

ENERGY BARGE

Building a Green Energy and Logistics Belt

Ruse, 2017-06-28

Thies Fellenberg

Fachagentur Nachwachsende Rohstoffe e.V.





★ Participating countries

■ Danube Transnational Programme area

Project overview

Start date: 01/01/2017

End date: 30/06/2019

Budget

Overall: 2,323,519.65 Euro

ERDF Contribution: 1,974,991.67 Euro

15 Project partners

8 Associated partners

Project Consortium

Bioenergy Partners:

- Agency for Renewable Resources, DE
- Biocampus Straubing GmbH, DE
- Deggendorf Institute of Technology, DE
- Bioenergy2020+ GmbH, AT
- International Centre of Applied Research and Sustainable Technology, SK
- National Agricultural Research and Innovation Center, HU
- Intern. Centre for Sustainable Dev. of Energy, Water and Environment Systems, HR
- Technology Center Sofia Ltd., BG
- Romanian Association of Biomass and Biogas, RO
- Federation of owners of forests and grassland in Romania, RO

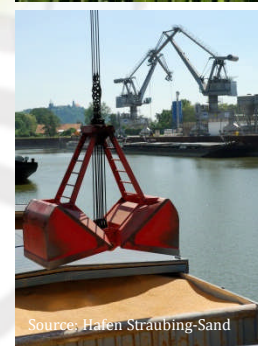
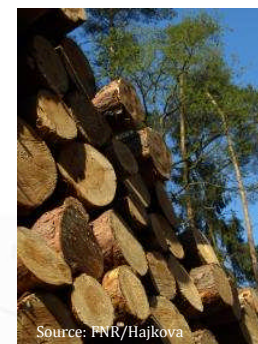
Logistics Sector / Port Locations

- Port of Straubing-Sand, DE
- viadonau – Austrian Waterway Company, AT
- Port of Vienna, AT
- Port of Vukovar, HR
- MAHART Freeport Co. Ltd., HU
- Slovak Shipping and Ports JSC, SK

Objectives

Main objectives:

- Increase the use of biomass for energy production in the Danube region
- Increase the share of biomass transports on the Danube



Specific Objectives

- 1)** Map value chains and facilitate market uptake of biomass for energy production
- 2)** Sustainable and secure distribution of biomass
- 3)** Provide practical solutions and policy guidelines (→ market actors, public decision-makers)

Methodology

- Analyse the biomass potential of the Danube region
- Company landscape in the programme area
- Pre-feasibility pilot studies and pilot actions by Danube ports
- Transnational workshop
- Transfer of results

Pilot projects in ports

Budapest

- Pre-feasibility studies to strengthen ports as logistics hubs for the bioenergy sector
- Small-scale investment:
 - Forklift with a bulk bag filling and handling adaptor
 - Loading of biomass products into big bags



Pilot projects in ports

Vienna

- Equipment for the handling of wood-based products:
 - Timber gripper for a wheel loader
 - Timber grapple for the e-crane
 - Crushing unit for round timber



Strategic Relevance

- Support to evaluate market potentials
- Improved transportation of biomass
- Cargo transport on the Danube +20% until 2020
- Better environmental performance along the entire value chain
- Transnational learning interactions

Thank you for your attention!

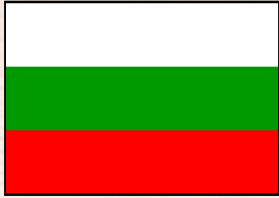
www.interreg-danube.eu/energy-barge

Facebook: www.facebook.com/energybarge

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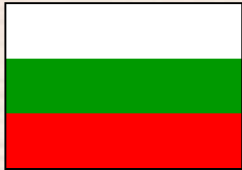


EXECUTIVE FOREST AGENCY

FORESTS AND FOREST SECTOR IN THE REPUBLIC OF BULGARIA

BIO₄ECO PERSPECTIVE

Dipl. Eng. Spas Tumbev
Chief expert “Forest protection”
Executive Forest Agency
Republic of Bulgaria



