Wood biomass value chain analysis

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PURPOSE OF THE STUDY

To carry out an analysis of the wood biomass value chain in Albania and to identify interventions that CNVP and others can implement in support of functional and equitable wood biomass value chains and effective and efficient use of wood biomass as a source of renewable energy.

Study was presented in year 2017 and followed later with several pilot interventions from CNVP funded by SIDA

- Fuelwood
- Pellets

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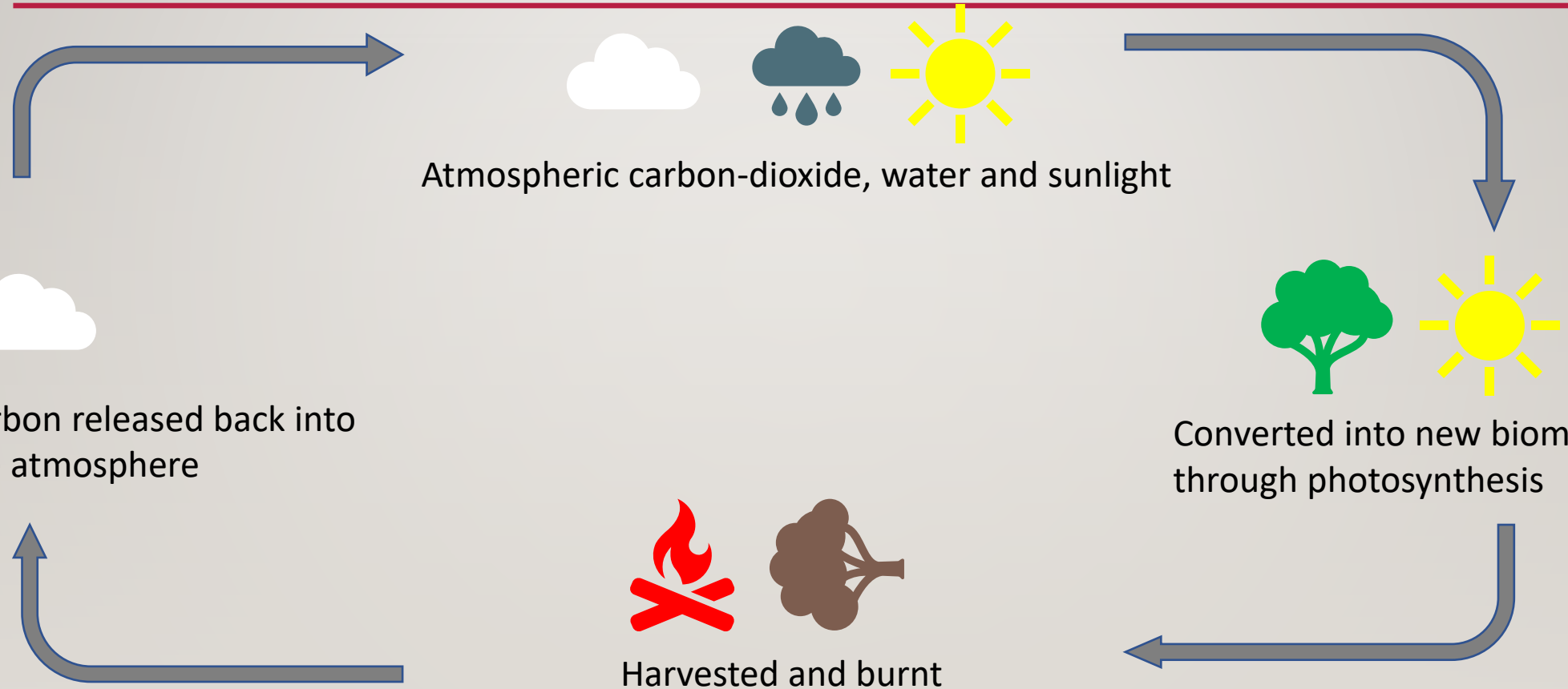
WOOD BIOMASS AS RENEWABLE ENERGY SOURCE



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METHODOLOGY

- Desk study
- Field visits in 4 regions: Kukes, Diber, Korca and Shkoder
- Interviews with stakeholders: Ministry of Environment, National Agency of Natural Resource, Forest Faculty, Forest Service at Municipalities, Administrative Units, Forest Inspectorate, Forest companies, Pellet companies, Forest Associations (national, regional & communal level), fuelwood traders, retailers, farmers
- Internal meeting with CNVP
- National workshop

