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Reports on social – environmental impact of the supply chain

WP 2 AWARENESS RAISING AND DEVELOPMENT OF METHODOLOGIES FOR FACING LOCAL CONFLICTS



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1. Legambiente
2. Kozjanski Regional Park, Slovenia
3. Sila National Park, Italy
4. Danube-Ipoly National Park, Hungary
5. Sölktäler Nature Park, Austria
6. Rodopi National Park, Greece

1. Introduction

Responsible partner: LEGAMBIENTE

The BioEUParks project has important implications on social and environmental aspects, either because the set-up of a supply chain entail an impact on local economies, either because the project foresees a participatory process aimed at involving all local actors, in order to avoid conflicts or - at least - to achieve a resolution of these conflicts. One of the aims of the project is in fact to reduce the environmental and social impact of the planned activities as much as possible and look for benefits for affected communities.

On this basis, a key part of the project is to examine how Parks identify and assess the potential environmental and social impacts of the project, evaluate alternatives, and design appropriate environmental and social management plans during and after the life-cycle of the project.

To accomplish this task, Parks have to take into account several aspects:

- Ex ante evaluation of the socio and environmental contest
- Analysis of the information needed to check project progress and evaluate the effectiveness of the activities carried out.
- Final evaluation that will allow partners to analyze the results of the project, especially taking into account difficulties and weak elements that arose during the activities, with the aim of identifying enhancement and mitigation measures.

Parks started the evaluation on these aspects in their first *Report on the social and environmental impact of the supply chain*, drafted during the months of June and July 2015, at the end of the first heating season.

The collected data will be integrated at the end of the second heating season, in order to have a full framework of the social and environmental impact of the project.

To facilitate this evaluation, two other project deliverables will be taken into account:

- the signature of a Memorandum of Understanding, whose aim is to define common shared rules and commit stakeholders to follow these rules. Real effectiveness of the Memorandum of Understanding is therefore a matter to be taken into account when assessing the socio-economic impact of the project.
- Sustainability principles that will be highlighted by the Supply Chain Guideline and will be taken into account during the whole project duration.

Methodology

To facilitate the drafting of the first Report, Legambiente sent a template to Parks highlighting some of the main issues that they should have been taking into account during the above mentioned analysis. Following are the questions included in the template:

Section I

- describe the legislative framework about forestry and renewable energy in force
- describe the local key actors targeted by the project (e.g. a forest cooperatives? A company? For each actor, please give a short description of its organization in terms of employees, objectives and area of competence)
- general description of the social and environmental framework (e.g. how many companies work your area? How many employees? Is there any local or regional management plan in the Parks?)
- give any example of conflict or best practice arisen on this issue before BioEupaks project started.

Section II

- Identification and analysis of potential social and environmental impact resulting from the project:
e.g. impacts on health and community wellbeing, change in local employment, integration of local residents in different phases of the project, providing proper awareness about renewable energies, the level of involvement of the various stakeholders in the project, change in land use or impact on biodiversity, pollution, water use etc.

Section III

- determine indicators compliance with project objectives
- determine mitigation measures if found to be necessary /
- Properly assess the performance and effectiveness of the adopted mitigation measures /

Section IV

Please summarize the potential impacts from the main activities of the project. Impacts are measured based on their type as they could be directly or indirectly affected by the whole project, nature reflects if the impact is positive or negative, duration emphasizes if the impact is permanent or temporary within the project time duration, and magnitude is the power of the impact on a certain component.

Despite not all Parks followed the scheme, the template was a useful tool to trace the path and explain partners the main goal of this action. Each report in fact adapt to local features and characteristics, depending also from the activation – or not activation – of the supply chain.

PARTNER	SILA NATIONAL PARK
Country	LORICA(CS)- CALABRIA -ITALY

INTRODUCTION

The BioEUParks project has important effects on environmental and social aspects both because the set-up of a supply chain implies impacting on local economies and because the project is based on a participatory process that aims at involving all local actors in order to prevent conflicts or – at least - negotiate solutions. One of the project's added value is the signing of a memorandum of understanding, whose goal is to agree on and comply with common rules. The effective implementation of such memorandum is an issue to be taken into account when assessing the socio-economic impact of this project.

Furthermore, one of the project's objective is to minimize negative social and environmental impacts of planned activities and to bring benefits to the interested communities.

1) THE ENERGY CONTEXT IN ITALY

Among the most industrialized countries, Italy has the lowest energy self-reliance rate: in fact, Italy depends from energy import up to 81% of energy consumption, compared to a European average of 54%.

According to 2011 figures provided by the Italian Ministry for Economic Development (MISE), the main countries which Italy imports fuel from are: Iran (29,2 %), Saudi Arabia (28,9 %) and Libya (11,9 %), as regards oil; Algeria (32,7 %) and Russia (28 %) as for natural gas. Finally, electric energy is mainly imported from France and Switzerland.

Italy shows, therefore, a strong dependence from fossil sources such as oil and natural gas that represent around 76% of primary energy demand (fig. 1.1) .

In 2011, final energy consumption was up to around 122 Mtoe, decreasing of 2% compared to the previous year, because of a slight reduction of consumption in industry, trade, public administration and housing (-3%), caused by the ongoing economic crisis.

Moreover, energy produced from renewable sources has showed a 10% increase compared to the previous year, reaching an amount of 17,9 Mtoe; non-conventional sources such as solar energy, wind energy, waste energy and biomass energy experienced the highest increase rate, although the national demand for renewable energy is also met through biomass and biofuel import.

Since 1999, the so called “Bersani decree” (D.L. 79/99, amended by law 239/04 and d.lgs. - legislative decree - 387/03), has obliged all energy producers to produce at least 2% from renewable sources.

The role of renewable sources becomes increasingly important as, because of factors such as the raising of fossil fuel prices and the creation of a European carbon market (2005) – the latter is necessary to meet the objectives set for greenhouse gases reduction – they are gradually reducing the economic advantage of fossil fuels.

Among renewable sources, biomass has the advantage of being easily-integrated with fossil fuel-based technologies and grids. The biomass sector is playing a key-role in Italian renewable energy policies.

According to the National Action Plan (PAN) approved in June 2010 following EU Directive 28/2009, biomass should become the main Italian renewable source by 2020, covering 44% of renewable energy consumption (20% of electricity, 58% of heating power, 84% of biofuels) amounting to 22,3 Mtoe.

A priority role in the biomass sector is played by wood products.

Furthermore, the new National Energy Strategy (SEN) for a more competitive and sustainable energy, approved by MISE with decree of 8th March 2013, fixes more ambitious objectives in the next years.

1.1) The national policies for the forestry sector and energy supply chain

Forestry regulations in Italy date back to the beginning of the last century: “Serpieri Law” - R.D.L. n. 3267/1923 on: “Reordering and reform of legislation on woodlands and mountain land”, introducing the “hydro-geological restriction” and aiming at achieving soil stability and water regulation; and R.D. n. 1126 of 16th of May 1926, laying down provisions on property rights on forest land and introducing certain obligations and limitations.

With “Galasso Law” n. 431 of 1985, (than amended and included in the Environment Consolidated Act), laying down urgent provisions for the conservation of areas of particular environmental interest and introducing the “landscape restriction”, woodlands were included among the natural resources to be protected.

D.Lgs n. 42 of 22nd January 2004 says that all actions likely to modify the external appearance of woodlands in a permanent way are subject to authorization.

During the last decades, forestry policies at both national and community/international level, have been shaped within a new legal framework that recognizes the multifunctional role of woodlands: from the conservation of the environment to the protection of territories and landscapes.

The very first relevant programming and regulatory document in the forestry sector is the multi-annual spending Law for agriculture (law n. 752 of 1986) that allowed the drafting of the first National Forestry Plan defining woodlands as renewable natural resources with many functions besides wood production.

As regards institutional tasks, the border between forestry and environmental competences has never been clearly marked.

Such an ambiguity was confirmed even after the amendment of the Constitution’s IV Title (Constitutional amendment law n. 3 of 18th October 2001) that maintains the State’s responsibility for international representation and protection of the environment but assigns to the Regions exclusive competences on woodlands.

Furthermore, law 353 of 2000, “Framework law on woodlands fires”, charges Regions for the primary prevention of and fight to fires, together with the responsibility for drafting and enforcing Woodlands Fire-protection Plans, and gives the State Forestry Corps a supporting operative role.

D.Lgs n. 227 of 18th May 2001 introduces a connection between the legal framework on forestry and the landscape-environment one, recognising the need to link forestry policies to the internationally-acknowledged principle of “sustainable forest management” and the role of silviculture in the conservation of forest resources.

It also lays down provisions for disciplining silviculture activities and for the legal definition of woodlands.

Following art. 3, “Guidelines on forestry” have been drawn up in order to support the Regions and the Autonomous Provinces to achieve certain objectives through the elaboration and/or modification of “Forestry Plans” and the sharing of common digital coordination and data collection tools between the State and the Regions.

In this context, paragraph 1082 of Budgetary Law for 2007 lays down provisions for the drafting of a Strategic Framework Programme for Forestry.

The permanent Conference for relations between the State, the Regions and the Autonomous Provinces (session of 18th December 2008, glossary of documents n.: 265/CSR of 18/12/2008), signed an agreement on Forestry Sector Framework Programme (PQSF).

The Programme aims at enforcing international commitments and at building a strategic coordination framework for the forestry sector, favouring synergies between the government bodies directed to improving effectiveness and efficiency of expenditures in the mid-term and long-term, recognising forests’ key-role in local socio-economic development and the protection of territories.

The PQSF has the following general objective: “Enhancing sustainable forest management designed to protect the territory and contrast climate change by strengthening forest supply chain from its productive base and ensuring, in the long-term, the multifunctionality of forest resources.”

1.2) Regional Forestry legislation

Forest cuts in the Park area are subject to three main regulations:

- **Calabria Region’s forestry law (L.R: n.45 2012) “Management, protection and valorisation of the regional forestry heritage”** laying down general rules and guidelines to improve sustainable forest management designed to preserve the territory and fight against climate change. This law aims at strengthening forestry supply chain starting from the production level in a way that ensures, in the long term, the multi-functionality and diversity of forest resources. This law also says which forestry interventions can be realized.
- **General Provisions and Forest Police Provision (GFPF) laying down technical and administrative rules for the use of forests.** These provisions state that, in order to obtain cut authorisations, public and private forest owners have to present a project drafted by a qualified expert. The following rules apply:

Method of woodland management	Operational Provisions
Coppice	Depending on species, the choice of forestry practices have to comply with technical guidelines included in the chapter “Sustainable forest management” of the Regional Forestry Plan. The choice of seedlings have to be made according to criteria laid down in art. 43 (coppice of two rotations system) and art. 44 (coppice with standards).
High forest	The planned felling quantity is determined according to section IV of the chapter “Sustainable forest management”. The management system has to involve, depending on the forest population and temperament of species, a selective regeneration cut “for small or very small groups” not larger than 200 square metres. Thinning, in natural formations has to consist in selection interventions “from below, of low or moderate degree” in relation to population structure, temperament of species and plant health conditions.