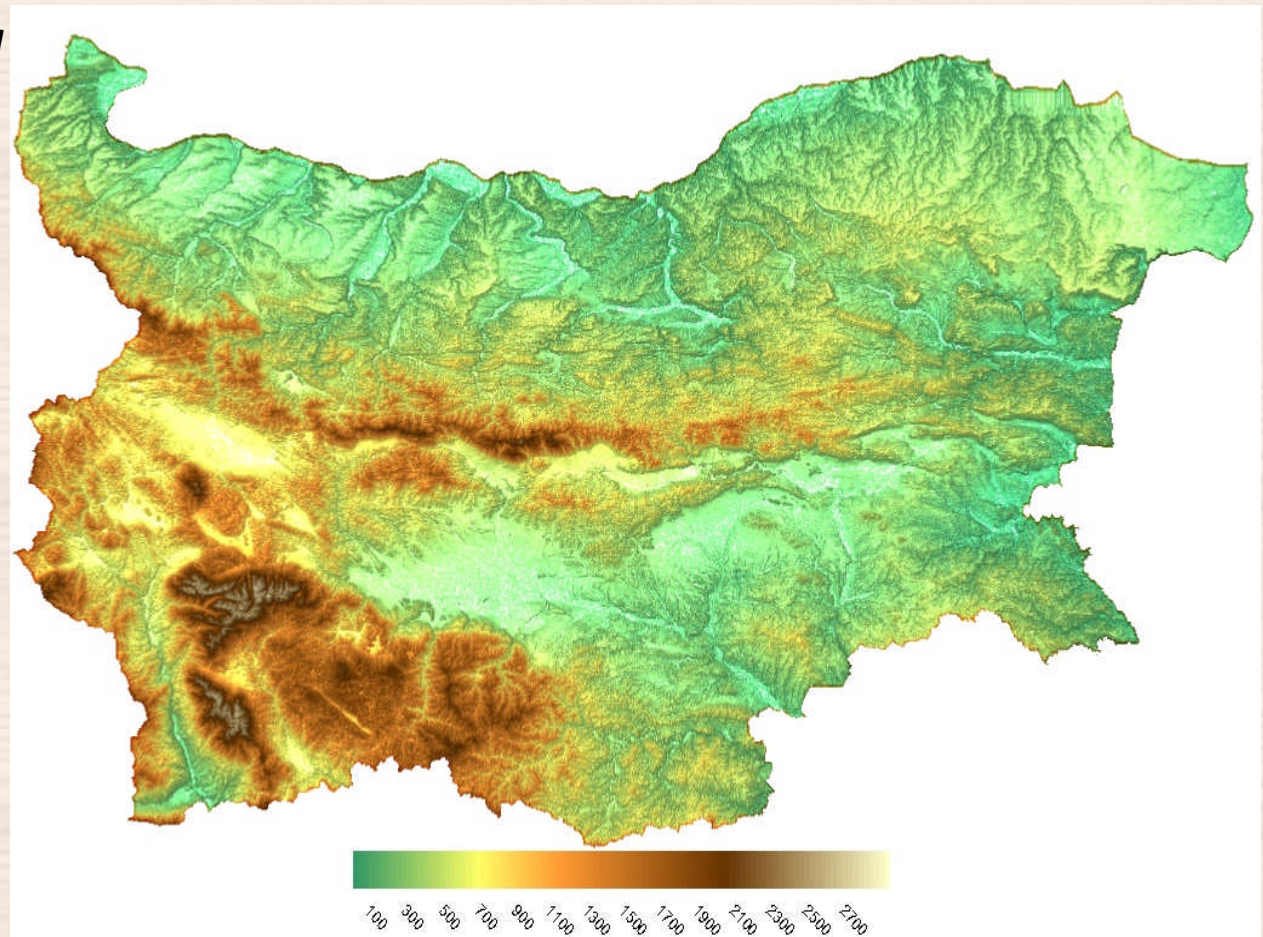
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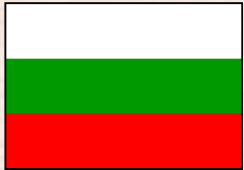


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Vision for the development of the forest sector

“Towards 2020 z. Bulgaria will have viable, productive and multifunctional forests; sustainable, competitive and innovative forest sector; preserved biological diversity, quality and quantity of water resources in the forest territories. The sector will support the economic development of the country, will ensure conditions for adequate realization of the employees in it, will provide to a maximum extend for mitigation of climate change effects and will guarantee the maintenance of healthy environment.”



