

Strategic Environmental Assessment

Practice-Orientated Training for Policy Makers,
Administration Officials, Consultants and NGO Representatives

TRAINING MANUAL

EaP GREEN PROGRAMME



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Introduction

Background

Strategic Environmental Assessment (SEA) is a primary tool for ensuring that environmental, including health, considerations are thoroughly taken into account in the development of plans and programmes. SEA promotes sustainable development by mainstreaming the environment into economic and social development and integrating green economy and sustainable consumption and production targets into strategic decision-making process.

After the signature of the Protocol on Strategic Environmental Assessment to the UNECE Convention on Environmental Impact Assessment by the Ukraine in 2003, SEA has been applied in strategic planning by several national and local authorities. In 2013 a new legislation on SEA is being developed in the Ukraine, creating a need for stronger and wider integration of SEA into national and regional planning processes through training for practitioners, development of related SEA procedures and exchange of good practices.

To address this need the UNECE Secretariat in close cooperation with the Ministry of Ecology and Natural Resources of Ukraine will organise a training workshop 'to provide a step-by-step guidance on application of the SEA as a tool in the strategic decision-making and strengthen the implementation of the UNECE Protocol on Strategic Environmental Assessment (SEA) to the Convention on Environmental Impact Assessment in a Transboundary Context, in Ukraine'. The training workshop will be held in Kiev on 1-4 October 2013.

The workshop will launch a comprehensive set of technical advice and capacity building activities envisioned for 2013 – 2016 under the Workplans of the Espoo Convention and its Protocol on SEA. The activities include carrying out reviews of the existing national regulatory and legislative frameworks, capacity building on SEA/EIA procedures, pilot projects, development of guidelines and other activities to strengthen administrative capacities of the national authorities in charge of the environmental assessment. The activities are funded by the EU Programme 'EaP GREEN: Greening economies in the European Union's Eastern Partnership countries'¹ and among others aim to promote use of Strategic Environmental Assessment (SEA) and Environmental Impact Assessment (EIA) as essential planning tools for sustainable development in Armenia, Azerbaijan, Belarus, Georgia, the Republic of Moldova and Ukraine.

Workshop objectives

The workshop aims to strengthen the capacity of the national authorities for the implementation of the Protocol on Strategic Environmental Assessment (SEA) to the Convention on Environmental Impact Assessment in a Transboundary Context, in Ukraine. It further aims to improve participants' understanding of the benefits of SEA and possibilities for using the SEA as a tool in strategic decision making. The workshop will demonstrate how

¹ The "Greening economies in the European Union's Eastern Partnership countries (EaP-GREEN)" is a four year EU funded Programme. It is implemented jointly by OECD, UNECE, UNEP and UNIDO for the benefit of Armenia, Azerbaijan, Belarus, Georgia, the Republic of Moldova and the Ukraine from 2013-2016. Espoo Convention Secretariat is responsible for implementation of the SEA/EIA related component. More information on the Programme is available following the link: <http://www.oecd.org/env/outreach/eapgreen.htm>

the SEA can be applied to plans and programmes in various contexts and provide insight to participants how to apply the SEA methodology.

Specific objectives of the workshop are:

- To introduce the concept of SEA and illustrate the process through a (hypothetical) case study;
- To relate the lessons learnt from the case study to the participants' context;
- To illustrate possible ways for effective SEA implementation in line with the provisions of the UNECE SEA Protocol;
- To provide participants with examples of tackling specific environmental issues, for example climate change, within the SEA;
- To obtain and discuss recommendations on future actions for improving the use of SEA methodology in Ukraine.

About the training approach and the training manual

The training employs innovative methods by intensively exploiting opportunities for action learning and group work. In line with the casework methodology of the Harvard Business School, the training focuses on practical approaches to SEA. This methodology allows discussions on locally appropriate SEA approaches (based on insights put forward by the participants). Furthermore, conclusions will be formulated through joint debate rather than providing 'ready-made' teaching messages. Using different materials, participants of the training will design and apply an SEA to a National Energy Strategy of the fictitious "Centia Republic".

These training materials are based on the OECD Development Assistance Committee (DAC) Guidance: Applying Strategic Environmental Assessment. Good Practice Guidance for Development Co-operation, Paris 2006 (<http://www.seataskteam.net>) and the UNECE Resource manual to support Application of the UNECE Protocol on Strategic Environmental Assessment (<http://www.unece.org/env/sea/>) and they promote the provisions of UNECE Protocol on Strategic Environmental Assessment.

The training manual was developed by a consultant team consisting of Jiri Dusik, Alfred Eberhardt and Felipe Perez supported by Harald Lossack, Axel Olearius and Jan-Peter Schemmel (GTZ).

The fictitious case study on the National Energy Policy of the Centia Republic has been prepared by Michal Musil (Integra Consulting Ltd.)

Welcome to the fictitious "Centia Republic"!

Understanding SEA

(Based on the UNECE Resource Manual to Support Application of the UNECE Protocol on Strategic Environmental Assessment)

Various definitions of SEA are enshrined in law or policy or referenced in the literature on the topic. As generally understood, SEA is a systematic and anticipatory process, undertaken to analyse the environmental effects of proposed plans, programmes and other strategic actions and to integrate the findings into decision-making. In this training manual, the term “SEA” has a specific meaning that is consistent with the definition contained in the SEA Protocol. It refers to: the evaluation of the likely environmental, including health, effects, which comprises the determination of the scope of an environmental report and its preparation, the carrying-out of public participation and consultations, and the taking into account of the environmental report and the results of the public participation and consultations in a plan or programme (art. 2, para. 6).

(According to OECD SEA Guidance)

“SEA refers to a range of ‘analytical and participatory approaches that aim to integrate environmental considerations into policies, plans and programmes and evaluate the inter inter linkages with economic and social considerations’ SEA can be described as a family of approaches which use a variety of tools, rather than a single, fixed and prescriptive approach. A good SEA is adapted and tailor-made to the context in which it is applied. This can be thought as a continuum of increasing integration: at one end of the continuum, the principle aim is to integrate environment, alongside economic and social concerns, into strategic decision making; at the other end, the emphasis is on the full integration of the environmental, social and economic factors into a holistic sustainability assessment.”

Overview matrix: SEA tasks

“Typical” planning of plans, programmes and policies (P/P/P), the preparatory, analytical and participatory tasks of SEA and the principal steps of SEA (OECD)

“Typical” strategic planning of P/P/P (depend on context)	Preparatory, analytical and participatory task within SEA (SEA Training)	Principal steps of SEA (according to OECD SEA Guidance, 2006)
Planners →	← SEA experts	
<p>Identification of current problems and issues</p> <p>Formulation of objectives and priorities of the programme</p> <p>Formulation of measures to implement the strategy</p> <p>Propose implementation and monitoring arrangements</p>	<ul style="list-style-type: none"> ▪ Link P/P/P and SEA, design appropriate strategy for SEA ▪ Determine the right issues and scope of assessment ▪ Analyze the baseline trends ▪ Assess proposed <u>development priorities</u> and their alternatives ▪ Assess cumulative impacts of proposed <u>activities</u> and propose their optimizing ▪ Use effective means of participation ▪ Ensure reflection of SEA results in decision-making as well as sufficient management and monitoring system for implementation ▪ Manage SEA efficiently within budgetary and time constraints 	<p>1. Establishing the context for the SEA</p> <ul style="list-style-type: none"> • Screening + planning of SEA • Setting objectives • Identifying stakeholders <p>2. Undertaking the SEA and preparation of SEA report</p> <ul style="list-style-type: none"> • Scoping (in dialogue with stakeholders) • Collecting baseline data <p><i>Undertaking analyses</i></p> <ul style="list-style-type: none"> • Identifying alternatives • Identifying how to enhance opportunities and mitigate impacts & risks • Quality assurance • Reporting <p>3. Informing and influencing decision-making</p> <ul style="list-style-type: none"> • Making recommendations (in dialogue with stakeholders) <p>4. Monitoring and evaluating</p> <ul style="list-style-type: none"> • Monitoring decisions taken on the PPP • Monitoring implementation of the PPP • Evaluation of both SEA and PPP

Case Study: National Energy Policy of the Centia Republic

Overall Context

Geography

The Centia Republic has a total area of 450,000 km². The territory includes Ploucnic basin with large plains along the Ploucnic river running to the sea coast North-West, the mostly volcanic Giant Mountains in the eastern part are the large mineral-rich area with peaks reaching as high as 1500 m above the sea level. In the South-West is the landscape dominated by moderately elevated Rumnice highlands built mostly of solidified sediments, including some limestone karst localities. In the West and South, the Centia Republic borders with the EU-member state – the Federal Republic of Helmany. The eastern neighbour is Govland.

Agricultural land comprises 44.4% of the Country's area; most of it classified as arable land. Approximately 22 % of territory is forested.

The north-eastern part of the Region (the Giant Mountains with their foothills) has a rather cold climate, while the western and south-western parts have a slightly warmer climate. The most important river system is the River Ploucnic. Its waters supply irrigation systems for agriculture as well as industry. At its lower reaches, Ploucnic also provide an important route for water traffic and it is also a source of hydropower. Supplies of ground water are mainly found in the South-East of the country, where significant part of the Rumnice highlands is a protected as an important water catchment area.

Population

The Centia Republic is home of 45 million people. The percentage of population living in municipalities having less 1000 inhabitants was 15.7%. The percentage of the population in urban areas was 65.8%.

The largest urbanized area of the Country is the Liberec - Jabolonec conurbation with nearly 3 million inhabitants. The formal capital city of the Republic is Lipa with population over 2 million. No other city exceeds 1,5 million, and except for provincial urban centers, the rest of the Republic has mainly rural and upland character.

Administrative setting

The Republic of Centia got the independency in 1992 and its constitution divides powers among a president, parliament, cabinet, and an independent judiciary. The president is head of state, head of government, and commander in chief of the armed forces. He is in charge of signature of all key decisions and documents at the national and regional levels after prior approval by the Government. The responsibility for different areas is divided among individual sectoral ministries in following manner:

Area	Responsible ministry
Economy, Trade, Industry	The Ministry of Industry and Trade
Energy	The Ministry of Energy
Regional development, urban development, land-use planning, waste management infrastructure	The Ministry for Regional Development
Transport	The Ministry of Transport
Environment and nature, waste management, water quality	The Ministry of Environment
Education, sport, family support, science and research	The Ministry of Education
Army, civil defense	The Ministry of Defense
Foreign relations, international treaties	The Ministry of Foreign Affairs
Employment, social affairs	Ministry of Social Affairs
Public health	The Ministry of Health
Agriculture, management of water resources, food security, forest management	The Ministry of Agriculture

All national programmes and policy documents have to be approved by the Government of the Centia Republic and signed by the president. The main national strategic document is the National Development Plan, stipulating main development priorities for the country for the period 2010 – 2020. The sectoral national strategic documents (Economic Development Programme, Transport Development Plan, National Environmental Policy etc.) are prepared by the relevant ministries. The spatial and regional development planning is coordinated by the Ministry for Regional Development (MRD). The environmental issues are under the auspices of the Ministry of Environment (MoEn) at the national level, and its subordinated Environmental Protection Agency (EPA), which has its branches in all regions in the country.