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FOREST STATUS

- 1,2 milion ha of forest land:
  - High forest: 36%
  - Coppiced forest: 46%
  - Shrubs: 36%
- About 150,000 ha of forest destroyed because of fires (2007-2012)
- Harvesting 2 to 3 times more than annual increment
- Forests severely degraded during last 25-30 years

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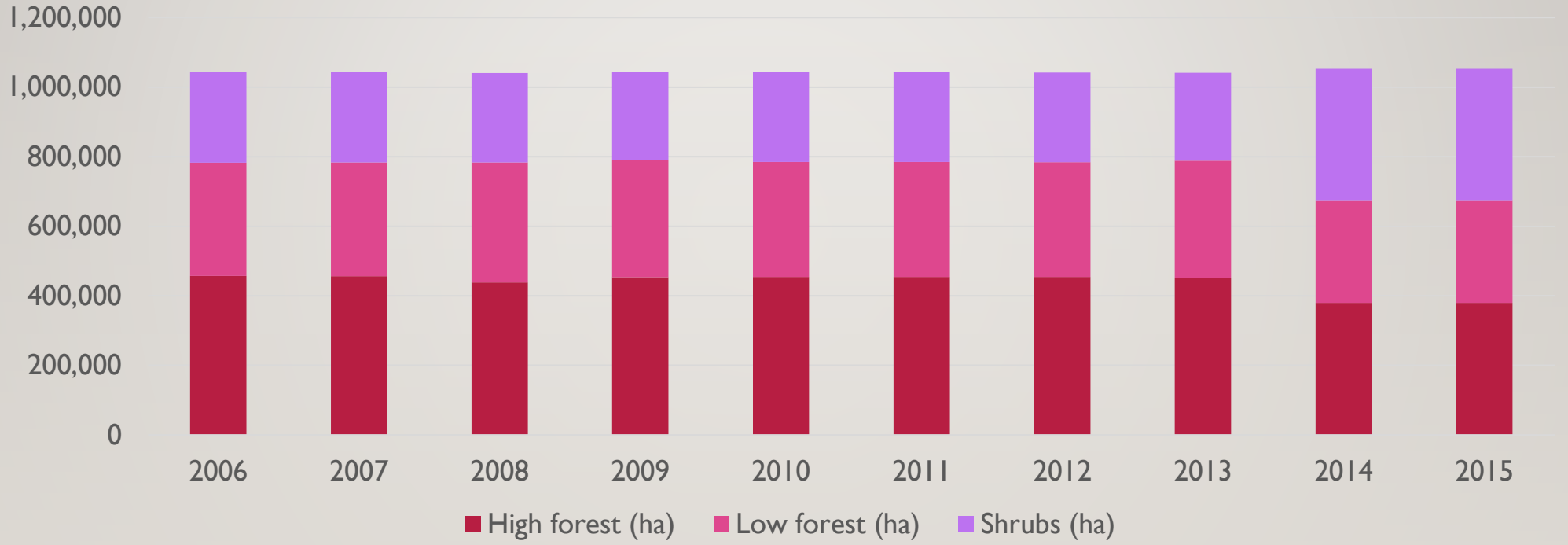
TRENDS IN HIGH FOREST, LOW FOREST AND SHRUBS AREAS (HA)