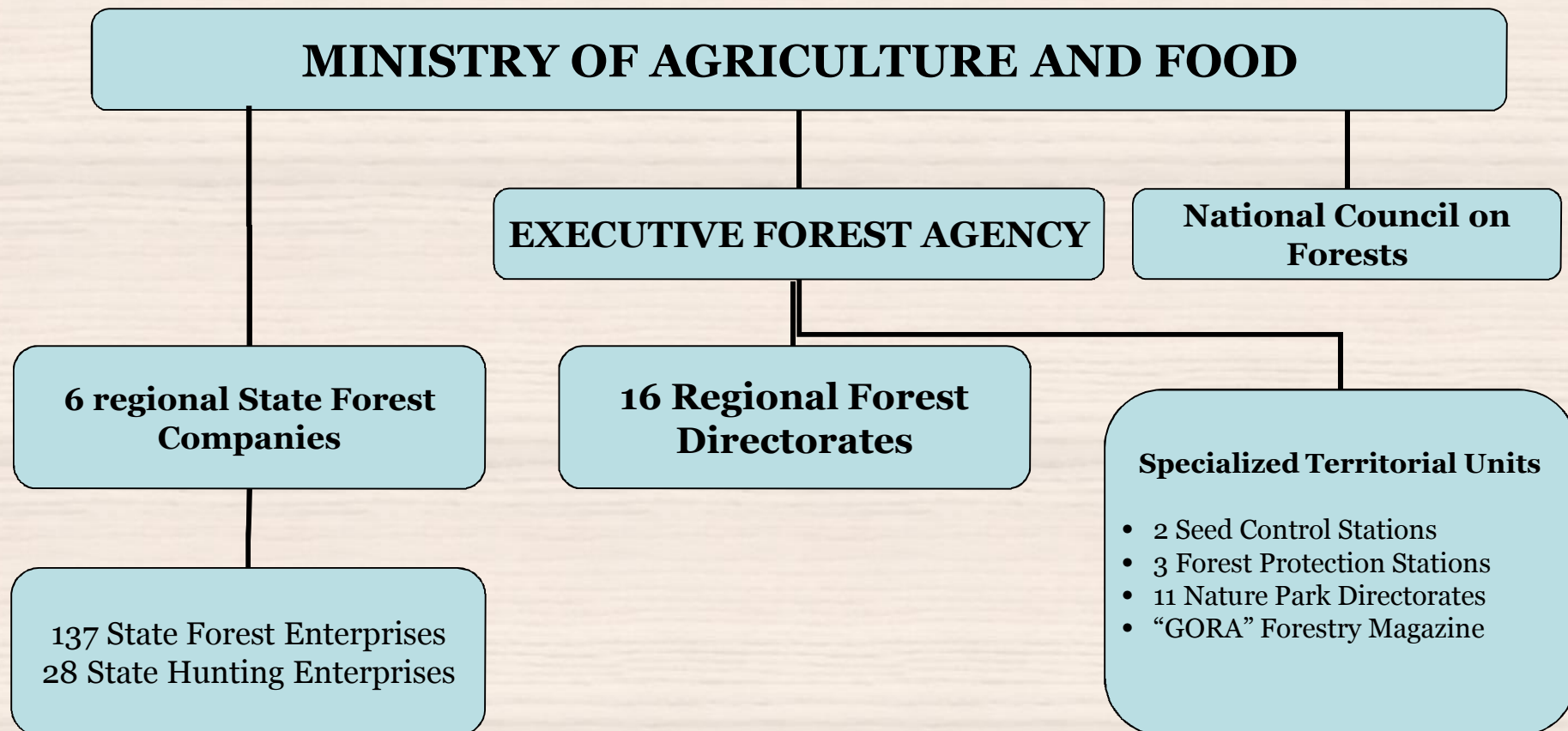


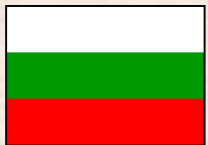
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ORGANIZATIONAL STRUCTURE





REPUBLIC OF BULGARIA



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The forests in Bulgaria

(data towards 31.12.2015)

Forest data:

- 4 223 000 ha forest territories
(about 37,4% of the country's territory);
- Approximately 67 % broadleaved forests;
- Over 680 000 000 m³ total volume;
- 14 million m³ annual increment;
- 3.8 m³ – average annual increment per ha;
- 8 390 000 m³ annual harvesting (standing timber)

Regarding their functions forests are divided as follows:

- protective;
- special;
- economic.



5th Biomass Fair of Catalonia
Vic, 23.02.2017



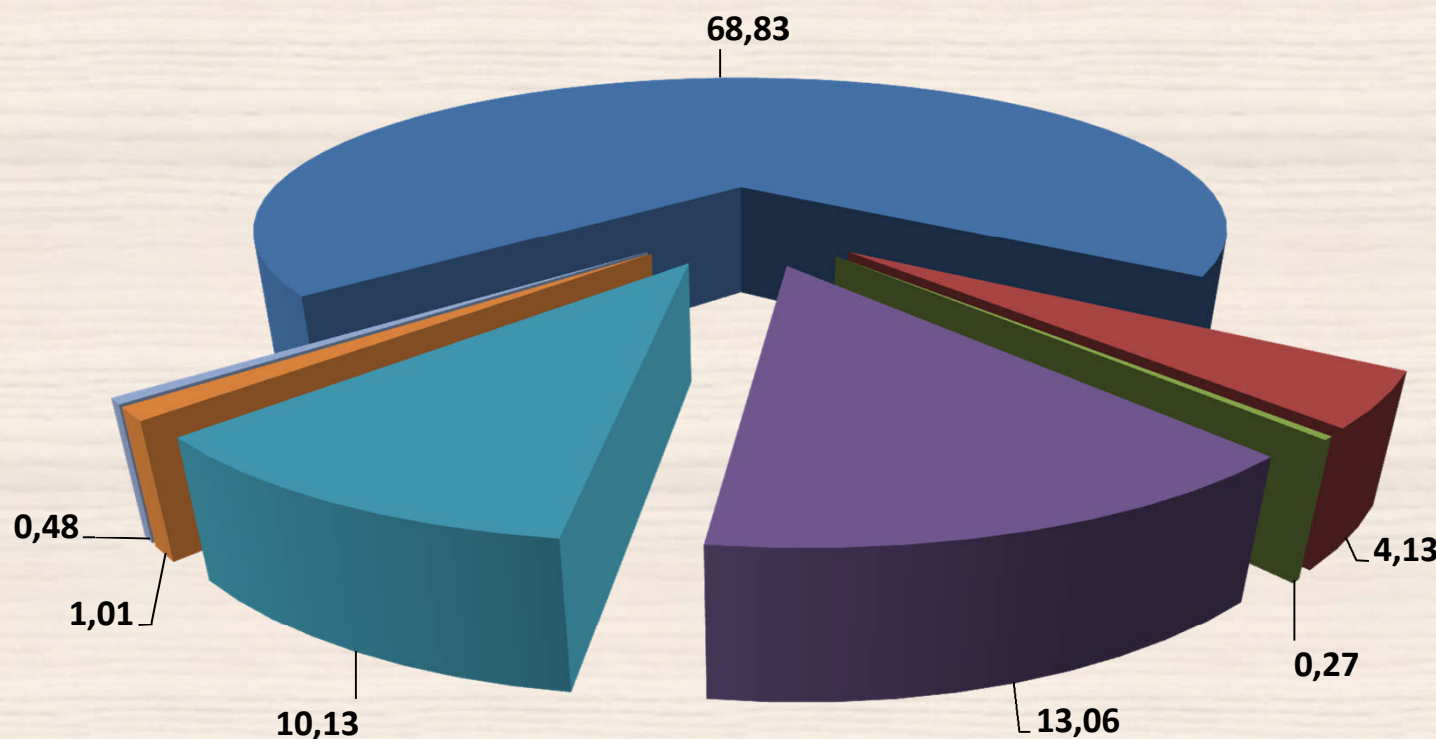
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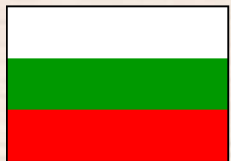
Forests ownership



