴ See references

appropriate source of energy, which is due to the lack of planning and competence of long term outlook by any of the authorities so far.

The fact is that some companies in Macedonia have succeeded in being frontrunners when it comes to green growth. These are mainly large companies that have presence on the international market and it appears that the international environment they operate in has made them think in that direction. Also, there are companies that implement measures for greening, but they do not identify them as such, since the level of awareness for green growth is low. Namely, guided by the competition and desire to decrease the operating costs, the companies implement energy and resource efficient measures, nonetheless they fail to record them as such. Still, there is a lot that can be done to “green” the growth, for example implementation of environment management system, green supply chain management, using the green growth activities as a marketing tool, voluntary environmental agreements, recycling, etc.

At the beginning, this paper is focused on the industry, or to be more precise the manufacturing industry, because it has been recorded that while it is the largest contributor to the Macedonian economy, in the same time it is highly resource intensive and therefore has large potential for savings. Nevertheless, the recommendations provided in this paper are applicable to probably every segment of the private sector.

II. The two sides of the Macedonian industry

II.1. Contribution of the industry to the Macedonian economy

The industry is of great significance for the Macedonian economy, especially the manufacturing industry considering its prevailing character when it comes to the contribution to the gross domestic product (GDP), export and foreign exchange reserves. According to the data provided by the Macedonian State Statistical Office, in the last seven years the manufacturing industry has been the largest contributor to the Macedonian GDP. In this regard, the metals industry has been highlighted as crucial one.

In order to capture the importance of the industry, we present data that reflects the participation of the industry and the manufacturing industry (separately) in the creation of the Macedonian GDP. As we can see, the industry is responsible for one fifth of the GDP in Macedonia and the largest percentage is attributed to the manufacturing. Furthermore, when analyzing the gross output at basic prices for the manufacturing industry in 2010, around 20 % refers to the manufacture of basic metals that just confirms the significance of this sector.

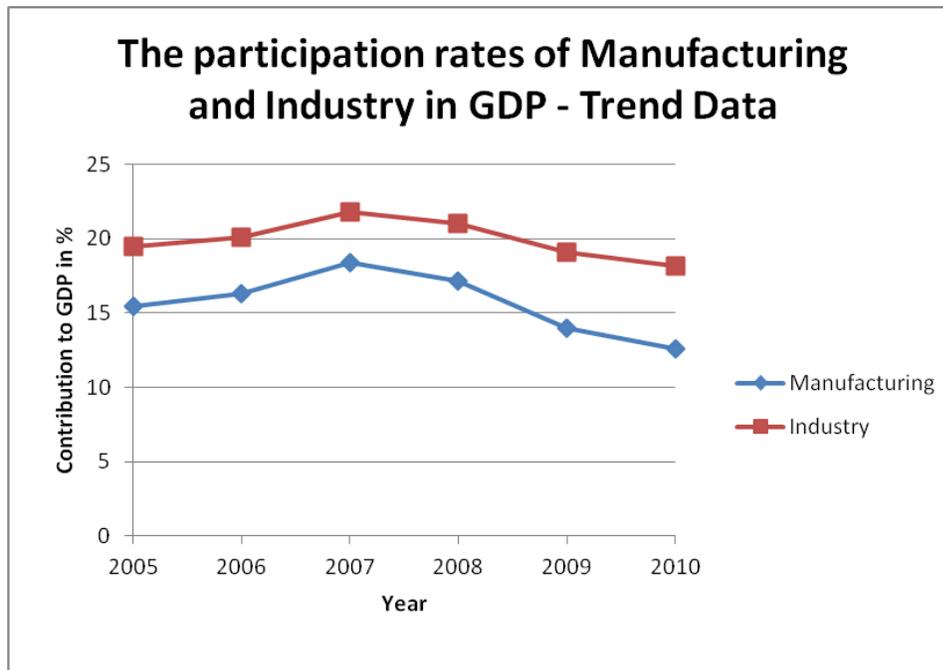
Table 1. Contribution of industry and manufacturing industry to GDP

Year	2005	2006	2007	2008	2009	2010
Sector						
Industry ⁵ (contribution to GDP in %)	19,5	20,1	21,8	21,0	19,1	18,2
Manufacturing industry (contribution to GDP in %)	15,5	16,3	18,4	17,2	14,0	12,6

Source: State Statistical Office, Republic of Macedonia

⁵ Mining and quarrying; Manufacturing; Electricity, gas, steam and air conditioning supply; Water supply; sewerage, waste management and remediation activities

Graph 1. Share of contribution to GDP by manufacturing and industry in Macedonia



Source: State Statistical Office, Republic of Macedonia

The manufacturing industry has a major share in the Macedonian exports.

Clothing and metals prevail with contribution of over 50% in the total export value. To be more concrete, when analyzing the period from 2008 to 2010, the share of the manufacturing of metals in the total export in 2008 is high 40,3%, and after that in 2009, due to the world economic crisis, the annual export growth of metals has decreased by 56,3%. Even in such conditions, the metals continued to play essential role in the Macedonian export basket by contributing with 26,1% in 2009 and 29,5% in 2010⁶.

⁶ All of the data that refers to the structure of the exports from Macedonia, has been extracted from the report "Making Exports a Catalyst for Economic Growth: An Assessment of FYR Macedonia's Trade Competitiveness" (World Bank, May 2012)

This contribution to the export is particularly important considering the problems Macedonia has with its trade deficit and need for foreign exchange reserves. These problems year after year trouble the Macedonian economy and every contributor to the Macedonian export basket is more than welcomed.

In 2010, even 15 companies working with metals are on the list of 100 largest exporters with total contribution of 19,1% to the Macedonian export.

Some of these companies are considered to be among the nine largest consumers of energy in Macedonia. Four companies from the metallurgy are on the list of top 10 Macedonian exporters⁷.

The industry is of particular interest to analyze it in terms of green growth, since there is very small number of companies that are significant contributors to the Macedonian economy, but at the same time their negative impact can also be quite high. Namely, the structure of the Macedonian private sector is such that there is very small diversification among the business entities (with respect to their economic contribution). As was presented, small number of industrial segments has large influence to the key macroeconomic indicators of Macedonia. This puts Macedonia in very unfavorable position with large exposure to shocks.

As a result of the world economic crisis, in 2009, the manufacturing of metals was seriously affected and this resulted in decreased production. Although this is capital intensive sector that does not have large impact on the total employment, it had negative impact on the GDP growth rate which was reported to be - 0,9%. This is the second lowest growth rate in the last 15 years. The same year, the export was decreased by 31%, which is (among other factors) largely due to the significant decrease of the export of metals by over 56%⁸. One of the shocks that challenged the Macedonian metallurgy was the decrease of the price of metals. This made the companies' work a lot harder. Additionally, the large companies from the industrial

⁷ Source: Kapital, special edition: Top 100 exporters from Macedonia

⁸ Unlocking Macedonia's Competitiveness Potential: A Sectoral Assessment of the Constraints and Opportunities in Automotive, Apparel, Agribusiness, and Logistic Services, World Bank, 2012

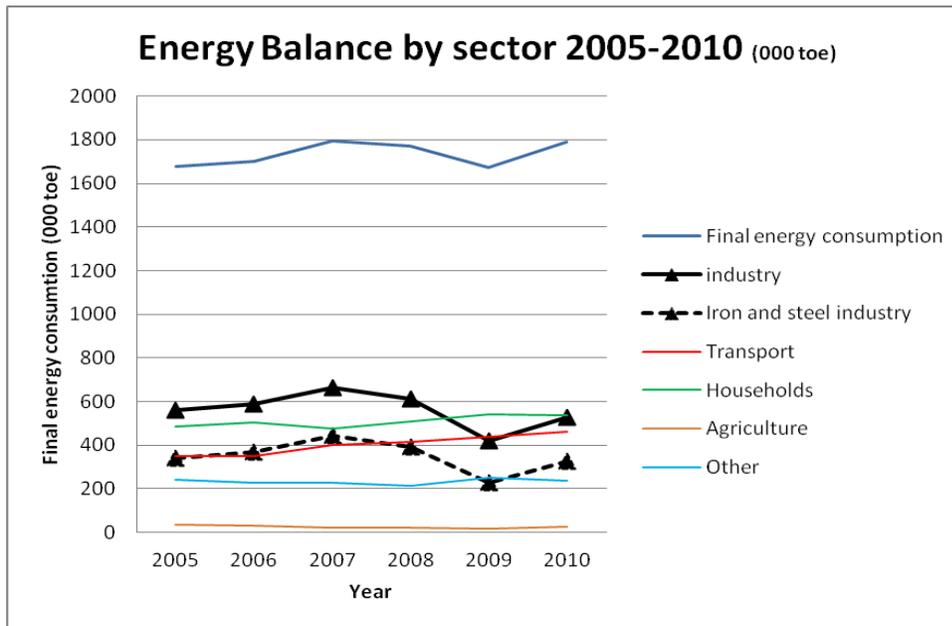
sector were the first ones to be affected by the changes in the Macedonian electricity market. Namely, in accordance with the approximation to the European Union, Macedonia committed to fully liberalize the electricity market by 2015. This process is being implemented step by step, depending on the stakeholder (large companies, SME's, households etc.). At the beginning, the changes started with the large energy consumers, and those are the same companies that have significant contribution to the Macedonian economy. As a result, in the last few years these companies are paying higher prices for electricity than the other business entities in Macedonia which has direct impact on their competitiveness on the world market.

II.2 Environmental performance of the Macedonian industry

II.2.1 Energy consumption

According to the data from the Macedonian State Statistical Office, the industry is one of the largest consumers of energy in Macedonia. As presented below, from the perspective of energy consumption, the industry is in lead compared to the other sectors. Along with the industry, the iron and steel industry is presented in order to grasp its significance not just in terms of contribution to GDP and export, but in terms of energy consumption as well.

If we analyze the chart below, we can see similar movements in the curve reflecting the total energy consumption by the industry and the curve reflecting the energy consumption by the steel and iron industry. This points out to the significant influence the steel and energy industry has to the overall industry in Macedonia. Great drop in the energy consumption by these sectors in 2009 is noteworthy, which is due to the world economic crisis and the large decrease in the production.

Graph 2. Energy Balance by sector, Macedonia

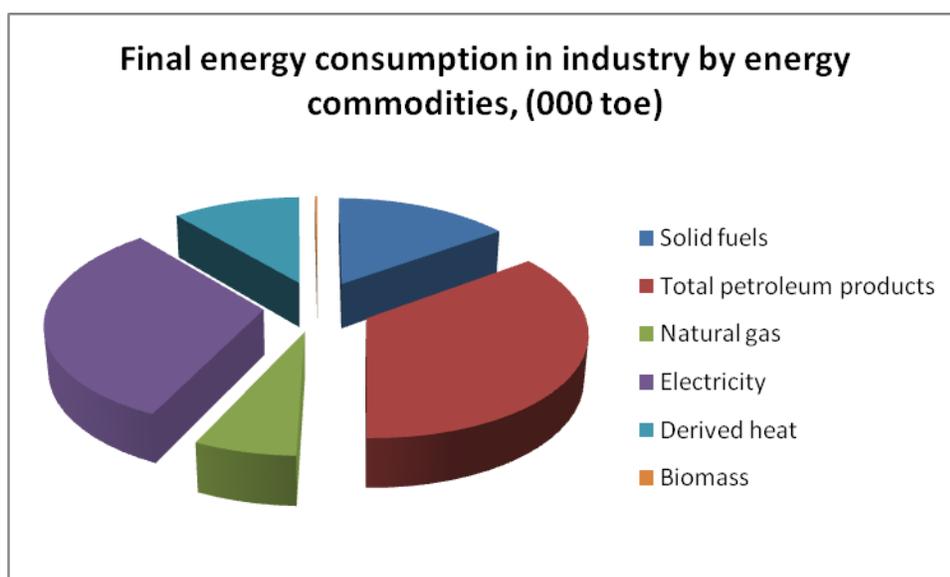
Source: State Statistical Office, Republic of Macedonia

It is important to underline that the steel and iron industry surfaces as a large energy consumer since 2005. Namely, in 2002, the final energy consumption by this sector has been three times smaller than in 2007. That same year, the energy consumption reaches its peak, with a growth rate of over 21% compared to 2006. The increasing trend of the energy needs of this sector is due to the reactivation of the large industrial capacities such as Feni (one of the largest Macedonian exporters), Silmak and others that were not active since the transition process in Macedonia started (20 years ago). These companies, along with several other (including more companies from the steel and iron industry) represent the group of the largest energy consumers in Macedonia and in accordance to the Macedonia's commitment to join the European Union and liberalize the electricity market, they have obligation to buy the electricity on the open (international) market by market price. In 2007, these companies were marked to be responsible for one fourth of the total energy consumption in Macedonia.

II.2.2 Energy commodities' utilization

In terms of the final energy consumption in the industry by commodity, mostly the industry uses electricity and petroleum products. The process of introducing natural gas is on the way, although it has to be stressed that it is taking long time to introduce this energy commodity on the Macedonian energy market. The unfortunate situation is that the share of biomass use is quite insignificant, even besides the fact that in 2010⁹, the final energy consumption in the industry sector by biomass was 4 times higher than the one in 2009. This increase may seem too large, and that is understandable considering the downturn the Macedonian industry had in 2009, nonetheless the fact remains that the industry sector is somewhat considering biomass as a source of energy. In 2005 and 2006, the energy consumption by the industry of this energy commodity reached its peak, however the percentage of biomass utilization compared to the overall energy commodities use by the industry has never been more than 1%.