The Centia Republic has 10 self-governing Regions represented by a Marshal (head of Regional Government), Regional Council and Regional Assembly. The Regional Government is in charge of the preparation and approval of regional strategic documents such as the Regional Development Strategy, the Regional Development Programme and other sectoral documents (e.g. Transport Policy and Waste Management Programme)

Economy

The economy of the Centia Republic is primarily industrial and agricultural. Composition of GDP by sector of origin is as follows: agriculture: 10.2%, industry: 31.6%, services: 58.2%,

(2012 estimation). Economic output measured by the GDP/per capita (PPP) is USD 7,500 (2012 estimation).

Established industries include steel and non-ferrous metals production, heavy machinery and chemicals (e.g. oil refinery). Mining sector (coal, metal ores) plays important role in the employment. These traditional sectors are however in decline due to obsolete equipment and ageing technologies, lack of investment and the unfavourable market conditions in recent years, including fierce competition from the Asian producers.

As a result of new market conditions in last 20 years, there has been some development of small and medium-size enterprises focusing primarily on production for the automobile industry, on construction and on services. Some foreign companies invested in the Country, building on the Region's traditions and qualified labour force. Recently, trade and transport have achieved a significantly increased role in the Country's economy.

Agriculture too has played quite important role in the Republic's economy. Recognizing the importance of agriculture, both country and regional governments have provided support to the sector. The agriculture sector is mainly focused on cereals and forage crops for cattle breeding. The producers are both medium- and small-sized private farms, as well as large cooperative or state owned agriculture complexes.

Tourism is small but promisingly developing contributor to the Country's economy. Every year hundreds of thousands of tourists visit the coast of the Blue Sea, attracted by the prospects for summer holidays. The Giant Mountains provide many opportunities to hike, bike, and practice winter sports there, however, this potential so far has not been fully utilized, partly due to the considerations for environmental protection of unique ecosystems.

Centia is an export oriented economy, where steel and other metallurgy products accounts for about 50% of total exports. Other key export products are fertiliser and grain. In contrast, despite own significant coal and other mineral reserves, the country depends heavily on oil and gas imports.

The Country's Labor force by occupation: agriculture: 5.6%, industry: 26%, services: 68.4%. As of 2012, the unemployment rate has reached 8 % with prediction of further rise. The typical salary has remained well below the European average. This reflects the structure of economy in the Republic, with a high percentage of low value-added services or production.

Infrastructure

The Centia Republic has developed railway and road infrastructure connecting all provincial centres. The main traffic route is the express road from the capital Lipa to Rumburec – Jablonec conurbation and then to the South, towards the borders with Helmany. With its two lanes in either direction, the road provides a quality link between the main centres of the country. Its extension to the state border will connect it with the highway network in Helmany. Class II and III roads account for 20.0% and 66.5% of the road network length in the Republic, respectively.

From the eastern neighbour – Govland, comes an international oil pipeline supplying namely the refineries and chemical production plants located in Jablonec.

International airports are located in Lipa and Liberec, inter-state air transport use also airports in provincial capitals.

Water traffic takes place in the navigable parts of lower Ploucnice river, international transport uses the waterways along the sea-routes beginning in sea ports of Hradek and Lipnice.

Energy system

The Centia Republic has access to abundant mineral resources, including energy resources – coal, and to less extent also oil, gas, as well as hydro and biomass. It is an important transit country for natural gas from Govland to European markets. Centia has potential to substantially increase its domestic production of natural gas and reduce demand, particularly in the residential sector, to fully meet domestic demand by 2030 and thus entirely cut imports.

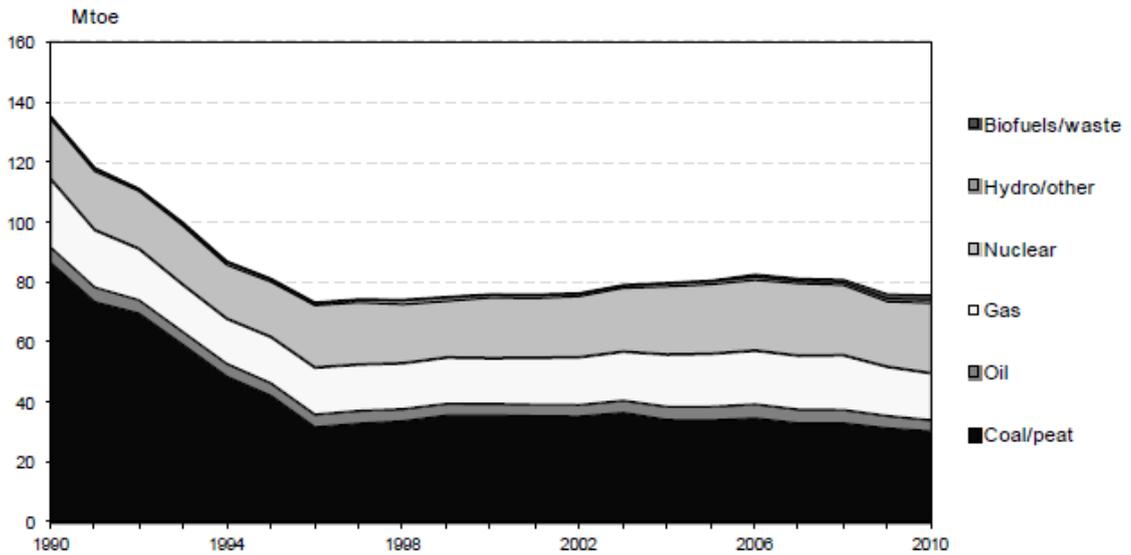
Centia’s total primary energy supply (TPES) was 130.5 million tonnes of oil equivalent (Mtoe) in 2010. This is a 0.9% decline from 2010, and a 7% decrease from 2004. From 1990 to 2010, TPES dropped by 47% primarily due to Country’s economic depression. During the 1990s and a shift in the economy with a decline in manufacturing and an increase in the service sector in the 2000s, leading to lower energy consumption levels. Over this period, consumption of gas and coal has strongly decreased

Economic and energy indicators, 2000-10

	Popula- tion (million)	GDP (USD billion, 2005)	Production (Mtoe)			TPES (Mtoe)	TPES/ capita (toe/capita)	CO ₂ from fuel combustion (Mt CO ₂)
			Oil	Gas	Coal			
2010	45.9	90.6	3.6	15.4	31	130.5	2.84	266.59
% change 2000-10	-6.7	52.1	-3.2	2.9	-14.7	-0.9	6.2	-3.9
% of world in 2010	0.7	0.2	0.1	0.6	0.9	1	-	0.9
World ranking in 2010	31	57	50	30	13	18	44	131

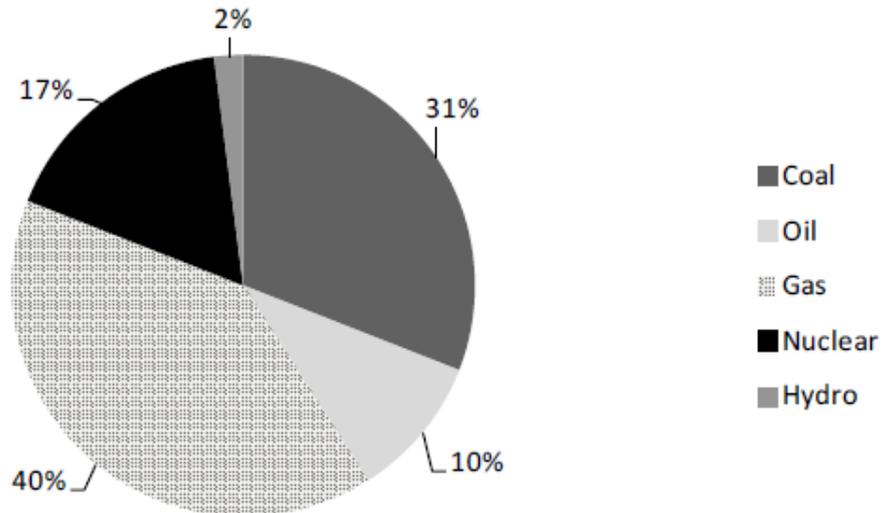
Note: TPES = primary energy supply including indigenous production and imports, minus exports and transfers between energy commodities, toe = tonnes of oil equivalent, Mt = million tonnes.

Domestic primary energy production, 1990-2010

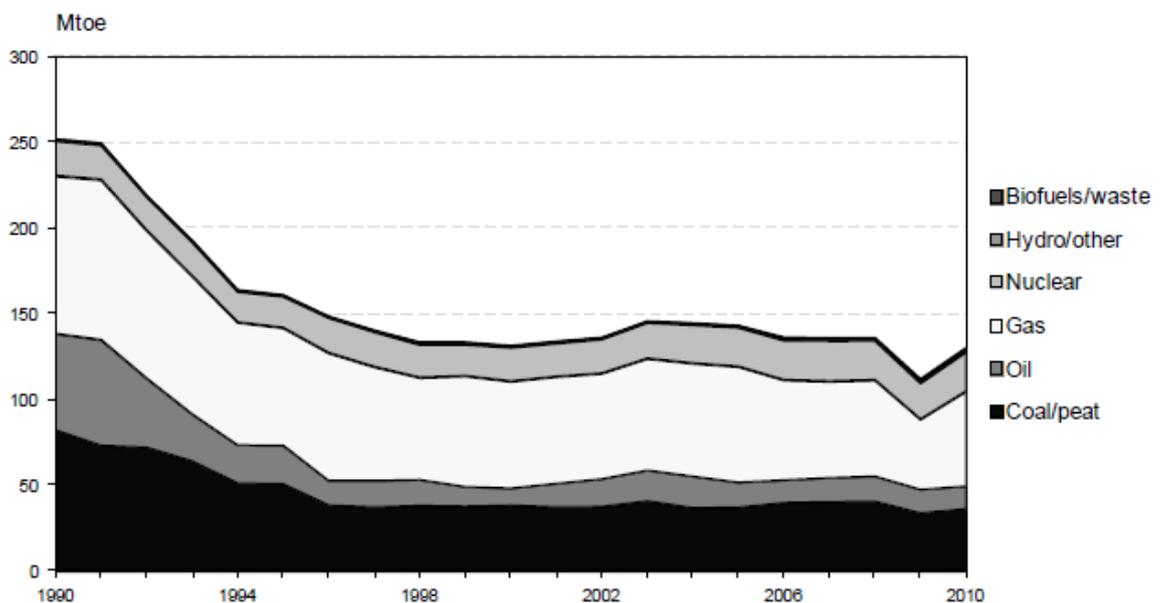


Centia’s energy mix is dominated by natural gas, which accounted for 40% of TPES in 2010, down from 47% in 2004 (figures 2.3 and 2.4). Coal accounted for 31% in 2010, compared with 23.6% in 2004. Nuclear was 17% of supply in 2010. Hydro contributed 2% to TPES, with only marginal supply amounts from other renewable energy sources. However, as reliable data on heat production from renewable sources is difficult to collect and as official statistics may underestimate real consumption of biomass products, the share of renewable energy in the primary energy mix might be slightly higher.