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- Forest territories managed by the State enterprises according to Art. 163 (Law on Forests)
- Forest territories managed by the Ministry of Environment and Waters
- forest territories consigned to Trial Forest Units
- Municipal forest territories
- Forest territories owned by physical bodies
- Forest territories owned by juridical bodies
- Forest territories owned by Bulgarian Orthodox Church



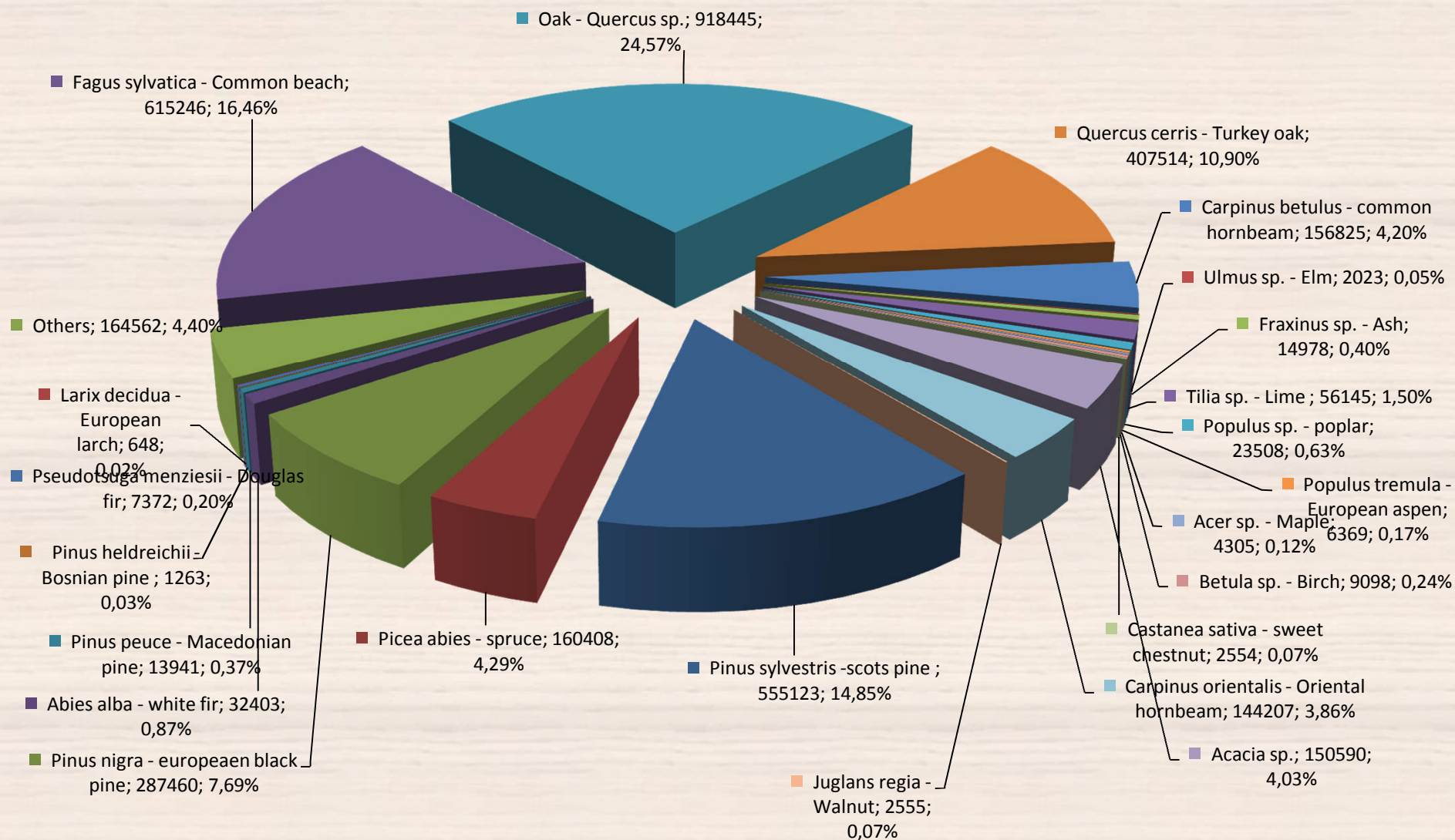


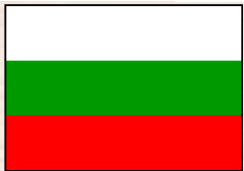
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Tree species distribution



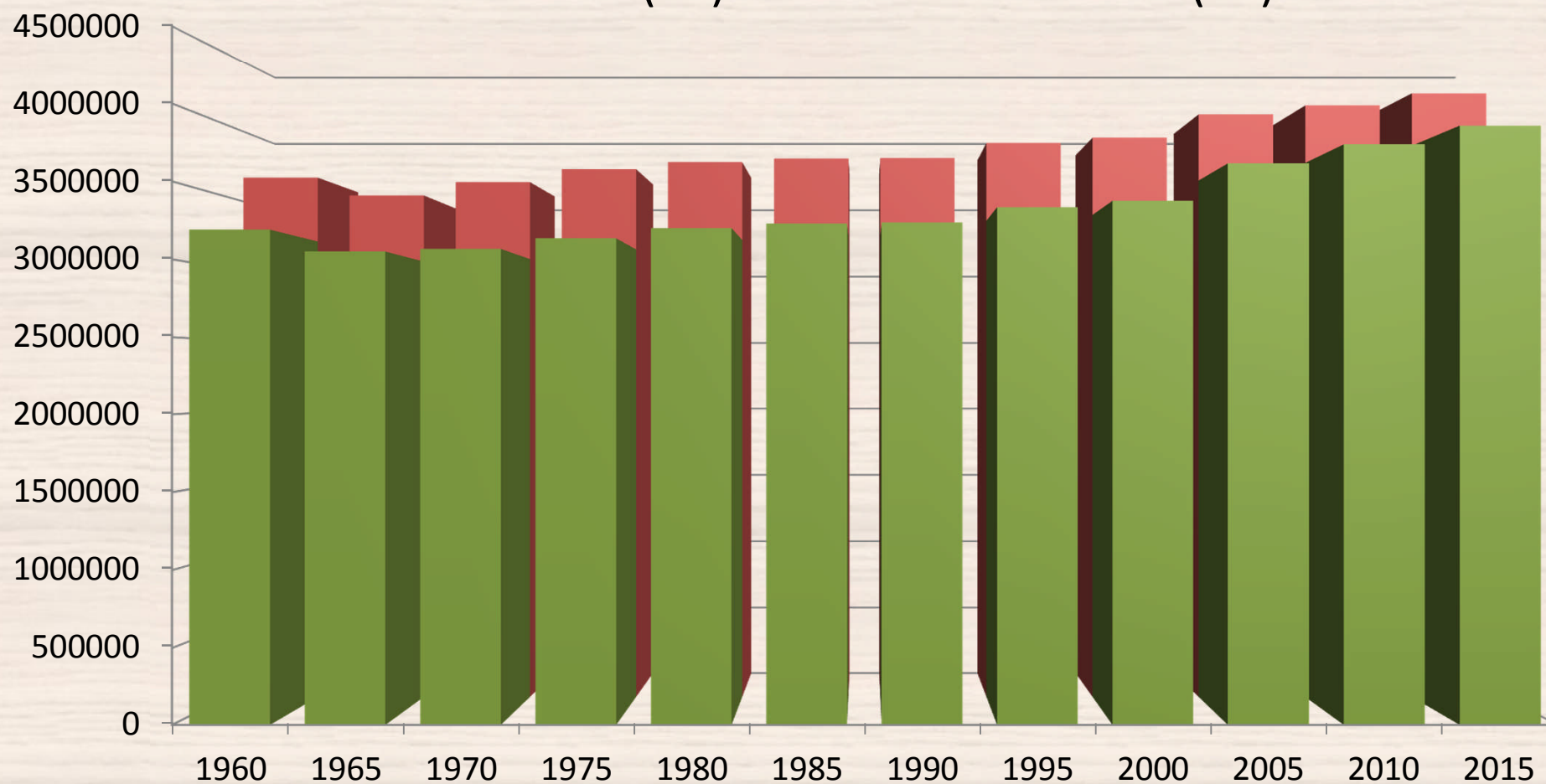


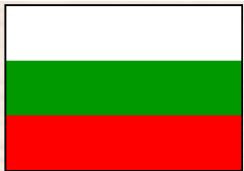
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■ forested area (ha) ■ total forest area (ha)