Graph 3. Industrial energy consumption by commodity, 2009



Source: State Statistical Office, Republic of Macedonia

⁹ Preliminary data from the State Statistical Office, Republic of Macedonia

II.2.3 Energy efficiency

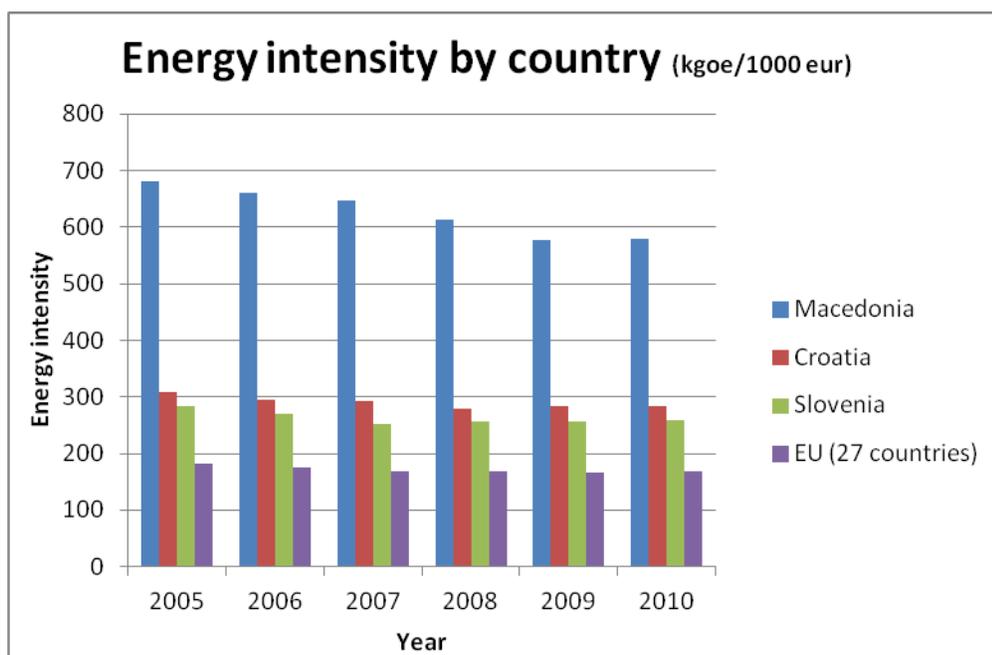
The energy intensity is an excellent indicator of the energy efficiency in a country. It represents a measurement of the consumed energy by unit of output, or in other words how much energy is used to produce the GDP in a given year. According to OECD, the energy intensity is one of the key green growth indicators¹⁰.

The comparative chart presented below, where Macedonia is measured up to Croatia, Slovenia and EU 27, indicates by itself how much Macedonia can improve in terms of energy intensity and being more energy efficient. The reason for comparing Macedonia to these countries is their relevance to the Macedonian case. To be exact, Croatia already did its part to the EU approximation process and it is expected to become a member state at the beginning of next year. Croatia and Slovenia were part of one country (Former Yugoslavia), including Macedonia, consequently many of the obstacles to grow, but also how to handle those obstacles have their similarities. Slovenia is a successful story of becoming an EU member state and by its size and population is very comparable to Macedonia. Considering that Macedonia has clear and conclusive stand to join the EU family, the EU developments and occurrences are of great significance.

Besides lagging behind the EU 27, Macedonia is seriously behind the very same countries with which it was part of same state 20 years ago and shared the same system of governance. It is worthy of mentioning that there are EU member states that are not doing too well in terms of energy intensity, however the fact remains that an improvement in the case of Macedonia is necessary.

¹⁰ Read more Towards Green Growth: Monitoring Progress, OECD indicators, 2011

Graph 4. Comparative illustration of energy intensity by country



Source: State Statistical Office, Republic of Macedonia and Eurostat

An unfortunate fact is that 8 years ago in a World Bank policy paper called FYR Macedonia Energy Policy Paper, the same reasons that have been identified for the high energy intensity are still valid, and that is: 1) heavy use of energy in the metal industry, 2) power generation with low efficiency and 3) the large consumption of electricity for residential heating during the winter¹¹.

Considering Macedonia's commitment to joining EU, this issue will have to be properly addressed. The issue of energy intensity is part of the EU's green agenda effort, and that is increasing the energy efficiency by 20 % by 2020.

In 2010, the Macedonian Ministry of economy, prepared Strategy for Improvement of the Energy Efficiency in the Republic of Macedonia until

¹¹ Report No. 29709 –MK, FYR MACEDONIA ENERGY POLICY PAPER, Infrastructure and Energy Services Department, Europe and Central Asia Region, The World Bank, 2004

2020 foreseeing a number of measures and activities that need to be undertaken. As it was expected, the calculations show that the Macedonian industry is a sector with largest potential for savings in terms of ktoe, CO₂ and financially¹². The steel and ferroalloys industries are by far the most energy intensive consumers of energy. What is important is that the investments foreseen in the industry sector are not the highest, meaning that the private sector with not so much investments can have the greatest impact. This is another argument why when thinking about green growth, the industry sector is the first one that comes in mind.

All of the investments foreseen in the industry sector are to be invested solely by the companies. However, the Macedonian private sector in practice does not often recognize the financial benefit of investing in energy efficiency. Often, the access to finance is to be found as constraint to energy efficiency. Furthermore, the subsidized price of energy Macedonia at the moment (except for the large consumers) has made companies' decisions to invest in energy efficiency less feasible.

Recommendation: *Increased opportunities for energy efficiency investments by the private sector.* Key constraint for investing in energy efficiency and reducing energy intensity by the private sector, are the sources of finance. The credit opportunities are somewhat limited. The past few years more and more opportunities arise, however the conditions are not quite favorable yet. There are different programs available¹³, such as the WeBSEFF program developed by EBRD and supported by the European Commission, the Green for Growth Fund, Southeast Europe initiated by KfW and EIB and financially supported by EBRD and supported by the European Commission and others. These programs are implemented through the commercial banks. Also the commercial banks are beginning to recognize the credit potential in this market and therefore start to offer their own credit lines. The main problem is that the interest

¹² Read more: Strategy for Improvement of the Energy Efficiency in the Republic of Macedonia until 2020, Ministry of Economy

¹³ These programs refer to investments in energy efficiency and renewable energy

rates and the accompanying conditions are formed mainly according to the bank's policy, which makes the acquirement of capital expensive and unfavorable. The Strategy for Improvement of the Energy Efficiency in the Republic of Macedonia until 2020 has foreseen a number of measures that can bring success, but its implementation is at the beginning.

Box 1. The resemblance between the Macedonian and Indian industry and lessons that can be learned

Although the differences between the Macedonian and the Indian economy are hard to be comparable, the importance of the industry sector, or to be more concrete the importance of the iron and steel industry is similar. This similarity refers to the contribution to the economy as well the state of energy intensity.

Almost decade ago, India implemented a very specific assignment under the project called "Development of Financial Intermediation Mechanisms for Energy Efficiency Investments in Developing Countries – Brazil, India and China"¹⁴. The project was supported by the World Bank, the UN Environment program and the UN Foundation. The objective of the assignment was to support one of the key industries in the Indian economy and to assist it with financial and technical support. The technical support comprised of expert advice, energy audit and feasibility study, while the financial support was aimed at acquiring the financial assets for implementation of energy efficient measures. Besides loan from IREDA (Indian Renewable Energy Development Agency Limited), the financial construction included government subsidies.

The resemblance of this case with the Macedonian situation goes even to the point that one of the companies where this assignment took place is also part of the key steel

¹⁴ Developing Financial Intermediation Mechanisms for Energy Efficiency Projects in the Steel Re-rolling Cluster at Mandi Gobindgarh, Punjab, India, Deloitte, 2004

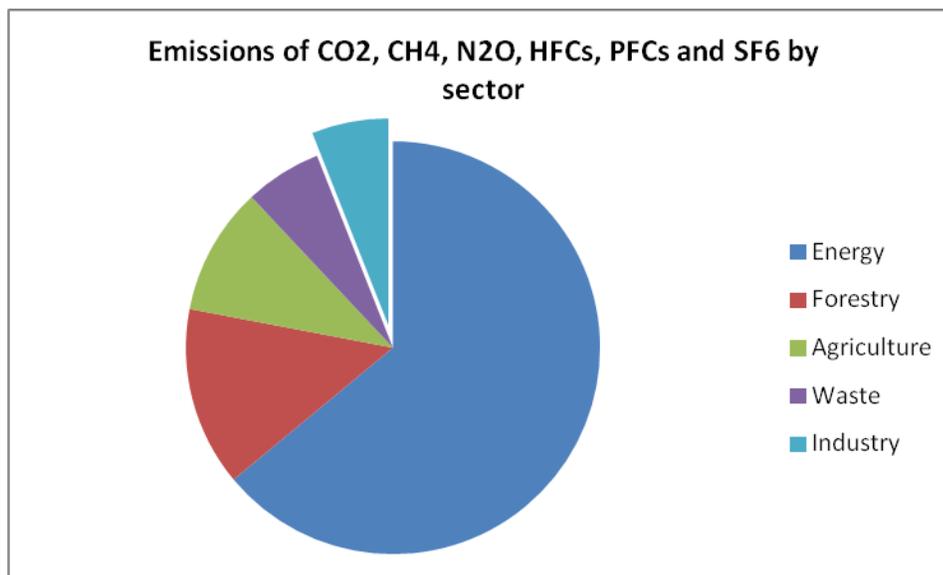
companies present in Macedonia.

Furthermore, India has developed somewhat unique approach towards energy efficiency financing and that is cluster lending for energy efficiency¹⁵. In a World Bank publication called "Financing Energy Efficiency: Lessons from Brazil, India, China and beyond", the authors present the advantageous character of this approach, for instance risk diversification, reduction of transaction costs, reduction of capital cost etc. The banking sector in India welcomed cluster financing and gladly recognized the advantages it brings.

II.2.4 Air pollution

Most of the pollution in Macedonia is coming from the energy sector. Looking at Macedonia as a whole, the industry sector is responsible for only 6 % of the total emissions of CO₂ – equivalent. Almost 80 % of the total emissions are attributed to CO₂.

Graph 5. Carbon emissions by sector, 2000

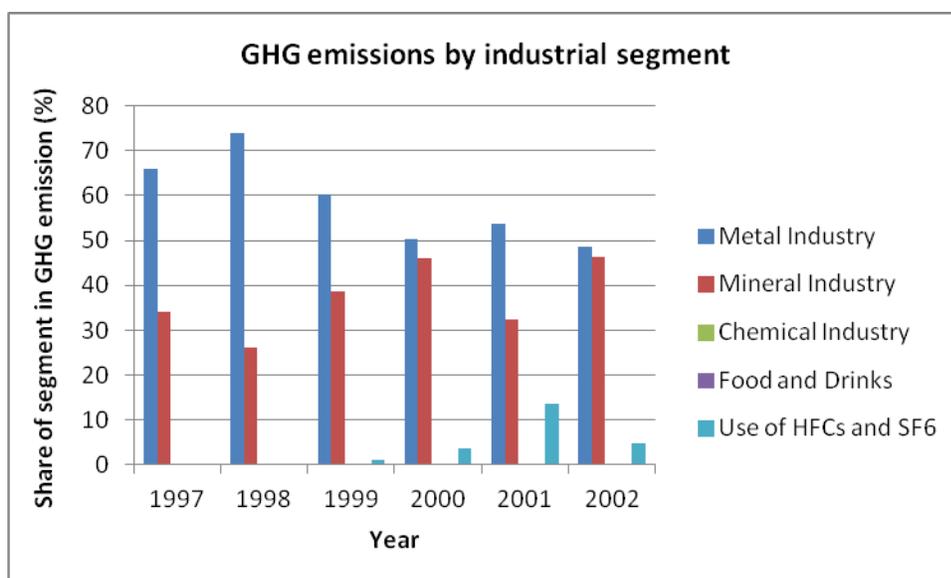


Source: National Air Protection Plan, 2012

¹⁵ Financing Energy Efficiency: Lessons from Brazil, India, China and beyond, The World Bank, 2008

However, the largest emitters of greenhouse gases within the industry are the segments of cement, iron, steel, zinc¹⁶. Coming back to the fact that there are not many companies in these industrial segments, we can see that only smaller number of companies have large negative impact on the environment. The share of GHG emissions by the metallurgy is considerable high, which makes this segment the largest industrial polluter. Since in 2005 few more large industrial capacities from the steel and iron industry have been reopened, the expectations are that the GHG emissions will have uprising trend. According to the baseline projections of the Macedonian Ministry of Environment and Physical Planning, the GHG emissions by the industry will be almost doubled in 2025, compared to 2008.