- **Sila National Park management plan**
Art. 23 – Interventions in forests and tree cuts

Zones A (integral natural reserve)	Any silviculture intervention is forbidden
Zones B (oriented general reserve), C (protected areas for traditional uses) and D (areas of economic promotion)	Silviculture interventions (forest utilisations, thinning, pruning, plant health cuts, etc...) must be authorised by the Park following explicit request.
Zones B	In corsican pine, beech, oaks and other high forests, forestry utilisations are allowed (based on selection cuts) with an utilisation rate of 1,5%.
Zones C and D	Thinning can be made according to GFPFs.

1.3) Regional regulations on energy

Regional Law n. 42 of 29/12/2008: Provisions concerning electric energy from renewable sources. Published on the Official Journal of Calabria Region n. 24 of 16/12/2008.

Resolution n. 55 of 30/01/2006: Wind energy sector in Calabria: Guidelines for the creation of wind energy station plants on the regional territory.

Published on the Official Journal of Calabria Region of 01/03/2006.

Regional Law n. 34 of 12/08/2002: Reorganisation of local and regional administrative functions. Published on the Official Journal of Calabria Region n. 15 of 16/08/2002.

Regional Law n. 17 of 24/11/2000: Provisions concerning licenses for electricity lines and electricity plants over 150.000 volts.

Delegation to Provincial administration bodies.

Published on the Official Journal of Calabria Region n. 111 del 29/11/2000.

Regional Environmental Energy Plan, approved by the Regional Parliament in 2005:

2) COMPANIES PARTICIPATING IN THE PROJECT

In order to disseminate "Bioeuparks" project on the territory, forestry companies, forest owners and transport companies existing within the Sila National Park area were involved.

The roundtables and specific meetings took into account those elements that are crucial to create the supply chain and maintain it in the future.

In particular, dissemination events aimed at identifying potential biomass producers and highlighting current biomass utilizations.

Another need was to identify companies equipped with forestry machines suitable for harvesting residual biomass and processing it for heating purposes.

Moreover, the companies had to be included in the regional register of forestry companies with specific reference to forestry works, environment restoration, biomass chipping, reforestation, restoration of degraded forests, wood transportation. All these criteria were taken into account in drafting the public tender.

2.1) Company description

The companies that took part in the specific meetings have a very diverse structure: they include small ones, employing few workers and using few machines as well as medium-size enterprises with many machines and 30 to 40 employees.

In the case of the tender for the supply of pellet to the boilers of Sila National Park, the winning applicant is a company with 40 employees, half of them are skilled workers.

This company's core activity is a sawmill producing construction wood for the local market. Moreover, the enterprise makes forest works and harvests trunks for the sawmill and wooden sub-products destined to shredding or chipping that used to be sold to thermal power plants in Crotona and Cosenza provinces.

Unfortunately, up to these days there is no forest management plan concerning woodlands in the Sila National Park area.

Among the good practices, we can mention the substitution of old LPG and diesel-fuelled boilers with biomass ones and the installation of a photovoltaic system on the roof of SNP management body's headquarters

3) IMPACT OF BIOEUPARKS PROJECT

3.1) Social impact

During the last years, the massive introduction of natural gas in Calabria determined a sudden and serious loss of energy self-reliance of local communities that had to go through systematic fossil fuel supplies, being exposed to their effects in terms of price volatility.

In general, social benefits connected to biomass use refer to improved life standards, lower emissions compared to harmful fossil fuels, job opportunities for locals and sustainable use of woodlands.

In this project, the substitution of boilers and the introduction of biomass fuels will allow the Sila National Park to play a leading role in the community: the use of local biomass represents and added value for local economy.

The money needed to buy pellet to fuel boilers will no more be destined to other countries or to oil transnational companies: on the contrary, it will create a virtuous circle for the local community.

Keeping the money within the local economy will, in turn, help revitalise other activities.

3.2) Environmental Impact

Environmental benefits deriving from the use of biomass for energy purpose are widely acknowledged.

The use of biomass rather than fossil fuels allows to avoid the emission into air and soil of huge amounts of CO₂ and other polluting elements. While burning, biomass emits the same amount of CO₂ it has accumulated during its life. Moreover, emissions linked to the transportation of biomass to thermal power stations will be avoided.

3.3) Economic Impact

The use of biomass, mainly from forestry processing residues, will favour the development of a local, forest-based economy where companies and experts may start businesses and create jobs with concrete impact on the territory. The demand of wood for energy purpose stimulates the re-organisation and development of the supply chain, involving agriculture and silviculture, wood-processing companies and transport companies and providing them with opportunities for more income or the start of secondary activities.

4) PROJECT INDICATORS

Due to potential risks linked to an irrational development of the sector, there is the need to identify indicators and some measures for the mitigation of possible negative impacts on legal, environmental, economic, or social aspects.

4.1) Legality and social/environmental responsibility

A wood-energy supply chain has to comply with principles of legality and social/environmental responsibility. All actors are tied to the full respect of laws, also considering that the supply chain is realised within a protected area.

The main issues in the context of legality are:

- occupational health and safety, also due to the nature of forestry sector, presenting certain risks for workers. Indeed, forestry works imply health and safety risks linked to steep and uneven soil or to extreme climate conditions. These problems are usually increased by the lack or inadequacy of first aid structures in workplaces and appropriate work clothing.
- Traceability of feedstock, as a parallel feedstock import sector exists. It is important that all wood biomass participants comply with EU regulation n.995/2010 that dating from 3rd March 2013, requires all

European actors to adopt appropriate procedures reducing the risk of importing wood products of illegal origin.

- Prevention of environmental damage: the supply chain involves issues related to the management of woodlands and emission of pollutants.

4.2) Protection of environment

The use of wood for energy purpose is often encouraged, due to its positive effects on the environment. This is why monitoring the actual environmental impact of the wood-energy supply chain is extremely important. To ensure an appropriate management of raw material, particularly in the early steps of the supply chain (from woodland to sawmill), may help protect forest ecosystems and biodiversity, as well as avoid biomass waste.

Besides protecting the ecological functions of woodlands, an accurate forest management (through thinning interventions and the removal of residues after forestry works), also in hard-to-access areas, reduces the risk of fires and soil erosion.

Carbon neutrality (that is, of CO₂ emissions) represents a fundamental difference between biomass and fossil fuels and is the main justification of public interventions in this field. It is important, therefore, to monitor and reduce emissions caused by the production and transport of biomass during the steps of the supply chain.

4.3) Local Development

The creation of the supply chain in the Sila National Park area will build a closer connection between local consumers and biomass harvesting areas. This may present, in turn, a more transparent image of the territory and consequently stimulate local economies.

Furthermore, the creation of local supply chains implies reducing distances for the transport of feedstock and decreasing CO2 emissions. Other important effects include:

- the reduction of “intermediaries” involved in the process, leading to a fairer distribution of the added value among the players and to a better remuneration for biomass producers;
- the sustainability of the production phase, improving the inclusion of local producers in the social context and reducing risks of conflict with the population;
- the promotion of new local markets, creating new jobs along the supply chain, slowing down rural depopulation, and improving local skills related to harvesting, processing and transport of wood.

4.4) Economic Development

In general terms, a new market of wood for energy purpose and other forestry activities should be perceived as partners rather than competitors: the development of a wood-energy segment represents an opportunity for the whole forestry sector.

IMPACT	KIND	NATURE	DURATION	SIZE
Ensuring workplace health and safety	<i>direct</i>	<i>Negative</i>	<i>Permanent</i>	<i>Moderate</i>
Compliance with environmental regulation	<i>direct</i>	<i>Negative</i>	<i>Permanent</i>	<i>Moderate</i>
Traceability of supplied material	<i>direct</i>	<i>Negative</i>	<i>Permanent</i>	<i>Moderate</i>
Reduction of CO2 emissions	<i>direct</i>	<i>Positive</i>	<i>Permanent</i>	<i>Moderate</i>
Sustainable forest management	<i>direct</i>	<i>Positive</i>	<i>Permanent</i>	<i>Moderate</i>
Participation of local stakeholders	<i>direct</i>	<i>Positive</i>	<i>Permanent</i>	<i>Moderate</i>

PARTNER	Sölktäler Nature Park
Country	Austria

Section I

Describe the legislative framework about forestry and renewable energy in force

About half of the Sölktäler Nature Park is forest. But only 8.725ha are used (Styrian country stats 2010). All forests are privately owned. The structure from the forest owners rises from 121 farms with a small forest with a few hectares to 16 forest enterprise with up to several thousand of hectares of forest.

- The largest forest enterprise is the “Fürstl. Colloredo-Mannsfeld’sche Familienstiftung“ with 5.540 ha in the Kleinsölkvally. This area also includes alpine meadows and wasteland above the treeline.



Colloredo-Mannsfeld owns the land around Schwarzensee

- Colloredo-Mannsfeld has customers for their timber all over Austria. 2/3 is sold as sawlogs, 1/5 als industrial timber and 13% as biomass.
 - The farmers with forests use the forest extensively. According to the Austrian Forest Inventory not the full increase is used in private forests smaller than 200 hectares. The usage is primarily for captive use. For example the biomass for the farm or the Timber is used for the construction of buildings. In these farms harvesting for selling timber only takes place every few years
 - The most important rules for the forest is the Austrian Forest Act 1975. It also highlights the commitment to sustainability is regulated:
 - §1 (3) »Sustainable forest management within the meaning of the Austrian Forest Act means the management and use of forests in a way and to an extent that their biodiversity, productivity, regeneration capacity, vitality and potential to be maintained permanently, to present and future ecological, economic and social functions to meet at local, national and global levels, without damaging other ecosystems.»
 - The Austrian Forest Law ensures that the forests are managed sustainably. In the Austrian Forest Law the definition of sustainable forest management (SFM) is already fulfilled (Call on 22.11.2012 with Dr. Albert Knieling Ministry of Agriculture. Albert Knieling confirmed that the principles of Sustainable Forest Management (SFM) are fulfilled by the Austrian Forest Act 1975).

Describe the local key actors targeted by the project (e.g. a forest cooperatives? A company? For each actor, please give a short description of its organization in terms of employees, objectives and area of competence)

- Forest Enterprise in Söltkäler Nature Park
 - 137 forest enterprises are farming 8.785ha of forests in the Söltkäler Nature Park (Styrian country stats 2010). Forests without use are not included in this area.
- Forest Enterprise without agricultural farm
 - 16 forest enterprises are in the Söltkäler Nature Park.
 - The owners live outside Söltkäler Nature Park.
 - In forestry, a strong structural change has taken place in recent years. Employees are only active in the management. The forestry has developed successful cooperation models with felling companies, hauliers, the sawmill, pulp and paper industry. This development was necessary for economic reasons.
- Farmers with forest land
 - 121 farmers are farming 50% of the forests in the Söltkäler Nature Park
 - Very extensive cultivation. Even the forest is partially used very little. Thus, there are large reserves of timber in the forest.
 - Farms are operated by family. They have no employees for the work in the forests. Farmers also work together with felling companies.