Primary energy mix, 2010



Total primary energy supply



Centia's economy remains one of the most energy-intensive in the region, despite progress in energy efficiency in the industry sector and closure of some of the most energy intensive industries in the 1990s. Centia's energy intensity, i.e. the ratio of TPES to GDP, is ten times more than the OECD average (in purchasing power parity terms –3.2 times more than the OECD average). While the situation improved notably during the 2000s when GDP growth was 1.5 times higher than energy demand, there has been deterioration in the broad energy intensity indicator in recent years

Environment

The Centia Republic is known for its natural riches and great variety of ecosystems, many protected areas and many endangered fauna and flora species. There are four protected landscape areas: Giant Mountains, Rumnice highlands, Centia ráj (the Centia Paradise) and Barokinsko (the Barokin Area). There are also 36 national nature reserves, and 60 natural monuments

Due to low quality of surface waters (suffering from industrial pollution as well as from discharging of poorly treated municipal waste waters), the water supply for population rely on few remaining sources, which imposing a substantial demand on the water protection in relation to the economic development in some areas. Water streams and lakes are also important for biodiversity, providing habitats for many protected invertebrates and fish species.

In 1997, 2006, and 2010, unprecedented 'summer flash floods' occurred in the region causing loss of several lives in the upper parts of the Ploucnice river basin (due to flooding of camps and houses along river banks) as well as extreme property damage in the cities of Liberec and Jablonec (flooding of urbanized areas, serious damage of roads along river banks and demolition of one bridge in the Liberec city). The national-scale climate predictions suggest that the incidence of similar events will very likely increase in the future.

The region is on other hand facing water shortages during summer months, which in 1998-2010 were much drier (even in the years of flooding) than was a historic average. This negatively affects water supply to the Liberec city and leads to increasing frequency of forest fires in the Giant Mountains.

Serious environmental problem is air pollution, resulting from concentration of heavy industries and power plants based on fossil fuels combustion. The excessive emissions of sulphur dioxide (SO₂), nitrogen oxides (NO_x) and dust (particulate matters of below 10 micrometres in size – PM₁₀) constitute serious threat to the air quality and health conditions of the population. In addition, in populated areas the road traffic and local heating systems are also major contributors to the unsatisfactory air quality.

The acidic deposition from the emissions also contributes to the poor health of remaining forests and negatively affects the soil and water quality.

Extensive industrial and mining operations in the past have created a legacy of number of localities with contaminated soil, that pose threat to underground water reserves and to air quality (through dispersion of contaminated dust particles through wind).

Case Work A: Link programme and SEA

Screening
Setting objectives of SEA
Identifying stakeholders
Scoping
Collecting baseline data
Assessment
Identifying alternatives
Identifying how to enhance opportunities and mitigate impacts
Reporting
Making recommendations
Evaluation
Monitoring

Introduction to the exercise

The government of the Centia Republic initiated preparation of the National Energy Policy (NEP). The Ministry of Energy is responsible for the coordination of the work on the NEP. Other relevant ministries and state agencies will be asked to provide inputs, i.e. to specify priorities for their area (Ministry of Agriculture, Ministry of Transport, etc.).

The Ministry of Energy will also ask for inputs from representatives of the:

- The Ministry of Environment (MoEn)
MoEn is responsible for licensing and production sharing agreements for hydrocarbon development and for climate change policy. The co-ordination and implementation of all climate policy-related measures defined by this ministry falls under the responsibility of the State Environmental Agency of Ukraine which also has overall responsibility for implementation of the provisions of the Kyoto Protocol and the UNFCC Convention.
- The Ministry of Industry and Trade is the lead for energy efficiency policies, but responsibilities for energy efficiency policies are shared among numerous ministries and agencies.
- The State Agency on Energy has the role of advancing energy efficiency and promoting the deployment of renewable energy sources.
- The Ministry of Regional Development develops policy and programmes relevant at local levels.
- The State Nuclear Inspectorate has regulatory responsibility for the operation of nuclear facilities including uranium mining, and radioactive waste storage.

The preparation of the NEP will take 13 months and will involve the following tasks:

1. Identification of current problems and issues (months 1-2)
2. Formulation of policy objectives and priorities (months 3-4)
3. Formulation of measures to implement the strategy (months 5-7)
4. Proposal of implementation and monitoring arrangements (month 8)
5. Internal and external review processes and final approval (months 9-13)

According to the relevant national Environmental Assessment legislation, i.e. the Act on Environmental Assessment, the Ministry responsible for the NEP preparation has to ensure that SEA is applied. The Ministry of Energy have not yet direct experience with SEA application, and to fulfil the legal obligations, it has contracted an external consultant to carry out SEA.

Previous SEAs conducted within the region were not of a sufficient quality and, moreover, the authorities usually consider carrying out the assessment mainly as an administrative exercise. Ministry thus expects that the SEA for the NEP will go smoothly and will not demand much involvement of the Ministry's own staff. Considering SEA only as a legal obligation, the Ministry is not fully aware of benefits of SEA for the NEP preparation and implementation.

While it is not formally decided if the SEA has to be applied for the NEP – it depends on the results of the screening procedure – the Ministry anticipating the results of screening has already started preparatory works.

As an advisor to the SEA process you know that the SEA team shall perform the following analytical tasks:

- a. Review the planning process and identify key issues that the SEA should advise on
- b. Identify relevant environmental and health issues for the plan, programme or policy (P/P/P) (while considering the overall nature of the P/P/P and key environmental features in the study area)
- c. Analyse past trends for the main issues and their future evolution should the P/P/P not be implemented (environmental baseline, zero-alternative)
- d. Assess proposed development scenarios, objectives and priorities and contribute to their optimisation
- e. Assess cumulative impacts of proposed development actions and contribute to their optimisation
- f. Propose an environmental management and monitoring system for implementation of the P/P/P, addressing also the main uncertainties in the assessment

Instructions for the group work

1. You have to decide if SEA is needed for this P/P/P (NEP). Please discuss and answer following questions:
 - Could this programming process lead to significant (adverse or beneficial) environmental impacts?
 - Does this programming process provide significant opportunities for integrating environmental considerations into development planning?
 - Would information available on the planning process provide a sufficient basis for SEA screening? If not, what information would be needed to perform proper screening?

- What information regarding environment is usually available at the beginning of the planning process at the national level in Ukraine?
- What screening criteria shall be used if screening is applied (you can consider relevant requirements of your national SEA legislation)?
- Whom would you consult in this stage?
- What shall be the overall administrative arrangements for the screening (e.g. which authority shall be responsible for this task, and if screening shall be performed as a separate stage before the SEA procedure starts).

While deciding whether the SEA is necessary for the NEP, you may consult provisions of the UNECE SEA Protocol (See Handout A.1)

2. You were asked to suggest optimal linkages between the SEA and the elaboration of the Programme. Please examine the structure of the planning process of the NEP using the table in Handout A.2 and answer the following questions:

- At what steps of the programming process would you consider introducing the basic preparatory and analytical tasks in the SEA as mentioned above?
- Are there any consultations that would be carried out within the SEA? Whom would you involve and when?
- What information should be made available to the public and when?
- Which obstacles you might expect in performing these tasks and how would you overcome them?
- How, and in which key SEA tasks, should the expert capacity of the Ministry of Energy be optimally used?

Handout A.1: Plans and programmes which shall be a subject of SEA in accordance with the UNECE SEA Protocol

Art 2(5): Definitions

“Plans and programmes” means plans and programmes and any modifications to them that are:

- (a) Required by legislative, regulatory or administrative provisions; and
- (b) Subject to preparation and/or adoption by an authority or prepared by an authority for adoption, through a formal procedure, by a parliament or a government.

Article 4: Field of application concerning plans and programmes

1. Each Party shall ensure that a strategic environmental assessment is carried out for plans and programmes referred to in paragraphs 2, 3 and 4 which are likely to have significant environmental, including health, effects.

2. A strategic environmental assessment shall be carried out for plans and programmes which are prepared for agriculture, forestry, fisheries, energy, industry including mining, transport, regional development, waste management, water management, telecommunications, tourism, town and country planning or land use, and which set the framework for future development consent for projects listed in annex I and any other project listed in annex II² that requires an environmental impact assessment under national legislation.

3. For plans and programmes other than those subject to paragraph 2 which set the framework for future development consent of projects, a strategic environmental assessment shall be carried out where a Party so determines according to article 5, paragraph 1.

4. For plans and programmes referred to in paragraph 2 which determine the use of small areas at local level and for minor modifications to plans and programmes referred to in paragraph 2, a strategic environmental assessment shall be carried out only where a Party so determines according to article 5, paragraph 1.

5. The following plans and programmes are not subject to this Protocol:

- (a) Plans and programmes whose sole purpose is to serve national defence or civil emergencies;
- (b) Financial or budget plans and programmes.

Handout A.2: Design of the SEA procedure

<i>Steps of the programming process</i>	<i>Key preparatory and analytical tasks in SEA</i>	<i>Arrangements for consulting the planning team, relevant authorities and the public in these analytical tasks</i>	<i>Expected obstacles in performing these analytical and</i>
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² Annexes I and II lists the project that are subject of EIA in accordance with the EU EIA Directive.

			<i>participatory tasks</i>
Identification of current problems and issues (months 1-2)			
Formulation of programme objectives and priorities (months 3-4)			
Formulation of measures to implement the strategy (months 5-7)			
Proposal of implementation and monitoring arrangements (month 8)			

Handout A.2: Information on the National Energy Policy

Basic characteristics

The National Energy Policy (NEP) of the Centia Republic is being prepared for the period 2015 – 2025. It aims to set out an approach for reforming national energy sector and indicates main investment directions in the energy infrastructure. The Policy defines priority objectives and measures as well as regional priorities and relevant indicators.

The aim of the document is also to create the framework for receiving support from the financial funds of the international donor organizations,

NEP has also to take into account relevant priorities and measures stipulated by relevant national strategic documents, (e.g. transport corridors proposed by the National Transport Policy, or locations for potential water reservoirs and other measures, regarding adaptation to climate change, proposed by the National Plan of Main River Basins and National Program to Abate Climate Change Impacts).

Structure of the NEP

The NEP will have following structure:

- Introduction
- Summary of existing relevant national and international policy objectives
- Overview of main Strengths, Weaknesses, Opportunities and Threats (SWOT) relevant to the Energy sector
- Vision, global objective, strategic objectives
- Specification of measures and activities
- Implementing scheme and indicators
- Financial framework

The NEP will include the following components:

- Energy efficiency
- Alternative energy sources
- Energy market reform
- Energy security
- Energy transmission infrastructure
- Emissions reduction

Case work B: Determine the right issues and scope of assessment

Screening
Setting objectives of SEA
Identifying stakeholders
Scoping
Collecting baseline data
Assessment
Identifying alternatives
Identifying how to enhance opportunities and mitigate impacts
Reporting
Making recommendations
Evaluation
Monitoring

Introduction to the exercise

The SEA for the NEP has already been launched. You have obtained many data about environmental issues in the region. However, because the SEA is being conducted concurrently with the planning process, you do not have at this stage any information about the proposed actions in the NEP. You have only been informed that the NEP will address the following issues:

- Energy efficiency
- Alternative energy sources
- Energy market reform
- Energy security
- Energy transmission infrastructure
- Emissions reduction

Now you need to select general environmental³ and health themes that should be considered within the SEA and further identify the most important environmental and health issues and objectives relevant to the NEP. This can be done by considering the overall purpose of the NEP and key environmental features in the study area.