Graph 6. Greenhouse gasses by industrial segment, 1997 – 2002



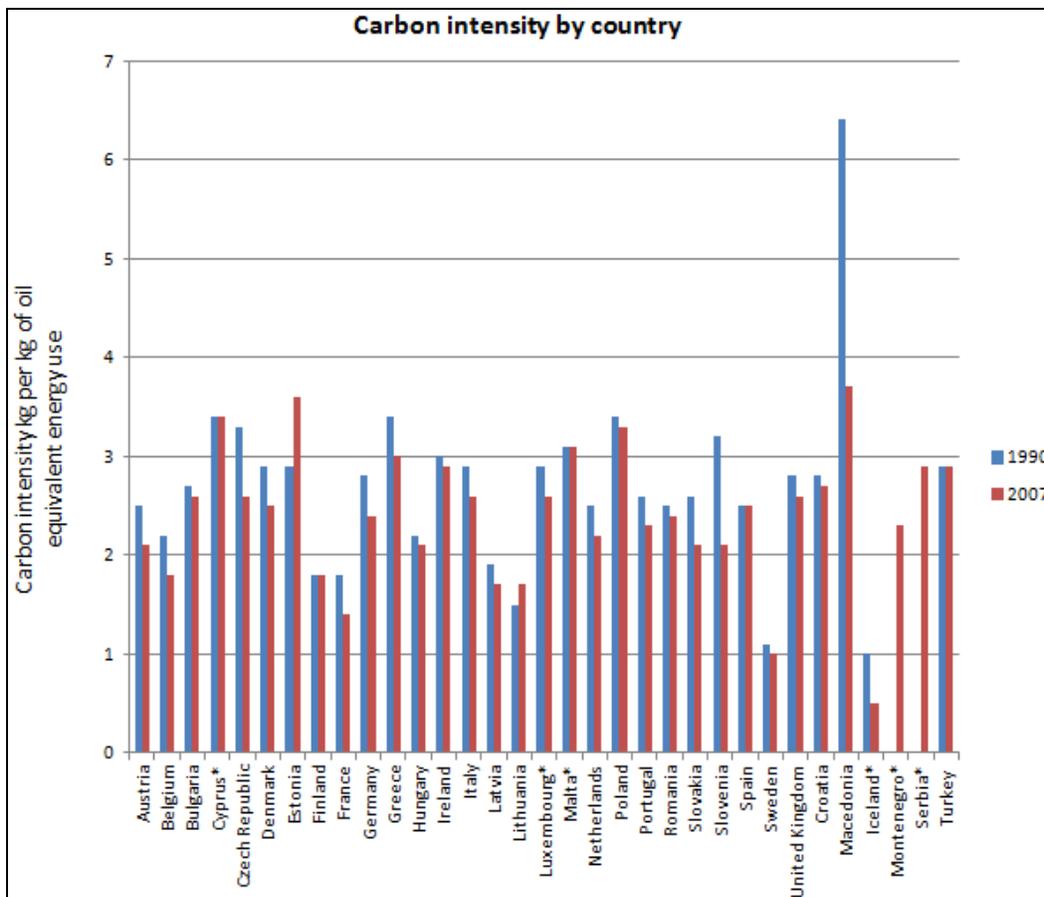
Source: Second National Communication on Climate Change, Macedonia, 2008

In terms of carbon intensity, Macedonia is not doing very well. On the graph below, we present extensive comparative analysis of carbon intensity in the EU

¹⁶ Second National Communication on Climate Change, Macedonia, 2008

countries, one acceding country that is about to join the EU (Croatia) and the candidate countries including Macedonia. Two things are noticeable. The first one is the unfortunate situation in 2007 that among all of these countries, Macedonia is doing worst in terms of carbon intensity. On the other hand, compared to 1990, Macedonia has accomplished to reduce the carbon emissions by almost 50 %, which is among the most significant reductions and improvements recorded in any of these countries.

Graph 7. Carbon intensity in EU, acceding and candidate countries, 1990 and 2007



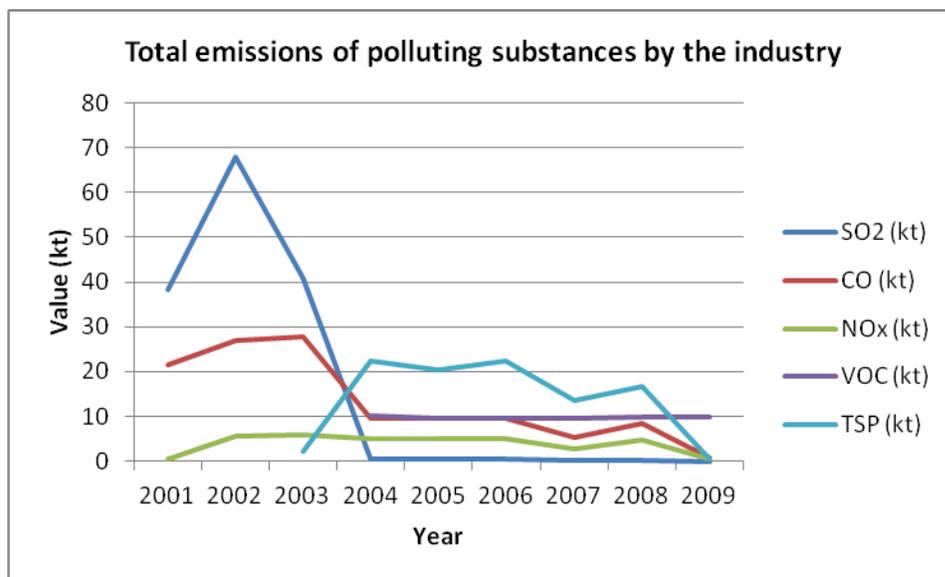
Source¹⁷: World Development Indicators, World Bank, 2011

¹⁷ For the countries marked with *, data has been used from www.indexmundi.com, however the data source is World Bank and World Development Indicators

Nevertheless, in the National Air Protection Plan (2012), the Macedonian Ministry of Environment and Physical Planning recognizes the efforts made by the business community, stating that the level of awareness about environment protection issues among the big companies is relatively high.

They seem to be aware of their obligations towards the environment, which is due mainly to the Macedonia's obligations in its approximation to the EU legislation. Many of the big companies have people responsible for regulatory compliance in the area of environment, they are up to date with the international trends of environmental concerns and are in constant communication with different stakeholders such as national institutions, donors and nonprofit organizations. In that sense, in relation to the polluting substances, downturn trend in the industry is identifiable.

Graph 8. Trend of total emissions of polluting substances in Macedonia, 2001 – 2009



Source: National Air Protection Plan, 2012

II.2.5 Technology

The Second National Communication on Climate Change comprehends short elaboration of a topic highly worthy of mentioning and that is the state of the technologies in the Macedonian private sector and the transfer of technology. To be more precise, it has been highlighted that the technologies that are being used in the industry are outdated. They have been used for many years and their level of productivity is very low. Therefore, these technologies are highly energy inefficient and mostly depreciated. The lack of domestic capital has been marked as one of the main reasons for this situation. The need for contemporary and efficient technology has been confirmed in plenty other documents prepared by the Macedonian Ministry of Environment and Physical Planning that elaborate environmental issues¹⁸.

The fact that the price of electricity is going up reduces the “affordability” to use energy inefficient technology. Namely, so far the private sector was able to afford using less energy efficient equipment because of the low regulated price of energy, but with the process of liberalizing the electricity market in Macedonia, their competitiveness could be significantly endangered. This situation could be improved by using less energy intensive technology that will in the same time reduce the impact on the environment.

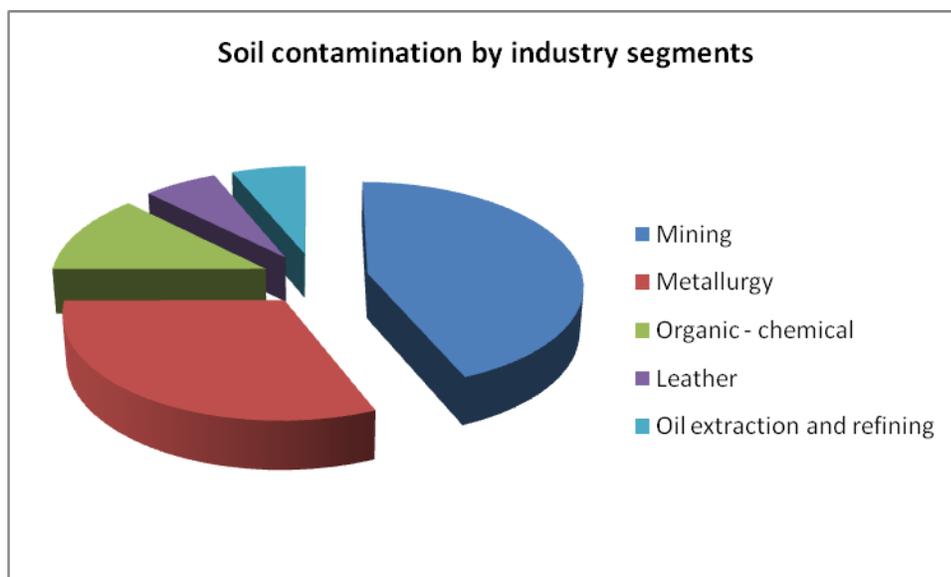
II.2.6 Soil contamination

The metallurgy is one of the main contaminators of the soil in Macedonia. This directly reflects food production and water purification. According to Publication called Environmental Statistics, 2011, published by the Macedonian State Statistical Office, the heavy metals industry is found to be responsible for one third of the soil contamination in Macedonia. This data is a result of investigations that have been carried out in 16 soil contamination hotspots¹⁹. On the chart, we can see few more industry segments that have been identified as key soil contaminators in Macedonia.

¹⁸ See www.moep.gov.mk

¹⁹ Environmental Statistics, State Statistical Office, Republic of Macedonia, 2011

Graph 9. Soil contamination in Macedonia by industry segments, 2011



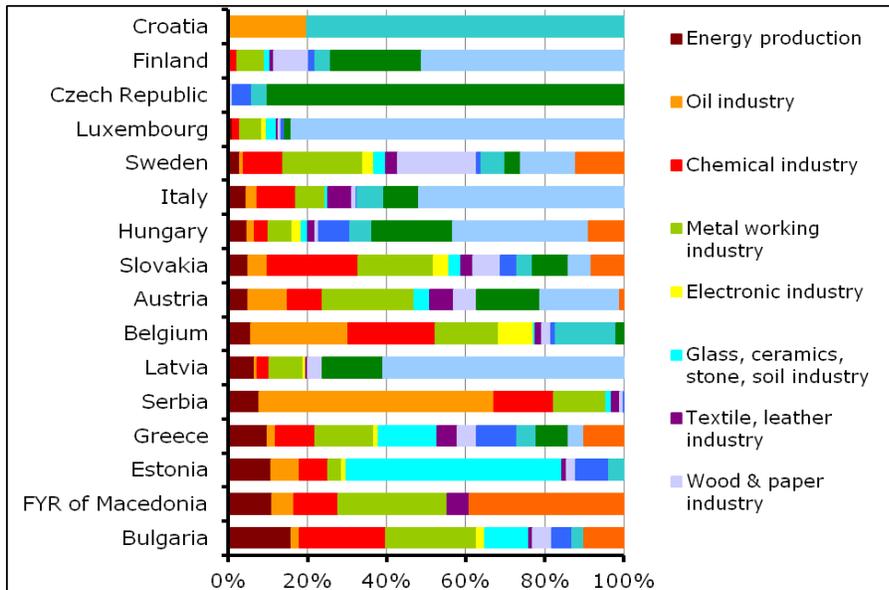
Source: State Statistical Office, Republic of Macedonia

It is unfortunate that the metals industry in Macedonia is the largest soil contaminator, compared to a whole range of EU and EFTA countries. According to a comparative data for soil contamination by industrial and commercial activities prepared by the European Environment Agency, all of the other countries presented in the graph below have metals industry with less negative impact on the soil. In addition to this, Macedonia employs minimum (compared to the other countries presented in the graph below) of 7 % public funds for contaminated sites, whereas the rest of the money should be provided by the private sector²⁰. This is a large obligation for the private sector, considering that there are countries like Czech Republic for example that are prepared to dedicated 100% public funds for this purpose. Moreover, the annual national expenditure for management of contaminated sites is below 0.1 % of GDP in

²⁰ European Environment Agency

Macedonia, which places Macedonia in the bottom three countries from the group presented below.