Farmers engage partly Companies for timber logging

- Municipality
 - An important link between the forest owners, the tourism and the inhabitants. The municipalities administrate the data of the landowners and the tourism businesses.
 - The municipality is involved in construction projects in the approval process.
 - The municipality has supported the construction of biomass heating plants in St. Nikolai, Mössna and Kleinsölk.
- When biomass heating in Stein / Enns the church is with the school and the residential building (including Nature Park office) in the main consumer of heat.



The construction of the biomass heating plant in St. Nikolai was supported by the municipality

- Authorities
 - Forest Authority
 - Monitors compliance of the Austrian Forestry Act
 - Nature Protection Authority
 - Monitors compliance the nature conservation law
 - For monitoring in the Natura 2000 area “Niedere Tauern” there is a separate area supervisor.
 - Chamber of Agriculture
 - Landowners or forest owners are required members of the chamber of agriculture
 - Members receive technical and economic consulting. An important place has the funding consultancy.
 - Sölktaier Nature Park has regular exchanges with the chamber of agriculture.



Volkhard Maier has presented BioEuParks Mr. Titschenbacher, president of the Styrian Chamber of Agriculture

General description of the social and environmental framework (e.g. how many companies work your area? How many employees? Is there any local or regional management plan in the Parks?)

- Most of the people in Söltkäler Nature Park work outside the Park
 - 829 people are working as employee or entrepreneur (Styrian country stats 2010)
 - 10,6% Agriculture and Forestry
 - 32,6% Industry
 - 56,8% Services
 - 549 inhabitants from the municipality Sölk work outside the Park
 - 212 employees work in Sölk in 146 companies
- Only a few of the companies have a relationship to biomass
 - Forest Enterprise (16)
 - Farmers with forest land (121) have a loose relationship
 - Timber truck company (1)
 - Digger companies (2)
- There is no management plan for the Park
 - The award as a Nature Park has no legal changes

Give any example of conflict or best practice arisen on this issue before BioEuparks project started

- In the 0-ies there has been a conflict in the construction of hydroelectric power plants. The Nature Park was able to contribute through awareness training and information sessions to clarify these conflicts.
- The greatest tensions exist between hunting and tourist interests. On the part of the natural park around talking trying to avoid conflict.



Near the Bräualm (St. Nikolai) there is a deer feeding. Municipality, tourist association, hunters and forest management have agreed that the area should not be entered.

Section II

Identification and analysis of potential social and environmental impact resulting from the project:

e.g. impacts on on health and community wellbeing, change in local employment, integration of local residents in different phases of the project, providing proper awareness about renewable energies, the level of involvement of the various stakeholders in the project, change in land use or impact on biodiversity, pollution, water use etc.

- All residents of the Söltkäler were involved in the project. They received information on the commune newspaper, at information events in the various districts, regional newspapers and social media.
- Through the sustainable use of forests in the Natural Park is an important contribution to the conservation of the habitat in the Natura 2000 area "Niedere Tauern". In the Special Protection Area (SPA) it is about the habitats of *Milvus migrans*, *Milvus milvus*, *Gypaetus barbatus*, *Aquila chrysaetos*, *Bonasa bonasia*, *Tetrao urogallus*, *Charadrius morinellus*, *Glaucidium passerinum*, *Aegolius funereus*, *Picus canus*, *Dryocopus martius*, *Picoides tridactylus*, *Luscinia svecica svecica*, *Lagopus mutus*, *Tetrao tetrix*, *Wissenschaftlicher Name*, *Ardea cinerea*, *Falco subbuteo*, *Columba palumbus*, *Alauda arvensis*, *Hirundo rustica*, *Delichon urbica*, *Anthus spinoletta*, *Motacilla cinerea*.



Tetrao urogallus is one of the protected species in the Natura 2000 area "Niedere Tauern".

- Within the BioEuParks project the share of regional biomass increased massively from 700 cubic meter per year to 1.050 cubic meter per year. The proportion of regional biomass has increased by 50%.
- By increasing the proportion of regional biomass transport routes were shortened This saves energy and avoids noise. The increase in the proportion of regional biomass by 50% led to a reduction in the truck transport paths to 10,000km. This represents a CO2 saving of 271kg.
 - The increase in the regional share of biomass has no direct impact on the environment in the Natural Park, as the production volumes have remained the same. The CO2 savings and avoid of noise has a national effect.
- Due to the very sparse population in Söltkäler Nature Park (5.5 inhabitants/km²), the lack of heavy industry and the extensive farming, there are no limits exceeded across the region.
 - The limits for Air-pollution in Austria

SO ₂	120 µg/m ³
SO ₂	200 µg/m ³
PM ₁₀	50 µg/m ³
PM ₁₀	40 µg/m ³
PM _{2,5}	25 µg/m ³

CO	10 mg/m ³
NO ₂	200 µg/m ³
NO ₂	30 µg/m ³ (35 µg/m ³ inkl. Toleranzmarge)
Benzol	5 µg/m ³
Blei	0,5 µg/m ³

Section III

Determine indicators compliance with project objectives

- Increase the proportion of regional biomass used in the heating plants in Söltkäler Nature Park
 - The proportion increased 50% within the project BioEuParks
 - The increase in the regional share of biomass has no direct impact on the environment in the Natural Park, as the production volumes have remained the same
- Project information through newspapers, radio broadcasts, social media, information events, conferences and meetings.
 - 10 articles in Newspapers
 - 5 releases on Social Media
 - 1 radio broadcast, live 1 hour

Determine mitigation measures if found to be necessary

- The increase in the regional proportion of regional biomass transport route has been shortened to 10,337km.
- Due to the low population density in the Natural Park (5 inhabitants / km²) all economically sensible biomass heating plants have been built.
- Potential for increasing the share of regional biomass is in family homes. Data collection is very difficult in this area, as there is no obligation to report the change of the heating system.
 - Data collection will be done by survey in the various districts.
- Reduction in CO₂ emissions
 - The heat production in the biomass heating plants in the Nature Park is very constant. Here is no potential for CO₂ savings.
 - CO₂ reduction is due to the reduction of transport routes
 - This causes a CO₂ reduction of 271kg.
 - Based on the survey for the conversion of the heating systems in family homes, the change in CO₂ emissions can be calculated.



Söltkäler Nature Park has low population density

Properly assess the performance and effectiveness of the adopted mitigation measures

- The greatest effect by increasing the share of regional biomass results from the shorter transport distances and the associated CO2 reduction.

Please summarize the potential impacts from the main activities of the project. Impacts are measured based on their type as they could be directly or indirectly affected by the whole project, nature reflects if the impact is positive or negative, duration emphasizes if the impact is permanent or temporary within the project time duration, and magnitude is the power of the impact on a certain component.

IMPACT	TYPE	NATURE	DURATION	MAGNITUDE
<i>EXAMPLE: Health and safety</i>	<i>Direct</i>	<i>Negative</i>	<i>Permanent</i>	<i>Moderate</i>
Air pollution	Direct	partly	partly	Moderate
Sustainability	Direct	Positive	Permanent	Moderat
awareness of biomass	indirectly	Neutral	Permanent	High
Noise	Direct	Positive	partly	Moderate
CO2 reduction	Direct	Partly	Partly	Moderate

PARTNER	KRP
Country	SLOVENIA

Section I

DESCRIBE THE LEGISLATIVE FRAMEWORK ABOUT FORESTRY AND RENEWABLE ENERGY IN FORCE

1.1. Slovenian legislative framework

Slovenia has a comprehensive legislative framework for renewable energy sources (RES). As one of the activities within Holistic project is installation of heating system on wooden biomass in the selected object in the Municipality of Ajdovščina, only the most relevant legislative documents will be presented in this chapter. Documents regarding power generation from RES are excluded from this analysis.

Energy Act (EZ 1)

New Energy Act (EZ 1) was adopted in March 2014. Governed by the provisions of the ten European directives, it arranges the field of energy market, promotes energy efficiency, and renewable energy. The law gives the legal basis for the adoption of the national strategic documents that will define the long-term policy in the area of land use and energy supply in the future. The basic document shall be the Energy Concept of Slovenia (EKS), which should set out the objectives of a competitive, sustainable and reliable energy supply for the next 20 years and a framework for the next 40 years. National Development Energy Plan will be based on EKS, and it should set the framework plan for major investment in energy infrastructure.

Through the framework for the promotion of energy efficiency and the use of energy from renewable energy sources, EZ 1 should contribute to the national goal of reducing greenhouse gas emissions and promote green economic growth (25% of energy from RES in final gross energy consumption in 2020). According to the Energy Act, the Government will determine goals for each year until 2020, as well as sectoral goals for final gross consumption of electricity, energy for heating and cooling, and energy for transport gained from RES. (Državni zbor Republike Slovenije, 2014). Furthermore, in § 322 it is stated that use of renewable energy, cogeneration and excess heat in the district heating systems is compulsory. The end users of heat and fuel have to pay a contribution to the production of heat from renewable sources. There is no contribution if the heat is gained from RES.

Resolution on the National Energy Programme (ReNEP)

Resolution on the National Energy Programme (ReNEP) was adopted in 2004. It is a strategic document for the future functioning of the coordinating institutions dealing with energy supply. It puts the objectives and sets out the mechanisms for achieving reliable, competitive and environmentally friendly energy supply. Furthermore, it puts the objectives and mechanisms for increasing the understanding of the role and importance of energy in increasing prosperity. It contains the objectives, guidelines and selected strategy of energy supply and use and prospective energy

balance for a periods of 10 and 20 years. Also, it determines the long-term development objectives and policies of energy systems and energy supply, among which are incentives for investments in energy efficiency and renewable energy, and the use of economically eligible

technologies for the production of fuels and energy production. (The National Assembly of the Republic of Slovenia, 2004)

It is stated in the ReNEP that, at that time, wood biomass was on the second place in usage in the primary energy balance. In addition, it is underlined that *'The use of wood biomass in the modern individual and collective installations for heating and process heat is also one of the greatest potentials for the use of RES-E in Slovenia'* (The National Assembly of the Republic of Slovenia, 2004, p. 14). It is also recognized that the production of heat from RES has the minimum impact on the environment, improves local air quality, increases the security of supply, promotes regional and rural development, and maintains existing and creates new jobs. That is why, as one of the measures for fulfilling the ReNEP goals is a creation of a wood biomass market. To ensure the stability of the market, it is necessary to adopt standards for the quality and range of products of wood pellets and other wood fuels. (The National Assembly of the Republic of Slovenia, 2004)

The Second National Action Plan for Energy Efficiency for the Period 2011-2016 (AN URE2)

The Second National Action Plan for Energy Efficiency (AN URE2) contains an overview of the objectives and implementation of The First National Action Plan for Energy Efficiency for the Period 2008 to 2010 (AN URE 1), assessment of the achieved effects and planned activities during the period 2011-2016, and financial resources for the implementation of programs and measures for achieving the objectives of energy efficiency. The objective of AN URE 2 is to achieve a 9% savings in final energy. AN URE 2 prescribes goals and measures for savings in primary and final energy, with special attention dedicated to public sector. Planned additional activities are directed primarily to the accelerated development of the market for energy services and the development of energy-efficient products and production processes, with the aim of achieving and surpassing fixed, short-term, and long-term objectives. In particular, pursued is the accelerated renovation of buildings in the public sector, achieving a near-zero energy buildings, increase in share of renewable energy, further reduction of energy use, and sustainable development of the economy.