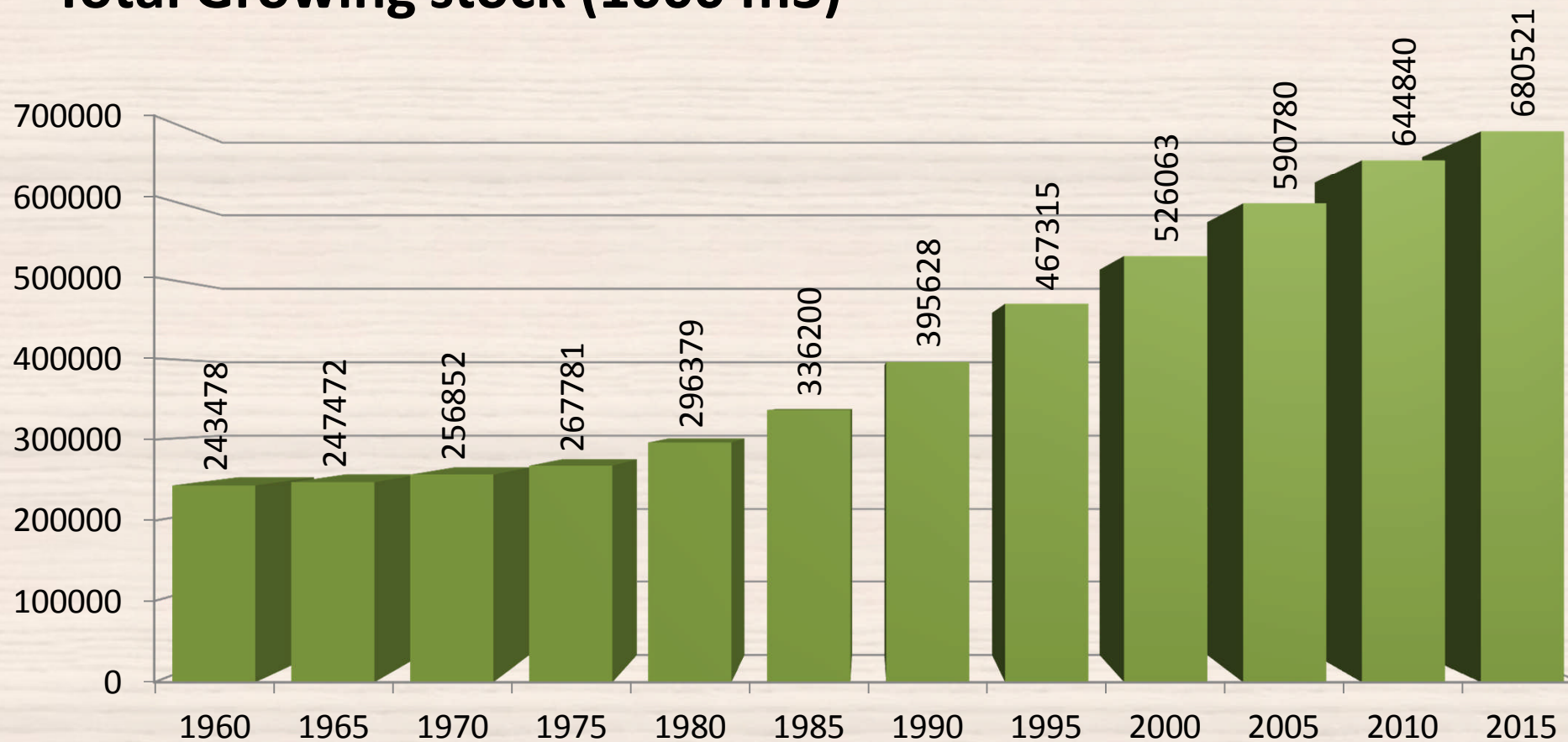


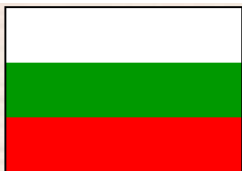
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Total Growing stock (1000 m3)





