UNIVERSITY OF GOTHENBURG
SCHOOL OF BUSINESS, ECONOMICS AND LAW

Macedonia- Environmental and Climate Change Policy Brief

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This Environment and Climate Change Policy Brief[1] aims to summarise the key environmental and climate change problems and opportunities for Macedonia, related to poverty reduction and economic development and the Swedish government's thematic priority Environment and Climate change which includes four focus areas; (i) climate change adaptation, (ii) energy, (iii) environment and security, and (iv) water.

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[1] This Environmental and Climate Change Policy Brief was written, at the request of Sida (Att: Lisa Mossberg) by *Emelie Dahlberg* at the Environmental Economics Unit (EEU) , Department of Economics, University of Gothenburg, as part of Sida-EEU's institutional collaboration on environmental economics and strategic environmental assessment, with contributions from SEI Oxford (Ben Smith). Comments can be sent to emelie.dahlberg@economics.gu.se. The views expressed in this Environmental and Climate Change Policy Brief are those of the authors and do not necessarily represent the views of Sida.

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Executive summary

After the civil unrest in 2001 the Former Yugoslav Republic of Macedonia has experienced a gradually improved political stability, a rising economic growth and poverty reduction. However, still over 20% of the population are poor. Macedonia faces several environmental problems including land and forest degradation, loss of biodiversity and ecosystem services as well as air and water pollution. Land degradation is associated with inadequate agricultural practices. Illegal logging and human induced forest fires are a growing area of concern. Agricultural activity, infrastructure and industry are major causes of loss of ecosystem services and biodiversity, as well as pollution of air and water. Climate change will add to existing stresses, particularly water scarcity, land degradation, loss of biodiversity, and natural disasters.

Economic development, together with democracy and stability, has increased the awareness of the importance of environmental protection. The recent successful election is a positive step on the path towards an EU membership. The progress towards EU membership and the alignment to EU environmental legislation is a key driver for reducing and preventing environmental degradation. Furthermore, adopting the EU legislation is expected result in significant positive impacts on health, cleaner water and air, and better waste management. Moreover, sustainable utilisation of natural resources will lead to a long term sustainable economic growth and poverty alleviation.

Although Macedonia has achieved some progress towards harmonisation to the EU acquis there is still a considerable amount of implementing legislation that needs to be prepared. For a successful implementation of the EU acquis there is a need to strengthen human and institutional capacity, especially within the area of environmental impact assessments, monitoring, integrated pollution control and climate change. There is also a need to strengthen environmental capacity within local authorities.

1. Introduction

The Former Yugoslav Republic of Macedonia is a landlocked and mountainous south-eastern European country, with Bulgaria, Greece, Serbia and Albania as neighbouring countries. The climate in Macedonia consists of two main types (i) Mediterranean and (ii) continental with typical long hot summers and very cold snowy winters. In addition there is also a mountainous climate characterised by short, cool summers and considerably cold and moderately wet and snowy winters.[2]

The population of Macedonia is approximately 2 million, of which about 1.4 million people live in urban areas. Population density is 79 inhabitants/square km which is low compared to the EU average of 115.[3] More than 20% of the population live below the national poverty line. Since the civil unrest in 2001 the political environment has gradually improved and in recent years the country has moved a long way towards stability. The restoration of peace in the region of Western Balkan together with democracy and stability has made protection of the environment an emerging issue and gradually environmental protection is evolving alongside economic development.

Macedonia is on its way to become a member of the EU and in progress of developing the country's legal framework in line with EUs environmental legislation. Adopting the EU

[2] Ginovska, 2007

[3] Ginovska, 2007

legislation and an EU membership is expected to lead to health improvements, cleaner water and air, improved waste management, and economic growth from industry and tourism.[4]

2. Key Environmental Problems and Opportunities and their Causes?

Macedonia is highly dependent on its natural resources (agriculture and mineral deposits). The country possesses a rich flora and fauna. The key environmental problems (not in order of priority and described further below) include land and forest degradation, loss of biodiversity and ecosystem services, and air and water pollution.

2.1 Key Environmental Problems and their Causes[5]

Land degradation: In terms of land degradation and erosion Macedonia is one of the most vulnerable Balkan countries. In 1993 it was estimated that 96.5% of total area of the country was affected by erosion. This is due to the mountainous landscape, historical and continuing unsustainable agricultural practices, and climatic variability with intense rainfalls and aridity. Water erosion is the dominant type of erosion in Macedonia. Intense and concentrated rains cause landslides, soil erosion and local floods. Furthermore, significant part of erosion deposits occurs in natural lakes and reservoirs. Approximately 17 million m^3 of arable soil is lost every year with significant costs.[6] The major problems causing soil degradation in rural areas are poor agricultural practices, especially inefficient irrigation schemes, the overuse of chemical fertilizers and pesticides, and mining operations. Moreover, about 30 000- 80 000 ha of irrigated agricultural land is vulnerable to salinization and land degradation.[7] Another problem affecting land degradation are forest fires and illegal logging. Also, abandonment of agricultural areas has in some places contributed to a reduction of erosion, but in mountain areas lack of maintenance of terraces may actually have increased erosion. Analyses show that soil in urban and industrial areas is contaminated with heavy metals and organic chemicals. Mining sites represent 27 % of all sources of contamination.

Forest degradation: Over 35% of Macedonia's total land area is forested[8] and one third of natural forest in Macedonia is preserved.[9] Illegal logging and human induced forest fires are a growing area of concern. Macedonia has been heavily exposed to forest fires. During the last ten years around 100 000 ha of forests have been affected by forest fires. Of which 95% are estimated to be caused by humans. Wood from forests is being used for fuel wood, both through legal and illegal logging.[10] In some areas of the Prespa basin high pressure on forest resources is likely to occur and the inadequate forest management has led to reduction of certain plant species used solely for timber.[11] Despite the relatively small formal economic importance of the forestry sector, the forests have a large non-economic importance, especially for the maintenance of biodiversity and ecosystems services.

