

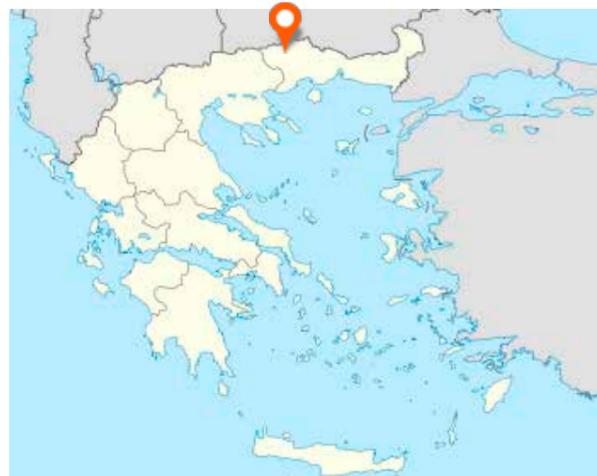
## 6. Setting up the production chain

During the organized awareness events, round tables and specific meetings DUTH and RNP teams have emphasized the disadvantages of the mainstream use of biomass in traditional stoves and fireplaces, and pointed out the economic and environmental benefits of new technological solutions in the use of biomass for heating. Efficient conversion and minimal GHG emissions would also be the target in new biomass burning installations.

All major actors in the wood production and trading agreed to the advantages of a local biomass supply chain, signed the respective MoU and committed themselves to participate in a pilot LSC. The local municipalities, seen as big energy consumers (city halls, schools, administration buildings, etc.) were conducted by the project teams, reaching to an agreement by the municipality of Nevrokopi to install biomass burners in municipality buildings and be the end user in the pilot LSC. Six biomass facilities using pellets as

fuel are operating in the municipality of Nevrokopi, with a total installed capacity of more than 1 MW and an average efficiency of 90%.

Other municipalities, realizing the benefits of using biomass instead of oil, also expressed their willingness to proceed with similar installations and they are seeking financial means. In addition, after intervention of the project team, the local pellet producing company launched a campaign to promote pellet usage on the basis of a leasing scheme, by offering the burner installation at low (or at no) cost in exchange for a binding contract of pellet supply for a certain time span. In this way the shortage of financial means is alleviated and a series of bureaucratic obstacles in biomass use for energy purposes is avoided.



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## USE OF WOOD BIOMASS FROM PARK Example of Rodopi National Park, Greece



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## 1. Description of the park

Rodopi National Park covers a wide mountainous area of 173,150 ha in the region of Eastern Macedonia and Thrace, along the Greek – Bulgarian borders. The protected area was established by the Law 3044/2002 and designated as a National Park by the Joint Ministerial Decision 40379/01-10-2009 (GG 445/D/02-10-2009). The RNP area is protected by multiple protection regimes



at national and international levels: seven (7) sites 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 of them being SPA and five SCI); 2 areas within RNP have been characterized as Preserved Natural Monuments, seven (7) areas as Wildlife Reserves (according to the Greek law) and three (3) areas have been characterized by the European Council as Biogenetic Reserves.

The park is one of the most ecologically significant regions in Greece, since inside it can be met all the vegetation zones of Europe, from the eumediterranean zone of the evergreen broadleaves to the zone of cold resistant conifers (Spruce, Scots Pine and Birch). The great majority (97.24%) of the park area is covered by forests and woodlands, while only 2.15% consists of agricultural lands. Moreover, the park incorporates the most wood productive forests of Greece, included in the “sustainable usage and development” zone, where wood production is permitted through the elaboration of management plans authorized by the local Forest Service.



## 2. Wood biomass potentials in the park

The area of Rodopi National Park includes highly productive forests. All forest and wood lands are owned by the Greek state. The Forest Service is responsible for their management and supervision. Wood production is regulated through the elaboration of forest management plans (valid for 10-year periods) which take into account all forest services in order to secure the forest ecosystem sustainability.

The high proportion of forest and woodland cover types in the park makes wood the most significant biomass source in relation to residues derived from agricultural activities. The woody biomass production potential of the RNP area is considered high comprising an average of 66,000 m<sup>3</sup> per year, 18% of which is conifer round-wood appropriate for pellet production and 82% is firewood from broadleaved coppices.