Source: Ministry of Environment

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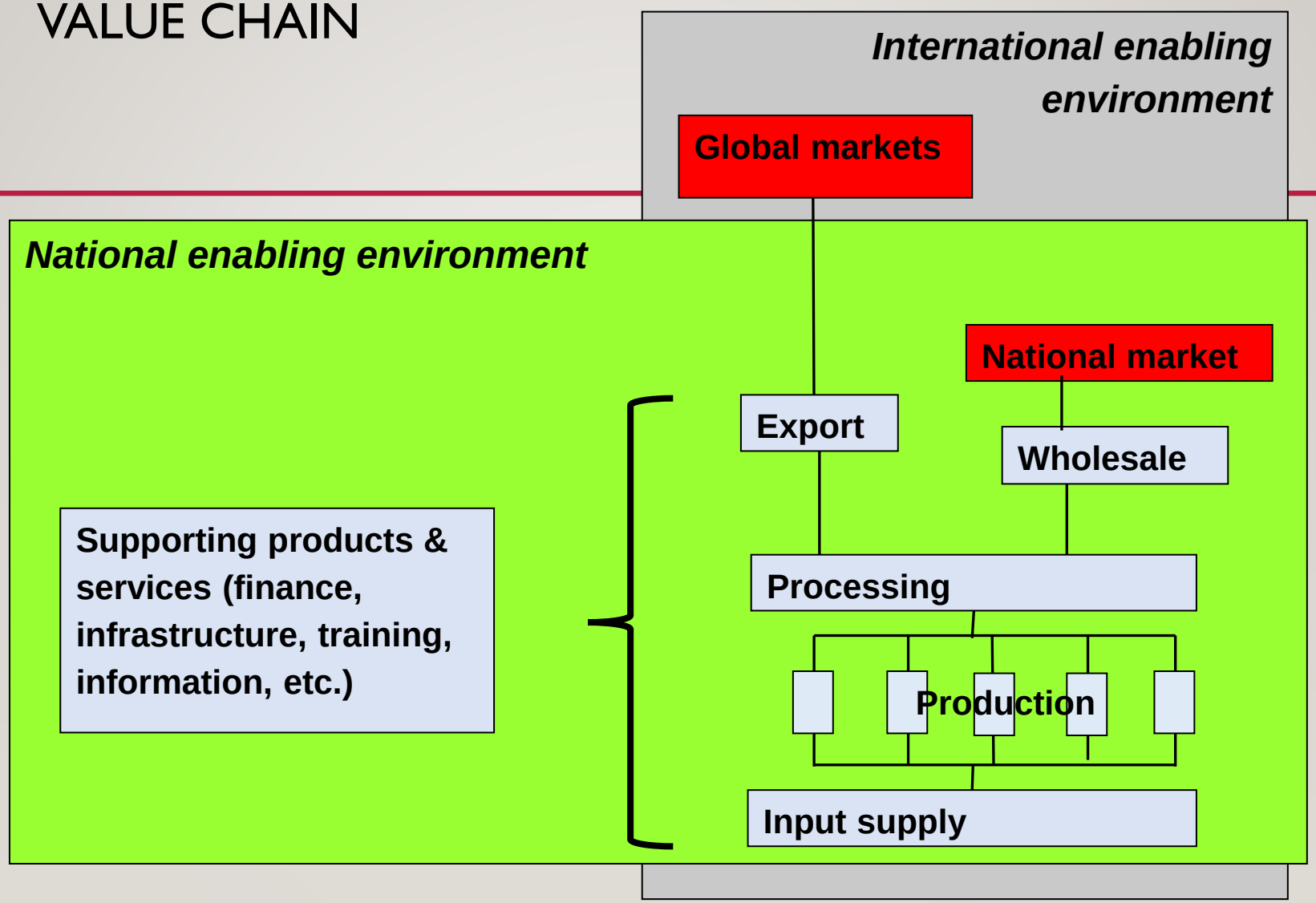
VALUE CHAIN



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MAJOR ACTORS/ STAKEHOLDERS RELATED TO WOOD BIOMASS CHAINS- 1

- Ministry of Energy and Industry
  - Responsible for the development of energy sector
  - New Renewable Energy Law approved by the Parliament in 2017
  - National Action Plan for Renewable Energy Resources (2015-2020)

- Ministry of Environment
  - Responsible for the sustainable management and development of the forestry sector
  - Number of new policies and decisions in place: E.g No 5, Feb 4, 2016 (Moratorium), No 438 Jun 8, 2016, No 808 Dec 12, 2016

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MAJOR ACTORS/ STAKEHOLDERS RELATED TO WOOD BIOMASS CHAINS- 2

- Municipalities
  - Responsible for fuelwood supply to citizens and institutions within municipality
- Forest Inspectorate
  - Monitoring of forest and environment: checking if regulations are followed
- Forest user associations:
  - Awareness raising
  - Support municipalities in developing annual utilisation plans
  - Training in proper forest management: especially thinning and cleaning
  - Representation of interest of forest users

MAJOR ACTORS/ STAKEHOLDERS RELATED TO WOOD BIOMASS CHAINS- 3

- Logging companies/ wood processing companies
  - Production of fuelwood and pellets
  - Note difference between 1 m3 fuelwood and 1 m3 stacked fuelwood (1.6 : 1)
- Traders and wholesalers
  - Buying, transporting and selling of fuelwood
  - This role is expected to be taken over by municipalities from 2017 onwards
- Consumers
  - Households, private companies (hotels & restaurants), schools, hospitals

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VALUE CHAIN ANALYSIS: POLICIES

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POLICIES RELATED TO WOOD BIOMASS- MINISTRY OF ENERGY AND INDUSTRY

- New Renewable Energy Law approved by the Parliament
- National Action Plan for Renewable Energy Resources (2015-2020)
- Target of Renewable Energy Resources by 2020:
  - 38% (31.2% 2009- 2014)
    - Hydropower, wind energy, solar energy: 25%
    - Biomass: 10%
    - Biofuels: 3%