Loss of biodiversity and ecosystem services: Macedonia has a rich flora and fauna with over 380 known animal species and 3500 higher plant species.[12] There are several direct and

[4] World Bank, 2007
[5] If nothing else is stated the references for this section is: NEAP, 2006 and EEA, 2007
[6] Mitkova, 2006
[7] UNDP, 2006
[8] World Bank, 2008
[9] Mitkova, 2006
[10] Illegal wood cutting is estimated to be equal to 30% of the legally cut wood. (NEAP 2006)
[11] UNDP, 2009
[12] World Bank, 2008

indirect threats leading to loss of biodiversity and loss of ecosystem services. Agricultural activity, infrastructure (e.g. construction of hydropower reservoirs), industry and mining (abandoned mines) have negative impact on and constitute a threat to biodiversity. Forest degradation is another potential threat. Despite forest protection to date, natural forests and those richest in biodiversity are still in decline. The forests in the Prespa lake basin constitute a wide range of habitat types, e.g. the rare oak forests which in Europe only exists in Macedonia and northern parts of Greece. Illegal hunting is reported to be a serious issue in the area of the Prespa basin. However, there are no exact figures on hunted game numbers available.[13] Agricultural production and the increase of modern, high productive crop types have led to significant loss of biodiversity. The rate of urbanisation has also had an adverse effect on biodiversity.

Air pollution: Air quality problems are particularly pronounced around the areas of major cities, thus potentially affecting 60% of the total population. Air pollution in Macedonia is mainly derived from energy production and transformation, fuels combustion, heat production for industry and residential and administrative buildings heating. There is a significant lack of equipment and modern technology causing major air pollution. Together with the increasing level of industrial activity there is also an increase of the emissions of SO_2, NO_x and dust. Energy production and transports are the major pollutants of NO_x. Air pollution from transports is in direct relation to the quality of the fuel that is used, and to age structure of the vehicle fleet[14].

Water stress and pollution: Macedonia is classified as a semi-arid area which makes the use, protection and conservation of water resources highly important. Although the country is fairly rich in water resources due to its great lakes Ohrid, Prespa and Dorjan, it is considered to be water stressed. Water quality of most surface waters and groundwater is low. The major polluters are discharges of municipal or industrial wastewater. In the agricultural north-east, there is significant pollution from livestock waste and food industries. The major water consumers are agriculture, industry (especially production of chemicals, food, non-ferrous metal and textile), households and energy production. The uneven precipitation and supplies of surface waters imply that the water demand for food production is not totally met[15]. Furthermore, there are indications that agricultural production contributes to land based pollution such as sedimentation from soil erosion and agrochemical pollution from uncontrolled use of fertilizers and pesticide which also affect water bodies. In rural areas large scale pig-farming, poultry breading and livestock contributes to pollution of both surface and groundwater. There are limited wastewater treatment plants in the industrial sector and no systematic monitoring of industrial water exists In general, polluted wastes are discharged directly into receiving water bodies without any treatment. Groundwater is of utmost importance. However, there is a lack of continuous groundwater observations and analysis of groundwater yields. Around 2% of the total territory is wetlands and natural lakes. The quality of these water sources are endangered by uncontrolled waste water discharge and water abstraction, tourist activities and unfavourable weather conditions, which could be further aggravated by climate change.

Insufficient waste management cause severe problems for water, air and land resources. Most landfills are inadequately designed. There are large numbers of illegal dump sites

[13] UNDP, 2009

[14] Almost 50% of all cars in Macedonia are over 20 years old. (NEAP, 2006)

[15] EEA, 2007b

(approximately around 1000 sites) and so far none of the existing landfills in the country complies with the EU standards. Furthermore, there are very limited systems of separating recyclable material and hazardous components of waste.

Climate change and disaster risks: Climate change will add to existing stresses, particularly water scarcity, land degradation, loss of biodiversity, and natural disasters. It is estimated that water run-off could decrease by up to 25% in some areas by 2100. Due to the hot and dry conditions, forest fires are likely to intensify and become more frequent. More on climate projections, adaptation and mitigation challenges are described in section 4.

2.2 Opportunities:

Historically, there has been a positive correlation between growth in GDP and the Human Development Index (which takes into account life expectancy, literacy, education and standard of living). In Macedonia this implies that one can expect that rising GDP will improve quality. The national economy is highly dependent on natural resources. Environmental and natural resource degradation (e.g. land degradation, water pollution) affects important economic sectors (e.g. agriculture). Sustainable utilisation of natural resources is an important opportunity that will in a long term perspective lead to sustainable economic growth and poverty alleviation. Furthermore, reduced pollution levels will have a significant positive effect on population health with socio-economic benefits.

The EU accession and cooperation with the EU has had a significant impact on Macedonia and it is the main driving force to national environmental reforms. The alignment to EU environmental legislation creates incentives and opportunities for better environmental technologies. There are large opportunities in waste management and water supply, wastewater treatment and water resources management as well as in air pollution control. With an inclusion into the European market Macedonia will provide export opportunities for environmental technology companies.

Regional environmental cooperation (Macedonia, Albania, Serbia, Kosovo) should be seen as an important opportunity for sustainable development. Although Macedonia is aligning with EU environmental legislation and environmental standard, there is still the risk of transboundary pollution. Regional environmental cooperation over transboundary water issues, transboundary air pollution issues, or other shared environmental problems is an opportunity to improve environmental performance.