Graph 10. Soil contamination by industrial and commercial activities by country, 2007

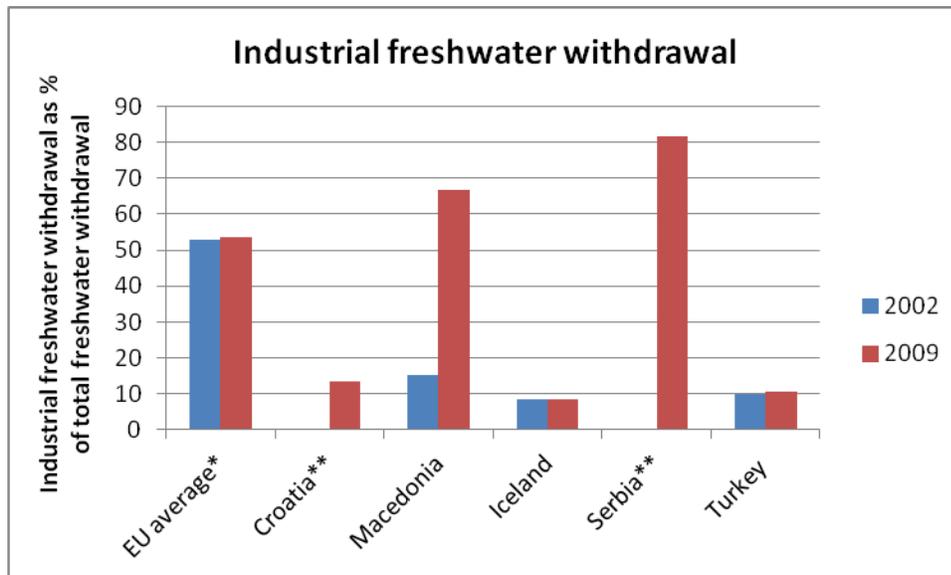


Source: European Environment Agency

II.2.7 Water use

Since 2002, in just five years, Macedonia has experienced significant increase in the use of freshwater by the industry. In 2007, the share of industrial freshwater withdrawal in the total freshwater withdrawal was 66.6 %, while in 2002 it was only 15.3 %. Bearing in mind the latest data (2009), Macedonia is relatively close to most of the EU countries. The reason for EU having such lower share of industrial freshwater withdrawal compared to Macedonia is that mostly the countries that are close to sea and predominately rely on tourism such are Greece, Malta and Cyprus have very low percentage of industrial freshwater withdrawal (below 4 %). This situation is somewhat similar when looking at Croatia and Turkey that have access to sea, while Serbia does not.

Graph 11. Industrial freshwater withdrawal by country, 2002 and 2009



Source: World Bank and World Development Indicators through www.indexmundi.com²¹

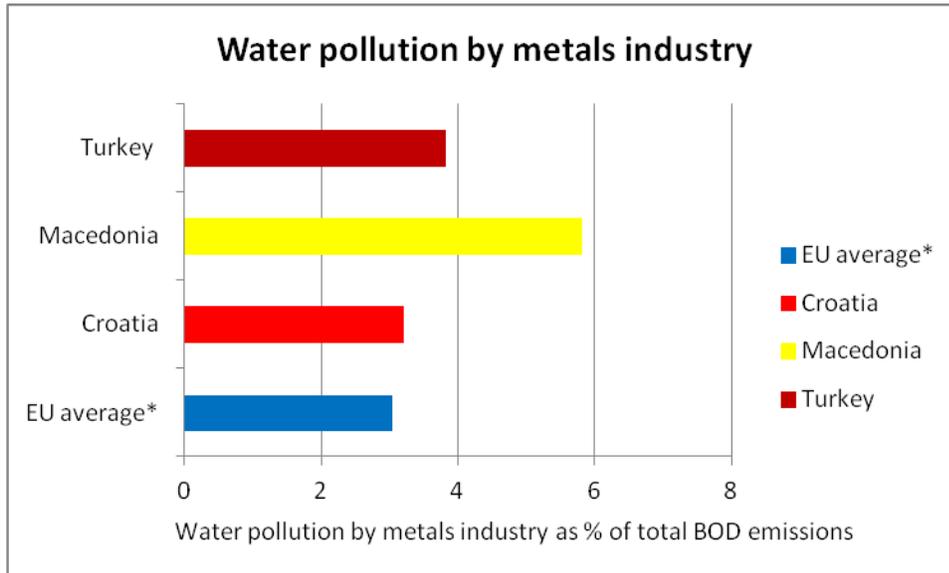
Another issue worthy of looking into is the water pollution caused by the metals industry. As stated before, the metals industry is quite important for the Macedonian economy. However, its importance can be analyzed not just from contribution perspective, but also from the perspective of harmfulness. Namely, in 2006, according to World Bank data, it has been recorded that the metals industry is responsible for 5,8 % of the total BOD (biochemical oxygen demand) emissions. The graph below shows that the metals industry in Macedonia is larger polluter compared to the situation in Turkey, Croatia and the EU average. Nevertheless, in 2006, in some EU countries the metals industry has also been recorder as large water polluter such as

²¹ *The data for 2002 and 2009 for Ireland has not been included due to unavailability. In the same time the data for Slovenia for 2002 was also not available.

**The data for 2002 was not available

Austria (5,7 %), Belgium (6,4 %), Czech Republic (5,4 %), Slovakia (7,9 %) and Sweden (5,3 %).

Graph 12. Water pollution by metals industry by country, 2006



Source: World Bank and World Development Indicators through www.indexmundi.com²²

II.2.8 Waste

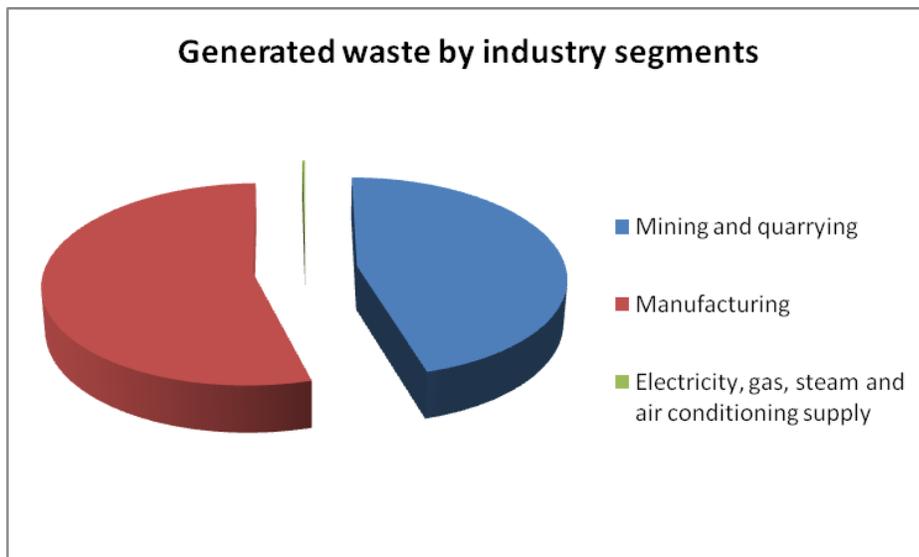
Another area where the industry “contributes” is the waste generation.

According to the Macedonian State Statistical Office, in 2010, the manufacturing industry has generated more than 54 % of the total generated waste in the industry. The metals industry has been responsible for almost all of the generated waste, or to be more precise out of 1017007.14 tonnes of generated waste by the manufacturing industry, the metals industry has generated 946318.86 tonnes. Around half of the generated waste by the industry is waste from thermal processes and mostly is not hazardous. Most of the hazardous waste that is being generated is coming from the mining and quarrying.

²² *The data reflecting Malta as part of the EU average is of 2005.

The Macedonian Ministry of Environment and Physical Planning has prepared National Waste Management Plan 2009 – 2015 where a number of measures have been foreseen. Its implementation is ongoing.

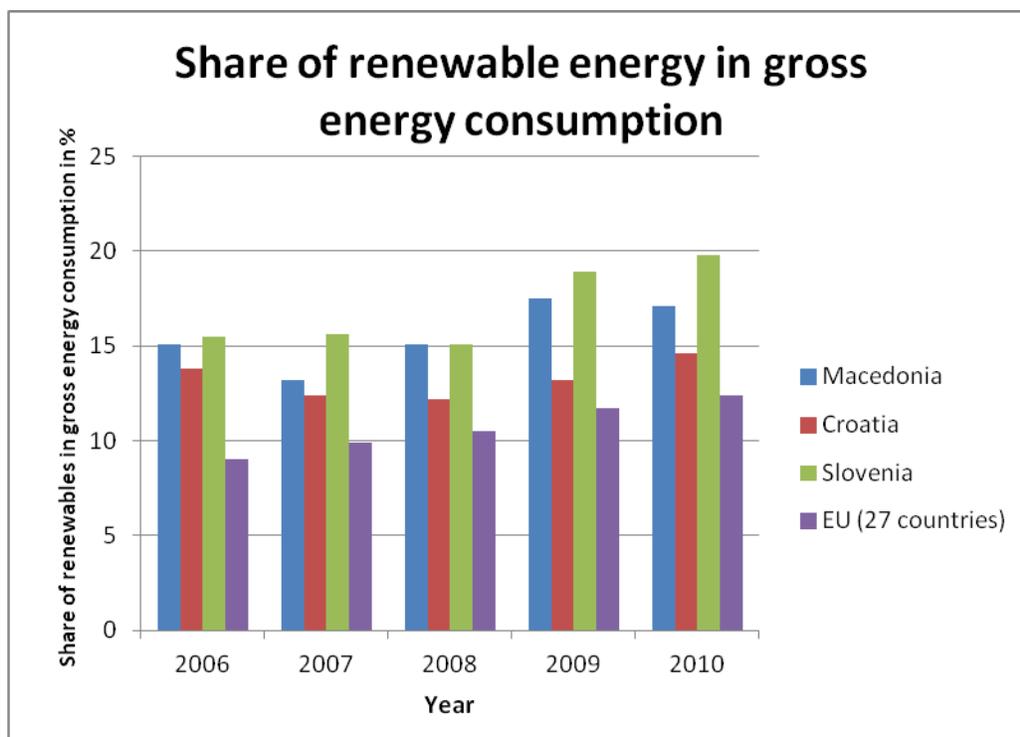
Graph 13. Waste generated by the industry in Macedonia, 2010



Source: State Statistical Office, Republic of Macedonia

III. Renewables (clean energy sectors)

Macedonia has a lot to offer in terms of possibilities for use of energy from renewable sources. Its indigenous potentials, if properly utilized, could be great boost for the Macedonian economy. The renewables are part of the narrow scope of the green growth concept. Looking at the chart below presenting a comparative data of the share of renewable energy in gross energy consumption, Macedonia is performing reasonably well.

Graph 14. Share of renewable energy in gross energy consumption

Source: State Statistical Office, Republic of Macedonia and Eurostat

The utilization of renewable energy sources is a substantial cost. Not often the private sector can afford to invest in such endeavors. It is up to the government to create enabling environment for such investments. Bearing this in mind, different incentives have been introduced such as feed in tariffs (different depending on the source of energy), subsidies, tax incentives etc.

The situation is that the renewable resources Macedonia has, are considerably underutilized. The potentials are in:

- 1. Hydropower** – it can be said that the Macedonian authorities are well familiar with the potentials of this source of energy. Since 2006 significant efforts are made for utilization of hydropower, however in terms of building large hydro plants the results are not quite satisfactory. Several attempts have been made to attract investors for investing in large capacities such as Boshkov Most, Chebren,

Galishte etc., however the results are yet to be seen. More than 5 years ago, another project started called 400 small hydro plants. This project is being carried out in several phases and so far a number of investors have decided to invest in such capacities. What is important to stress is that with this effort, not only Macedonia has the prospect of providing energy security, but also this is in direct correlation with the government's efforts for attracting FDI.

2. **Solar power** – looking at the past two decades, this is an energy source that has been seriously mistreated. Mostly the solar energy is used for water heating and not so much for electricity production. The feed in tariffs for utilization of this resource are most considerable (compared to the tariffs for other energy sources) and subsidies for solar panels are provided. However, the implementation of these measures is carried out rather poorly, which is why the results could be significantly improved.
3. **Biomass** – Macedonia does have the tradition of biomass utilization. Much of it is for the needs of the households. Nonetheless, the private sector also uses some biomass, which shows readiness for alternative energy use. According to the state statistical office, in 2010, the final energy consumption in the industry sector by biomass was 4 times higher than the one in 2009. This increase may seem too large, and that is understandable considering the downturn the Macedonian industry had in 2009, however the fact remains that the industry sector is somewhat considering biomass as a source of energy. In 2005 and 2006, the energy consumption by the industry of this energy commodity reached its peak, however the percentage of biomass utilization compared to the overall energy commodities use by the industry has never been more than 1%.
4. **Geothermal** – this renewable is used in Macedonia mainly for heating. It is available only in some parts of the country and there are positive examples of its usage by the private sector. What is lacking is a research for complete identification of the sources of this type of energy. There is a possibility that

there are plenty of other sources, but the need for substantial investment represents serious constraint and consequently the possibility for financial gain is in question.

5. **Wind power** – the government has expressed ambition towards use of wind energy. Some measurements have been done in the past and currently through GEF funded project several measurement stations for wind energy have been set up in specific areas. Although the idea is attraction of FDI, the state owned company ELEM that is one of the largest power generators in the country has also expressed interest for investing in this renewable.

According to a research for the top 10 green sectors worldwide that are attractive for investors conducted by the global portal Researchwhitepapers²³, with these indigenous sources that constitute the overall renewable energy sector in Macedonia, the country has a potential that is yet to be screened by the private sector and the investors' community.

When thinking about comparative advantage and key sectors for attracting FDI, the renewable energy sector has definitively a lot to offer.

Related to this issue, one must be cautious. Macedonia does have established legal and strategic framework for renewable energy investments. However, the level of investments in clean energy can be significantly improved. In some cases, it has been recorded that the procedure for investing in this sector has numerous obstacles. The regulatory barriers to such investments can be found in the procedures for obtaining status of preferential generator, permit for construction of appropriate facilities, land use right etc.²⁴

Recommendation: Use your own experience – Regulatory guillotine for reduction and/or abolishment of barriers for investing in clean energy.