When doing so, you should list all relevant issues and objectives and then select those that are of particular importance. Be aware that your initial short list has to be open and flexible – it can be amended as you get additional information during the planning process.

Instructions for the case work

Please work on answering the following questions:

³ The climate change shall be considered as one of the environmental themes, so “environment / environmental” means “environment / environmental including climate change” in the whole case study.

- What are the general environmental and health themes to be considered within the SEA? (you can consider requirements of the relevant national or international legislation)
- What are the key environmental and health issues and objectives considering the overall purpose of the NEP and main environmental characteristics and problems in the study area?
- What are the expected climate change risks and hazards in Centia Republic and how vulnerable is the region's development to climate change? Please include the climate change as one of the key environmental issues in Handout B.1.
- Are the consequences of climate change already apparent in the Republic's territory, and if so, are they associated with development issues addressed by the NEP?
- What are the relevant national (or international) documents related to the climate change with which the NEP should be consistent?
- What are the 'strategic indicators' or 'guiding questions' for analysing the trends and impacts of the NEP on the key environmental and health issues and objectives?
- Is the available information sufficient to specify the scope of the SEA? If not, what other information and data would be needed and how would you acquire them?

If time permits, you may also:

- Determine whom to consult during scoping and how; and how the SEA team will interact or work with the planning team; and
- Define the temporal boundaries of each particular issue – i.e. how far into the future would you look when examining positive and negative impacts of NEP on these issues: *short-term* (e.g. term of the current government), *mid-term* (10 years) or *long-term* (over 10 years).

Please note that there is a lack of comprehensive and reliable data on environmental and resource issues. The sources of information that are available to you are shown in exhibits B.1 to B.4.

Handout B.1: Determining the scope of assessment

General environmental, including climate change, and health themes to be considered	Key specific environmental, including climate change, and health issues related to the NEP	Official environmental, including climate change, and health objectives related to the NEP	Guiding questions or indicators for the assessment
<p><i>List the general environmental, including climate change, and health themes for the NEP</i></p>	<p><i>Identify and explain the key specific environmental, including climate change, and health issues that exist in the area that is likely to be impacted by the NEP. This overview provides a localized or bottom-up perspective.</i></p>	<p><i>Identify any relevant environmental, including climate change, and health objectives that define a broader national/regional environmental and health framework for the NEP. Since this overview provides a top-down perspective, the identified objectives do not have to strictly relate to the local environmental issues (as identified in the previous column). They only have to be relevant for the NEP.</i></p>	<p><i>Define the guiding questions or indicators that could best describe the trends in the key specific environmental and health issues and in the relevant environmental and health objectives, with and without the proposed NEP. Focus on 1-3 guiding questions or indicators</i></p>

Handout B.2: Possible climate change objectives and indicators⁴

	Possible objectives	Possible indicators: ways of describing and monitoring the environmental baseline
Mitigation measures to prevent effects leading to climate change	minimise future climate change, e.g. by: <ul style="list-style-type: none"> • reducing the need for energy • improving energy efficiency • switching to lower carbon fuels • increasing % renewable energy 	<ul style="list-style-type: none"> • electricity generated from renewable energy sources and CHP located in the area • embodied energy in new buildings • average energy efficiency of buildings
Effects leading to climate change		<ul style="list-style-type: none"> • carbon emissions per person • total vehicle kilometres • total electricity and gas use • greenhouse gas emissions: per region, per capita
Climate change		<ul style="list-style-type: none"> • sea levels • rainfall • temperature
Adaptation measures to reduce impacts of climate change	reduce vulnerability to the impacts of climate change, e.g. by: <ul style="list-style-type: none"> • providing wildlife corridors • providing adequate health services and infrastructure • ensuring that drainage systems can cope with changing rainfall patterns/intensity • taking a precautionary and risk-based approach to developing in the floodplain • ensuring adequate future water supply and demand management • designing buildings and urban areas to cope with new climate extremes • providing robust transportation infrastructure 	<ul style="list-style-type: none"> • % developments with Sustainable Urban Drainage Systems • no./ % homes in floodplain • no./ % roads in floodplain
Impacts of climate change		<ul style="list-style-type: none"> • ranges of habitats • no. heat/cold deaths • no. cases of subsidence • no. homes flooded • river flows and water quality • air quality, particularly in urban areas • cost of flooding (to insurers, to authority)

⁴ Adopted from: UK Environment Agency, Countryside Council for Wales, English Nature, UKCIP, Levett-Therivel sustainability consultants, CAG consultants and the Environmental Change Institute, (2004): Strategic Environmental Assessment and Climate Change: Guidance for Practitioners.

Exhibit B.1: State of Environment Report

The State of Environment Report identifies the following main environmental trends in the region:

- Biodiversity loss:** Most of the areas with natural or close-to natural ecosystems are protected. But since the most attractive areas for tourism are within these protected areas (especially mountains) there is strong pressure for the development of tourism facilities (hotels, ski lifts, ski paths) and related infrastructure (parking, roads). Aquatic biodiversity – especially in the lower parts of rivers – is altered by a number of large hydropower plants as well as by wastewater discharges from industrial and municipal sources.
- Pressures on land:** Key pressures result from the development of sites for economic activities, especially around larger towns and cities and in the coastal zone. These activities include shopping centres and industrial sites as well as tourist resorts. There is still a low level of brownfield (deserted industrial sites) use. There is also need for the establishment of a new waste disposal sites or construction of incinerators, as the production of municipal waste continues to increase. There are also several new water dams planned in the upper parts of the river systems.
- Soil degradation:** The most comprehensive soil degradation processes are associated with agricultural activities in rural areas. Erosion impacts 37.5% of the Republic's total territory; 73% of agricultural land is endangered by water erosion, which results in a loss of soil nutrients. There are also areas where the soil has been polluted through the application and storage of mineral and organic fertilisers and pesticides. A deforestation of mountain slopes caused mainly by atmospheric pollution causes significant local erosion problems in the all mountain regions.
- Air quality:** While the new industrial facilities usually comply with emissions limits, many older installations in the heavy industry and energy sectors are main sources of sulphur dioxide (SO₂) and nitrogen oxide (NO_x) emissions. Important source of air pollution (namely particulate matter (PM 10)) is local heating – especially in villages or urban areas not connected to a central heating system. In most of the towns and cities having more than 10,000 inhabitants is road traffic a major contributor to the poor air quality.
- Water:** At a national level, an observed small but statistically significant shift in several climate characteristics has recently raised concerns regarding the potential impact of climate change on the Centia Republic. National authorities consider necessary to adopt measures to increase the retaining capacity of the catchment areas and ensure sustainable utilization of national water resources.
- In 1997, 2006 and 2010, unprecedented floods occurred in the region causing the loss of lives, as well as extreme property damage. The national-

scale climate predictions suggest an increasing probability of incidence of similar events in the future.

Forests:

Acidic atmospheric deposition continues to threaten forests areas. Together with an unbalanced composition of species, this results in increased vulnerability of forests to extreme weather events and epidemic outbreaks of bark beetle.

Exhibit B.2: National Environmental Strategy

The National Environmental Strategy defines the following main environmental objectives as follows:

- Improve air quality, especially in towns and cities.
- Ensure adequate quality of the sewage systems in the urbanized areas and improve the efficiency and capacity of the wastewater treatment facilities.
- Provide sufficient capacity for treatment facilities for biological waste
- Reduce the high level of municipal waste production and increase recycling
- Reduce conflicts between tourism and nature and biodiversity protection, especially in mountain and coastal areas.
- Provide sufficient protection against floods.
- Supervise development of infrastructure, which have a negative effect on the landscape.
- Reduce the currently excessive use of agriculture land and greenfields for urban development and economic activities (industrial sites, shopping centres)
- Reduce soil erosion and soil pollution from agricultural activities
- Clean up pollution 'legacies' (especially sites contaminated with heavy metals or chloride hydrocarbons) that can influence the quality of underground waters.
- Increase share of renewable energy sources and reduce greenhouse gases emissions
- Promote environmentally friendly means of transport
- Reduce adverse health impacts from transport (especially caused by noise and air emissions)

Exhibit B.3: National State of the Environment Report

The National State of the Environment Report 2012 provides the following environmental information:

- The priority air pollutants are SO₂, NO_x and PM₁₀ particles (i.e. dust particles below ten microns in size), heavy metals and ozone. The main source of PM₁₀ is indirectly from transport, i.e. the dust raised by cars. Increased concentrations of PM₁₀ can be expected in cities with high traffic density. Also NO_x exceeds the limits especially during the winter time. Small incinerating sources – local heating using solid fuels – also plays an important role in air pollution. The main source of heavy metals pollution is industrial production, not only from current factories, but also dust from formerly contaminated sites. There are two areas identified as having extremely low air quality in the Republic: Liberec – Jablonec region and the country's capital Lipa, where concentration of industrial as well as traffic pollution sources causes serious concerns.
- The area of agricultural land is decreasing over the past decade. Developers are greatly interested in the use of the agricultural land for housing and business purposes. At the same time, the area of grasslands and waste land without agricultural activity increased.
- The soil is polluted by chemical substances because farmers have not complied with regulation on the use of fertilisers and on the storage of mineral and organic fertilisers and pesticides. There is also atmospheric deposition of various pollutants, resulting from industrial and transport emissions.
- A large proportion of the agricultural land is endangered by water and wind erosion, causing soil fertility to decline and, consequently, the degradation and decline of the productivity of agricultural ecosystems.
- The production of waste continues to increase. There is only limited capacity for landfill at existing sites (until 2015). There have also been instances of waste imported from Helmany. Landfill is the main means of waste management in the Centia Republic. The objective of the National Waste Management Plan to significantly decrease the amount of waste sent to landfill is unlikely to be achieved in foreseeable future.
- The degree of separation of municipal waste remains low. In 2007 about 82 % of municipal waste collected was sent to landfill, 9 % incinerated and the rest was recycled.
- Because of physical geography of the region (mountain areas, catchment areas, etc.), there is an expectation of increased risks associated with an increased occurrence of extreme weather phenomena. Considering damage caused by the floods in 1997, 2006 and 2010, it is necessary to intensify activities to protect inhabitants and territory of the Republic.
- The landscape water absorption capacity has decreased significantly over last decades. One of the main reasons are unsuitable agricultural land management and forest management, and the increase of hard surface areas
- The quality of forests – especially in upland areas – has been negatively influenced by the coincidence of poor air quality and unfavourable climatic conditions (more frequent wind storms, extreme rainfall and so soil erosion). The species composition is unbalanced with

significantly prevailing coniferous trees, which are non-indigenous in lowland areas (below 800m altitude). The problem is also one of low age diversity of spruce monocultures.

- The demand of the public as well as investors for use of natural protected areas for sport and tourism is increasing. Significant parts of the coastal zone as well as mountain localities have been negatively affected as a result of the unrestricted access of visitors. In the vicinity of several popular tourist resorts and winter sport facilities the pressure is considered beyond the environment's carrying capacity.