Macedonia possesses a very attractive landscape which could generate more tourism, especially in the mountainous regions. Regions are defined by their great wealth of natural and cultural resources which could be an opportunity to develop business based on eco-tourism and nature-based activities contributing to national growth and poverty alleviation.

Macedonia has large potential for renewable energy. There are 6 big and 22 smaller installed hydro plants for electricity production and the government has made an extensive list of prospect sites where there is possibility for more hydro electricity production. However, the construction of hydropower reservoirs can be a direct cause of biodiversity loss which has to be considered in the planning process. Furthermore, the country is rich on geothermal sources and has large potential for geothermal energy. Wind energy potential has not been analysed.[16]

[16] NSSD, 2008b

3. Effects of the Environmental Problems

3.1 Impacts on Poverty

Vulnerability: According to the Human Development Index Macedonia is a highly developed country ranked 68 of 179 countries. Still many people are poor. Over 20% of all Macedonians live below the national poverty line. [17] In terms of food insecurity and vulnerability, in 1993-1995 over 15% of the population was under-nourished. In 2002-2005 this number had decreased to around 2%. Today the country is not facing any major or chronic lack of food.

Rural areas are generally economically weak and the basic infrastructure and related installations (water supply, sewage and waste water treatment, roads, electricity) are insufficient. Statistics show that only 30% of the rural households have an income that meets their needs. Especially vulnerable are poor elderly households, whose members cannot utilise existing agricultural opportunities, hence only generating a small income.[18]

The majority of the rural population is engaged in agriculture. Agricultural employment is generally seasonal and the wages in agriculture tend to be lower than other sectors. Furthermore, almost half of all agricultural workers are unpaid family workers. Agricultural employment serves as a social and economic buffer, helping to alleviate poverty particularly in times of high off-farm unemployment. Rural households are vulnerable to environmental degradation as the agricultural productivity (loss in yields) is decreased by current environmental problems e.g. erosion, pollution, water scarcity etc.

It is often women who carry the highest share of the agricultural activities which also makes them more vulnerable to environmental degradation. Expected drop in crop yields due to climate change will have a significant effect on women as work within the agricultural sector will become more time-consuming and burdensome. Moreover, it is important to highlight that women's knowledge regarding agricultural activities is valuable information for adaptation to climate change.[19]

About 70% of the population lives in urban areas and the annual urbanisation growth rate is 1.6%.[20] Approximately 40 % of the villages in the country are classified in the group of economically underdeveloped regions located in the mountain regions.[21] The continued urbanisation is another driver of environmental degradation. Consumption patterns are changing e.g. increase in traffic is causing major environmental problems in larger cities. Furthermore, the urban planning and infrastructure is insufficient creating for example solid waste management problems.

Security: In general, environmental degradation or competition for natural resources in the Western Balkans cannot be viewed as a driving source of conflicts. The risk for conflict caused by those factors must be seen as very low if at all. Historically, political and ethnic tensions have been causes of conflicts.

[17] UNDP, 2008
[18] Government of Macedonia, 2000
[19] NSSD, 2008b
[20] NEAP, 2006
[21] Ginovska, 2007

3.2 Impacts on Economic development

The current global economic crisis and economic slowdown have had negative effects on the Macedonian economy. The Government of Macedonia forecasts a 2% economic growth for Macedonia in 2009. Last year Macedonia had an economic growth of 5.3% (according to a forecast made in November 2008 Macedonia was thought to increase GDP by 4.7% in 2009). The Macedonian economy industrial and service sectors account for approximately 27% and 62 respectively.[22] Agriculture accounts for 15-20% of GDP and employs 14% of the population. The global economic downturn has decreased foreign direct investment, lowered credit, and export growth. Unemployment remains high at nearly 35%.

The agricultural sector is a key sector and plays a critical role for the social and economical stability of the country. Although this sector contributes to employment and income opportunities as well as food self-sufficiency for rural populations unsustainable agricultural activity and food production has led to a number of environmental problems; (i) Salinization, (ii) desertification, (iii) erosion of soil in mountain areas, (iv) contamination of ground and surface waters with pesticides, (v) eutrophication of surface water from fertilizers, (vi) loss of soil fertility from the application of agricultural chemicals, (vii) loss of biodiversity and ecosystem services due to both expanding agriculture and abandoned grazing. These environmental problems together with expected impacts of climate change will have significant negative effect on the agricultural productivity as well as projected economic growth. For example, reduced precipitation, more frequent summer drought, increased salinization and soil erosion are likely to reduce yields of crops such as wheat, alfalfa, apples and grapes, the cost of which is estimated at €30million by 2025 and €40million by 2100.[23] Improving agricultural efficiency, output and environmental management need to be tackled together for a sustainable environmental and economical future.

A rise in income levels and households expenditures has potentially positive social implications. However, it also tends to lead to an overall rise in environmental impacts related to unsustainable household consumption. Increasing income, especially in urban areas, lead to new consumption patterns which have high environmental consequences, such as increasing pollution from private transport, an increase in meat consumption and increase in generation of household waste. Comparing Macedonia's ecological footprint[24](2.2ha/person) with the global available bio-capacity per person (1.8ha/person) shows that the country is on a path of unsustainable consumption. However, still Macedonia lies far below the EU countries (where the average figure is 4.8ha/person). The rising economic growth is likely to further increase the ecological footprints in the future. [25] Moving towards sustainable consumption and production requires a decoupling[26] between economic growth and natural resource and energy use, and associated environmental impacts. The national expenditure on environment is low compared to other countries (0.1% of GDP).[27]

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[22] CIA fact book, 2009

[23] MOEPP, 2008

[24] The Ecological Footprint-indicator measures human consumption of the earth's ecosystems and natural resources.