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POLICIES RELATED TO WOOD BIOMASS- MINISTRY OF ENERGY AND INDUSTRY

National Action Plan for Renewable Energy Resources in Albania (2015-2020):

- Theoretical potential of biomass to contribute to energy balance:
  - Forests: 1.07%
  - Biomass from seed/ fruits/agr. production: 4.45%
  - Urban waste: 5.80%
  - Waste from fruit trees: 0.65%
  - Cattle waste: 2.37%
  - Power plants: 0.26%
  - ***Total*** ***14.6%***
- Reduction of wood fuel consumption from 211,50 ktoe in 2013 to 167,79 ktoe in 2020
- Re-afforestation of at least 2200 ha annually
- Law on integrated waste management:
  - No import of industrial waste
  - Sawdust considered as industrial waste

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POLICIES RELATED TO WOOD BIOMASS- MINISTRY OF ENVIRONMENT
DECISIONS 5, 438 AND 808

Notes:

- All logging from all forest areas banned
- Fuelwood can be supplied from forest cleaning and thinning operations from all forest areas except PA
- Municipalities sole responsible for fuelwood supply for citizens and institutions within their area
- Demand estimated based on local assessments
- Supply based on operational plan which is developed on the basis of a forest management plan
- Municipalities have two options:
    1. Set up own structure and implement all activities from fuelwood collection to marketing
    2. Contract (using a tender process) forest company to do thinning and cleaning operations; forest companies must leave fuelwood at the road head, municipalities responsible for transport and marketing

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FOREST POLICIES AND REALITY ON THE GROUND

Municipalities assess demand & supply	Municipalities prepare projects for forest cleaning and thinning	Municipalities send projects to MoE for approval	Implementation of projects after received approval	Institutions and citizens receive/ buy fuelwood from municipality
• Demand >> Supply • Most State Forest management plans expired since 2013 • CFP management plans expired or will expire in 1-3 years • Some areas were not covered by recent management plans (1981-1991) • Partial assessment of some forest parcels (2016)	• Technical projects prepared based on insufficient information • Technical projects prepared for only small areas	• Only projects that are based on management plans / field assessments will be approved	• Municipalities lack capacities/ funds in proper forestry : Forest management planning, forest operations, marketing forest products, etc.	• Insufficient supply to meet demands • Pogradec municipality: ✓ Need 60,000 m^3 ✓ Supply 3,000 m^3 • Diber municipality: ✓ Need: 60,000 m^3 ✓ Supply: 2,500 m^3

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CHALLENGES AND OPPORTUNITIES: PRODUCTION & COLLECTION FUELWOOD

Constraints	Opportunities
• Demand >> supply • Forest cannot provide current needs • Management plans expired or about to expire • Management plans have a focus on timber production • Poor condition of forest roads • Some forest parcels have wood biomass for extraction but not accessible	• Land available for plantations • Villagers interested to protect and manage their own forest for fuelwood supply • Forest regeneration expected now Moratorium is in place • Cleaning and thinning operations: former operations left about 30% of biomass in the forest

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FUELWOOD PRODUCTION & USE (M3)

Source: Ministry of Environment

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PRODUCTION OF PELLETS

- Several pellet companies operational in Albania since 2008
- Production of pellet companies in range of about 2,000 tons to 15,000 tons per year
- Capacities of pellet companies up to 3 times higher than production because of lack of materials
- Demand for pellets higher than supply
- Wood processing companies often combine activities with pellet production to make use of waste
- Some pellet companies have contracts with institutions (supply of machineries, maintenance and pellets)
- Central heating systems with pellets in institutions encouraged by Ministry of Environment