²³ <http://researchwhitepaper.com/global-cleantech-capital-providers-guide-p-57.html>

²⁴ Strategy for Utilisation of Renewable Energy Sources in the Republic of Macedonia by 2020, Ministry of Economy

Macedonia has been quite successful in the implementation of the project “Regulatory Guillotine” that aimed at amending and/or abolishment of regulations that represent burden for doing business. As a result, the improvements according to the World Bank Doing Business Report have been exceptional. There are positive experiences of other countries that have done regulatory reform in the renewable energy sector, however considering Macedonia’s previous similar experience, all that is needed is application of those positive practices. When conducting this activity, it is important to bear in mind two different aspects:

- First, there are prospective investors, large companies that can have significant impact on the Macedonian energy market. One must be careful when providing certain rights, but also obligations to such investor. Their contribution is of great significance to the Macedonian economy.
- Second, there are smaller investors (including households) who might not decide to invest in certain project for renewable energy just because of the complicated procedure. Having large base of small investors will decrease the need for import of energy and in the same time will provide a diversification of the risk if some investor does not abide by its obligations.

This regulatory guillotine shall specifically focus on the procedures in the renewable energy sector. It will look at the documentation needed, time, money, responsible institutions etc. It is important to distinguish investors based on their impact on the market, and provide somewhat relaxed procedures for the small projects.

In several studies related to the renewable energy sector in Macedonia, further information can be found on the potentials of every indigenous source. The optimal utilization of the renewable energy potentials would bring benefits such as energy security, compliance with the EU standards and the green agenda (reduction of greenhouse gas emissions) and foremost improved economic situation by increasing the investments, decreasing the need for import of energy and improvement of the trade account balance.

IV. Diversification

IV.1 Diversification of the economic activities

There is small number of companies in the steel and iron industry in Macedonia and as presented above, their role is considerable important taking into account their contribution to the domestic economy and the key macroeconomic indicators respectively as well as their harmfulness when looking at energy intensity. Because of the somewhat homogenous character of the Macedonian private sector contributors to GDP and export, the Macedonian economy can be quite vulnerable to external shocks such as price and demand of metals. If we analyze the Macedonian economy in 2009 and the reasons behind what happened, one of the reasons that we can consider is the strong relation between the metals industry and the energy market in Macedonia. In this sense, what happens on the metals market directly influences three major categories: GDP, export (and the foreign exchange reserves respectively) and final energy consumption. An increase of price of metals would directly and positively influence the Macedonian GDP and export, however it will also significantly increase the level of final energy consumption. With such a small economy, Macedonia cannot influence the world price of metals and their demand, because of their exogenous character. In order to protect itself from these dependencies, diversification of the Macedonian economic structure is a must. It needs to be recognized that this process is under way, bearing in mind the swing the automotive industry is undertaking as part of the country's economic and investment portfolio. As a result of the government's efforts for attracting FDI in the automotive sector, the dependency of the metals industry and the Macedonian key macroeconomic parameters is changing.

Another important issue is the life span of the metals industry. The fact is that Macedonia has European future. These kinds of energy intensive industries are not highly welcomed in the European Union. Moreover, stating the evident, these large industrial capacities in Macedonia were reopened solely because of the attractive price

of metals. Considering all of the above, how long will this last? The example in box 2 presents a case study from Hungary that relates to the Macedonian situation and the life span of the metals industry. Furthermore, it turns to the benefits of clean energy utilization which is quite important issue for Macedonian considering the indigenous potentials it has to offer.

Recommendation: *Use the indigenous potentials for attracting investments.*

Macedonia does have what to offer in terms of attracting investments in the clean energy sector. Investments in renewables, besides the obvious effects such as reduction of GNG emissions, increase of energy security etc., will bring two very important benefits: additional diversification of the economic activities in the country and increase in the supply of energy. The second benefit will further relax the impact the metals industry has on the energy market.

Two types of investors in renewable energies needs to be in mind:

1. Large investors – the economic conditions that the Macedonian government offers to investors in combination with its natural capital can be an excellent opportunity to attract investors. However, before this happens there are few preconditions that with some effort can be fulfilled. Namely, implementation of the regulatory guillotine in the renewable energy sector and full and comprehensive analysis of the natural potentials will create environment that can attract investors. Besides the government efforts in exploration of the hydro potential, a lot has not been done to benefit from the other natural sources of energy.
2. Small investors – the attraction of small investors in this sector have large portion of benefits. Most of them have already been mentioned such as energy security, clean energy, new jobs etc. In addition, one very important aspect is the diversification of the economic activities in the rural areas. If small agriculture businesses which are typically family owned turn to the renewable

energy sector as well, this will allow them opportunity for additional earnings. These farmers usually own large agricultural grounds that can be at the very least used for exploration of solar energy, biomass from agriculture etc. This way, by stimulating these small investors, the government will positively impact the regional rural development in the country where at the moment any assistance is more than welcomed²⁵.

Box 2. Clean energy investments

Miskolc is a large city in Northeastern Hungary with population of about 170,000 inhabitants. It is a rather poor part of the country troubling with high unemployment rate, depopulation and low GDP contribution. The heavy industry has played significant role in the economy, however during the transition period the steel industry took its downturn. Now, most of the economic activities are rural.

Due to the European approach towards regional and rural development, the local community decided to establish LAG (Local Action Group) called Bükk-Miskolc Regional LEADER²⁶ Action Group. The key focus of this region is exploration of the indigenous sources of energy for the benefit of the community. Several benefits are expected such as decreasing the unemployment rate, providing energy security by introducing self supplying smart microgrid that will allow the community to be self sufficient of energy, effective waste management and community inclusion.

The programme that is being implemented is called "1 Village – 1 MW". This programme is comprised of 2 stages. In the first stage, 28 community energy yards with 24 3-5 kW photovoltaic systems, 7 8-15 kW micro CHP units and 2 60 kW dual axis sun parabola systems for a total of about 1 million € were established²⁷. The energy is

²⁵ Throughout the years, Macedonia's development has been quite polarized where most of the economic activities are carried out in the capital, city of Skopje.

²⁶ French acronym "Liaison Entre Actions de Développement de l'Économie Rurale" which means "Links between the rural economy and development actions"

²⁷ Official website of the Bükk-Miskolc Regional LEADER Action Group www.bukkmakleader.hu

gathered through a Smart Grid Control and Energy Information System called "Mikrovirka" and sold to the National Grid. Six community based biogas plants (KGB) are part of the second phase of the programme. The local stakeholders will be engaged in a way that will collect and deliver the biomass in exchange for supply of energy (kWh credit that can be used for own purposes) or money. Another project that is taking place is the creation of "Hydrogen Village" that will include a wind plant providing energy and water self-sufficiency.

These projects are financed by the EU and national funds (subsidies and feed in tariffs). Macedonia has a number of similar areas alike Miskolc. Both the problems and the potentials are comparable. Noteworthy conclusions and experiences can be drawn and applied in the Macedonian scenario. Besides the benefits that were already mentioned, this project created almost 1,000 jobs.

IV.2 Resources diversification and eco – efficiency

The choice of energy resources that companies can use in Macedonia is quite limited. This directly reflects their competitiveness and prospects for growth. The absence of different sources of energy makes the companies less efficient and effective when decision making. This does not only refer to companies, but to households as well. The high level of dependency on few energy sources increases the vulnerability to external shocks. Besides the renewables as alternative sources of energy, the natural gas is an option that can support the competitiveness of the Macedonian private sector as well. There are steps that are undertaking for full penetration of this eco-friendly energy source, but it is a process with rather slow implementation. Bearing in mind the limited access to energy resources, the possibilities a company has for developing environmentally friendly business strategy are not many. Still, this could not be an excuse for the private sector. The roadmap to greening has been clearly set by the advanced economies.

Another important aspect when looking at resource use is the eco – efficiency. In 1999, the European Environment Agency defined eco – efficiency as: *"A concept and strategy enabling sufficient delinking of the 'use of nature' from economic activity needed to meet human needs (welfare) to allow it to remain within carrying capacities; and to permit equitable access and use of the environment by current and future generations"*. According to the World Business Council for Sustainable Development (WBCSD) *"eco-efficiency is achieved by the delivery of competitively-priced goods and services that satisfy human needs and bring quality of life, while progressively reducing ecological impacts and resource intensity throughout the life-cycle to a level at least in line with the earth's estimated carrying capacity. In short, it is concerned with creating more value with less impact"*²⁸. The eco – efficiency of a particular business can be measured as²⁹:

Eco – efficiency = Value of a product / Environmental impact of a product

Although the current situation of the Macedonian energy market reduces the options for the companies to be more eco – efficient, all things considered, at the end the eco – efficiency depends on the company itself. It is up to the company how much will it allow for its economic activities to influence the environment and in what way.

Looking at the formula above, the eco – efficiency can be increased in two ways: by increasing the value of a product and by reducing the environmental impact of that product. More and more companies turn to growth accompanied with preservation of the environment. According to distinguished Harvard Business School Professor Michael Porter, this is the perfect time to include the private sector in the process of reducing the environmental impact. According to him, acquiring

²⁸ Eco – efficiency, Creating More Value with Less Impact, WBCSD, 2000

²⁹ Eco-efficiency Indicators: Measuring Resource-use Efficiency and the Impact of Economic Activities on the Environment, United Nations, 2009

economic and environmental benefit in the same time by a company is feasible. And not just that, but the private sector can take the leading role by including the improvement of the environmental performance in its business model, meaning that investing in better environmental performance does not necessarily leads to higher costs, but on a contrary it reduces the use of resources and improves the productivity which ultimately leads to higher profitability³⁰.

There are numerous benefits a company can experience if paying attention to eco – efficiency. Reducing of energy intensity, water use intensity, land intensity, they all lead to higher productivity, greater growth and lower environmental impact. The reduction of material use intensity reduces the costs of operating which increases the profitability of a company. On the other hand, increasing the quality of a product would increase its value and sometimes durability, which also leads to higher eco – efficiency. Fundamentally, the concept of eco – efficiency is nothing else than common business sense and aspiration of every company to achieve optimal use of resources.

Considering the growing scarcity of resources in the world, this issue has been climbing rapidly on the political agenda. This is not an issue that the advance economies need to deal with, but an issue that is concerning to every economy in the world.

Recommendation: *Continuous search of the companies for new ways to be resource efficient.* Being eco – efficient is basic economic sense. Every company should look for different ways to save resources and therefore cut its expenses. The compliance with eco –efficiency brings large portion of benefits to a company. Besides the ones already mentioned, the image of a resource efficient company is another advantage that can be utilized for company’s benefit. Some companies in Macedonia tend not to “think globally” and this limits their prospect for new opportunities. The respectfulness for eco – efficient company has not reached its peak in Macedonia. The

³⁰ Presentation by Professor Michael Porter given at the World Bank, 2012

awareness among the population is rising and being eco – efficient business can bring many benefits that the companies are yet to experience. However, becoming an eco – efficient company is not a short term process. Only those able to see ahead will survive and even more profit from their proactive way of thinking.

Box 3. Proactive way of thinking could bring eco – efficiency

BASF is a German chemical company, one of the largest in the world in its field. This company has made eco – efficiency its strategic commitment. They do carbon footprint, full assessment of the product's influence to the environment during its life cycle, eco – efficiency labeling etc. Most importantly they have developed Eco – Efficiency Analysis, a tool that helps them compare products and processes. With this analysis, they look at a certain product from the beginning of its production to its final consumption and even disposal. It includes the environmental impact of products used by BASF as well as of starting materials manufactured by others. The analysis also takes the consumption behavior of end-users into account, as well as various recycling and disposal options³¹. For the measurement of the environmental impact of a particular product, six aspects are taken into consideration such as: energy consumption, land use, potential toxicity and risks, emissions and material consumption. This tool is helpful in the strategic management process. It provides input that is valuable when making strategic decisions for future path. BASF's eco – efficiency analysis has been validated by the German Association for Technical Inspection (TÜV Rheinland) and the US NSF (National Sanitation Foundation).

BASF spends a lot of time and resources to its dedication to sustainable development and eco – efficiency. This does not mean waste of money, but even better, the key economic data for 2011 show 15% increase in sales and almost 36% increase in net income. In the same time the environmental impact (that even before was low) has been decreased. As we can see the concept of decoupling works excellent in the case of

³¹ www.basf.com

this company.

Another successful example with high relevance to the Macedonian situation is the case of Harrison Steel Casting Company³². It is not so much the savings the company have achieved, but the way of awareness rising. Namely, in 2006 the company received an energy audit from which a number of recommendations emerged. One of those recommendations was an upgrade of the natural gas burners that are used for preheating ladles that hold molten metal. The investment needed was \$17,500, while the estimated savings were \$73,857 per year, which makes the payback period to be less than three months. Before the energy audit, the company was not aware of this huge possibility for savings.

Other recommendation that has been implemented is variable speed drives project for its well pumps. This project will help in optimizing the plant's water pressure by slowing down the pumps. The initial investment is \$25,000 and the annual savings are calculated at \$16,800. This means that in less than two years the investment will be repaid.