National Renewable Action Plan 2010-2020 (NREAP) Slovenia

National Renewable Action Plan (NREAP) was adopted in 2010. It is a strategic document aiming at determining quantitative values of energy usage from RES. In the NREAP first is presented national renewable energy policy, followed by expected final energy consumption for period 2010-2020. In the second part of the document national and sectoral targets and trajectories are presented. The main part of the document prescribes specific measures needed to fulfill the requirements of the Directive 2009/28/EC, and describes support schemes for promotion of energy from RES.

In the NREAP, there are specific measures prescribed for buildings, specific measures for the promotion of the use of energy from biomass, as well as support schemes to promote the use of energy from RES in heating and cooling. Specific measures for buildings are taken from the Rules on efficient use of energy in buildings. According to this document building is energy efficient if at least 25% of the entire final energy is obtained from RES. Building is also energy efficient if 50% of the final energy for heating and cooling is obtained from solid biomass.

National Energy Programme (NEP)

National Energy Programme (NEP) is in adoption process from 2011. NEP identifies the long-term development objectives and guidelines of the national energy policy, energy systems and energy supplies, taking into account the environmental and technological criteria, the

development of public infrastructure and infrastructure of national importance, and the incentives and mechanisms to encourage the use of renewable energy sources and implementation of measures for the efficient use of energy. As stated in the NEP: *“Efficient energy use, renewable energy sources and the development of active networks for the distribution of electricity are priority areas of energy policy to increase the security of supply and the competitiveness of the company and a gradual transition to a low-carbon society”*. (Institut Jožef Štefan - Center za Energetsko Unčikovitost (CEU), 2011, p. 22)

Chapter 3 in the NEP is dedicated to RES. As stated there, national goals for RES are as follows:

- a 25% of RES in the final use of energy by 2020,
- a 30% of RES in the final use of energy by 2030,
- a 10% of RES in the transport sector by the year 2020,
- establish RES as priorities in economic development. (Institut Jožef Štefan - Center za Energetsko Unčikovitost (CEU), 2011, p. 50)

Operational objectives for production of heat are as follows:

- a 33% of the production of heat from RES by the year 2020,
- a 37% of the production of heat from RES by the year by 2030,
- 20% RES in district heating systems by 2020,
- encourage 100% use of RES in five municipalities by the year 2020. (Institut Jožef Štefan - Center za Energetsko Unčikovitost (CEU), 2011, p. 50)

Other relevant legislative documents

Documents presented in this subchapter are related to production and use of biomass for heating. Some of them are indirectly related with RES (administration, construction, environment impact assessment, etc.), while others are lower legislative acts addressing heating of buildings. Table 1 gives an overview of permits and consents needed for establishment of heating plants.

Table 1. Overview of permits, and consents

	Plants for decentralized production of electricity, heating and cooling - investment maintenance work	Plants for decentralized production of electricity, heating and cooling - less complex engineering structures
National Energy Programme/ Strategic Spatial Plan	-	-
National spatial plan	-	-
Municipal spatial plan	✓	-
Integrated environmental impact assessment	-	-
Water rights	-	-
Mining rights	-	-
Environmental permit	✓	-
Construction permit	✓	-
Environmental impact assessment-env.consents	-	-
Environmental permit to emit substances into the air or water	✓	✓

Acts

- ✓ Construction Act, Official Gazette of the RS, No. 102/04 - official consolidated text, 14/05, 92/05, 93/05, 111/05, 126/07, 108/09, 61/10, 20/11, 57/12, 101/13, 110/13
- ✓ Environmental Protection Act, Official Gazette of the RS, No. 39/06 - official consolidated text, 49/06, 66/06, 33/07, 57/08, 70/08, 108/09, 108/09, 48/12, 57/12, 92/13
- ✓ Nature Conservation Act, Official Gazette of the RS, No. 56/99, 31/00, 119/02, 22/03, 41/04, 96/04
- ✓ Forest Act, Official Gazette of the RS, No. 30/93, 56/99, 67/02, 110/02, 115/06, 110/07, 106/10, 63/13, 101/13, 17/14
- ✓ Mining Act, Official Gazette of the RS, No. 14/14- official consolidated text
- ✓ Physical Environment Act, Official Gazette of the RS, No. 33/07, 70/08, 108/09, 80/10, 43/11, 57/12, 57/12, 109/12
- ✓ Spatial Planning Act, Official Gazette of the RS, No. 33/07, 70/08
- ✓ Waters Act, Official Gazette of the RS, No. 67/02, 2/04, 41/04, 57/08, 57/12, 100/13, 40/14
- ✓ Local Finances Act, Official Gazette of the RS, No. 123/06, 101/07, 24/07, 57/08
- ✓ Public Procurement Act, Official Gazette of the RS, No. 12/13 - official consolidated text
- ✓ Act Regulating Public Procurement in Water, Energy, Transport and Postal Services, Official Gazette of the RS, No. 72/11 - official consolidated text, 43/12, 90/12, 19/14

Programmes

- ✓ Operational programme for complying with national emission ceilings for atmospheric pollutants - Revision on Operational programme for complying with national emission ceilings for atmospheric pollutants from 2005
- ✓ Operational programme for the protection of ambient air against pollution caused by PM10
- ✓ Operational programme for limiting greenhouse gas emissions until 2012
- ✓ National Housing Programme, Official Gazette of the RS, No. 43/00
- ✓ An action plan for renewable sources of energy for the period 2010-2020, Official Gazette of the RS, No. 77/09
- ✓ Ordinance on Spatial Planning Strategy of Slovenia, Official Gazette of the RS, No. 76/04, 33/07

Decisions

- ✓ Decision on the strategy of spatial development of Slovenia, Official Gazette of the RS, No. 76/04, 33/07
- ✓ Decree amending the Decree on energy infrastructure, Official Gazette of the RS, No. 75/10, 53/11
- ✓ Decree amending the Decree on the categories of activities for which an environmental impact assessment is mandatory, Official Gazette of the RS, No. 95/11
- ✓ Decree amending the Decree on the emission of substances into the atmosphere from small and medium combustion plants, Official Gazette of the RS, No. 24/13
- ✓ Decree amending the Regulation on classification of construction with regard to their complexity, Official Gazette of the RS, No. 18/13, 24/13 in 26/13
- ✓ Decree on criteria for determining the likely significance of environmental effects of certain plans, programmes or other acts and its modifications in the environmental assessment procedure, Official Gazette of the RS, No. 9/09

- ✓ Decree on energy infrastructure, Official Gazette of the RS, No. 62/03, 88/03
- ✓ Decree on green public procurement, Official Gazette of the RS, No. 102/11, 18/12, 24/12, 64/12, 2/13
- ✓ Decree on the categories of activities for which an environmental impact assessment is mandatory, Official Gazette of the RS, No. 78/06, 72/07, 32/09
- ✓ Decree on the emission of substances into the atmosphere from stationary sources of pollution, Official Gazette of the RS, No. 31/07, 70/08, 61/09 in 50/13
- ✓ Decree on the spatial order of Slovenia, Official Gazette of the RS, No. 122/04, 33/07

Regulations

- ✓ Regulation amending the Regulation on classification of construction with regard to their complexity, Official Gazette of the RS, No. 18/13
- ✓ Regulation on classification of construction with regard to their complexity, Official Gazette of the RS, No. 18/13
- ✓ Regulation on the promotion of efficient energy use and the use of renewable energy sources, Official Gazette of the RS, No. 89/08, 25/09
- ✓ Resolution on National Environmental Action Plan 2005-2012, Official Gazette of the RS, No. 2/06
- ✓ Rules on design documentation, Official Gazette of the RS, No. 55/08
- ✓ Rules on efficient use of energy in buildings, Official Gazette of the RS, No. 93/08, 47/09
- ✓ Rules on the methodology and content of feasibility studies for alternative systems of energy supply for buildings, Official Gazette of the RS, No. 35/08
- ✓ Rules on the methodology and issuing of building energy IDs, Official Gazette of the RS, No. 77/09
- ✓ Rules on the methodology and obligatory content of local energy concepts, Official Gazette of the RS, No. 74/09
- ✓ Rules on the operation of Centre for RES/CHP support, Official Gazette of the RS, No. 86/09

DESCRIBE THE LOCAL KEY ACTORS TARGETED BY THE PROJECT

(e.g. a forest cooperatives? A company? For each actor, please give a short description of its organization in terms of employees, objectives and area of competence)

1. Slovenian forest service (Regional unit Brežice and Celje). It is a public organization with 110 employees, area of competence is 290.463 ha.

Objectives: **Preservation and close-to-nature development of Slovenian forests and of all their functions for their sustainable and good management and use as well as nature conservation in forest space for the good of present and future generations. Competences are described in national forestry law**

2. The Chamber of Agriculture and Forestry of Slovenia (Regional unit Celje and Novo mesto).

It is a public organization with 100 employees, area of competence is about 400.000 ha. Objectives: They advice owners of agricultural lands at management.

3. Representatives of the local community (Kozje (89,7 km² – inside park 89%), Bistrica ob Sotli (31,1 km² - inside park 100%), Podčetrtek (60,6 km² - inside park 52%), Brežice (268,1 km² - inside park 52%), and Krško (286,5 km² - inside park 2%)).

This are public organisations with 30 employees. Objectives: Local communities are taking care of infrastructure, educational system, associational activities and health supply inside their area.

GENERAL DESCRIPTION OF THE SOCIAL AND ENVIRONMENTAL FRAMEWORK

(e.g. how many companies work your area? how many employees? is there any local or regional management plan in the parks?)

In our area there are 8 companies with cca 200 employees. In our area there are also two agricultural cooperatives with cca 20 employees.

In the Park we don't have a local or regional management plan. Every year we prepare a program of our activities for the exact year.

The forests area is particularly covered by the Act on Forests (Official Gazette of the Republic of Slovenia, Nos. [30/1993](#), [13/1998](#), [67/2002](#), [110/2007](#)), which regulates the protection, silviculture, exploitation and use of forests, and the disposal of forests as natural resources with the aim of ensuring their close-to-nature and multi-purpose management in accordance with the principles of protection of the environment and natural values, long-term and optimal working of forests as ecosystems, and enabling their functions (Article 1 of the Act on Forests).

Article 5 of the Act on Forests states the tasks of forest owners:

1) Rights of ownership to forest shall be exercised in such manner as ensures their ecological, social and productive functions. The owner of a forest must therefore:

- manage the forest in accordance with regulations, management plans and administrative acts issued on the basis of the act;
- allow free access to and movement in the forest to others; and
- allow beekeeping, hunting and the recreational gathering of fruits, herbal plants, mushrooms and wild animals in accordance with regulations.

2) Owners of forests shall have the right to participate in procedures for adopting forest management and wildlife management plans and in the preparation of forest silviculture plans. Their needs, proposals and requests shall be respected as far as is possible and consistent with ecosystem and legal restrictions.