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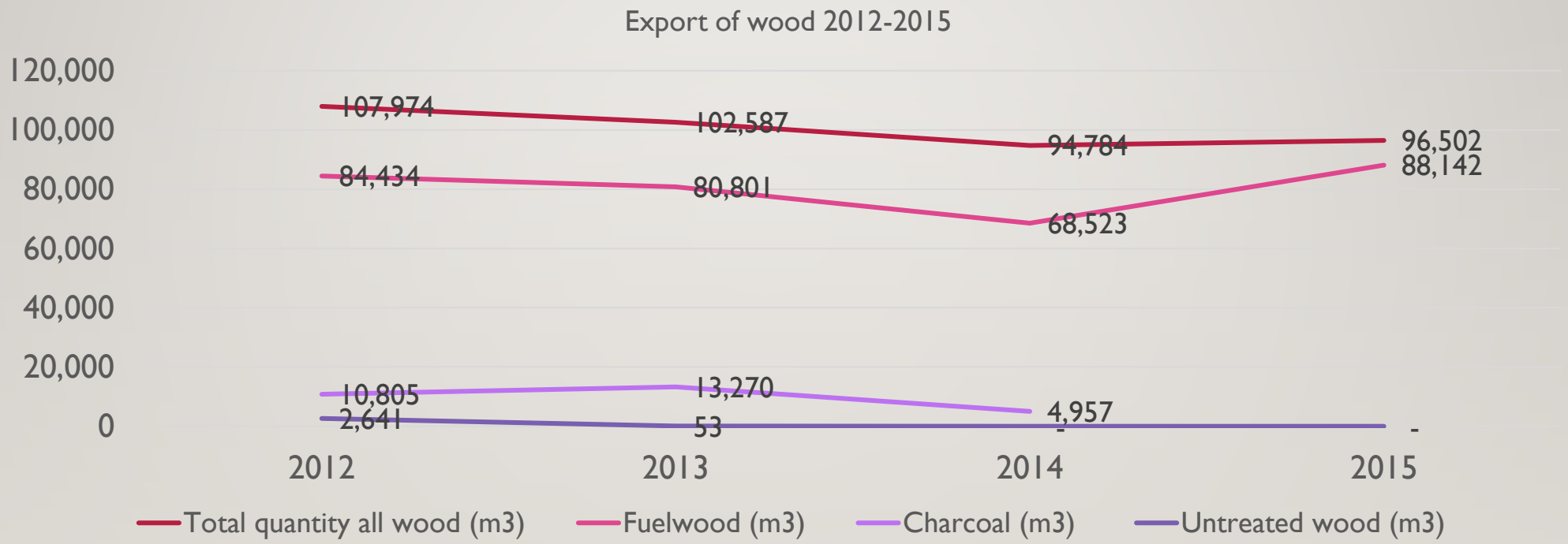
EXPORT OF FUELWOOD



Source: Ministry of Environment

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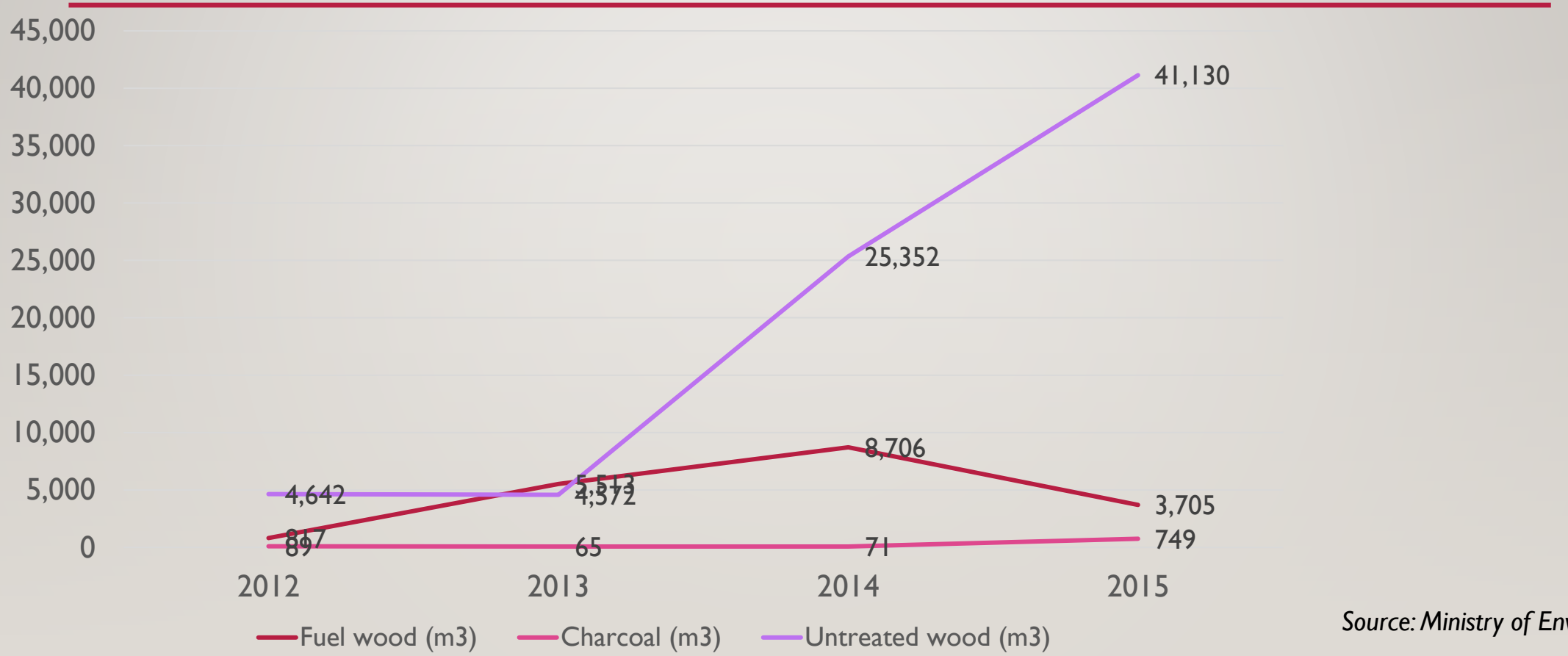
IMPORT OF FUELWOOD