What is important here to learn is the approach to searching for different ways to save and earn. Often it is a lot easier to increase the profit by spending less, not by selling more. Investments in energy efficiency do not bring one time savings, but savings year after year. These types of projects not only increase the company's savings and earnings, but in the same time are environment friendly. The investment in energy audit is a small one, and the potential for earnings is great. The companies have to strive to constant improvement so they can conserve or even increase their competitiveness. The expectations are not that the companies will invest a lot of resources in eco – efficiency for the reason of protecting the environment, but will

³² Success story: Harrison Steel, US Department of Energy, 2010

invest because it will better their competitiveness and productivity, and the environment conservation will be one highly positive side effect.

V. Awareness

The issue of awareness about green growth opens a lot of different aspects how it can be perceived. It can be viewed from the perspective of the private sector, consumers, non-profit organizations, government etc. Either way we look at it, what is certain is that it reflects the demand and consumption of greener³³ products. The private sector is demand driven, if there is demand for greener products, there will be such production and appropriate supply. All the stakeholders mentioned above are influential to the demand for such products. Still, when making a decision for purchasing a product, we have to bear in mind that a lot of different factors are influential such as culture, age, income, social status, education etc.

There are plenty motivational factors that can influence a company to go green such as demand, corporate social responsibility, binding legislation, public image etc. All things considered, probably the greatest motivator to greening would be the demand. On the demand side we can have people, companies or organizations (foremost public institutions). All of these stakeholders can motive the private sector into greening. Therefore, in the next text we explore the level of awareness among the people about environmental impact of a particular product, business to business collaboration and demand and green public procurement as a growing trend among the public institutions.

In Macedonia uprising trend in the demand for greener products is recognizable, although it is beyond comparable with the advanced European economies such as Germany, Sweden, UK and others. One could say that the

³³ The term "greener" is deliberately used. It does not mean green products, but products produced with lower impact to the environment

mentality and the habits of the Macedonian consumers are somewhat similar to the surrounding countries such as ex – Yugoslav countries, Bulgaria, Greece and it is probably more comparable to these countries than to the developed European economies. The general impression is that Macedonia, being developing country is lagging behind the EU member states with respect to the issue of awareness for environmental impact when buying products. Nevertheless, what is noteworthy is that the trend of buying eco – friendly products will arrive sooner rather than later in Macedonia, and only those companies with proactive approach and pragmatic views will benefit from this consumption shift.

In 2009, the Gallup Organization, Hungary at the request of the EU Directorate-General for the Environment carried out a survey named “Europeans’ attitudes towards the issue of sustainable consumption and production”³⁴. This survey gives insight into the consumers’ awareness for environmental impact. The survey does have relevance to the Macedonian case, since all 27 member states have been included and Croatia as an acceding country. Although Macedonia has not been part of this research, the results have their applicability. The survey comprised comprehensive sample of respondents totaling 26,500. The results can be divided in five parts, as following:

- **Level of influence of the environmental impact when making a decision to purchase a product**

The environment does have strong impact when making decision for buying a product. 77% of the respondents claimed that they do consider the energy efficiency of a product when making a decision whether to purchase it. Also, more than 82% have stated that the product’s impact on the environment influences their purchasing decision.

- **Perceptions and awareness of eco – labeling**

³⁴ Europeans’ attitudes towards the issue of sustainable consumption and production, conducted by the Gallup Organization, Hungary at the request of the EU Directorate-General for the Environment, 2009

Almost one half of the respondents have claimed that they find the eco – labeling important when making purchasing decision and more than 73% think that labeling indicating the carbon footprint of a particular product should be mandatory.

- **Attitudes towards promotion of eco – friendly products**

One third of the respondents think that the way to promote use of eco – friendly products is by providing tax incentives, i.e. reducing the appropriate taxes. On the other hand almost half of citizens in the respective countries would recommend reduction of the taxes for the eco – friendly products while increasing the taxes for the damaging ones. According to 30% of the respondents, the retailers can best promote the eco – friendly products by providing better information to the consumers.

- **Level of trust in producers' claims about environmental impact of their products**

The opinions whether the citizens trust the companies in their claims about the environmental impact of their products are somewhat equally divided. Also the level of distrust in the companies' reporting about their environmental performance is a lot higher than the level of trust. All this does not lead to the conclusion that the citizens do not trust the companies, but rather require them to be more engaged in the process of greening and reducing the environmental impact.

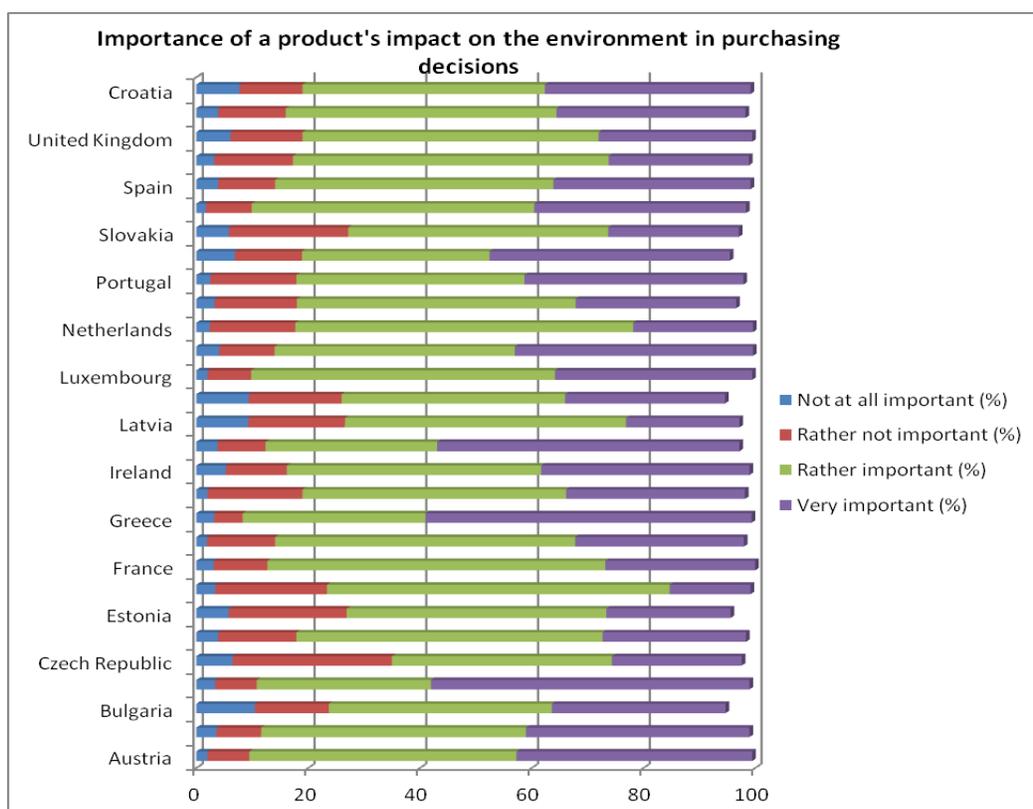
- **Views on the need for voluntary environmental code of conduct by the retailers**

Only one out of ten respondents think that the companies are doing a lot for the environment and that a voluntary code of conduct is not needed. The others are in favor of introducing voluntary code of conduct or think that is even better to use binding legislation.

Based on this survey, the most important thing that comes in mind is that the consumers require seeing conscientious and caring attitude by the companies. This is a trend worldwide, not just in Europe. The Macedonian private

sector needs to consider this, both when exporting and selling home. These are the product preferences of the EU consumers, and if the Macedonians do not have the very same preferences at the moment, they probably will, in near future. As an example, the chart below is an indication of the influence of the environmental impact of a particular product among the EU citizens when making a decision to purchase.

Graph 15. Influence of the product’s impact on the environment in making purchasing decisions, 2009



Source: Europeans’ attitudes towards the issue of sustainable consumption and production, conducted by the Gallup Organization, Hungary at the request of the EU Directorate-General for the Environment, 2009

The path to reducing the environmental impact is time consuming. It takes time for companies to become aware, to decide to take action, to present it appropriately to the consumers. Since the process of growing awareness is well under way, the companies are faced with the challenge of taking things into their own hands, rather than waiting for legislation or some incentive by the government.

Recommendation: *Voluntary binding by the companies to reducing environmental impact.* Those companies that will become part of the group of frontrunners will be able to benefit highly. As we could see, there is a growing awareness for environment friendly products and this already reflects the demand. In addition, there are number of benefits that a company will experience if going green, such as improved working environment (especially for those with health issues), improved public image, marketing opportunity, decreased operating costs because of resource efficiency etc. Furthermore, there could be future opportunities for getting a tax credit or eased access to finance, for instance loans or grants provided by different organizations (government, donors etc.).

VI. Environmental standards

One of the most commonly used environmental management systems (EMS) in Macedonia is ISO 14001. It is an international standard that comprehends all aspects of environmental control, it helps the companies to reduce their impact on the environment and continuously to improve their environmental performance. This type of certification can be provided only by an accredited organization and there are several of those in Macedonia providing such services. Plenty of benefits can be experienced if a company decides to introduce EMS. At the very least it can reduce the costs for waste management, resource consumption, it will provide compliance with the regulation (domestic and international), improve company's image, facilitate the entrance to the

world market (especially the European Union), increase employees' involvement etc. The compliance with this standard is a two step process. The first step is the assessment of the current situation and the need for compliance with certain regulations and requirements, but more importantly the second step is a construction and implementation of a plan for continuous reduction of the environmental impact.

Basically, EMS is a commitment to the environment and just like any other commitment a company has to be careful when giving one. There are certain negative side effects that may arise such as high and unachievable goals that can influence the company's performance; the credibility of the company and its managing staff may be impaired, loss of managers' (planning is needed) and employees' (training is needed) time etc.

It can be freely said that those Macedonian companies that are export oriented are likely to implement certain EMS. It can be often found that they do understand the trends of the contemporary market and are aware that in order to compete or collaborate with an international company, they have to provide product or a service with high standards. That is why some of the large Macedonian companies do comply with these criteria. What is highly questionable is the compliance of the SME's and the overall private sector. ISO 14001 is not a legal requirement for the companies and that is why it is very hard to find relevant data for the total number of companies that have implemented this standard. Additional problem is its enforcement. One thing is to acquire ISO 14001 standardization, another is continuous compliance and this is an issue that has to be addressed appropriately.

In accordance with its mandate, IFC (the private sector arm of the World Bank Group), in 2006 conducted a series of workshops for International Standards and Technical Regulations throughout Macedonia. These workshops, being part of the Advisory Services Program, aimed at increasing the awareness for different types of standards (including ISO 14001). The activity was carried out with the support of the Agency for promotion of Entrepreneurship of the Republic of Macedonia. Total of 10 workshops

were organized with 213 companies as participants. During the workshops, questionnaires were distributed in attempt to provide some reflection of the current situation. The survey showed that almost half of the companies are not familiar with the international standards and technical regulations. 14,4 % of the companies have stated that they have a need to deepen their knowledge for ISO 14001, which is a third best score compared to the other ISO standards. According to 25,4 % of the companies, the certification represents an obstacle to export. What comes as a surprise is that 31,9 % of the companies have stated that they have implemented ISO 14001. Nonetheless, this can be somewhat understandable considering that 91 % of the companies have stated that are exporting or are planning to export, which just confirms the thesis that those that are export oriented are also trying to be eco – friendly. However, even besides the fact that accurate data for every company nationwide is not available, the actual number is certainly much lower.

Recommendation: *Increased technical support for implementation of EMS.*

The issue of standardization is somewhat unknown for the Macedonian companies. It is more likely to agree to such step if they were to be guided before and during the process of implementation. Consulting services are an expense for the companies, and often it is not considered as necessary one. This way, at the very starting point some companies show resistance towards this issue. But with raising awareness campaigns, information sessions and similar activities, this obstacle can be overcome. The level of awareness needs to be increased. The process of standardization and acceptance of certain environmental standards is an unavoidable process, especially with Macedonia's approximation to the EU acquis. A number of obligations and contracts oblige Macedonia to comply with certain environmental criteria, such as Kyoto protocol, EU legislation etc. Those companies able to see it will be more competitive and ease the transition process to the European legislation.

With respect to the large consumers of energy, it seems that they are aware of the need for increased environmental standards, but some of them feel

restrained since this activity would require initial investment. In this sense, they appeal for support and improved financing opportunities.

Recommendation: *Creation of database of environment friendly companies.*

Since the process of acquiring some of the environmental standards is still voluntary, database of eco – friendly companies is hard to find. Even though it is such a small thing to do, this restrains many positive aspects that can emerge from it, such as public recognition, raising awareness, green business to business collaboration etc.

Box 4. Learn from one of your own

Alkaloid AD Skopje is considered to be one of the most successful domestically owned companies in Macedonia³⁵. It manufactures pharmaceutical, chemical, cosmetic and food products. It has a pallet of several thousand different items. The company employs over 1250 employees and has 13 subsidiaries throughout the world including USA, Russian Federation, Switzerland, the ex-Yugoslav countries etc.

The company is comprised of two profit centers: Pharmaceuticals and Chemicals, Botanicals and Cosmetics. Due to its proactive character and vision, in 2000 the Botanicals profit center was certified with ISO 14001. At the time, there were not many companies with caring attitude towards the environment. The key products of this profit center are teas and food products such as vegetables, dried fruits, salt, high-energy healthy foods etc. With the implementation of EMS the company committed to reducing water waste, respirable dust, waste paper and noise levels. Alkaloid prepared a plan with concrete assignments and responsibilities for accomplishment of the environmental objectives.