Forest management and silviculture planning are the responsibility of the Slovenia Forest Service. The composition of plans is more specifically detailed in the **Regulation on Forest Management and Silviculture Plans** (Official Gazette of the Republic of Slovenia, Nos. 5/1998, 70/2006). The managers of the protected area participate in drafting these plans for protected areas.

GIVE ANY EXAMPLE OF CONFLICT OR BEST PRACTICE ARISEN ON THIS ISSUE BEFORE BIOEUPAKS PROJECT STARTED

Four solar power stations were build in a farm land. Power stations were financed by private owners. The conflict is, that a part of forest was cut down and farm lands of private owners were destroyed because of building solar power stations which does not goes with principles of managing protected areas. With owners or so called applicants that are investing in building solar power stations, a lot of meetings were held of which result is that solar power stations should be built on larger economic or farm objects.

Section II

IDENTIFICATION AND ANALYSIS OF POTENTIAL SOCIAL AND ENVIRONMENTAL IMPACT RESULTING FROM THE PROJECT:

e.g. impacts on health and community wellbeing, change in local employment, integration of local residents in different phases of the project, providing proper awareness about renewable energies, the level of involvement of the various stakeholders in the project, change in land use or impact on biodiversity, pollution, water use etc.

- 3 new jobs: new jobs are in a private sector because of a working remote control heating sistem (1 new job – direktor of District heating Kozje, 2 new jobs- production and sale of wooden biomass
 - Increased local income: because of production and sale of more wooden biomass for the need of of District heating Kozje. Everything is running inside of a private sector. Public institute Kozjanski park is working as a important intermediary between solo private actors.
 - Better environmental awareness: as a part of a project, we held many events and meeting where we gave information to attendees about positive influences on environment with use of wooden biomass used for heating.
 - Unspoiled biodiversity in general: With increasing wooden biomass used for heating we positively influence on keeping biodiversity in a sense that the environment is less polluted and destroyed and therefore many plants and animals would better life conditions, especially inside Natura 2000 areas.
- Within the project we held many classes where we introduced positive effects.

Section III

DETERMINE INDICATORS COMPLIANCE WITH PROJECT OBJECTIVES

1. We succeeded in establishing system of Local supply chain in a settlement Kozje - The use of fosil fuel has reduces, we connected manufacturers of wooden biomass, owner of a remote control heating sistem and final users.
2. With executing workshops, round tables and solo meetings we contributed to bigger awareness of residents about the meaning of protecting environment.
3. We introduced the project to visitors of a protected area on our events. This is how we contributed to getting to know the meaning of using wooden biomass.
4. We made a lot of articles in local newspapers so we can inform residents of protected area with project activities.
5. We want to establish society of forest owners– with help of society we could fulfill project goals even more also the durability of this would assured.

Expected social impacts: Ther will certainly follow some social impacts when biomass production chain will be more established and broadened in the area of the Park.

First social impact as we expect will be connected with increased level of local economy – that means bigger local income. At the moment biomass production ensures income only for two inhabitants of the Park, but there will soon be more.

Second social impact comes through lowering the heating costs due to biomass use (cheaper than oil or gas).

Consequence is more money for other costs/goods/investments. Another also very important social impact will come from »a good practice« - meaning »other will follow«.

We expect significant increase in biomass use in the Park in the close future.

Expected environmental impacts: We expect lower air pollution around the central heating plant in Kozje due to obeying more strict legislation for organisations or companies than private persons.

Another environmental impact will be less wood left in the forest after cutting.

We don't expect some significant impacts from that fact because almost half of the Park area is covered with forests and furthermore forest companies does not cut the whole yearly growth (30-40%).

Furthermore we don't expect any significant impact on biotic diversity of the Park area because the amount of the biomass extracted from forests is not big.

Please summarize the potential impacts from the main activities of the project. Impacts are measured based on their type as they could be directly or indirectly affected by the whole project, nature reflects if the impact is positive or negative, duration emphasizes if the impact is permanent or temporary within the project time duration, and magnitude is the power of the impact on a certain component.

IMPACT	TYPE	NATURE	DURATION	MAGNITUDE
<i>EXAMPLE: Health and safety</i>	<i>Direct</i>	<i>Negative</i>	<i>Permanent</i>	<i>Moderate</i>
<i>Inhabitants educated about biomass concept</i>	<i>Direct</i>	<i>Neutral</i>	<i>Permanent</i>	<i>Moderate</i>
<i>Local actors realised advantages of use of biomass</i>	<i>Direct</i>	<i>Neutral</i>	<i>Permanent</i>	<i>Moderate</i>
<i>Local supply chain is established</i>	<i>Direct</i>	<i>Neutral</i>	<i>Permanent</i>	<i>Moderate</i>
<i>Smaller consumption of fossil fuels</i>	<i>Direct</i>	<i>Positive</i>	<i>Permanent</i>	<i>Moderate</i>

PARTNER	Rodopi National Park (RNP)
Country	GREECE

Section I

Description of the legislative framework about forestry and renewable energy in force

The Forest Service as the land owner and responsible for the management of the forests and local Forest Workers Cooperatives are involved in the harvesting procedures of the forest biomass.

The Forest Workers Cooperatives (FWC) are legal entities commissioned to operate in state forests providing logging services. The main legislation documents that rule their operation are:

1. Law 86/1969 "Forest Code" Article 134
2. Presidential Decree 126/1986 "Procedures for granting the operating, maintenance and improvement of forests belonging to the State and legal persons of the public sector in forest cooperatives".

The Forest Workers Cooperatives could exercise wood trading without restrictions, a case which is actually very rare.

The framework that regulates RES use is a bundle of laws and regulations (Ministerial decrees) from which the most significant are the following:

- Law 3468/2006 "Production of Electricity from Renewable Energy Sources and CHP plants and other provisions".
- Law 3851/2010 "Accelerating the development of Renewable Energy Sources to deal with climate change and other regulations addressing issues under the authority of the Ministry of Environment, Energy and Climate Change".
- Law 4062/2012 "Exploitation of former Hellinikon Greek Airport - HELIOS Project - Promotion of renewable energy use (Directive 2009/28 / EC) - Criteria for Biofuels and Sustainability Bioliquids (Directive 2009/30 / EC)".

There are only few and relatively recent regulations and guidelines for the protection of consumers from fraud during their transactions on biomass trade which are:

1. Guide for firewood transport, which is actual a technical description for biomass storage and trade published from the Ministry of Development and edited by CRES (Centre for Renewable Energy Sources).
2. Solid biomass fuels for non-industrial use – Requirements and Test Methods Ministerial Decision 198/2013 (GG 2499/B/04-10-2013), Ministry of Finance.

Description of the local key actors targeted by the project

Forest Service is the sole land owner and responsible for the sustainable management of the forests. Local Forest Workers Cooperatives commissioned by law are involved in the harvesting procedures of the forest biomass.

Forest Service is the land owner and responsible for the management of the forests and local Forest Workers Cooperatives are involved in the harvesting procedures of the forest biomass. Forest management and logging is performed under specific restrictions set by the forest and environmental legislation and the related regulative framework. Forests and forest stands as the basic forest divisions are managed by the Forest Service under multiannual (10year) forest

management plans. Coniferous stands are managed under a selective logging with a rotation period of at least 10 years between 2 successive interventions.

The amount of wood in m³ and the possible product categories that will be extracted from each stand has been pre-assessed in the multiannual plan as well. There is a typical limit in the balancing between the logging assessment and the actual loggings that is $\pm 20\%$ of the assessed wood volume in the plan.

The Forest Service in the RNP area is represented by three basic units-forest offices which are:

1. The Forest Office of Drama with 91 employees
2. The Forest Office of Nevrokopi with 16 employees
3. The Forest Office of Stavroupoli Xanthi with 11 employees

Forest Workers Cooperatives perform the harvesting operations inside the RNP area and their participation in biomass production process in a LSC is mandatory. Inside the RNP area operate 72 Forest Workers Cooperatives comprising 463 members. These numbers reveal a great fragmentation and a small average size of membership.

The Forest Workers Cooperatives share the prescribed for harvesting wood volume according to annual or biennial programs, compiled by the Forest Service Offices and approved by the Prefectural Directorate. Each FWC is installed by the Forest Service in one or more forest stands inside the harvested area. FWCs have also the responsibility to sell the biomass (wood products) after payment of relevant fees to the state.

In particular, 12% of the revenues derived from selling wood products are transferred to the Forest Service and to the Green Fund and an administrative fee of 5% is paid to the municipal authority where the harvesting takes place.

Alfawood is a private enterprise and the only operable biomass processing facility in the RNP area. It was established in 2010 nearby the town of Nevrokopi. It is the only biomass processor inside the RNP area and its production capacity of 65,000 tons per year.

This facility uses 100% coniferous logs and wood residues from coniferous wood processing. The production in 2012 was about 40,000-45,000 tons, with 95% of this production was channeled to the local market and only 5% was exported. Only a small portion of this production (less than 5,000 tons/year) was derived from pine wood post-processing residues. About 10 to 15 people are working in the facility; the number balances over the time.

The population in the RNP area is settled in 23 small and medium sized communities. These communities are distinctive spatial units that belong in 4 different municipalities which is the target group of the end users in the LSC. Contacts and specific meetings they have already performed by the Bioeuparks partners with representatives of all municipalities.

Thanks to Bioeuparks efforts till today, one municipality doubled the number of biomass boilers in municipal buildings and raised greatly the established thermal capacity and the energy efficiency use. A second municipality has plans to install two biomass boilers soon and is negotiating the obtainment of two more through leasing.

General description of the social and environmental framework

The population of the area is 19,502 people, data derived from four successive inventories (30 years) reveal that the total population in the RNP area shows a very slow but continuous sliding and the general trend shows a stabilization after a sharp decline between 1981 and 1991 when it is reduced by almost 30%.

The active population is about 6,867 people, which account the 34.21% of the total population of the area. A percentage of 56.72% or 3,895 of the active population is engaged in the primary production (NACE A-B) – agriculture, forestry and husbandry, while the rest is engaged in

industry and services (NACE C-F & G-Q). Comparing the 463 members of the FWC with the total of 3,895 people engaged in primary production we can assume reasonably that a percentage of 12% of them is involved directly to forestry. No recent data are available to permit an evaluation of the trends in the activities.

The RNP area is protected by multiple protection regimes in National, European and Global level. In particular, seven (7) areas of the RNP have been integrated into the Natura 2000 network according to the Habitats Directive 92/43/EEC and the 2009/147/EC (two (2) SPA and five (5) SCI), 2 areas have been characterized as Preserved Natural Monuments, seven (7) areas as Wildlife Reserves according to the Greek law and three (3) regions which have been characterized by the European Council as Biogenetic Reserves.

Examples of conflicts or best practices arisen on this issue before BioEupaks project started

- Biomass import from neighboring countries distorts wood market in Greece. Especially, wood imports from Bulgaria (an EU member state) are much cheaper than the wood produced locally. The VAT legislation and regimes regarding imports from EU countries provokes high disadvantages to Greek biomass producers inside the RNP. Moreover, Greek pellets production is charged with 23% VAT when the same product imported from the neighbouring EU member state is charged with 0% VAT.