[25] EEA, 2007b

[26] Decoupling is a measurement on growth-environmental links; "emissions diminish while GDP increases". Decoupling occurs when the growth rate of an environmental pressure is less than that of its economic driving force (e.g. GDP) over a given period. (OECD, 2002)

[27] World Bank,

Energy efficiency and adequate pricing mechanisms are important for economic development not least for creating a sound investment climate. Energy efficiency in Macedonia is low. The coal based energy sector is undoubtedly one of the sectors putting the largest pressure on environment. Access to energy is one of the key issues for the country's future development. There is a growing demand for energy at the same time as there are poor conditions of the power system and high inefficiency in energy production (e.g. high energy intensive and obsolete technologies). Furthermore, the strong dependence on energy imports makes the country extremely vulnerable to energy crises as the one in the beginning of this year, when Russia halted its energy supply affecting several countries, including Macedonia.

3.3 Impacts on Public Health

There are clear linkages between environmental degradation and public health issues. In Macedonia air pollution affects over 60% of the population, mainly people living in the major cities (e.g. Skopje, Veles, Bitola and Tetova). As an effect mortality caused by circulatory and chronically respiratory diseases is increasing. Children and elderly are particularly at risk.[28] WHO estimates that, over 200 deaths each year are due to outdoor air pollution. In rural areas, only 81% of the population has access to improved sanitation, compared to 92% among urban population.[29] Most cities have water supply and solid waste management problems.[30] Inadequate sanitation and discharges of untreated waste water which goes directly into groundwater pose a serious health risks for the population.

WHO estimates	**Water Sanitation & Hygiene**		**Indoor air pollution**		**Outdoor air pollution**	
Country	Diarrhoea deaths/year	Diarrhoea DALYs/1000 capita per year	Deaths/year	DALYs/1000 capita per year	Deaths/year	DALYs/1000 capita per year
Albania	300	0.3	<100	0.1	200	0.4
Croatia	--	0.2	--	--	900	1.9
Bosnia-Herzegovina	--	0.3	<100	0.1	300	0.5
FYR Macedonia	**--**	**--**	**--**	**0.1**	**200**	**0.7**

Source: WHO, 2007 (data from 2002)

Leakage of chemicals into to soil and groundwater also poses health risks in terms of chronic toxic effects in humans, livestock and wildlife. Furthermore, lead petrol is still being sold in Macedonia[31] and industrial emissions remain an important source of lead pollution. Analysis show of high levels of lead in children's blood, where the greatest concern is its effects on central nervous system.[32]

[28] NEAP, 2006
[29] Unstat, 2008
[30] NEAP, 2006
[31] Lead petrol is to be faced out in 2010.
[32] EEA, 2007

4. Climate Change and Macedonia

Due to its mountainous nature Macedonia has a varied climate that ranges from sub-Mediterranean to Alpine. Macedonia is not badly affected by climatic disasters, but current hazards include droughts and floods.[33] Temperatures have been observed to be increasing in Macedonia, in particular in the sub-Mediterranean climatic region, with increases of 0.7C since 1960 at Valandovo in the South West of the country. Precipitation totals for the period 1970-2000 are lower than those for 1960-1990, and this decrease is particularly marked at stations in the Alpine and sub-Alpine regions[34].

Projections from the International Panel on Climate Change (IPCC) show that average annual temperatures in southern Europe will warm by 2.2-5.1C until year 2100. Results indicate warming of 1.6-2.1°C by 2050 and 2.7-5.4°C by 2100.[35] The greatest changes are projected for the alpine and sub-alpine regions of the country and for the summer season[36]. Climate models show good agreement that there will be a decrease in precipitation in the Mediterranean basin. Decreases for Macedonia are estimated to be -2 to -7% by 2050 and -5 to -21% by 2100. Heat-waves and droughts are likely to become more frequent, and the return period for extreme precipitation events will decrease.

Additional regional climate modelling and/or statistical downscaling is needed to further explore local changes within Macedonia, as it can be expected that the complex orography of the country will lead to significant local modifications to national average changes.

4.1 Impacts

The temperature increase will increase evapo-transpiration, which will amplify the effects of decreased precipitation and lead to reduced water availability. Run-off could decrease by up to 25% in some areas by 2100 with the east of the country likely to experience greater water stress than the west[37]. There is a large information gap on monitoring water resources, with no soil or groundwater monitoring currently in place, and this will need to be addressed. A decrease in the amount and duration of snow-cover, and earlier snow-melt will also affect the hydrological regime in the country.

Mortality from cold spells during the winter will decrease, but this is likely to be countered by a larger increase in mortality due to heat-waves in the summer months. Heat-waves such as the extended and severe events of June-July 2007 can be expected to become much more common by the end of the century. The elderly will be particularly vulnerable to the effects of warmer temperatures. The incidence of vector-borne diseases can also be expected to increase. Winter tourism will suffer from a decrease in the length of the ski season, and non-snow dependent activities will need to be found to reduce dependency on good snow cover. The summer season will be extended, but there may be an issue around the provision of water resources.

Rising temperatures mean that the Alpine ecological zone could be lost in many places within 50 years, threatening species such as the Balkan Chamois, and reducing biodiversity in the

[33] CRED 2009

[34] MOEPP 2008

[35] IPCC 2007, MOEPP 2008

[36] For more detail on sub-national climate projections for Macedonia, readers are referred to Bergant 2006 and this interactive map based on the same study: http://www.unfccc.org.mk/scenarios%20map.htm

[37] UNFCC 2008

country. Forest fires are likely to intensify and become more frequent due to hot, dry conditions, and cause increasing levels of damage to economically valuable forests (forest fires in July 2007 caused €21 million worth of damage).