With the comparison of the environmental impact a year before the certification and several months after the certification was awarded, the results were highly satisfying.

³⁵ Alkaloid and the Macedonian environment gain from ISO 14001, ISO Management Systems, 2002

The company significantly improved the situation with concentrations in respirable dust from manufacturing. The noise levels, emission of exhaust gases from steam boilers and waste water for washing manufacturing equipment were reduced. Also, which is quite accomplishing, is that in 2000 (compared to 1999) the production was increased by 35% while in the same time reduction of waste paper was recorded.

Ever since 2000, Alkaloid has strategically committed to preserving the environment and running EMS. In 2009, compared to 2006, Alkaloid achieved to reduce the utilization of fuel as well as the water consumption. Additionally, the company successfully replaced the use of oil with natural gas at their location in Skopje³⁶.

The top – down commitment to this process was identified as key factor for success. Not only the top management, but also the employees have dedicated to contributing to the environment. Alkaloid AD Skopje can be found as a case study in different areas due to its pragmatic vision.

³⁶ <http://www.alkaloid.com.mk>

VII. Greening supply chain

Considering that the awareness and market demand for greener products, as well as the issue of environmental management system were explored in the previous text, the topic that imposes itself next is the greening of the supply chain. The supply chain is a whole network of different stakeholders that influence the production process, distribution, transport and logistics, marketing, consumption, disposal of waste etc. The ultimate driving force is the need to consume certain product.

Plenty of definitions exist with respect to green supply chain management (GSCM). In 2001, Sean Gilbert defined greening the supply chain as a process of integrating environmental criteria or concerns into organizational purchasing decisions and long-term relationships with suppliers. According to Srivastava (2007) green supply chain management means integrating environmental thinking into supply chain management, including product design, material sourcing and selection, manufacturing processes, delivery of the final products to the consumers, and end of life management of the product after its useful life. There are many more definitions explaining what green supply chain management stands for, however they all lead to the conclusion that it is a concept that adds green perspective of every step or element of the supply chain.

The introduction of EMS and greening of the supply chain are complementary to one another. Green Supply Chain Management is one step further and goes beyond own company's efforts to reduce the environmental impact and looks into its business partners' practices as well.

The need for greening and the initiative to act has taken its course and is well under way. It is not even initiative anymore, but it is an action now, especially in the advanced countries. The concern of greening is high on their agenda. Macedonia is a small market. Any company serious in its attentions to sell should and is looking for

external markets and export possibilities. Most of the Macedonian companies are just a small part of the supply chain and the stakeholders in it. But the trend in those markets is taking “green color” more and more. This means that if the Macedonian companies are considering going beyond the small market of Macedonia, greening is a must. That is why many of the companies that are export oriented are already employing some environmental management standards. Even though, probably, there is understanding of the need to go green if a company wants to export, action is needed. Just like introducing EMS, time, effort and commitment is needed for greening the supply chain as well.

The benefits for the Macedonian companies of joining a green supply chain could be the very least:

- ***Increased prospects to sell product or service.*** The awareness for greening is rather high in the countries with high purchasing power. This will reflect a Macedonian company regardless if it is selling directly to end consumers or collaborating with large buyer company located in these countries. The buyer company is not pressed only to have introduced EMS, but also to see through that the whole life cycle of the product, including its disposal is environment friendly. That is why green supply chain is needed, the buyer companies need to make sure that the appropriate environmental standards are introduced by each supplier, they require accountability and responsibility from their partners since it is something that is asked from them by the end consumers.
- ***Improved collaboration.*** Green supply chain management requires a lot of collaboration and communication among the partner companies. Often the companies try to address jointly the environmental concerns that are of mutual interest. This will allow improved cooperation which ultimately will lead to:
 - greater competitiveness
 - synergetic results that will reduce the impact on the environment
 - risk mitigation in terms of accountability
 - joint efforts for innovation

- **Transfer of knowhow.** Greening the supply chain does not mean individual effort by each partner. The large companies are often at disposal to their smaller partners and by openness and willingness to assist, they help them in their efforts to achieving higher environmental standards.
- **Improved image.** Being environmental friendly company will not only improve the image among the consumers, but among the partners as well. This is especially important for smaller companies such are the Macedonian, which want to be a part of a larger network with respectable companies. It will also open a lot of doors for future collaboration. Additional benefit is that the reputation will be improved with the institutional stakeholders as well³⁷.
- **Cost efficiency.** By improving the environmental performance the companies will be more resource efficient (less water usage, energy efficiency, waste disposal, reduced carbon emissions etc.). All this leads to reducing costs and higher profitability by the company. Although, different opinions regarding this issue can be found in the literature, what remains a certainty are the long term benefits. Therefore, the Macedonian private sector needs to look ahead and strongly evaluate the future steps that are going to be undertaken.
- **Improved regulatory compliance.** Even though at the moment many of the environmental standards in Macedonia are voluntary, this situation will not go on for long. The approximation to the European legislation (the EU acquis) is imposing additional obligations that will have to be met. The companies that are part of a certain green supply chain management structure will have no difficulty complying with those regulations.

Recommendation: Increased efforts by the private sector to meet strong environmental standards and implementation of green supply chain

³⁷ The example in Box 4 can also be used as a example of a company with good reputation among the institutional stakeholders

management. If the private sector is looking its perspective as an exporter, greening is a must. There are many reasons why a Macedonian company should think green. At the very least it should consider the following issues:

- First, in order to collaborate with large companies and to be a part of a good business network, greening is required
- Second, the current market demand in the high consumption economies require greening

The process of greening of the Macedonian economy is in progress. So it does not necessary mean that a company should only think green if it exports, but also should take into consideration that the demand for such production in Macedonia is growing.

There are frontrunners in Macedonia related to this issue and that is not a constraint for the other companies, but it should be looked at as an opportunity to learn from others' experiences and to follow their successful footsteps.

Box 5. Disregarding the environment will drive out the large buyers

Nantong Yiyi Interlining Co., Ltd. is a privately owned shirt manufacturer from China³⁸. It exports to different parts of the world including Europe and United States. In 2007, the company experienced difficulties with respect to its placement in China. Namely, the company was placed on the China Water Pollution Map due to its disregard to the environmental standards. One of its large buyers, the Esquel Group, a Hong Kong clothing manufacturer, discovered about the non-compliance and requested immediate action to be undertaken. In 2009, the company requested environmental audit to be done by consulting firm and that pointed out to several irregularities such as high level of COD (Chemicals Oxygen Demand) and high levels of water and energy intensity. Although the company at the beginning was holding back from taking corrective actions

³⁸ Greening Supply Chains in China: Practical Lessons from China –based Suppliers in Achieving Environmental Performance, Working Paper, World Resources Institute, 2010

doubting the profitability of such investment, the large buyer imposed great pressure to resolving this issue. Not having any way out, the company decided to implement the measures which resulted in improvement in every of the aspects where irregularities were recorded before. The company's COD levels were in compliance with the environmental regulations, the water usage was reduced by one third and the energy consumption was reduced by 400 tons of coal equivalent a year by recycling of high temperature water. After this, the company also received ISO 14000 certification. Regarding the initial investment, the company was supported by the Esquel Group by assisting them in receiving a grant for environmental improvement from the authorities. The grant was almost one third of the investment. This way, the company not only succeeded in achieving its environmental goals, but also was able to pay back the investment in only 2,3 years.

The greening "wave" has also reached to Wal-Mart, the largest retailer in the world. Wal-Mart is known to have a low cost strategy which basically is one of the reasons for its success. However, Wal-Mart has employed quite successful supply chain management system which allowed the company to be taken as an example by many. Even with its low cost strategy, the company decided to push its suppliers into greening and search for options to be more resource efficient while reducing the environmental impact. In 2005, Wal-Mart committed to 5% reduction in packaging by 2013³⁹. That will allow the company to reduce the carbon dioxide emissions by 667,000 metric tons and save 3,4 billion dollars, while in the same time the savings across the supply chain will be around 11 billion dollars. It is not just Wal-Mart, many of the international companies are looking into greening and sustainability. It has to be kept in mind that these are the prospective large buyers for the Macedonian companies on the world market.

³⁹ Green Supply Chain Management, Marketing Tool or Revolution?, Françoise van den Broek, 2010

VIII. Demand driven private sector based on government spending (Green Public Procurement)

There are plenty definitions trying to describe the issue of green public procurement. According to the European Commission and its Communication [COM(2008) 400], green public procurement is "a process whereby public authorities seek to procure goods, services and works with a reduced environmental impact throughout their life cycle when compared to goods, services and works with the same primary function that would otherwise be procured"⁴⁰. In 2006, in a study commissioned by the EU Directorate General for Environment, green public procurement has been defined as an "approach by which Public Authorities integrate environmental criteria into all stages of their procurement process, thus encouraging the spread of environmental technologies and the development of environmentally sound products, by seeking and choosing outcomes and solutions that have the least possible impact on the environment throughout their whole life-cycle"⁴¹.

The issue of green public procurement is quite important for greening of the private sector in Macedonia since it can provide great push to the Macedonian companies in a green course. The government is a large consumer and with its procurement procedures can direct the private sector to perform green. The green public procurement is an excellent incentive for pushing the companies into using green technologies, producing greener products, green supply chain management etc. There are examples when certain Macedonian authorities have required that a company have introduced EMS when applying to a tender procedure, however there are plenty more aspects that need to be considered when tendering "green". It is not just to prepare a tender and ask for some environmental aspects to be taken into

⁴⁰ COM(2008) 400, European Commission, 2008

⁴¹ Green Public Procurement in Europe, study commissioned to consortium of Virage, Centre for Environmental Studies, Global to Local, Macroscopio and SYKE by the European Commission, 2006

consideration. What is important is to know what environmental aspects should be taken into consideration and to know how to dovetail those environmental aspects appropriately in accordance to the aim of the procurement procedure. For this to take place, the following conditions need to be fulfilled:

- High level of awareness for green issues among the authorities
- Commitment to green growth and consideration of all environmental aspects
- Appropriate knowledge/environmental expertise available to the teams responsible for procurement

The prospective operators (those applying to the tender) should have appropriate, accurate and concrete information in order to prepare their offers. Therefore, the procurement procedure needs to be clear and state exact environmental requirements. Requirements such as “the product needs to be eco – friendly” does not reflect green public procurement. Another issue of green public procurement is the award and selection criteria and how much meaning will be given to the environmental impact. In this regard the price have very important role and often the environmental friendly products or services can be found more expensive than other.

A step forward in a direction of thinking green when conducting procurement would be to have implemented EMS in the government institutions. In this sense, conducting green procurement procedures will become part of their environmental management obligations. There are institutions that have done this already, such is the Secretariat for European Affair of the Republic of Macedonia, and this is an example that should be followed.

The study that was commission by the EU Directorate General for Environment and done by five organizations working in the field of environment, aimed at measuring the implementation of green public

procurement in all EU member states⁴². The methodology was survey of 860 online questionnaires, as well as analysis of at least 1000 tender documents. The results showed that there are several leading countries when it comes to this issue, and those are Austria, Denmark, Germany, United Kingdom, Sweden, Finland and Netherlands. These countries have performed best when it comes to greening the procurement procedures, while the others have shown lack of environmental knowledge, political commitment, information etc. The strengths that were found among the leading countries were: implemented EMS by the authorities, appropriate knowledge of different environmental aspects, excellent dissemination of concrete information, political support and dedication to this concern.

What is noteworthy is that mostly the leading, the advanced countries have shown to have higher awareness and better results related to the issue of greening. Their awareness can be seen by concrete examples, by the implementation of environmental concerns in their procurement procedures. The other countries are also getting there by increasing their environmental considerations.

Box 6. Stimulate the private sector to act green⁴³

The Central Procurement Agency from Lombardy, Italy was set up to serve for procurement purposes for the public institutions in the respective region. The agency needed to conduct procurement of paper and therefore decided to carry out analysis about the products available and possible innovation and ecological solutions. The tender was prepared in a way to consider the possible environmental impact of the product being purchased. The technical specification in the tender documentation had a number of requirements such as that the products are chlorine free, have the appropriate standardization (ISO 9001:2000), recycling related requirements etc. One

⁴² Since the study was done in 2006, Bulgaria and Romania were not part of this research. They joined the EU in 2007.

⁴³ The web site for green public procurement of the European Commission was used as a source for the case studies presented in this box, www.ec.europa.eu/environment/gpp

fifth of the points were given to the technical offer. With this procurement the expectations are that the impact on water, forests and energy is reduced.

The Office of Public Works (OPW) is the Irish government's responsible institution for carrying out procurement procedures. In 2003, after an environmental impact assessment was conducted, OPW decided to include the possibility of additional points to the operators that offer environment friendly products. Due to increased need for furniture for the government, the OPW prepared a tender procedure for procurement of the needed products. The technical specification has been very concrete and specific with respect to the environmental requirements for the products. It also requested that the operators have employed good environmental practices. The Furniture Division at OPW has successfully decreased its costs because of its sustainability strategy, while at the same time reducing the environmental impact. Moreover, the costs of the suppliers have also been decreased.

The Ministry of Environment and Water of Bulgaria is another successful example of green public procurement. In 2009, the ministry decided to carry out full green public procurement for paper. 8000 packages of 100% recycled paper were needed. With the analysis that was done before the procurement, the ministry found that the recycled paper has competitive price with other paper, while in the same time it meets the environmental criteria part of the technical specification. With this green public procurement the Bulgarian authorities learned that green public procurement does not necessarily have negative financial consequences and at the same time it reduces the impact on the environment.