- The fees paid by FWC for the harvesting of coniferous wood (used in pellet production) are considered very high, since they permit a narrow earning margin of 1.00€ per stacked cubic meter. There is urgent need for reducing the annual fees for the so called “industrial wood” loggings (relatively small sizes coniferous wood).

This reduction will rise the narrow earning margin for the Forest Working Cooperatives and will promote a greater wood extraction from stands that today are not preferable. Despite the meeting of the Bioeuparks partners with the General Director of the Decentralized Administration of Macedonia and Thrace and the relative letter that the FWC have sent, the problem remains because the final decision is to be made by the Ministry of Reconstruction of Production, Environment and Energy (former Ministry of Environment, Energy and Climate Change).

- New biomass feeding facilities had been adapted in old oil boilers already established in some municipal buildings, giving poor results in terms of energy use efficiency and needing frequent maintenance. Due to Bioeuparks efforts brand new facilities have been established in other municipal buildings giving optimal results in bioenergy use.

- The need of including the cost of a person engaged in boilers' feeding and maintenance in contracts signed between biomass provider and end user is considered important, in terms of boiler efficiency and ease of use.

One disadvantage that municipal representatives describe as the greater barrier in biomass boiler establishment is the need for continuous feeding and cleaning of the plants. This action could not be performed successfully by municipal servants and thus the inclusion of the cost in biomass providing contracts, as an additional service, could be a possible solution.

By this solution new jobs are created in the area of the RNP.

Section II

The identification and analysis of potential social and environmental impact resulting from the project should also include the economic impact of the implementation of the LSC in the area of the RNP, since exploitation of local biomass is basically an economic activity. Moreover, an impact can hardly belong to only one category but has rather implications on all categories –

social, environmental and economic. In this context, the different types of impacts that the LSC implementation has resulted are presented below:

Climate change mitigation is an environmental impact that focuses directly to the goals that EC has set by the Directive 28/2009 and to the country's targets regarding the 20-20-20 policy. The positive contribution of the project' LSC is considered low, due to the low total established capacity (1 MW) of biomass boilers till today.

This contribution could be greater as more authorities will presumably be engaged in the established LSC in the near future.

The direct impact on local population is low but the indirect one for the country and its obligations in reducing CO₂ emissions could be considered moderate.

GHG reduction is also an environmental impact that is directly related to the goals of the EC Directive 28/2009 and to the country's targets (20-20-20 policy).

The positive contribution of the project is assessed as moderate, because the reduction of fossil fuels consumption is relatively high although the total established capacity (1 MW) of biomass boilers is relatively low until today.

The perspective is obviously positive, since more public authorities are expected to be involved in the LSC.

Pressure on natural resources is an environmental impact related to the goals set by the Directives 92/43/EEC and 2009/147/EC and in country's environmental and forest legislation. The pressure imposed by the LSC in the RNP area is considered low, because the feedstock was already available as wood biomass used for other than energy purposes. In addition, wood biomass availability is very high and existing forest management plans take into account this pressures and regulate the availability of natural resources.

Dependency on fossil fuel is a social and economic impact related to the 20-20-20 policy. The project contributes positively to the independence of fossil fuels and promotes the use of local resources.

Although the contribution is considered low, due to the low capacity of the installed bioenergy facilities, the potential contribution could be high and is directly related to the new bioenergy facilities to be installed in the future.

The direct impact on the local population is low but the indirect economic impact could be assessed as permanent and high, because of the great cost difference between pellets and the equivalent oil for the same thermal result.

Energy use efficiency is an economic, environmental and social impact the magnitude of which depends on the adoption of efficient bioenergy facilities from the local population. The positive contribution of the project concerning energy use efficiency is assessed as high.

Knowledge & experience transfer is a social impact that focuses directly to public authorities as end users and to the local population.

The positive contribution of the project is considered moderate today but there is great possibility to be become high through time, as the good practice examples realized in the local communities will be further known.

Consensus building and cooperation among the local rings of the LSC is a social impact that focuses directly to all local actors in utilization of bioenergy. The positive contribution of the project is moderate today but there is great possibility to be higher in the near future.

The project motivated continuous communication among local actors in the area and resulted in alleviation of misunderstandings or potential conflicts and efficient cooperation of local actors for mutual profit.

The cooperation is expected to be continued in the future, because the biomass potential in RNP is high and the chances for the development of the local economy through biomass LSC are high as well.

Local economy growth is an economic impact that focuses directly to all local actors and indirectly to the local population. The positive contribution of the project is assessed as high, since the local economy is based mainly on the agro-forestry sector. The LSC acts as an opportunity for new income creation in all economic sectors, from primary production of wood to the end bioenergy user.

Jobs creation and maintenance is a social impact targeted directly to the local population. The positive contribution of the project is considered low to moderate, due to the small scale of the pilot LSC.

But, the expansion of the supply chain as a good practice example can potentially create new jobs, mainly in the trading of biomass (in the forms used for energy) and in services provided in burners feeding and maintenance.

The project acts as an opportunity for new jobs creation in all levels of NACE and in all types of actors involved in the LSC.

Section III

Indicators

no	year	site	Maximum capacity Kwh	Mean capacity	capacity Kcal/h
1	2013	Fire station	80	60	51600
2	2013	City hall	80	60	51600
3	2013	Neyrokopi gym	150	110	129000
4	2014	Perithori school	222	186	160000
5	2014	Bolakas gym	278	232	200000
6	2014	Bolakas school	222	186	160000
			1032	834	752200
			Max capacity	>1	MW

The total installed maximum capacity of biomass burners in the RNP are today greater than 1 MW that the project had set as reference number. Even if this max capacity is obtained from six different units the results could be comparable somehow with those obtained by CHPs.

The goal of installed capacity equal or greater than 1 MW has been achieved, therefore no mitigation measures are needed.

The baseline of indicators for RNP in the beginning of the project were equal to 0, since no energy plant was installed in the area.

The results of bioenergy production after the 1st year of the LSC implementation are presented in the table below and show a successful impact of the Bioeparks project on the biomass exploitation for energy.

Bioenergy production will be reassessed after the 2nd year of implementation and real data from two successive years will be available for comparison.

Monitoring indications show that biomass production (feedstock) is increasing and the perspectives to extend the LSC to other end users are fairly good. Consequently, no mitigation measures are needed.

	RNP Benchmarking	RNP 1st year
Biomass Produced (Ton/year)	0	3,195
Electrical power MWh/year	0	0
Thermal energy MWh/Year	0	15,615
Renewable Energy production (MW/year)	0	679.40
Primary energy savings toe/year	0	58.43
Reduction of GHG ton/year	0	179.58

Summary of potential impacts from the main activities of the project.

Impacts are measured based on their type as they could be directly or indirectly affected by the whole project, nature reflects if the impact is positive or negative, duration emphasizes if the impact is permanent or temporary within the project time duration, and magnitude is the power of the impact on a certain component.

IMPACT	TYPE	NATURE	DURATION	MAGNITUDE
Climate change mitigation	Direct	Positive	Permanent	Low
GHG reduction	Direct	Positive	Permanent	Moderate
Pressure on natural resources	Direct	Negative	Permanent	Low
Dependency on fossil fuel	Direct	Positive	Permanent	Moderate to High
Energy use efficiency	Direct	Positive	Permanent	High
Knowledge & experience transfer	Direct & indirect	Positive	Permanent	Moderate to High
Consensus building	Direct & indirect	Positive	Permanent	Moderate to High
Local economy growth	Direct	Positive	Permanent	High
Jobs maintenance and creation	Direct & indirect	Positive	Permanent	Low to Moderate

PARTNER	DINPD - Danube-Ipoly National Park Directorate
Country	HUNGARY

1. Evaluating impacts towards achieving sustainability

The goal of the BioEUParks project is to promote setting up local biomass supply chains and thus promote sustainable use of solid biomass for Energy production. The plan was to elaborate a local supply chain system, which ensures sustainable land use. The partners discussed a lot, how sustainability should be measured.

Regarding the many different usage and meaning of the word “sustainability” it was considered to set up our own definition of sustainability but this turned out to be too ambitious intention because of the wide variety of nature sites and local societies with different character involved in the project.

Therefore a common set of sustainability criteria was set up by the project partners based upon the European criteria regarding biofuels. This set of criteria is the base of examination of the impacts of the pilot supply chains. (Annex 1)

Furthermore the basic tools of project level Environmental Impact Assessment (EIA) procedures were used for identification and evaluation of key impacts.

From the very beginning of the project possible impacts were considered and early involvement of the public and possible stakeholders was an important part of ex-ante assessment of the possible impacts of the project. Therefore some impacts were already mitigated during setting up pilot supply chains by prioritizing biomass resulted from nature conservation management.

In the first part of this report we discuss all the possible impacts and those mitigations are not considered, when we evaluate a possible impact as “High”.

While using the project-specific indicator set and in the detailed description of the impacts of the actual pilot supply chains we see that some of these impacts became of low importance. However, when promoting setting up similar local supply chains these possible impacts must be analysed for every new site and supply chain again.

To come up with a legal proposal the impact assessment must be widened to the level of Strategic Environmental Assessment (SEA) as some aspects fall outside of project level EIA:

- small projects which individually do not cause significant impacts collectively may do so;
- connecting non-project actions may have significant consequences as well.

Elaborating a full SEA is definitely overwhelming the frames of the BioEUParks project but the main aspects of it should be kept in mind during the discussions of the policy proposal to be come up with by the end of the project.

2. Identifying significant effects of the local solid biomass supply chains

Being the pilot areas nature parks (nature protected areas) for identifying significant effects we use methodological tools of the Environmental Impact Assessment concept, not forgetting that nature cannot be saved without the contribution and commitment of the local communities, which underlines the importance of examining social impacts as well.

Screening and scoping:

Impacts of each elements of the supply chains have been examined: feedstock, harvesting, transport, storage, conversion, Energy production, end-consumer.

The level of the impact is given as compared to the other elements of the supply chain. (Obviously one small scale heating or CHP installation has little impact on climate on global

level, but because of the CO emission this impact is significant compared to the storage of the BM fuel of the facility.)

Level of possible impact: H-high M-middle, L-low, N-nothing or not applicable

	habitat	air	soil	water	noise	climate	roads, buildings	landscape
feedstock	H	L	M	M	N	M	N	H
harvesting*	H	M	H	L	H	M	M	N
transport*	L	H	N	L	H	H	H	L
storage	M/N	N	L/N	N	N	N	M	M
conversion	M/N	M	L	L	L	M	N	N
Energy production	N	H	N	M	L	H	N	H
end-consumer	N	N	H	N	N	N	N	H

* Removing the BM from the site of harvesting to the transporting vehicles is considered as part of the harvesting (because it is strongly connected to the method of harvesting), "transport" is considered as the transport on the existing road system. (In future development of supply chains impacts of transport might need reconsideration eg. in case of building new roads or special transport systems, like conveyor)

Ex-ante evaluation:

The public was informed from the very beginning of the project and the main stakeholders were given early and effective opportunities to participate in the decision making procedures before setting up the supply chains.