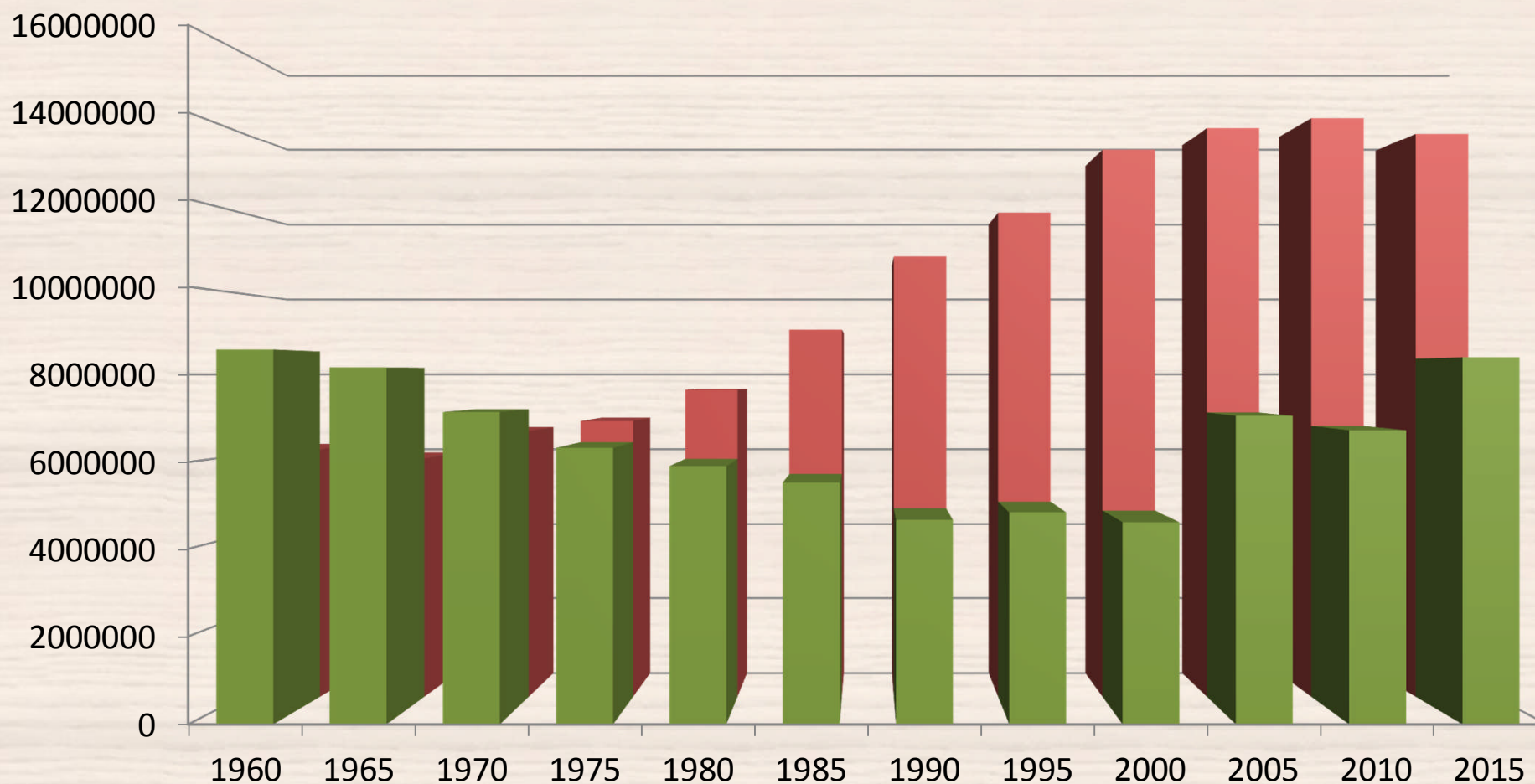
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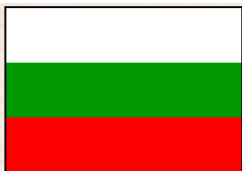