For more information on the tender specification of each case study please read the reference provided.

IX. Environmental obligations caused by regulations

The Macedonian industry faces great challenges ahead considering the ongoing process of approximation of the Macedonian legislation to the EU acquis. Significant efforts and investments are required by the industry to comply with the strict EU environmental standards. On a long term, this could bring many benefits for the Macedonian companies and Macedonia overall, however the problem is that significant investments are required now and this can seriously affect their competitiveness in terms of costs.

Probably the most challenging EU Directive is the one concerning the “Integrated pollution prevention and control”. This directive reflects the private sector and requires high pollutants involved in the industry or agriculture to have specific permit that can be issued only if strict environmental criteria are met. The environmental issues taken into consideration with this directive are the very same that were discussed previously in the text in terms of the impact of the Macedonian industry on the energy, water, soil, waste etc. To be more precise, the acquirement of such permit will require the Macedonian companies to use energy efficient technologies, reduce air pollution, reduce waste, reduce soil contamination and so on. These permits are issued by the appropriate authority in the respective countries. In the case of Macedonia, two types of permits are issued. The A permit (for large installations with high pollution effect) is issued by the Ministry of Environment and Physical Planning, while the B permit (for small installations with lower pollution effect) is issued by the appropriate local self – government unit.

Until very recent, the Macedonian government was committed to full compliance with this obligation by 2014, which was quite a challenging task for the Macedonian private sector. According to a research conducted by a Macedonian nongovernmental organization called FRONT⁴⁴, out of 117 installations, only one fifth have acquired the appropriate permit. This has been done for a period of

⁴⁴ From theoretical to real-life integrated prevention and control of industrial pollution, FRONT, 2012

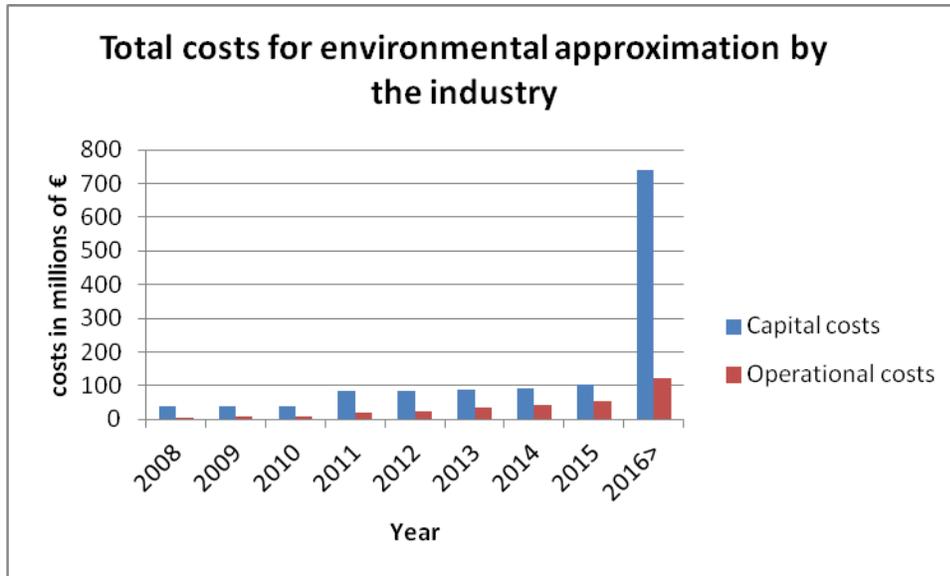
6 years, which leaves less than 2 years for full compliance with this EU directive by all installations. According to some concerned parties, this task will be hard to be accomplished on time. Each company that needs to acquire such permit will have to be committed to implementation of operational plan for pollution prevention and control. In this direction, in late august 2012, the Macedonian government decided to introduce a new set of measures for support of the Macedonian metallurgy by which the deadline for acquiring permit for integrated pollution prevention and control has been extended to not later than 2019. According to the Macedonian regulations, the appropriate costs will have to be fully covered by the companies themselves and they will have no opportunities to use any direct financial assistance by the government institutions⁴⁵. However, certain favorable credit line has been foreseen to ease the process of complying with the EU regulations.

According to the National Strategy for Environmental Approximation, the Macedonian industry⁴⁶ has considerable financial obligations in the years to come related to the environmental approximation. In the period of 2008 – 2015, the Macedonian industry will have to invest cumulative amount of 567 million Euros, recorded as capital costs. In the same period, the operation costs will be cumulative 150 million Euros. It has been stated that the polluters will have to assume the costs for their pollution activities.

⁴⁵ National Environmental Investment Strategy 2009–2013, Ministry of Environment and Physical Planning of the Republic of Macedonia, 2009

⁴⁶ The term industry here has very broad scope including every stakeholder except for national and local authorities and households.

Graph 16. Foreseen total costs by the industry for environmental approximation to the EU



Source: National Strategy for Environmental Approximation, Ministry of Environment and Physical Planning of Republic of Macedonia, 2008

Graph 16 shows the costs that the industry will have in the next period for complying with the EU regulations. The costs are presented by year individually, meaning that the growing trend does not reflect cumulative numbers, but growing financial obligations for the Macedonian industry year by year.

X. Outlook and conclusion

Key focus in terms of contribution and consumption in the future is given to the non OECD countries. These are developing countries with plenty potential and needs to demand resources. According to the World Energy Outlook 2011, prepared by the International Energy Agency, and their central scenario, the global energy demand will increase by 40% by 2035, whereas 90% of the global energy demand growth will be on the non OECD countries. Around 25 trillion dollars will have to be invested in energy supply infrastructure in the non OECD countries.

Exxon Mobil in their "2012 The Outlook for Energy: A View to 2040" confirms these projections by stating that the energy use in the OECD countries will remain stable, while the non OECD energy demand should grow by 60% by 2040. They expect 30% rise in the demand for energy by the industry by 2040. Most of it will come from chemicals and manufacturing. The production of iron, steel and cement is expected to be doubled.

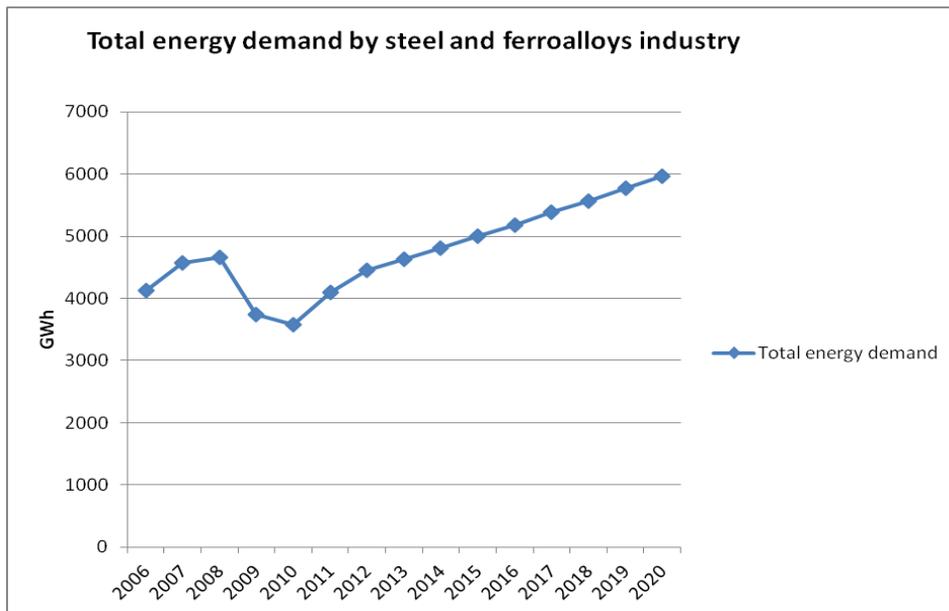
These calculations on the world outlook refer mostly to the large economies such as China and India. They are the ones that will have the greatest impact along with few others.

However, in terms of Macedonia, the question is: What can we expect?

- **The process of liberalization of the electricity market in Macedonia is well under way.** The energy prices are already in increasing trend. By many, the increase in energy prices in Macedonia is inevitable, especially considering that at the moment the price of electricity paid have social component in it, meaning that is below the market price and is subsidized (except for the large industrial consumers).
- **In addition, the energy demand is also expected to grow.** According to the Macedonian Strategy for Energy Development and its baseline scenario, the energy demand in the industry will increase by 37.42 % in 2020, compared to 2006. The share of the energy demand of the steel and ferroalloys industry in the total energy demand by the industry will remain somewhat the same, although this industry will

have slightly higher growth rate in the energy demand than the one reflecting the total industry. As presented in graph 17, the total energy demand by steel and ferroalloys industry is expected to have uprising trend, with an average annual growth rate of 2.68%.

Graph 17. Total energy demand in the steel and ferroalloys industry according to baseline scenario



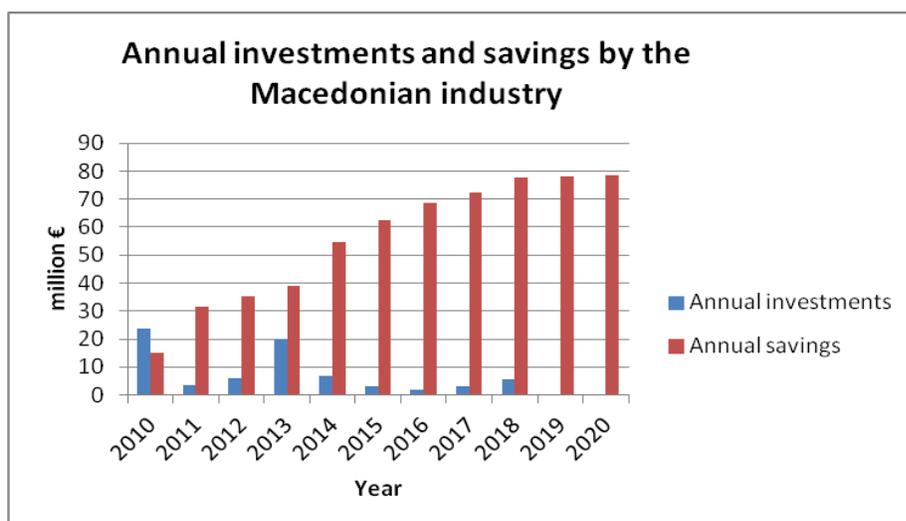
Source: Strategy for Energy Development in the Republic of Macedonia until 2030, Ministry of Economy of the Republic of Macedonia, 2009

➤ **The investments in energy efficiency usually require large costs at the beginning with expectation of even larger benefits after a period of time.**

The part of investing more at the beginning may be problematic for the Macedonian companies due to lack of appropriate financial opportunities and “expensive” loans. In the Strategy for Improvement of the Energy Efficiency in the Republic of Macedonia until 2020, certain calculations about the needs for energy efficiency investments by the industry have been made. The graph below presents comparative image of the investments required by year, and the savings that will

arise out of those investments. As we can see, larger amount of money is required at the beginning of the period. Every next year, the savings surpass the investments, i.e. the benefits are higher than the costs. The total amount foreseen to be invested in energy efficiency by the industry in the period of 2010 – 2020 is 73.9 million Euros, while in the same period the expected savings are 612.8 million Euros⁴⁷. The industry sector compared to the other sectors (residential, commercial and public building and transport) has the most favorable cost benefit ratio.

Graph 18. Comparative analysis of the foreseen annual investments in energy efficiency and the appropriate savings by the Macedonian industry



Source: Strategy for Improvement of the Energy Efficiency in the Republic of Macedonia until 2020, Ministry of Economy of the Republic of Macedonia, 2010

- **The share of contribution by the iron and steel industry will probably shrink.** The economic structure will diversify and other sectors are already emerging. Most recently, the automotive industry is taking a swing due to the significant efforts of the government for attracting FDI in this sector. The

⁴⁷ These calculations are based on the current energy prices. The calculations that are based on the liberalized market prices show even greater savings in cumulative amount of 995.1 million Euros

importance of the automotive industry in terms of contribution to the Macedonian economy, especially the export is increasing. In this direction, the dependency of the metals industry and the Macedonian key macroeconomic parameters is relaxing.

- **It has to be kept in mind that at the moment the metals industry is playing maybe the most significant role in the Macedonian economy.** The metallurgy currently can be considered as a pillar of the Macedonian industry. It has many challenges ahead considering the Macedonia's obligations towards EU and its acquis, and even this is on a short term. The standings of this pillar must not be put at risk. The process of diversification of the economic structure does not mean that this industry should be neglected. This industry is expected to keep playing important role and therefore with joint efforts, progress towards reducing the environmental impact needs to be achieved.
- **The Macedonian economy has the potential of rapid growth.** At the moment, its trend depends foremost on the political conditions reflecting the business climate. Looking at the World Bank Doing Business Report, Macedonia is doing quite well in terms of the economic conditions for attracting FDI. The government is open for new investments, however what comes as an obstacle is the prolonging of the accession to NATO and the start of negotiations for joining the EU due to political reasons. If this is to be resolved in near future higher growth of the Macedonian economy can be expected, including higher resource consumption.

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