Source: Ministry of Environment

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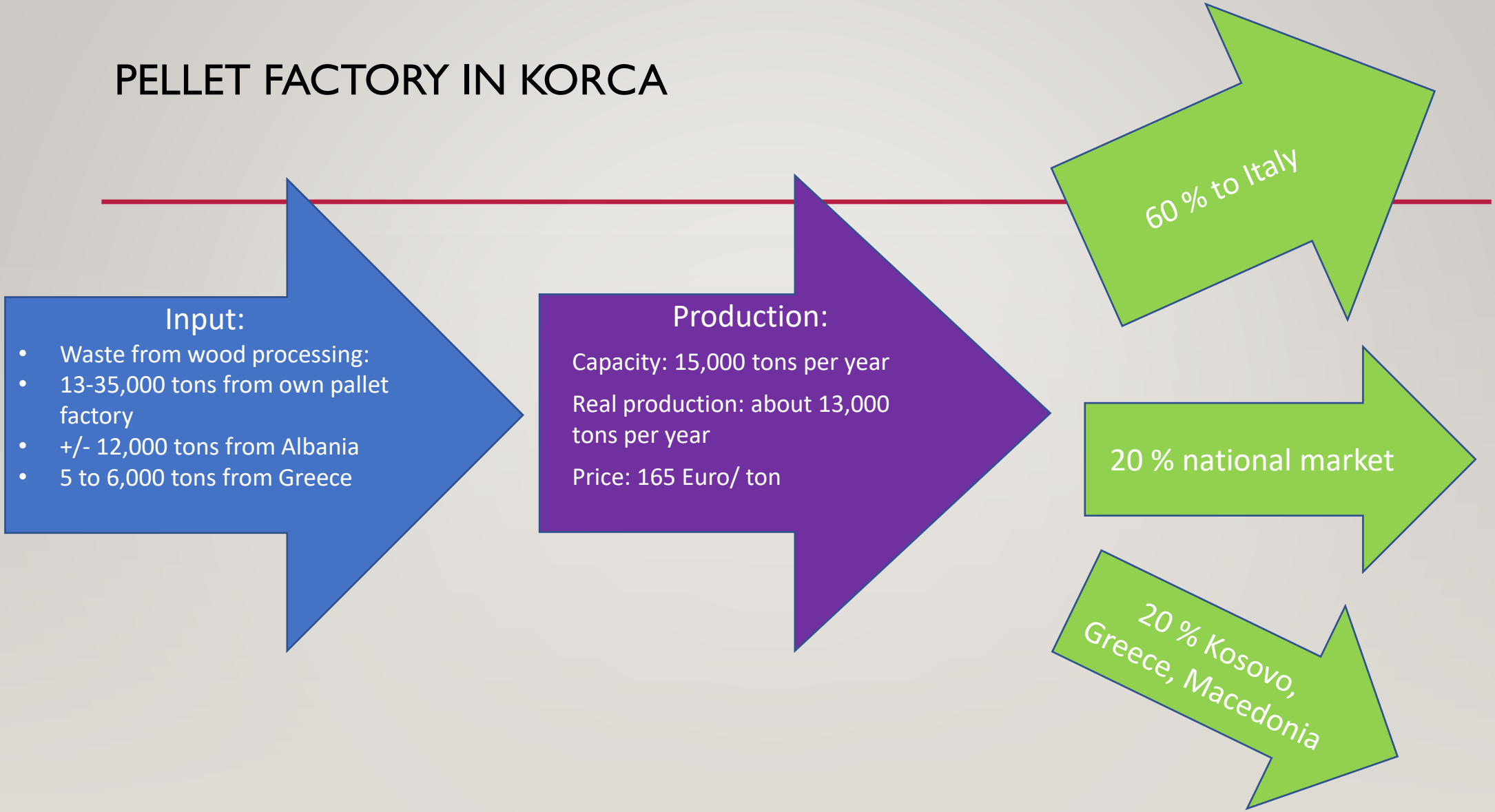
PELLET FACTORY IN KORCA