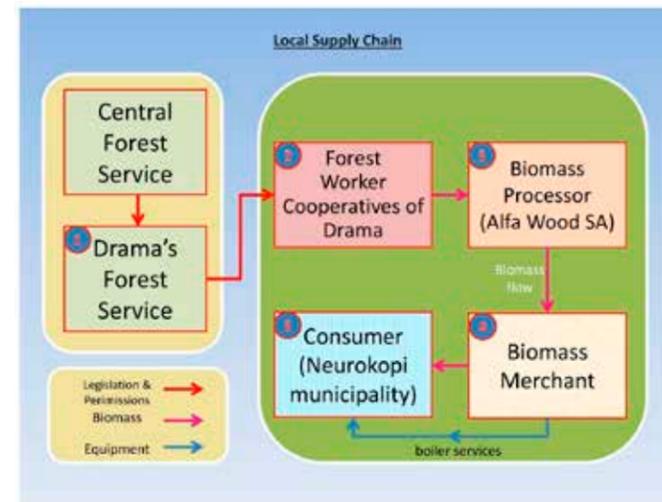
Additionally, about 7,000 m<sup>3</sup> per year of residues from technical wood processing could be used for pellet production.

## 3. Description of production chain

The existing wood production exploitation schemes are used to develop the pilot local supply chain (LSC), targeted to the production of thermal energy from firewood and/or pellets. The LSC follows the contemporary work flow applied in wood production and trading, since wood is the basic biomass source in park. The operating LSC includes a Local Authority (Municipality of Nevrokopi) as end-user. The Local Authority is supplied with biomass from a biomass provider (merchant) on a long term

basis. The merchant acquires the biomass (pellets) from a wood processor (private company). The wood processor is provided with raw material (wood) from the Forest Worker Cooperatives (forest harvester), under the supervision of the local Forest Service, which represents the forest owner (Greek State) as well.

The chart shows the main actors and interconnections of the LSC in the area of Rodopi National Park:



Appropriate maintenance and contemporary operation (e.g. cleaning and refilling) of the biomass burners can be better achieved through relative services provided by the merchant and/or the biomass processor, which can assure compliance of the characteristics of the burning material to the standards of the burner.

## 4. Description of wood biomass producers and suppliers

The Forest Service representing the Greek State as the owner of the forests is responsible for the management of the forests. Forest Workers Cooperatives are involved in the harvesting procedures of the wood biomass. Forest Service defines on site the harvesting borders for each FWC and marks the trees for logging. FWCs are obliged to accomplish the logging and move the logs outside the harvesting area within a certain time period. Each FWC is installed in one or more forest stands inside the harvesting area after signing of relevant contracts.

Harvested wood is merchandised by the FWCs as well. Each FWC provides a guarantee deposit of 5% of the value of harvested wood to the local Forest Service. The 12% of the revenues derived from harvested wood are transferred to the Green Fund (Ministry) and an administrative fee of 5% is



transferred to the municipality where the harvesting takes place.

After the logging operations and the approval of the harvested volume by Forest Service, the wood products are sold at the road (or log yard) by the FWCs to the wood market (wood traders, wood sawmill companies, pellet manufacturers, etc.). The transportation of wood logs is done by trucks and the transport cost is charged to the purchaser. Storage is also the responsibility of the purchaser.

The major private companies active in wood trading in the area of RNP have their own depositories (open air and/or covered) to secure the appropriate storage of the feedstock material and final products.

## 5. Description of end users

Since no biomass power plant is installed in the area of RNP, the final consumer of the LSC will be the households which use firewood and pellets for heating. Local municipal authorities are and will continue to be the major biomass consumers, involved as end-users by installing biomass burners in order to heat municipal buildings. Local municipalities are considered the most appropriate bodies to promote the efficient use of biomass originating from sustainably managed local forests through installations that can be demonstrated as good practice examples.

Population dynamics and energy needs in the reference area of the Rodopi National Park determine the overall demand of the local biomass supply chain. The thermal energy demands of the communities inside the RNP (according to the database of the Ministry of Environment, Energy and Climate Change) are 10,782 MJ per capita, which means 0.257 toe or 2,995 KWh per capita per year. Comparing the energy demands of the RNP communities to the estimated wood production of the park, it can be concluded that the park has the potential to cover these demands by almost 4 times.