Exhibit B.4: National Program to Abate Climate Change Impacts

The National Program to Abate Climate Change Impacts describes climate change scenarios for the Centia Republic providing following information:

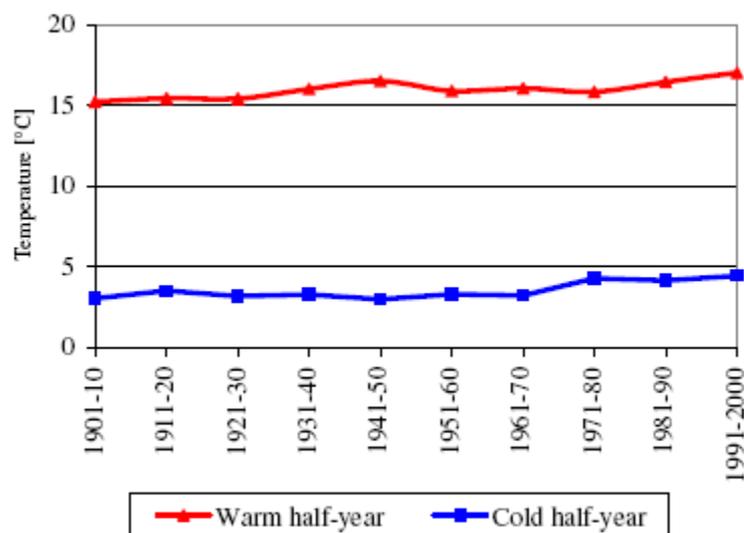
- The scenarios and the hydrological model employed indicate a decrease in average water courses flow rates of 15 to 40 %. Similar decreases have been recorded for minimum flow rates and minimum outflow of ground waters. The higher temperatures in the winter months lead to a reduction or disappearance of water supplies from snow and greater evaporation from the ground. This leads to a shift of elevated flow rates and contribution to groundwater supplies from the spring to the end of winter and to a significant reduction in their volumes. Flow rates will mostly decrease as a consequence of greater evaporation from the ground from spring to autumn. Because of reduced flow rates and increased evaporation, the ability of water reservoirs to provide balanced water reserves will be reduced. Water courses with large accumulation areas in the form of groundwater stocks or artificial reservoirs are more resistant to the impacts of climate change. The danger of eutrophization of water courses increases with a decrease in flow rates and warming of the water. In connection with the increased variability of the distribution of precipitation and extreme weather events, there will be an increasing risk of floods and periods of drought.
- If the scenario of climate change occurs, impacts on forest ecosystems can also be expected, i.e. long-lived formations with limited adaptation potential. Besides the potential adverse impacts resulting from biotic factors (insects etc.), there will be also likely positive effects of increased carbon dioxide concentrations on growth conditions and growth activity of forest tree stands. However, the increased average temperatures will also lead to increased evapotranspiration, which, especially at sites with lower precipitation, could lead to a worsening of the water balance. It can be expected that the change in habitat conditions and the occurrence of extreme weather events could act as a predisposition stressor. The rotation period⁵ will be shortened, both because of earlier maturity (economic advantage) and also because of deterioration in the condition of stands (economic losses). Due to the longer vegetation period and increased temperatures (occurring since the sixties of the last century), there will be changes in vegetation levels and thus natural changes in species compositions. At lower altitudes, the worsened water balance will lead to a shift in the natural boundaries of forests. This will have a significant impact, especially on secondary spruce stands at lower and medium altitudes. As a consequence of climate change, approximately 20 % of existing spruce stands are at risk; cultivation can be designated as risky for a further 53 % of spruce stands. These stands will have a greater tendency to destruction of the root system by various fungi species and to disturbance of physiological processes in tree species by vascular mycosis. Worsening of the health status, together with favourable conditions for insect populations, exacerbates the risk of an increase in the occurrence of bark and leaf-eating insects, especially spruce bark beetles. The extreme weather events, i.e. excessive

⁵ Growing period from tress planting to timber harvesting

"overheating" of the tissues in combination with summer dry spells, will be also one of the key factors of the forests health status.

- In comparison with forestry and water management, the impacts on agriculture can be managed more efficiently (e.g. by the composition of crops and management methods). The positive consequences of climate change include prolonging of the frost-free period by 20-30 days and a shift in the beginning of the vegetation period to the beginning of March and in the end of this period to the end of October in the warmer areas. The higher temperatures will extend the vegetation period and affect the growth and development of crops so as to allow earlier germination and onset of further phenophases so that, compared with current situation, the time of ripening or harvesting could be postponed by at least 10 to 14 days. Another positive climate change impact is the accelerated rate of photosynthesis with increasing carbon dioxide concentrations and increased ability to utilize water available in the soil. However, this will also lead to increased water consumption, and thus it could lead to exhausting of water supplies before the end of the vegetation period in certain areas.

Figure: Changes in the ten-year average temperatures in the warm and cold half years in the Centia Republic in the 20th century



Case work C: Analyze the baseline trends

Screening
Setting objectives of SEA
Identifying stakeholders
Scoping
Collecting baseline data
Assessment
Identifying alternatives
Identifying how to enhance opportunities and mitigate impacts
Reporting
Making recommendations
Evaluation
Monitoring

Introduction to the exercise

You have determined the key issues and the temporal and geographical scope of the SEA. Now you need to describe the main key future trends for selected issues if the NEP was not to be implemented. This will be your baseline against which the potential effects of the proposed NEP can be measured during the future steps within the SEA. However, there might also be background trends that can be hardly influenced by decision making at a national level – a climate trends being an important example. Yet, these trends might be important to consider while preparing your baseline analysis.

Since it is not possible to analyze all issues within this case work, only the issues of air quality and climate change was selected for this exercise.

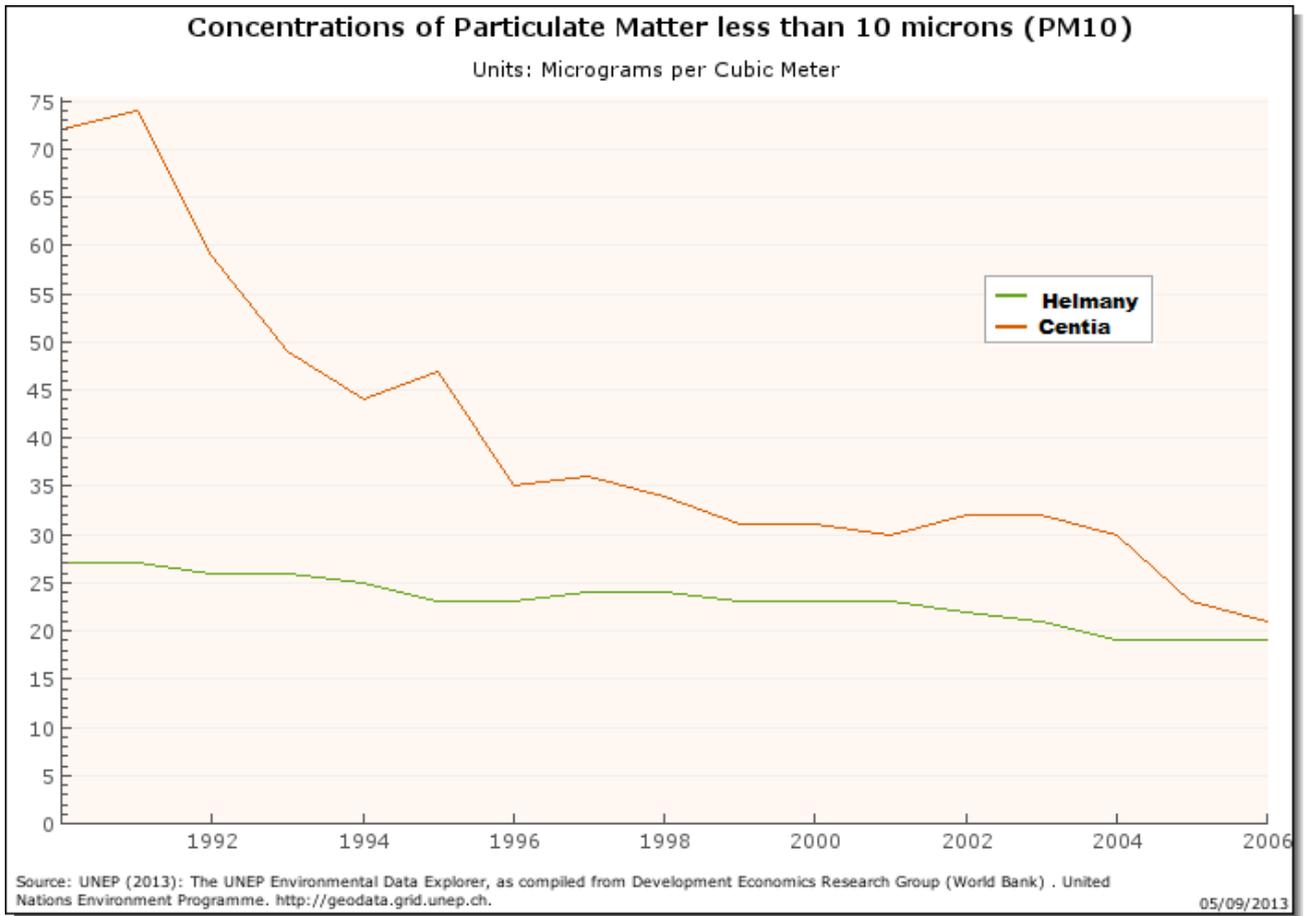
Instructions for the case work:

Please develop answers to the following questions:

- How would you describe the relationship between the trend in emissions of SO₂, PM₁₀, NO_x (which have been identified as one of the main environmental problems) and the trends in energy sector (which is one of the major drivers of this environmental problem) on the basis of the given data (see exhibit C.1)?
- How would you predict the future trends for these emissions, based on the expected future changes in energy sector, if the National Energy Policy was **not** implemented?
- How would you describe the relevance of estimated future climate change trends (see exhibits B.4 and C.2) for the NEP? How would you flag the key concerns?
- What are the losses, and what is the likely impact on the economy, associated with existing climate hazards?
- Which population groups or economic sectors can be adversely affected by this trend?
- What would you do to make this projection more accurate?