4.2 Mitigation

Emissions of carbon dioxide in Macedonia in 2006 were 3.94tonnes/capita and 2.03kg/$ of GDP. This compares to 5.70t/capita and 2.54kg/$ for central and eastern Europe and 4.28t/capita and 0.74kg/$ for the World. The EU by comparison has emissions of 8.07t/capita and 0.42kg/$, with total emissions in 2006 of 3,983Mt of carbon dioxide[38]. Macedonia is a signatory to the Kyoto Protocol on emissions reduction, however as part of the non-Annex 1 group of countries has no binding emissions targets under the first commitment period of the protocol (2008-2012). The energy sector accounts for 70% of total emissions in Macedonia[39] The Clean Development Mechanism (CDM) receives a lot of attention in national planning documents as a way to reduce emissions and also receive investment. The Ministry of Environment and Physical planning (MOEPP) is the Designated National Authority for the CDM and has the role of ensuring that any CDM projects are in line with the sustainable development objectives of the country. There are currently no CDM projects being implemented in Macedonia, although a National Strategy on the CDM has recently been launched and agreements are in place with Italy and Slovenia on developing CDM projects. Macedonia has high carbon intensity (carbon use per produced unit) when compared to other countries in Eastern and Central Europe because it relies heavily on coal for energy generation, and rapid emissions savings could be made from investment in renewable energy[40]. Estimated savings through the CDM are 4Mt CO2eq/year, which would create income of roughly 24-36 million Euros/year at the current price for carbon[41].

The two mitigation scenarios for the electricity sector outlined in the National Communication still increase emissions by 46 and 32% compared to the 2008 baseline. The BAU scenario gives an increase in emissions from this sector of 71% by 2025. Overall emissions are projected to increase across all sectors, but significantly less if the more stringent mitigation scenario is implemented. Much of the current energy infrastructure comes to the end of its life in 2020, so there is a good opportunity to invest now in a more sustainable energy infrastructure.

4.3 Institutional framework

Macedonia acceded to the UNFCCC in 1998 and to the Kyoto Protocol in 2004. The MOEPP is the focal point for the UNFCCC, and also the Designated National Authority for the CDM. The Climate Change Project Office was set up in 2000 and sits as a unit within the MOEPP, driving work on climate change within the ministry. The National Climate Change Committee (NCCC) is separate from the MOEPP and is composed of representatives of government (including inter-alia, ministries of the Environment, Finance, Transport, Economy, Education and Science, Health and Agriculture, Forestry and Water[42]), NGOs, the private sector and research organisations. The function of the NCCC is to oversee national policies on climate change and to ensure that these policies are consistent with national development strategies

[38] IEA 2009
[39] MOEPP 2008
[40] CDM Pipeline 2009
[41] MOEPP: The Republic of Macedonia, Climate Change and the Kyoto Protocol
[42] Environment chapter of EU questionnaire on accession

and priorities. Implementation of environmental policy occurs through a wide range of public and private sector entities, and the MOEPP is only the coordinator of environmental policy. Macedonia has started to integrate climate change into national strategic planning documents and laws. Article 4 of the Law on the Environment explicitly mentions 'Restraining greenhouse gas emissions in the atmosphere' and encouraging the use of clean technologies and renewable energy[43]. In the Law on the Environment it is stipulated that Macedonia should adopt a National Plan on Climate Change, but this has not yet been developed. The Second National Environmental Action Plan (NEAP) and the National Strategy for Sustainable Development (NSSD) both documents include climate change, with Energy and Climate being identified as key elements in achieving the goals of the NSSD[44] The focus in the NSSD are to develop a less carbon intensive energy sector (through both switching supply and increasing efficiency) and to engage strongly with the CDM. Adaptation is recognized in the strategy but is secondary to mitigation.[45] Measures in the strategy to conserve and manage natural resources will also improve the adaptive capacity of ecosystems.

The focus of the government has been on mitigation rather than adaptation to climate change, however there is an Inter-Sectoral Adaptation Action Plan which includes integrating adaptation into the management strategies for different sectors, establishing early warning and monitoring systems and building the capacity of different actors through training and the provision of additional funding[46]. Decentralization is a key pillar of the national strategies of Macedonia, and as such it is local government and other local actors who will be tasked with the implementation of many of these plans. The government recognizes the need to rapidly build the capacity in these actors if national environmental strategies are to be successfully implemented.

4.4 Implications for EU membership

EU membership can be considered as the overall strategic objective for current development policies in Macedonia, and strategy documents such as the 2nd National Environmental Action Plan are aimed at the requirements in the EU acquis, and harmonisation of environmental policies.

The second National Communication has strengthened national capacity on preparing greenhouse gas inventories; however several institutional and legislative measures need to be adopted to further strengthen and embed this procedure. This inventory will serve as the background for the establishment of a GHG registry, which is a country requirement for EU accession. There will need to be some amendments to the existing Law on the Environment and Law on Energy in order to pave the way for a Law on GHG allowance trading so that the Emission Allowance Trading Directive can enter into legislation. A pilot emissions trading scheme will be adopted for 2 years in order to prepare local actors to participate in the EU emissions trading scheme[47].

It is unclear what effect Macedonia becoming a member of the EU would have on the EU's targets for a 20% reduction in emissions by 2020, to be achieved by country specific

[43] MOEPP 2005: Law on the Environment
[44] MOEPP 2008
[45] NSSD 2008a
[46] A table of activities within this plan can be found at http://www.unfccc.org.mk/documents/NAP%20final%20EN.pdf
[47] MOEPP 2008

reductions, and whether a target would be imposed on Macedonia. If new countries are included in this target then there will be negotiations to set a target that takes into account national circumstances. It is extremely unlikely Macedonia would be obliged to make the full 20% reduction, but may be required to ensure that its emissions do not grow over the period, for example. In the area of energy and climate Macedonia appears to be progressing well towards the requirements for EU integration.