Conflicts raised by previous biomass-energy developments in Hungary were examined as well. Three main problems have been identified as a result of these activities:

- large areas of protected habitats or valuable habitats of high biodiversity had been clear-cut for harvesting feedstock
- new demand had increased significantly the price of the fire wood in the areas of the developments
- local inhabitants have fears from air-pollution and negative landscape effects of building big new Energy production facilities.

These impacts are also included in the evaluation matrixes and were examined carefully.

Some possible harmful impacts are got around (and thus eliminated or mitigated) by legislation. Legislation covering the main impacts of setting up local biomass supply chains:

- *Habitats* are protected by the Nature Conservation Law¹ and Forestry Law² and the nature conservation management plans and forestry plans of the sites ordered by those laws.
- *Air*: regarding emissions from the small scale (<20MW) facilities of the local BM supply chains neither Air Protection Law nor Environment Protection Law and the connecting governmental order³ is relevant but the Law on protection of the Built Environment⁴ and the connected governmental order⁵ regulates licensing procedures for building new Energy production facilities if the size of the building is bigger than 50m³ or higher than 3m and emission can be

¹ 1996. évi LIII. törvény - a természet védelméről

² 2009. évi XXXVII. törvény - az erdőről, az erdő védelméről és az erdőgazdálkodásról

³ 314/2005. (XII. 25.) Korm. rendelet a környezeti hatásvizsgálati és az egységes környezethasználati engedélyezési eljárásról

⁴ 1997. évi LXXVIII. törvény - az épített környezet alakításáról és védelméről

⁵ 312/2012. (XI. 8.) Korm. rendelet az építésügyi és építésfelügyeleti hatósági eljárásokról és ellenőrzésekről, valamint az építésügyi hatósági szolgáltatásról

regulated in the prescriptions of the licensing authority; and in the technical standards of the heaters.

- *Soil* is protected by the Agricultural Law and Soil Protection Law⁶ but it has little relevance regarding the possible harmful effects of BM supply chains except ensuring that management must be in line with the land use category and permission is necessary for changing of land use. Local municipalities' Environmental Programs (where such a program exists) may include further soil protection regulations. Regarding harvesting methods the forestry plans contain strict prescription. (Based upon the Forestry Law only those forestry activities may be carried out which are included in the forestry plan of the site accepted by the National Forestry Agency. The nature conservation manager participates in the authorization process of the forestry plans.)

- *Water*: small scale facilities and activities are not directly regulated by the environmental legislation but the general regulations of the Nature Conservation Law, the governmental order on protection of groundwaters⁷ and Soil Protection Law. Special regulations are relevant in case of Sensitive Areas and in drinkwater resource protection areas.

- *Noise*: regarding the small scale of the supply chains the strictest requirements are set up by the Nature Conservation Law - in context of disturbing habitats of protected species – and labour safety and local municipality regulations – in context of noise injuries and noise pollution in.

- *Climate*: small scale activities are out of the scope of the existing legislation, technical standards of fuel, vehicles and burners/heaters ensure that the emission of GH gases is controlled. Taking into account the whole life cycle of the solid BM supply chains and assuming that fossil fuels are replaced by BM in the Energy production, the impact on climate is positive (the overall GHG emission is decreased).

- *Roads, buildings*: Law on protection of the built environment and local regulations can offer controlling tools in case of unacceptable impacts.

Relevant legislation regarding the raws of the impact matrix (the elements of the supply chains): Feedstock and harvesting is controlled by the Nature Conservation Law and Forestry Law.

- *Landscape*: regarding new facilities the Nature Conservation Law, the Environmental Law and the Law on protection of the built environment are relevant, while impacts of biomass extraction are controlled by the regulations of the Nature Conservation Law and Forestry Law.

The relevance of all the indicators included in Annex 1. have been examined for the case of the pilot supply chains considering all the possible impacts marked as High in the screening matrix. In this phase the importance of the possible impact is reconsidered based upon the warranties of legislation. Furthermore some of the impacts rated as High are not relevant for the basic types or in the area of the pilot supply chains.

The impact of transport is high where marked so only compared to the other elements of the supply chains. The overall impact of transport is minimized by maximizing the transport distance in 50 km.

Level of possible impact: H-high M-middle, L-low, N-nothing or not applicable, W-warranted by legislation

⁶ 2007. évi CXXIX. törvény - a termőföld védelméről

⁷ 219/2004. (VII. 21.) Korm. rendelet a felszín alatti vizek védelméről

	feedstock	harvesting	transport	storage	conversion	Energy production	End-consumer
i. Biomass production or extraction shall have neutral or positive effects on biodiversity at the landscape level	H	H	L	L	N	N	L
ii. Biomass production or extraction can only be performed in protected areas or areas with high conservation values if it is part of a management plan to protect biological values	H	N	N	N	N	N	L
iii. The integrity of relevant ecosystems and habitats for rare and endangered species shall be maintained	W	W	N	N	N	N	N
iv. Biomass extraction shall, if possible, be conducted in relation to other management practices in the landscape so as to sustain or enhance biodiversity, including the regional recovery and persistence of endangered species	H	H	M	H	M	H	L
v. Buffer zones or vegetation filters between biomass production areas and waters and wetlands shall, if needed, be used to reduce the risk for damage	N	N	N	N	N	N	N
vi. Methods shall be chosen to minimise the risk for permanent physical damage to the soil	M	H	N	N	N	N	N
vii. Methods that cause a net depletion (after compensatory measures) of humus, nutrients and minerals in the soil below levels necessary for the maintenance of the long-term soil production capacity shall be avoided	N	N	N	L	N	N	N
viii. Nutrient rich waste products and by-products should preferably be recycled	H	H	N	N	N	N	N
ix. Residues from forestry and agriculture should be used for energy production or other purposes	H	H	N	N	N	N	N
x. Biomass production and extraction shall be conducted in a way that prevents further deterioration, for example by erosion or nutrient leakage, and protects (or enhances) the status of aquatic ecosystems	H	H	N	M	M	N	N
xi. Land shall be used efficiently, and practices that optimise productivity shall be used.	H	H	N	N	N	N	N
xii. Residues and by-products should be used for energy or other applications in order to increase efficiency	H	M	N	N	N	N	N
xiii. If reuse or recycling of waste in not possible, use for energy shall be preferred over dumping	N	N	N	N	N	N	N
xiv. The energy input in production, extraction and conversion of biomass to bioenergy should be minimized	H	H	H	N	H	N	N
xv. Efficient conversion technologies shall be used	N	N	N	N	H	N	N
xvi. Long distance transports of non-processed raw materials shall be avoided				H			
xvii. Use of waste heat shall be encouraged	N	N	N	N	N	N	N
xviii. Combine production of heat, electricity and other products (chill, steam) should be promoted whenever possible	N	N	N	N	N	N	N
xix. The GHG emission savings of the production chain – including production, extraction, conversion and transport – shall be maximized and compared to a reference scenario with fossil fuels. Both long and short term gain and losses shall be evaluated	L	L	L	N	L	L	N
xx. The use of waste, residues and by-products shall be encouraged and accounted for when calculating GHG emission savings	H	H	N	N	N	N	N
xxi. Land with high carbon stock such as wetlands and continuously forested areas should not be used for the production of liquid biofuels if it implies a permanent change in	H	N	N	N	N	N	N

	feedstock	harvesting	transport	storage	conversion	Energy production	End-consumer
land status							
i. The production of biomass for energy shall only occur at sites where it does not threaten local/regional food supply	N	N	N	N	N	N	N
ii. Negative effects of competition between energy, food, fodder and material use should be minimized	H	N	N	N	N	N	N
iii. The possibilities of a secured long-term supply of biomass shall be considered and demonstrated when establishing a heat or power plant	H	H	L	H	L	N	N
iv. The bioenergy producer should take responsibility for the assessment of the values of the production area and also for the assessment of how the production may affect the local community	H	N	N	N	N	H	N
v. Production of biomass for energy should no influence the possibility for recreational activity in a negative way	H	H	M	L	N	N	N
vi. Local acceptance and avoidance of conflicts should be reached through regional and local planning instruments, and preferably comprise multi-stakeholder dialogues	H	N	N	N	N	H	N
i. Activities shall have generally positive effects on social welfare and accessibility to rural areas	H	H	N	N	N	N	N
ii. Development of local energy systems that enable combinations of different renewable energy sources shall be encouraged	N	N	N	N	N	N	N
iii. Bioenergy systems should preferably have positive effects on the local economy	H	H	N	N	N	N	N
iv. Cost effective raw material production (logging operations, ...)	N	N	N	N	N	N	N
v. Cost effective transportation of raw material	N	N	H	N	N	N	N
vi. Cost effective processing and storage of the bioenergy product (pellet, chips, ...)	N	N	N	H	H	N	N
vii. Cost effective conversion of biomass to energy (thermal or electricity).	N	N	N	N	N	H	N
viii. Cost effective raw material production (logging operations, ...)	H	H	N	N	N	N	N

In the monitoring of the supply chains the indicators signed by H must be examined case-by-case.

1. Methods used for the social impact assessment

Early involvement was a key element for identifying important stakeholders and key impacts. Awareness raising actions helped to identify the most important social aspects and concerns and eliminating basic fears based upon the experiences of previous BM Energy production developments, like increasing fire wood prices or clearcutting (see ex-ante evaluation above). Stakeholders were identified in the frame of group meeting of the project staff and face-to-face discussions with other employers of the DINPD, partners of the DINPD and experts. Existing facilities and municipality intentions were mapped by involving experts. Data analysis of available biomass in the region also included social aspects, like alternative land use etc. Project staff, other experts of the DINPD and sub contracted experts were involved in data analysis. Focus group meetings (ad hoc meetings, round tables and specific meetings) were organized to understand deeply the considerations of the different stakeholders. Questionnaire surveys were conducted to deepen the understanding of different aspects and interests.

Finally, not only the setting up of local BM supply chains but also the other project activities had significant positive impact on developing partnerships and transferring knowledge.

2. Description of the most significant effects of the local solid biomass supply chains and mitigation measures

Selection of feedstock has important social and environmental impacts. In the assessment of available biomass possibilities of other land uses, alternate products, alternative use of the BM product and other social-environmental aspects were examined.

- Hay is not used as feedstock in the final pilot supply chains because in those areas managed by the DINPD in the Ipoly Valley-Borzsony region, where hay is available, the alternate use (feeding the animals) is significant and in years, when hay production is not so good, all the available hay is necessary for feeding the animals.

- Fire wood is available in big amount in the region. Logging has serious negative impact on the environment, therefore increasing the intensity of logging is not required. For the local supply chains based upon fire wood BM exploitation can be increased on a moderate level without endangering the habitats – this is ensured by the Forestry Law and forestry plans. What ensures even more that no negativ impact is arisen on the habitats by setting up the pilot supply chains is the fact that no extra amount of biomass is harvested, only the users of the biomass were changed: the forestry companies sell less firewood for the big BM plants and sell more firewood locally. In case of the residential supply chains less fire wood is sold for the forestry companies and the remaining part is sold directly to the local inhabitants and local entrepreneurs.