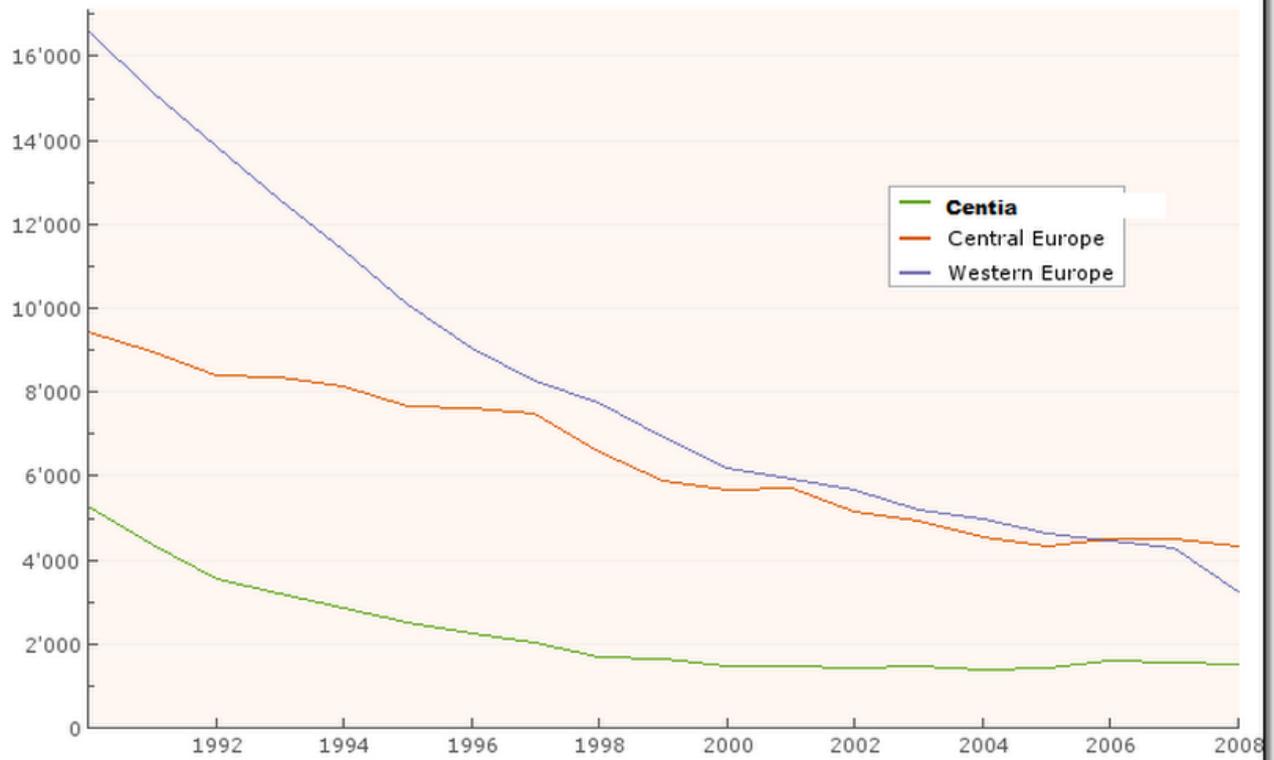
- Considering all this, how would you describe the realistic worst-case and the best case scenario in the future trend if the energy policy is not implemented?
- Do you see any significant data gaps? Would you need more information to answer questions above? What sources could be used to get additional information?
- What are the legal and policy targets?
- What has been the trend so far?
- How far is the current situation from any established objective or targets?
- Is it reaching any critical turning point of bottom-line?
- What is driving these trends?
- How is this baseline trend going to be influenced by major developments that have been already approved but not implemented yet, climate change, changes in the regulatory or policy framework, economic incentives, etc.?

Exhibit C.1: Air pollution trends



Emissions of SO2 - Total (National Reports, UNFCCC)

Units: Gigagrams



Source: UNEP (2013): The UNEP Environmental Data Explorer, as compiled from United Nations Framework Convention on Climate Change (UNFCCC) . United Nations Environment Programme. <http://geodata.grid.unep.ch>.

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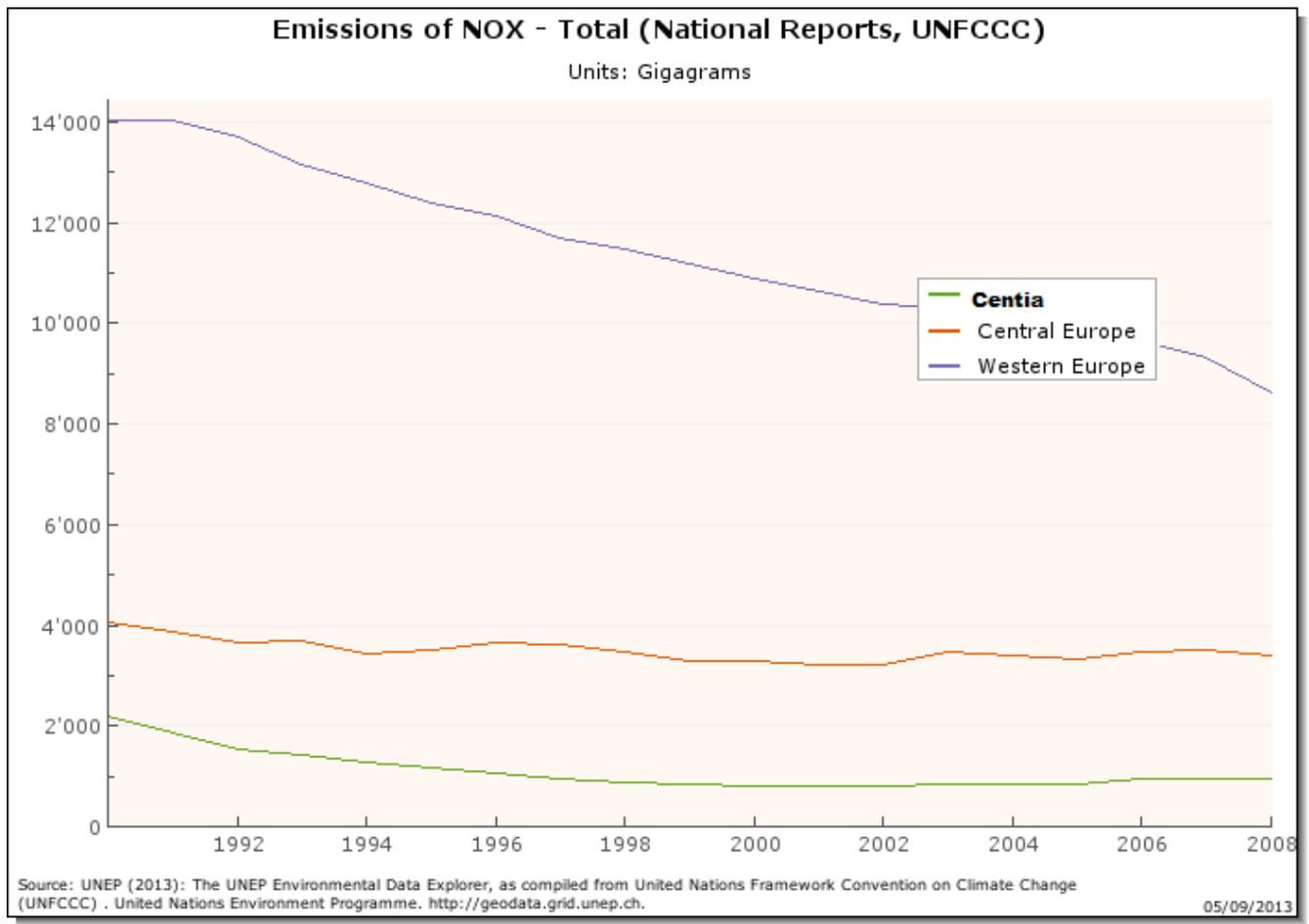


Exhibit C.2: Climate change prediction

Despite the great deal of uncertainty connected with the climate change modelling and impact prediction, particularly at the regional or even local levels, the national expert board put forth a scenario suggesting following shifts in the basic climate characteristics in the course of the next 30 years:

Table C.1: Increase in average seasonal and annual air temperatures (°C)

	average temperature	low estimate	high estimate	range of estimations
spring	+1,7	+1,3	+2,2	0,9
summer	+2,3	+2	+2,6	0,6
autumn	+2,2	+1,7	+2,6	0,9
winter	+2,5	+1,9	+3,2	1,3
year	+2,2	+1,7	+2,7	1

Table C.2: Changes in seasonal and annual precipitation (%)

	average	low	high	range of
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	change	estimate	estimate	estimations
spring	+16	+9	+25	16
summer	+12	+5	+22	17
autumn	+1	-12	+16	28
winter	-5	-20	+5	25
year	+6	-4	+17	21

Table C.3: Expected trends in occurrence of selected weather events

days with temperature > 35°C	↑
days with temperature > 30°C	↑
days with min. temperature < 0°C	↓
days with max. temperature < 0°C	↔
days with precipitation	↔
extreme precipitation (> 50mm/day)	↑
days with snow coverage	↓

Case work D: Analyze proposed development priorities and their alternatives

Screening
Setting objectives of SEA
Identifying stakeholders
Scoping
Collecting baseline data
Assessment
Identifying alternatives
Identifying how to enhance opportunities and mitigate impacts
Reporting
Making recommendations
Evaluation
Monitoring

Introduction to the exercise

The programming process has moved forward slightly and the overall objectives of the programme have been formulated as outlined below.

You have been asked to review the overall development objectives and priorities of this programme that have been proposed by the official programming team, established under the courtesy of the Ministry of Energy. You were informed that also an alternative set of proposals formulated by the Chamber of Commerce, which has been consulted during the NEP preparation, is under consideration for including into the final NEP draft. Please see exhibit D.1.

Instructions for the case work

You are trying to determine all environmental implications of the generally formulated objectives and priorities of this programme.

For simplicity, please focus only on one (or two) of the identified development priorities (as listed in exhibit D.1) – you may choose any priority depending on your own preference.

When doing so, you may

- 1) Start by listing all environmental objectives identified in the preceding step that are relevant to this proposed development issue or objective.
- 2) Analyze relations between the proposed priority of the NEP and the relevant environmental issues or objectives. You may use the matrix in handout D.1. Various conflicts and synergies may also be easily visualized, for example by using simple symbols or colours that indicate:
 - absolute conflict or constraint (red)
 - considerable conflict or constraints (orange)
 - considerable positive impact or synergy (light green)

- full synergy – the proposed objectives resolves an existing environmental or sustainability problem (dark green)
- impact is uncertain (blue)
- impact is insignificant (no colour)

If time permits, you may further explain your assessment by outlining whether and how the proposed development priority:

- positively or negatively affects the key drives (root causes) of the relevant environmental problems
 - may lead to any new environmental risks
 - creates favourable conditions for environmental improvements
- 3) Analyze if and how the proposed development priorities take into account hazards and risks related to the effects of climate change.
 - 4) Propose changes in this development priority and ‘flanking’ measures. Your analyses should provide you with ideas for possible changes and modifications in the proposed strategic direction of the Policy. Please try to think creatively but also realistically – e.g. consider economic implications or limitations of proposals that you make.
 - 5) If time permits, outline additional analyses that you would undertake in a real-life situation to analyse these strategic impacts properly.

For concluding discussion:

When working on the task, please discuss and present your view on following questions:

- Would you consider this step as useful?
- If not, what other approach you would apply to address overall development direction of the NEP early in the planning process?
- What difficulties would you foreseen when working on this task?
- Are there any analyses usually carried out within national planning process which could be used in this SEA step?
- Whom would you consult in this stage?