5. What are Key Actors doing to manage the Environmental Problems?

5.1 Key Actors

The Ministry of Environment and Physical Planning (MOEPP) is the responsible ministry to coordinate issues of environment, nature and physical planning. Within the MOEPP there are four Departments; Department of Legislation and Standardization, Department of Sustainable Development, Department of European Integration and Environmental Information Centre.[48] The MOEPP is in charge of formulating and implementing environmental policy[49] The strategic objectives of the MOEPP stated in the Vision 2008 are: (i) Achieve the EU standards for environmental quality by developing and implement the framework laws on environment (e.g. air, water, nature and waste management), physical planning, (ii) Develop the capacity of the environmental sector (within local government, industry, environmental service providers, government institutions and NGOs), (iii) Reduce the risks of human health and natural ecosystems, (iv) Develop open dialogue and partnership with all stakeholders in the environmental field, (v) Mobilise domestic and international funding needed for the environmental investments in the country by applying the polluter pays principle, (vi) Secure environmental information and access to the public, (viii) Raise public environmental awareness, (ix) Maintain an active role in environmental cooperation with the EU, the neighbouring countries and in multilateral mechanisms.[50]

Other key governmental institutions that have responsibilities directly related to the environment are; (i) Ministry of Agriculture, Forest and Water Economy, responsible for issues concerning e.g. agricultural land use and use of forests and other natural resources, hunting and fishing and genetically modified food (ii) Ministry of Health, responsible for issues concerning e.g. protection of the health of population, through surveillance/control of pollution of air, water and food (iv) Ministry of Economy, responsible for issues concerning e.g. eco-tourism, industrial pollution, mineral resources exploitation and energy efficiency.[51]

5.2 Other Actors

There are about 70 to 100 registered environmental NGOs in Macedonia. It is the environmental NGOs that are among the most active NGOs in the country. These NGOs contributes to the development of sound and well-formulated environmental policies through dialogue with decision makers.

In the field of environment the agencies within the European commission are important. Macedonia communicates closely with the European Environmental Agency (EEA), the Regional Environmental Reconstruction Programme for South East Europe (REReP), UN-

[48] MoEPP, 2009
[49] NSSD, 2008a
[50] MoEPP, 2008
[51] NEAP, 2006

ECE, UNDP, UNEP and UNIDO. Supporting bilateral donors are e.g. Switzerland, Sweden, Germany, Italy, and Austria.[52] The donor community are together with the Macedonian government jointly working towards introducing a programme-based approach (PBA) in five selected sectors (including Agriculture and Environment). (see chapter 7)

5.3 Capacity needs

Environmental issues are becoming more and more important in Macedonia. The second NEAP states that environment has not, at least for governmental decision procedure, been a priority area until now. The capacity of the system to for environmental inspection and enforcement system must be significantly strengthened for a successful implementation of the EU acquis. There is lack of skilled staff within the MOEPP, especially within the area of environmental impact assessments, monitoring, integrated pollution control and climate change.[53]

There is also a lack of capacity on local level. To provide local authorities with the capacity needed to implement environmental regulations, the government estimates that it needs to more than double the number of civil servants responsible for environmental implementation in local authorities and greatly increase the number of official inspectors.[54]

Furthermore, there is a lack of public awareness for environmental protection. Raising awareness on these issues could be beneficial as it could influence and increase governmental decisions on environmental issues.[55]

5.4 National Strategy for Sustainable Development

The final draft of the National strategy for sustainable development in February 2008 has not yet been approved. The strategy was developed in response to requirements for EU accession and also as a response to the UN convention on sustainable development. The project of making the strategy was led by the Ministry of Environment and Physical planning and was funded by Sida. Before providing comments on the quality of the document as such the Environmental Economics Helpdesk would like to give a few remarks on national strategies for sustainability in general.

- NSSD is a long term strategy that cuts across all sectors of society with the aim of building economic, social and environmental sustainability. Yet, all too often these documents are considered to solely address environmental sustainability.
- According to OECD "A NSSD should not be thought of as a new planning mechanism but instead build on what already exists in the country, thus enabling convergence, complementarily and coherence between different frameworks and policies."
- High level commitment and influential lead institutions are essential if policy and institutional changes argued for in the NSSD are to be implemented.

The strategy states that EU accession is a precondition for sustainability. Given the mentioned low political interest/awareness of the importance for environment and sustainable natural resources management EU accession will probably help speed up government action. This does not only relate to environmental sustainability but also economic and social

[52] NEAP, 2006
[53] NSSD, 2008b
[54] National Programme for the Adoption of the Acquis Communitaire, 2008
[55] NSSD, 2008b

sustainability. The strategy has been developed mainly by local, technical expertise with representation from key ministries which a great advantage. It is difficult to assess is the degree of high level ownership for the document. In an action plan for Program Based Approaches[1] the donor community only refer to the NSSD in the section dedicated to the Environmental sector. This could signal that the status of the document is weak and that it has failed to position itself as covering both economic, social and environmental sustainability.

The NSSD includes a good analysis of constraints, it raises the important issues such as institutional and capacity development, energy pricing reforms, rural development, strategic actions, indicators etc. Despite efforts to avoid becoming a "green" document by stressing social and economic issues it is still biased towards environmental sustainability.

- Could be stronger at showing links to health and economic growth and good environmental quality/well managed ecosystems.
- Climate change is primarily described as a mitigation issue. Impacts of climate change on Macedonia are not well elaborated and should be strengthened.
- It could merit by being more clear on how integration in various sector policies could be achieved, for instance by promoting the use Strategic Environmental Assessments.
- The list of strategic actions is exhaustive and perhaps the relatively large focus on pilots and demonstration projects could merit further discussion. It is important that projects and pilots are supportive to policy reforms and not instead of needed reforms.