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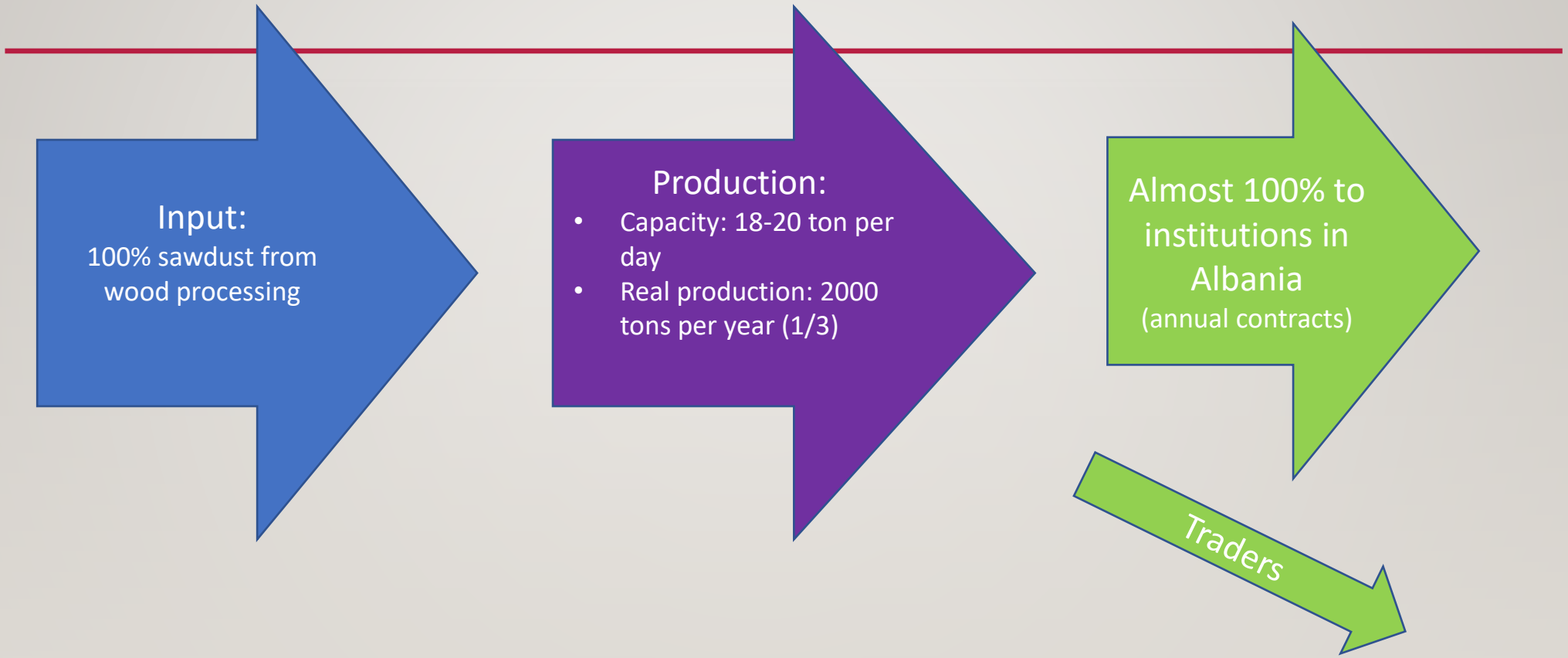
PELLET FACTORY IN ELBASAN



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CONSUMPTION OF FUELWOOD / PELLETS

- Preferred species for fuelwood: Beech followed by Oak
- In general for households living in rural areas use 7-10 m3 fuelwood per year and 4-5 m3 fuelwood per year in urban areas
- Schools entitled to 3m3 fuelwood per class room per year; heating from 15 Nov to 15 March (School in Kukes region switched back to fuelwood as petrol turned out to be too expensive)
- Growing demand for pellets and pellet stoves
- Ministry of Environment supports the use of central heating systems in institutions

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MAIN CONCLUSIONS

- Wood biomass provides a good source of renewable and low carbon energy
- Forest resources in Albania are declining
- Ministry of Environment and Industries foresees only minor role of wood biomass in energy production
- Ministry of Environment installed Moratorium and other supporting policies to protect and conserve forest resources
- Montenegro installed a ban on the export of logs effective since 1 Jan 2017
- Municipalities responsible for the fuelwood supply for citizens and institutions in their locality
- Municipalities and forest Inspectorate lack capacities, funds and infrastructure to fulfil new roles and mandates