- Using small branches resulted from nature conservation management as by-product could have negative impact on the habitats if such BM is removed from the area which should be left in the area for nature conservation purposes. In the areas producing feedstock for the pilot supply chains removal of the invasive species does not have negative impact on the site.

Using by-products or waste has a definite positive social-environmental impact compared to BM resulted from logging or BM that could be used for food production.

Main impacts of the selected harvesting methods:

- Logging is regulated by the forestry law and plans so the environmental sustainability of the harvesting in case of pilot supply chains based upon the fire wood produced by the forestry companies are ensured by the legislation.

- The removal of the BM must be examined for each new site because in some habitats removal of the BM can harm the protected species around the invasive species or the soil. This is also relevant for the logging in Ocsa, where additional criteria was prescribed in the contracts for the timing of the harvesting and for the removal of the BM from the site.

- The logging done in Ocsa by the employers of the DINPD and not by subcontracted forestry companies decreased the costs of logging. Giving the possibility for local people to remove and transport the fire wood themselves results in lower costs of the firewood. The same is relevant for small branches as well. Labour safety regulations must be followed strictly to avoid negative impacts, like injuries.

- Time restrictions of harvesting prescribed by the forestry and nature conservation legislation decreases the negative impacts on habitat caused by noise and other disturbance. As in the pilot supply chains only heat production is involved, which is mainly seasonal, the time restrictions don't endanger sustainable supply. In case of the pasta factory the demand is less seasonal – here the bigger storage capacity is available to ensure the continuous fuel supply..

Transport methods couldn't be influenced a lot. There are some negative social-environmental impacts:

- Usually vans are used for transporting the fire wood and the woodchips. Air pollution, emission of GH gases, noise, heavy load on the public roads are the main negative impacts of transport. Regarding the small scale of the supply chains these impacts are not so relevant. Maximizing the transport distance decreases these impacts. The small scale or non-motorized transporting utilities in Ocsa Suply Chain further minimize the negative impacts of transport.

Impacts of storage and conversion in the pilot supply chains have little significance. In planned small settlement supply chains using the own human and instrumental capacities of local municipalities would be a preferable solution for creating jobs and decreasing the costs of the BM.

Impacts of energy production:

- In case of the pilot supply chains existing facilities are involved, the process is not changed, therefore the - obviously existing - negative environmental impacts are not increased by the project. In case of Sas-Hill Supply Chain the amount of produced energy was increased because the needs (opening hours in winter time etc.) increased. This means that the emission has increased as well but this cannot be avoided if we want to fulfil the increased demand. The BM heater is a much more environmental friendly and cheaper solution than the electric heating before the reconstruction of the visitor centre.

- The socio-economic advantages of BM heaters were communicated during the project and many municipalities such as individuals decided to establish biomass heating facilities. Lack of financial resources delay such initiations. During the project a new found was opened and one application was delivered with the help of the project partnership.

3. Summarizing social and environmental impacts of the pilot supply chains

Setting up very small scale local BM supply chains and local supply chains based upon BM resulted from nature conservation or from existing MB production and based upon existing burner facilities have mainly positive impacts on the society and the environment. Selection of the feedstock has key importance determining the impacts. Selecting the end user might influence the selection of the site and thus the whole process. In case of establishing new facilities other possibly significant impacts must be examined very carefully. Before setting up many small scale local supply chains further SEA type of impact assessment is necessary.

ANNEX 1. Sustainability criteria set up by the partnership of the BioEUParks Project

1. Environmental

<i>Criteria:</i>	
xxii.	Biomass production or extraction shall have neutral or positive effects on biodiversity at the landscape level
xxiii.	Biomass production or extraction can only be performed in protected areas or areas with high conservation values if it is part of a management plan to protect biological values
xxiv.	The integrity of relevant ecosystems and habitats for rare and endangered species shall be maintained
xxv.	Biomass extraction shall, if possible, be conducted in relation to other management practices in the landscape so as to sustain or enhance biodiversity, including the regional recovery and persistence of endangered species
xxvi.	Buffer zones or vegetation filters between biomass production areas and waters and wetlands shall, if needed, be used to reduce the risk for damage

xxvii.	Methods shall be chosen to minimise the risk for permanent physical damage to the soil
xxviii.	Methods that cause a net depletion (after compensatory measures) of humus, nutrients and minerals in the soil below levels necessary for the maintenance of the long-term soil production capacity shall be avoided
xxix.	Nutrient rich waste products and by-products should preferably be recycled
xxx.	Residues from forestry and agriculture should be used for energy production or other purposes
xxxi.	Biomass production and extraction shall be conducted in a way that prevents further deterioration, for example by erosion or nutrient leakage, and protects (or enhances) the status of aquatic ecosystems
xxxii.	Land shall be used efficiently, and practices that optimise productivity shall be used.
xxxiii.	Residues and by-products should be used for energy or other applications in order to increase efficiency
xxxiv.	If reuse or recycling of waste is not possible, use for energy shall be preferred over dumping
xxxv.	The energy input in production, extraction and conversion of biomass to bioenergy should be minimized
xxxvi.	Efficient conversion technologies shall be used
xxxvii.	Long distance transports of non-processed raw materials shall be avoided
xxxviii.	Use of waste heat shall be encouraged
xxxix.	Combine production of heat, electricity and other products (chill, steam) should be promoted whenever possible
xl.	The GHG emission savings of the production chain – including production, extraction, conversion and transport – shall be maximized and compared to a reference scenario with fossil fuels. Both long and short term gain and losses shall be evaluated
xli.	The use of waste, residues and by-products shall be encouraged and accounted for when calculating GHG emission savings
xlii.	Land with high carbon stock such as wetlands and continuously forested areas should not be used for the production of liquid biofuels if it implies a permanent change in land status

2. Social

<i>Criteria:</i>	
vii.	The production of biomass for energy shall only occur at sites where it does not threaten local/regional food supply
viii.	Negative effects of competition between energy, food, fodder and material use should be minimized
ix.	The possibilities of a secured long-term supply of biomass shall be considered and demonstrated when establishing a heat or power plant
x.	The bioenergy producer should take responsibility for the assessment of the values of the production area and also for the assessment of how the production may affect the local community
xi.	Production of biomass for energy should no influence the possibility for recreational activity in a negative way
xii.	Local acceptance and avoidance of conflicts should be reached through regional and local planning instruments, and preferably comprise multi-stakeholder dialogues

3. Economic

<i>Criteria:</i>	
ix.	Activities shall have generally positive effects on social welfare and accessibility to rural areas
x.	Development of local energy systems that enable combinations of different renewable energy sources shall be encouraged
xi.	Bioenergy systems should preferably have positive effects on the local economy
xii.	Cost effective raw material production (logging operations, ...)
xiii.	Cost effective transportation of raw material
xiv.	Cost effective processing and storage of the bioenergy product (pellet, chips, ...)
xv.	Cost effective conversion of biomass to energy (thermal or electricity).
xvi.	Cost effective raw material production (logging operations,...)

FINAL COMMENTS

The supply chain has been activated only in 3 Parks. That makes the socio – environmental evaluation not easy for the two Parks left: Sila National Park (Sila) and Solktaler Nature Park (Austria).

By the way, it is important that these two parks already started to examine in depth the elements which must be used during the environmental and social monitoring, in order to be aware of the work they will have to do at the end of the next heating season. In fact, one of the problems that emerged during the project is the difficulties Parks are facing when they have to work on issues different from the "technical" ones, relating to the set-up of the supply chain. It is important, therefore, that all partners have the right tools and start considering this monitoring activities as a key part of the project, especially considering the fact that the sustainability criteria of the supply chain are an essential requirement.

Sila National Park, for instance, already made an analysis of the potential impacts of the supply chain

“[...] social benefits connected to biomass use refer to improved life standards, lower emissions compared to harmful fossil fuels, job opportunities for locals and sustainable use of woodlands. In this project, the substitution of boilers and the introduction of biomass fuels will allow the Sila National Park to play a leading role in the community: the use of local biomass represents and added value for local economy. The money needed to buy pellet to fuel boilers will no more be destined to other countries or to oil transnational companies: on the contrary, it will create a virtuous circle for the local community. Keeping the money within the local economy will, in turn, help revitalize other activities.

[...] The use of biomass rather than fossil fuels allows to avoid the emission into air and soil of huge amounts of CO₂ and other polluting elements. While burning, biomass emits the same amount of CO₂ it has accumulated during its life. Moreover, emissions linked to the transportation of biomass to thermal power stations will be avoided. [...]

[...] The use of biomass, mainly from forestry processing residues, will favour the development of a local, forest-based economy where companies and experts may start businesses and create jobs with concrete impact on the territory. The demand of wood for energy purpose stimulates the re-organisation and development of the supply chain, involving agriculture and silviculture, wood-processing companies and transport companies and providing them with opportunities for more income or the start of secondary activities. [...]

Also, Sila National Park identified the indicators to measure potential social, environmental and economic impacts of the project: for instance the monitoring of the emissions caused by the production and transport of biomass during the steps of the supply chain, the promotion of new local markets, the reduction of “intermediaries” involved in the process.

In some cases, the analysis carried out by the Parks showed that there will be no significant impacts in social or in environmental area because the amount of biomass is not big comparing with the amount of forests in the Park.

In Slovenia, for instance

[...] almost half of the Park area is covered with forests and furthermore forest companies does not cut the whole yearly growth (30-40%). Furthermore we don't expect any significant impact on

biotic diversity of the Park area because the amount of the biomass extracted from forests is not big. [...]

So even if the Parks will use more biomass in the future, social and environmental impacts will be still low. Kozjanski Park, in Slovenia, identified two main inputs in terms of social impact, mainly connected to the *“increased level of local economy”* and *“the lowering of the heating costs due to biomass use (cheaper than oil or gas)”*.

The connection with the local economy is an ingredient taken into account by different partners. Even in Rodopi Park, Greece, in fact, the positive impact of the project on local actors and the creation of a supply chain will provide a *“new income”* are mentioned as key part of the project. This shows us once again, as the economics aspects (the ability to buy biomass at a lower price, the ability of the project to develop the local economy, etc.) are the most important ones for the partners.

Particularly interesting is the analysis made by Danube-Ipoly National Park (Hungary) which was inspired by the awareness-raising actions to identify the main "social aspects and concerns", such as the issue of gas emissions. This aspect, besides having effects on the environment, it also has social consequences as it is one of the aspects that can raise conflict between citizens, worried about the consequences on their health. Must be also considered that in Hungary the set up of the pilot supply chain had no negative impact on the habitats as it did not change the amount of biomass, but the users only: *“the forestry companies sell less firewood for the big BM plants and sell more firewood locally”*.

In the end, we must always bear in mind how the evaluation of the economic and social impact strongly depends on the characteristics of the territory in which concrete actions are realized, territory which is very different from country to country: in Austria, for example, we consider a territory that has a very low population density (5 inhabitants / km²) and the *“potential for increasing the share of regional biomass is in family homes”*. Thus, the *“increase in the regional share of biomass has no direct impact on the environment of the Natural Park, as the production volumes have remained the same”*.