All in all, the NSSD in its current form is of sufficient quality. The weaknesses listed above could be brought up as dialogue issues during the implementation phase issues rather than delaying the process further.

6. Implementation and Follow-up of Responses to Environmental Problems and Opportunities and the Accession to EU-membership[56]

Macedonia has made progress in developing its legislative framework in the field of environment. However, in terms of harmonisation to the EU acquis and EU-membership there is still a considerable amount of implementing legislation that needs to be prepared. For example, investments in municipal infrastructure (e.g. for waste water treatment) are low and will need to increase in order to meet the requirements of the acquis.[57]

Air quality: Implementing legislation on assessing ambient air quality has been adopted but is only partially aligned with the acquis. Progress has been made for a properly functioning air quality monitoring system. However, the system needs further improvement and there is also a need for more capacity and better cooperation between institutions to ensure proper collection and analysis of data. A system to recycle ozone-depleting substances has been established.

Water quality: Very little progress has been made in terms of water quality. A new law on water has been enacted but has not yet been adopted by the parliament. The water quality monitoring system is under improvement but still lacks sufficient coverage and data collection

[1] Action Plan to Introduce the Programme-based Approach Concept in Macedonia
Joint donor coordination working group -- February 2009

[56] If nothing else is stated, this section is based on the reference EC, 2008

[57] NEAP, 2006

and analysis. The polluter-pays-principle is not applied, thus impairing the sustainability of investments in wastewater treatment.

Waste management: Implementing legislation on landfills, medical and hazardous waste and waste oils has been adopted and the national strategy for waste management has been approved. However, a waste management plan is yet to be finalised. There is a need for a system to deal with data collection, registration and reporting.

Nature protection: A national strategy and action plan has not been completed for nature protection. Some progress has been made in the area of forestry where a programme for expanded reproduction of forests has been adopted.

Industrial pollution: Control and risk management of industrial pollution has been improved. However, there has been little progress in the area of chemicals. A chemicals commission in charge of classification and notification of chemicals and biocides as well as authorisation for placing them on the market, has been established.

Environmental management: Administrative capacity at state and local levels is low in terms of both human and financial resources. Thus, there is a strong need to strengthen capacity for improving legislation implementation and enforcement. Coordination between institutions in charge of environmental issues needs to be enhanced.

Agriculture: In terms of the agricultural sector significant progress has been achieved. The law on agricultural land, which regulates management, oversight and protection has been enacted and implemented. Capacity has been strengthened through new employees at the Department for policy analysis and the agricultural information system although there is still a need to increase human capacity within the ministry. Good progress has been made in rural development and the rural development programme under the Instrument for Pre-Accession Assistance (IPARD) has been adopted. However, alignment to the EU aqcuis is still at an early stage.

Energy: In the area of energy Macedonia is far from aligned with the EU acquis. A strategy for long term development of the energy sector is not yet completed and preparations are in an early stage. The implemented legislation on renewable energy sources show of some progress in the field of renewable energy.

EIA and SEA legislation: The implemented legislation on strategic environmental assessment is only to some extent aligned with the EU acquis. One of the objectives of the Government is to ensure full implementation of the SEA Directive by year 2010. The requirements of the Environmental Impact Assessment (EIA) regulations to inform and consult the public are not sufficiently applied. Capacity is weak within the area of EIA and SEA.

Economic policy instruments: There are relatively few economic policy instruments in place with the purpose to reduce environmental degradation. There are high taxes on petrol and diesel but the main purpose is not to provide incentive for reducing environmental degradation but to generate fiscal revenue. However, there is a difference between the tax on leaded and unleaded petrol which creates an incentive to buy the unleaded petrol.[58] The high tax on imported vehicles could be seen as an environmentally harmful tax as it create a

[58] NEAP, 2006

disincentive for new more environmentally friendly cars, indirectly promoting old vehicles that exist in the country.

7. Implications for Swedish Development Cooperation

7.1 Conclusion

Macedonia is highly dependent on its natural resources for economic development. The last year's economic growth has been a major contributor to decreased poverty and increased human health. However, still many people are poor and the, to some extent poverty alleviating, economic growth has at the same time promoted unsustainable consumption and production levels. The rate of urbanisation is putting a lot of pressure on the already weak urban planning and infrastructure. The inadequate system of solid waste management together with increased consumption and increased household waste is causing severe problems affecting water, air and land. Industries with insufficiently developed technology, e.g. no wastewater treatment, are heavily polluting urban surroundings.

The current economic crisis and economic slowdown have had negative effects on the economy. Unemployment remains high at the same time as foreign investment and export growth is decreasing. The agricultural sector is a key sector and plays a critical role for the social and economical stability of the country. A majority of the rural population is highly dependent on agriculture as it serves as a social and economic buffer, helping to alleviate poverty particularly in times of high off-farm unemployment. The agricultural sector is severely affected by environmental degradation (e.g. land degradation, climate change) and at the same time contributing to a number of environmental problems (e.g. land degradation, loss of biodiversity).

Accession to the EU is the main driving force to national environmental reforms. Some progress has been made towards harmonisation to the EU acquis and EU-membership but transposition is still waiting for several pieces of legislation. There is a need to strengthen human and institutional capacity, especially within the area of environmental impact assessments, monitoring, integrated pollution control and climate change. There is also a need to strengthen environmental capacity within local authorities. The alignment to EU environmental legislation creates market incentives and opportunities for e.g. environmental technology. With an EU-membership Macedonia is likely to become an area of opportunity for environmental technology export.