Exhibit D. 1: NEP Priorities

Proposal # 1 (prepared by the programming team):

The NEP will pursue the following priorities:

- Prepare energy efficiency programme to finance replacement and development of new energy generation units and networks, complying with emission standards,
- Support utilization of alternative energy sources including waste
- Support investment in extraction of natural gas to improve energy security of the country
- Develop natural gas and oil transport infrastructure for both domestic economy and export purposes.
- Further develop hydropower potential, which would improve energy independence and increase much needed flexible generation capacity.
- Ensure safe operation of nuclear power plant and make progress in development of final nuclear waste treatment and storage facility

Proposal # 2 (prepared by the Chamber of Commerce):

Following priorities are also considered to be included to the NEP:

- Phase out subsidies to local heating systems to encourage energy savings and energy efficiency measures both in heating systems and residential buildings,
- Accelerate the restructuring of the coal mining industry, including time schedule for the phase out of subsidies for coal producers and closure economically unsustainable mines.
- Support renewable energy sources, namely wind, solar and biomass

Handout D.1: Matrix for the initial analysis of conflicts or synergies between the proposed strategic priorities of the programme and environmental objectives

Development priority:		
<i>Relevant environmental, including climate change, and health, objectives</i>	<i>Likely conflicts and synergies</i>	<i>Possible mitigation and adaptation measures</i>
<p><i>List all relevant objectives identified in the preceding step that are relevant to the proposed development objective</i></p>	<p><i>Indicate how the proposed development priority relates to the relevant environmental objective. Use the following terms or colours:</i></p> <ul style="list-style-type: none"> <i>absolute conflict or constraint (red)</i> <i>considerable conflict or constraints (orange)</i> <i>partially positive impact or synergy (light green)</i> <i>full synergy – the proposed objectives resolves an existing environmental or sustainability problem (dark green)</i> <i>impact is uncertain (blue)</i> <i>impact is insignificant (no colour)</i> <p><i>Consider also if and how the proposed development priority takes into account hazards and risks related to the effects of climate change and include this among likely conflicts and synergies. .</i></p> <p><i>You may supplement this by explanation on how the proposed development priority:</i></p> <ul style="list-style-type: none"> <i>positively or negatively affects the relevant environmental issue</i> <i>may lead to any new environmental risks</i> <i>creates favourable conditions for environmental improvements</i> 	<p><i>Provide your recommendations for possible changes and modifications in this proposed strategic orientation of the NEP. Try to think creatively but also realistically – e.g. consider the economic implications or limitations of proposals that you make.</i></p> <p><i>You may also suggest additional ‘flanking’ measures for future management of environmental issues that you’ve identified. These proposals may be provided to the planning team for consideration in the NEP.</i></p> <p><i>Don’t forget measures regarding adaptation to the climate change!</i></p>
	

Recommended changes and modifications of the development priority:		
Recommended flanking measures for management of relevant key environmental issues that you’ve identified:		

Case work E: Assess cumulative impacts of proposed activities and propose their optimization

Screening
Setting objectives of SEA
Identifying stakeholders
Scoping
Collecting baseline data
Assessment
Identifying alternatives
Identifying how to enhance opportunities and mitigate impacts
Reporting
Making recommendations
Evaluation
Monitoring

Introduction to the exercise

The programming team is proposing a larger set of actions that are supposed to support achievement of the NEP objectives as formulated earlier.

Based on the discussions within the programming team, within the priorities related to energy infrastructure development has been prepared several proposals for intervention. The actions are specified as follows:

- Construction of gas and oil pipelines from Jablonec to Hradek port
- Opening natural gas extraction sites tapping the gas deposits in the vicinity of Semily
- Conversion of Liberec coal power plant (2000 MW) to a natural gas powered unit.
- Introduction of subsidy scheme to provide support for use of alternative energy. In the first phase (5 years) as potential investment activities were proposed:
 - 3 wind parks located in elevated parts of coastal region (in districts of Bor and Cvikov) and in suitable localities of Rumnice highlands with total of 110 turbines (estimated 400 MW)
 - Modernisation and partial conversion of local central heating sources from gas and coal to waste incineration – in following districts – Lipa, Doksy, Bor, Cvikov, Frydlant
 - 10 biomass utilization units (estimated 100 MW in total) in agriculture areas of Mimon and Doksy

- Upgrade of technical measures for reducing the SO₂ content in atmospheric emissions on all major installations not complying with emissions standards (limestone/gypsum technology⁶ is anticipated)
- Construction of two dams with hydro plants (each 130 MW) on Jizera river between Turnov and Brod and between Brod and Semily

Instructions for the case work

You are expected to determine the cumulative effects of these proposed development actions on the trends identified in previous case works. When doing so, you may:

- Identify those proposed components of the NEP that will have impact on the given environmental trend
- Outline the nature of those impacts by reflecting their magnitude, probability, scale, frequency or duration, and reversibility, and reporting the main uncertainties in your assessment – you may use also symbols in the table E.1)
- Determine whether the proposed development actions appropriately consider risks and vulnerability of the territory related to the climate change (if not, please suggest their modification and/or additional ones), and how their implementation can be influenced by the climate change and its consequences. You may use handout E.1 for identification of the relevant development activities.
- Design measures to minimize negative effects and to maximize positive ones (mitigation and adaptation measures) including suggestions of appropriate indicators for key environmental issues
- Identify possible improvements through relevant alternatives
- Determine conditions for implementation and/or the basic issues that should be addressed by any further assessments (e.g. EIA) if this action is carried out further

You are requested to undertake the assessment work within your SEA team. In doing so, please use the impact matrix as provided in handout E.2.

⁶ This process is the most globally used system for sulphur removal from the flue gases resulting from fossil fuels combustion: crushed limestone / lime is mixed with water to form a slurry which is then sprayed into the sulphur containing flue gases. The sorbent reacts with the SO₂ to form an aqueous slurry of calcium sulphite. Compressed air blown into the slurry oxidises the calcium sulphite to produce calcium sulphate. This product is then treated to remove excess water and either sold to the building trade or disposed of as landfill.

Handout E.1: Matrix for analysis of the likely climate change effects to the NEP

<i>Key environmental issues</i>	<i>Likely effects of the climate change</i>	<i>Likely effects to the NEP</i>
<i>List key environmental issues to be likely effected by the climate change</i>	<i>Describe likely effects of the climate change to the key environmental issue and consequences of these effects in the Region.</i>	<i>Identify components of the NEP which can be likely affected by the climate change and its consequences and describe these effects. Determine if identified components of the NEP appropriately reflect these effects. If necessary, suggest relevant mitigation and adaptation measures, including changes and modification of the NEP.</i>
	

Recommended changes and modifications of the NEP component:		

Handout E.2: Impact assessment matrix for the proposed action

Analysis of cumulative impacts of the NEP on the key environmental issues		
Theme:		
Issue:		
Summary of the past and future trends without the NEP:		
Expected direct effects of the proposed NEP on the future trend in this issues		
Components of the NEP	Expected environmental risks (negative impacts) and environmental opportunities (positive impacts)	Proposed mitigation and enhancement measures
<p><i>Feature or component of the NEP (these may be clusters of projects or individual projects proposed in the NEP).</i></p>	<p><i>Explain in detail:</i></p> <ul style="list-style-type: none"> • <i>Character of risk/impact (what exactly causes this risk/impact or assumptions for this prediction)</i> • <i>Probability and key uncertainties</i> • <i>Geographic scale -directly and indirectly affected geographic areas that will become of specific concern</i> • <i>Duration and reversibility</i> • <i>Key concerns associated with this impact</i> <p><i>Consider and describe also the likely effects of the climate change (risks and vulnerability of the territory related to the climate change) and how its consequences can influence implementation of the respective component of the NEP.</i></p> <p><i>All these statements shall be substantiated by detailed calculations, examples, and references to international and national literature and supplemented by graphic aids (maps, graphs) to illustrate the impact.</i></p>	
Expected future cumulative effects of the NEP on the trends for the selected environmental issue		
<p><i>Summarize the worst-case scenario & the best-case scenario for the future evolution of this trend if all direct and indirect impacts of relevant components of the NEP on the trend would happen. When doing so, consider also the likely effects of the climate change to the NEP implementation.</i></p>		

Table E.1: Characteristics of environmental impacts

Characteristics of the impact	Symbol	Explanation
Probability	!!	The impact is very probable
	!	The impact is probable
Scope/extent	--	Negative impact of a great extent
	-	Negative impact
	+	Positive impact
	++	Positive impact of a large extent
Frequency/duration	>>	The impact is frequent to constant / long-term to permanent
	>	The impact is occasional / short-term
Reversibility	V	The impact is reversible
	N	The impact is irreversible
Uncertainty	?	Possible impact depends on the implementation conditions of the area of support; the conditions are listed in the evaluation comments

Case work F: Use effective means of participation

Screening
Setting objectives of SEA
Identifying stakeholders
Scoping
Collecting baseline data
Assessment
Identifying alternatives
Identifying how to enhance opportunities and mitigate impacts
Reporting
Making recommendations
Evaluation
Monitoring

Introduction to the exercise

The Ministry of Energy (responsible for the coordination of the NEP preparation) invited the following organizations to provide inputs to the preparation of the NEP:

- The Ministry of Environment
- The Ministry of Industry and Trade
- The State Agency on Energy
- The Ministry of Regional Development
- The State Nuclear Inspectorate

During the NEP preparation, the Ministry is going to organize meetings across the Republic (in the larger municipalities, capitals of provinces, i.e. about ten meetings altogether) with those people possibly interested in submitting development projects to be financed by the NEP.

Because of the requirements of the Act on Environmental Assessment, the finalized draft of the NEP together with the Environmental Report must be published and sent to the Ministry of Environment, the Nature Protection Agency and the National Health Institute. A public hearing must also be organized allowing the public to make comments and suggestions regarding both the NEP and the Environmental Report.

The Ministry also plans to publish the draft NEP once completed (but before its finalization) on the web page, inviting the sending in of comments.

During the initial scoping for the SEA, your team has identified a broad list of stakeholders for potential participation in the process:

• Ministry of Environment	• Regional Councils
• Ministry of Industry and Trade	• State Nuclear Inspectorate

• Ministry of Agriculture	• Centia’s Academy of Science
• State Energy Agency	• Lipa University – Faculty of Environmental Management & Science
• Major investors in the energy sector (private enterprises and companies)	• City Councils of Lipa, Liberec, and Jablonec
• Ministry of Regional Development	• Ministry of Defense
• Environment Protection Agency	• Management authorities of protected landscape areas
• National Environmental Fund	• NGOs – Agenda 21 in Lipa and Liberec, Friends of Earth (national office), Bio-watch N2000, National Network of Organic Agriculture
• Ministry of Social Affairs	• Association of farmers and agricultural producers
• Ministry of Health	• Hydrological Institute of Centia
• Bio waste Research Institute	• Centia Environmental Information Agency

Instructions for the case work

Within a session of your SEA team you are challenged to develop a communication plan for the SEA. Please use handout F.1 for answering the following questions:

- What are the key analytical tasks in the SEA process within which discussions with stakeholders should take place? (For their selection, please use the overview of key SEA analytical tasks in exhibit F.1.)
- Which key stakeholders should be consulted when you are working on respective analytical tasks of SEA?
- Which key stakeholders belong to the public concerned?
- What techniques (public meetings, workshops, information hotline, questionnaires, brochures, negotiation roundtables, advisory committees, etc.) would be appropriate for the active participation of each of the key stakeholders?
- To which extent would your SEA team hold consultations jointly with the planning team? Which role would you give the planning team throughout the participation process?