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MAIN CONCLUSIONS

- The demand for fuelwood is much higher than the formal supply
- Marketing of fuelwood is largely informal
- Sharp increase in fuelwood prices: From 2,500 to 4,000 ALL per stacked m3 in a year's time to 8,000 ALL next year?
- Pellets are highly efficient and can form a suitable alternative for fuelwood to increase efficiency
- Pellet companies face difficulties in accessing resources (production much lower than capacity of pellet processing plants; some consider moving to Montenegro)
- Use of central heating systems based on wood biomass in institutions promoted
- At the same time use of wood biomass/ pellets is encouraged and discouraged

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APPROACHES IN SUPPORT OF WOOD-BIOMASS VALUE CHAINS

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APPROACHES IN SUPPORT OF WOOD-BIOMASS VALUE CHAINS

- Enabling policy environment
- Service delivery, cooperation and coordination
- Forest management to increase production and productivity
- Marketing, trade and export
- Research and feasibility studies

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ENABLING POLICY ENVIRONMENT

- Recognition of user and /or property rights over traditional forest land will encourage farmers to take further care of their forest and might ease selling of fuelwood by farmers to municipalities
- Allow forest companies to have long-term concessions (at least 3 harvesting rotations/ 30-50 years) with clear criteria regarding low impact logging; This will encourage forest companies to invest and extract timber/ fuelwood in a more sustainable manner
- Albanian government to make agreements with neighbouring countries on wood/ sawdust imports
- Sawdust should be considered as resource and not as industrial waste

ENABLING POLICY ENVIRONMENT

- Financial incentives & fiscal benefits for the use of e.g. improved (pellet) stoves/ central heating systems and thermal insulation
- Replacement of old wood stoves by more efficient heating systems in institutions in the coming 5 years
- Special programs/ subsidies to support poor/ remote areas without sufficient fuelwood resources: thinning/ sanitairian operations, shrub area management (by Municipalities)
- Provision of sufficient funds & infrastructure for Municipalities and Forest Inspectorate to carry out new roles and mandates
- Ensure recruitment of appropriately qualified staff in new forest structures under municipalities
- Investments in forest management planning including forest management for fuelwood production (under ESP and Municipality Fund)

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SERVICE DELIVERY, COOPERATION AND COORDINATION

- Increased collaboration between Ministry of Energy and Industry, Ministry of Environment, Ministry of Agriculture and Municipalities on the implementation of the National Action Plan for Renewable Energy Resources (2015-2020)
- Strategic planning on how to reduce fuelwood use at national level and at municipality level (e.g. policies, energy efficient stoves, central heating systems, district heating, alternative sources of energy, etc.)
- Recognition of the coordination role that forest associations can play in forest management for fuelwood production and potentially selling of fuelwood in municipalities
- Organisation of meetings between private sector and ministries/ municipalities on collaboration (e.g. pellet supply to institutions) and future prospects
- Capacity building and awareness raising of new structures to support them in implementing their roles

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FOREST MANAGEMENT TO INCREASE PRODUCTION AND PRODUCTIVITY

- Registration of forests in name of municipalities (under ESP)
- Incomes from selling fuelwood and fees/ tariffs collected by municipalities to be reinvested in fuelwood/ wood biomass chains
- Partial forest management assessment if management plans do not exist
- Thinning, sanitairian operations to enhance forest growth
- Make use of up to 50% of biomass that's left after (illegal) forest operations

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FOREST MANAGEMENT TO INCREASE PRODUCTION AND PRODUCTIVITY

5 models:

- Collaboration between municipality and traditional forest users for fuelwood supply
- Oak coppice forest
- Management of shrub areas (*Arbustus unedo*)
- Plantation fast growing native species: Poplar & willow
- Agroforestry (for example tree pollarding system and crops)

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MARKETING, TRADE AND EXPORT

- Control informal trade of fuelwood
- Market information on where fuelwood/ sawdust can be obtained for reasonable prices

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RESEARCH AND FEASIBILITY STUDIES

- Feasibility study and pilot on district heating with biomass
- Research/ studies on the potential of using agricultural waste for heating (e.g. nutshells are of high quality for pellets)
- Research on potential use of geothermal energy
- Research on to what extent fuelwood can be replaced by other renewable energy sources (solar/ wind/ other)
- Research on potential carbon credits because of emission reduction (PIN)

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