A suggested "road map" for sustainable management of the natural resources of Macedonia the findings and recommendations of the Millennium Ecosystem Assessment (MA) can be put to good use. The overall aims of the MA were to contribute to improved decision-making concerning ecosystem management and human well-being, and to build capacity for scientific assessments of this kind. A substantial adoption of the MA conceptual framework, approaches, and methods in donors' ongoing initiatives and programs to support natural resources management could "fast-track" the process for a sustainable development in Macedonia. For additional information on the MA, see annex 1.

7.2 Issues for Sida to Consider

Against this background the following issues could be relevant for Sida to consider in the development of a new cooperation strategy with Macedonia:

Transition towards Programme Based Approach:
The government of Macedonia and the donor community are jointly working towards introducing a programme-based approach (PBA) in five selected sectors (including Agriculture and Environment) and a draft Action Plan has been developed for the transition from project-based to programme-based support. The Action Plan with its attachment touches upon many important issues to be considered for this transition, including the importance of country ownership and institutional capacity, structured coordination, as well as clearly defined goals, results, and responsibilities. It would be valuable for Sida to consider the following issues.

- ***Start with the end in mind***: what are the objectives and desired results for the (i) transition process, and (ii) the sector? It is good if the objectives are explicitly stated and shared between all stakeholders. The results (for both process and sector) should be measurable, reportable and verifiable (MRV).
- ***Feasibility***: It is stated that the working groups will "ensure oversight at technical level". It could be good to also clearly define who will be **responsible** for the implementation (of both process and sector), and who will actually do the work (state actors, local authorities, consultants, etc). What are the scope, mandate, and responsibilities of the different stakeholders/groups, and who will monitor progress?
- ***Structures***: Will national structures for *inter alia* procurement and channelling of funds be used (this is related to the process objectives)? In that case, will there be an assessment of the quality of national structures? Who is responsible for procurement?
- ***Financing***: Is the transition phase fully financed, is there cost sharing? How much of the national budget is devoted to the sectors, will there be an increased national funding in the long-term?
- ***Work plan***: The work plan to be developed should include a realistic time plan, and details on the above (results, feasibility and clear division of responsibilities, information on structure and financing plan).

In the implementation process of a PBA Sida should think in terms of donor coordination/harmonisation and alignment to national needs and priorities. Sida could in a dialogue with the Macedonian government and donors identify gaps in line with Swedish support. Once the process goals have been agreed, the financing modality (such as coordinated project financing, pooled funding, or SWAPs) can be decided. Below follows some issues that could be relevant for Sida to consider:

Municipal services:
Sida could consider support to improving quality and efficiency of municipal service delivery, such as water supply, sewage and wastewater treatment, energy/district heating or solid waste management. Improved institutional capacity at municipal and utility level will have positive environmental and socio-economic effects including reduced emissions to air, water, and land, improved health and biodiversity. Both political and economical policy instruments should be considered.

Environmental management:
A need has been identified to strengthen capacities at national and local levels for core environmental management functions, such as developing, implementing, monitoring and enforcing policies and regulations, and monitoring air- and water quality.

- Sida could consider how to best support environmental national or local authorities to implement the recent National Strategy for Sustainable Development. Sweden has a long tradition of decentralization and integration of environment into other sectors. Can Sida draw on some specific competences in Swedish regions/municipalities to support capacity development in Macedonian environmental authorities?
- Support to improved institutional capacity for Strategic Environmental Assessment could also be considered.

Environmental awareness and education:
Public awareness about climate change and the environment and environmental education are important steps towards achieving a sustainable development. Sida could consider support to environmental awareness programs or promoting environmental education in primary schools.

Finally, this policy brief is by no means all-encompassing. Needless to say, there are many aspects that deserve a much more detailed level of analysis. We hope, however, that this Environmental and Climate Change Policy Brief fulfils its aim of being a point of departure for a discussion on how environmental, natural resources and climate change aspects can be integrated into Swedish development cooperation with Macedonia.

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Annex 1: The Millennium Ecosystem Assessment

The Millennium Ecosystem Assessment in brief

The Millennium Ecosystem Assessment (MA) was called for by the United Nations Secretary-General Kofi Annan in 2000. Initiated in 2001, the objective of the MA was to assess the consequences of ecosystem change for human well-being and the scientific basis for action needed to enhance the conservation and sustainable use of those systems and their contribution to human well-being. The MA has involved the work of more than 1,360 experts worldwide. Their findings, contained in five technical volumes and six synthesis reports, provide a state-of-the-art scientific appraisal of the condition and trends in the world's ecosystems and the services they provide (such as clean water, food, forest products, flood control, and natural resources) and the options to restore, conserve or enhance the sustainable use of ecosystems.

There is a growing understanding of the fundamental role ecosystems and the services they provide play for human welfare, see Fig 1 describing the linkages between biodiversity, ecosystem services and human well-being.

Key findings of the Millennium Ecosystem Assessment[59], finalised in 2005 and the so far most comprehensive survey of the ecological state of the planet, include:

- 60% of world ecosystem services have been degraded
- Of 24 evaluated ecosystems, 15 are being damaged, see Table 1.
- About a quarter of the Earth's land surface is now cultivated.
- People now use between 40 percent and 50 percent of all available freshwater running off the land. Water withdrawals have doubled over the past 40 years.
- Over a quarter of all fish stocks are overharvested.
- Since 1980, about 35 percent of mangroves have been lost
- Nutrient pollution has led to eutrophication of waters and coastal dead zones
- Species extinction rates are now 100-1,000 times above the background rate

The degradation of ecosystem services is hence already a significant barrier to achieving the Millennium Development Goals, contributes to growing inequities and disparities across groups of people, and is sometimes the principal factor causing poverty and social conflicts.