Handout F.1: Format of the public communication plan

<i>Key analytical tasks of SEA</i>	<i>Stakeholders that should be involved</i>	<i>Tools to be used</i>

Exhibit F.1: Key analytical tasks to be performed in SEA

1. Review the planning process and identify key issues that SEA should advise on
2. Identify relevant environmental and health issues for the plan, programme or policy (P/P/P) (while considering the overall nature of the P/P/P and key environmental features in the study area)
3. Analyse past trends for main issues and their future evolution should the P/P/P not be implemented (env. baseline, zero-alternative)
4. Assess proposed development scenarios, objectives and priorities and contribute to their optimising
5. Assess cumulative impacts of proposed development actions and contribute to their optimising
6. Propose environmental management and monitoring system for implementation of the P/P/P, addressing also main uncertainties in the assessment

Case work G: Ensure reflection of SEA results in decision-making as well as an adequate management and monitoring system for implementation

Screening
Setting objectives of SEA
Identifying stakeholders
Scoping
Collecting baseline data
Assessment
Identifying alternatives
Identifying how to enhance opportunities and mitigate impacts
Reporting
Making recommendations
Evaluation
Monitoring

Introduction to the exercise

Within case work A it was discussed how to link the SEA results to elaboration of the National Energy Policy of the Centia Republic. At this point in undertaking the SEA, it becomes clear that Policy elaboration is coming to an end and will have to be finalised within the next 2 months. The final proposal by the programming team, including an SEA report, will be forwarded to the Government for final decision making, i.e. approval of the NEP.

With this background, the SEA team has to specify the way in which the results of the SEA can best be documented for consideration in the decision-making on this policy document. This includes the SEA report. Further, the management and monitoring of the future implementation process for the NEP has to be specified now. This also includes possible requirements resulting from the SEA.

Instructions for the case work

Based on a discussion in your SEA team, please:

- Design a draft table of contents of the SEA report. Bear in mind that the SEA report should be easy to read and should summarize key issues for decision-making.
- Devise mechanisms for ensuring the proper reflection of the SEA results in the programme implementation and monitoring. In this respect, it will be important that the implementation and monitoring of this programme will be mainly done by the Ministry of Energy, which will be responsible for the investment projects evaluation and selection.
- Consider how closely the SEA and planning teams should work together. What might be the advantages and disadvantages of your proposal?

Case work H: Manage SEA effectively within budgetary and time constraints

Introduction to the exercise

The resources provided for an SEA in terms of time and budget, expert input, management support, etc., will always be restricted. Therefore, it is of great importance to organize the SEA process in a way that an effective SEA is brought in line with the available resources. This is usually done at the beginning of the SEA process. Within this exercise, this task is being performed in retrospect, making use of all the experiences you have gained during previous case works.

Instructions for the case work

You have completed some basic analyses that need to be performed during the SEA of the National Energy Policy of the Centia Republic.

Now imagine that you are back at the beginning of the whole SEA process again and your first task is to prepare a basic management plan for a full SEA of such a programme.

The key guiding question is “How would you ensure that your proposed SEA tasks are effectively managed within the available time and resources?”

You need to summarize the key tasks (i.e. analyses and consultations) to be performed by the SEA team. You also need to determine the skills or expertise that needs to be present in the core SEA team. Lastly, you also know that available resources allow for a maximum of 200 person-days to perform this SEA. These 200 person-days include 70 person-days for unexpected (contingency) analyses – i.e. your operational budget allows you to allocate only 130 person-days to various tasks that need to be performed within the SEA.

You may summarize the proposed approach using the table below in exhibit H.1 that addresses the following issues:

- The final proposal of tasks (i.e. analyses and consultations) to be performed by the SEA team during the elaboration of the programme
- The required skills among the SEA experts
- A proposal regarding the expected number of person-days for each SEA stage

Exhibit H.1: Presentation of the proposed SEA approach, required expertise in the SEA team and proposed workdays for the completion of the SEA.

<i>Steps of the programming process</i>	<i>Final proposal for the preparatory, analytical and participatory SEA tasks</i>	<i>Required expertise in the SEA team</i>	<i>Proposed number of workdays for this stage</i>
Identification of current problems and issues (months 1-2)			
Formulation of programme objectives and priorities (months 3-4)			
Formulation of measures to implement the strategy (months 5-7)			
Proposal of implementation and monitoring arrangements (month 8)			

Annexes

Annex 1: IAIA Performance Criteria of SEA

According to the International Association for Impact Assessment (IAIA), a good-quality Strategic Environmental Assessment (SEA) process informs planners, decision makers and affected public on the sustainability of strategic decisions, facilitates the search for the best alternative and ensures a transparent decision making process.⁷ For this purpose, a good-quality SEA process has the following characteristics:

Is Integrated

- Ensures an appropriate environmental assessment of all strategic decisions relevant for the achievement of sustainable development.
- Addresses the interrelationships of biophysical, social and economic aspects.
- Is tiered to policies in relevant sectors and (transboundary) regions and, where appropriate, to project EIA and decision making.

Is Sustainability-led

- Includes a meaningful analysis of alternatives and provides sufficient detail to indicate that different alternatives have been seriously considered.
- Facilitates identification of development options and alternative proposals that are more sustainable (i.e., contributes to the overall sustainable development strategy as laid down in Rio 1992 and defined in the specific policies or values of a country).

Is Focused

- Provides sufficient, reliable and usable information for development planning and decision making.
- Concentrates on key issues of sustainable development including key trade-offs between the stakeholders.
- Is customized to the characteristics of the decision making process.
- Is cost- and time-effective, practical and easy to implement.

Is Accountable

- Is the responsibility of the leading agencies for the strategic decision to be taken.
- Is carried out with professionalism, rigor, fairness, impartiality and balance.
- Is subject to independent checks and verification
- Documents and justifies how sustainability issues were taken into account in decision-making.

Is Participative

- Informs and involves interested and affected public and government bodies throughout the decision making process.
- Explicitly addresses their inputs and concerns in documentation and decision making.

⁷ Based on <http://iaiaconnect.iaia.org/resources2/view/profile/id/15150/vid/1>

- ☑ Helps to achieve consensus between stakeholders.
- ☑ Has clear, easily-understood information requirements and ensures sufficient access to all relevant information.

Is Iterative

- ☑ Ensures availability of the assessment results early enough to influence the decision making process and inspire future planning.
- ☑ Provides sufficient information on the actual impacts of implementing a strategic decision, to judge whether this decision should be amended and to provide a basis for future decisions.

Is Influential

- ☑ Has an impact on the finally adopted strategies decision and its implementation.
- ☑ Influences the overall attitude and institutional structure of government bodies towards environmental sustainability issues.
- ☑ Builds interest of government bodies to undertake similar processes in future planning processes.
- ☑ Is a learning process and builds capacity to include environmental considerations in decision making.

Annex 3: Sources & Key references on SEA

Sources

OECD DAC Task Team website (www.seataskteam.net)

The dedicated website of the OECD DAC Task Team on SEA - part of ENVIRONMENT's work programme to provide Task Team Members and other practitioners with the opportunity to engage in dialogue, to exchange experiences, and to share relevant resources. Give information on working groups, resources, tools, biographies and includes provision for on-line discussions. GTZ is member of the Taskteam and contributes to the implementation of the Guidance throughout the GTZ/InWent SEA Training course.

CIDA

Various publications on SEA and environmental assessment are available at www.acdi-cida.gc.ca/ea (click on publications). These include an SEA handbook to provide guidance on implementing the federal 1999 Cabinet Directive on the Environmental Assessment of Policy, Plan and Programme Proposals (CIDA 2003). The handbook is intended for those who may be involved in the development of a policy, plan, or programme, i.e. Cabinet liaison staff, environmental specialists, programme and project analysts, and policy makers.

European Union: <http://ec.europa.eu/environment/eia/home.htm>. Provides information on environmental assessment and the European SEA Directive, policies, integration, funding, resources, news and development.

International Association for Impact Assessment (www.iaia.org) – provides information on the IAIA, conferences, activities and special projects, resources, publications and reference materials (including SEA performance criteria and key citations for EA topics), and training.

Institute for Environmental Management and Assessment (IEMA) (<http://www.iema.net/>). The Centre for Environmental Assessment and Management at IEMA undertakes work on guidelines, training, research and projects. Website provides access to publications on EA including the EA Yearbook.

International Institute for Environment and Development (<http://www.iied.org/>) – provides downloadable papers and books on EIA, SEA and related subjects.

Netherlands Commission for Environmental Assessment

The NCEA provides advisory services and related training activities to support the development of SEA in a country as well as advice on the terms of reference for SEA. It reviews the outcome, and gives coaching on SEA processes and the development of SEA systems. When applied, SEA is undertaken in the framework of the national context. The NCEA is developing an SEA database which will provide a broad array of easily accessible information (see: www.eia.nl).

Regional Environment Centre for Central and Eastern Europe (REC)

The REC provides services for national SEA capacity-building and assists in implementation of pilot SEAs in countries in Central and Eastern Europe. REC facilitated elaboration of the Capacity Development Manual for the UNECE SEA Protocol and of the SEA Handbook for the EU Cohesion Policy in 2007-2013. (see: <http://www.rec.org/topicarea.php?id=8>)

Swedish International Development Agency (Sida)

Sida has published guidelines for SEA in the context of country strategies and sector programmes (available at www.sida.se/publications). These emphasise key links between poverty, the environment and sustainable development.

Transport Research Laboratory, UK

The SEA Information Service website (www.sea-info.net), supported by the Centre for Sustainability at TRL provides a gateway to information on Strategic Environmental Assessment (SEA) and Sustainability Appraisal (SA).

UNECE

UNECE Resource Manual to Support Application of the Protocol on Strategic Environmental Assessment. (<http://www.unece.org/environmental-policy/treaties/environmental-impact-assessment/enveiapublications/official-publicationsguidance/2011/sea-protocol-resource-manual/enveiapubssea-manual.html>)

Information on EIA and SEA in the context of the Espoo Convention of Environmental Impact assessment in a Transboundary Context and its Protocol on SEA can be found at www.unece.org/env/eia.

UNDP

The objectives of UNDP's Strategic Environmental Assessment (SEA) Implementation Plan are to raise awareness, understanding and knowledge on SEA concept and benefits, to provide a systematic approach for mainstreaming environment into UN and UNDP programming at global, regional and national levels; to enhance the use of SEA as an approach in the preparation and implementation of MDG-based national development strategies; and to enhance capacity of both UN staff and partner countries for SEA application. More SEA related information can be found at <http://europeandcis.undp.org/ourwork/environment>

UNEP

UNEP has developed a second version of its EIA training resource manual as a focus for capacity-building. This incorporates a module on SEA (Sadler and McCabe, 2002). UNEP has also issued guidance on EIA and SEA good practice (Abaza *et al.*, 2004).

UN University

<http://onlinelearning.unu.edu/en/sea/> provides a link to an SEA Course developed for the UN University, describing range of SEA-tools and providing case materials and other valuable information.

World Bank

<http://go.worldbank.org/XIVZ1WF880> – provides information on: SEA structured learning programme; understanding SEA; SEA guidance, general reference documents, and country and sector specific documents; external SEA links; news and events; and questions and requests.

Key references

Dalal-Clayton D.B. and Sadler B. (2005) Strategic Environmental Assessment: A Sourcebook and Reference Guide to International Experience. OECD, UNEP and IIED in association with Earthscan Publications.

Sadler B. & Verheem R. (1996). Strategic Environmental Assessment: Status, Challenges and Future Directions. Ministry of Housing, Spatial Planning and the Environment, The Netherlands, and the International Study of Effectiveness of Environmental Assessment.

Therivel, R. (2004) Strategic Environmental Assessment in Action, Earthscan, London.