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■ **Actual harvesting**

■ **Total annual increment**



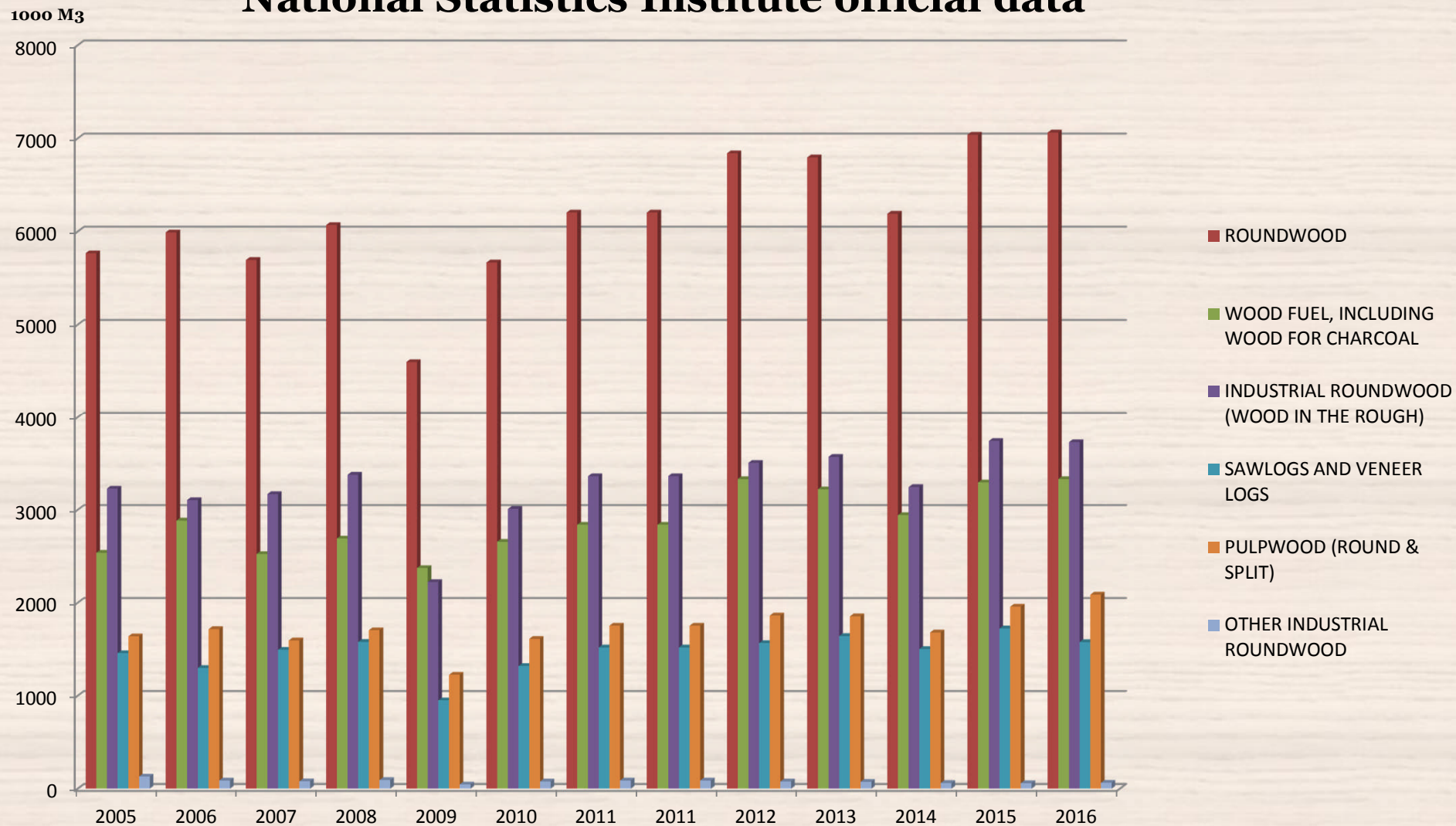


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National Statistics Institute official data





ИЗПЪЛНИТЕЛНА АГЕНЦИЯ ПО ГОРИТЕ



COMMON INFORMATION

- Developed in 2015 as a follow up of the project FUTUREforest under INTERREG IV C programme
- EFA obtained letter of support from Ministry of Economy, General directorate “European funds for competitiveness”
- Approved with Monitoring committee decision from 09.02.2016
- Starting date – 01.04.2016
- Duration – 4,5 years
- Phase 1 (2,5 years) – Policy development
- Phase 2 (2 years) – newly included for monitoring purposes
- Total budget – 1 495 000 €, EFA budget – 190 000 €
- National co-financing - 15 % (28 000 €) covered by the Bulgarian Ministry of regional development and public works
- The project is approved under Specific objective 3.1 “Improve the implementation of regional development policies and programmes” of Programme INTERREG Europe



ИЗПЪЛНИТЕЛНА АГЕНЦИЯ ПО ГОРИТЕ



OP “Innovations and competitiveness”

- Operative Programme “Innovations and competitiveness” Priority Axis 3 “Energy and resource efficiency”, Investment priority 3.1. “Energy technologies and resource effectiveness“
- According to Thematic aim 4 “Support for transition to low carbon economy in all sectors” and according to the national level identified necessities within the OPIC 2014 - 2020 framework, the above investment priority includes support for the decreasing of the energy intensity of the economy, predominantly due to improvement of the energy efficiency and enterprises flexibility
- The above support includes investments in tangible and intangible assets, systems for energy management, incl. ICT based systems for management of the energy efficiency, second usage of residual heat energy in the industry, **SUPPORT FOR HIGHLY EFFECTIVE MICRO AND SMALL CO-GENERATIONS** and
- Support is available **ONLY** for existing companies/ facilities



ИЗПЪЛНИТЕЛНА АГЕНЦИЯ ПО ГОРИТЕ



Main actions

- Main stakeholders, included in official Order of the Executive Director of EFA, and first official meeting held on 14.09.2016 - minimum 5 official meetings in total, support in the development of the Action plan for energy from wood biomass and participation in Thematic workshops and Study visits
- PPP documentation developed, procedure conducted and selection procedure completed – for development of Action plan for energy from wood biomass
- National project management team established – 15 common meetings held, all documentation and organization work necessary.
- Hosting first Thematic Workshop “Role of Forests within Regional and National Low Carbon and Bioeconomy Strategies and Programmes“ and second Steering Group meeting in the period 07-10.11.2016
- Second meeting of main stakeholders held in the period 23-24.03.2017
- National co-financing provided
- First FLC conducted



ИЗПЪЛНИТЕЛНА АГЕНЦИЯ ПО ГОРИТЕ



AP development basis

- **Forest Act:**
 - Art. 154. (1) The state policy in the field of forestry is conducted by the Minister of agriculture and food through the Executive Forest Agency
 - Art. 9-11 set the levels of forest planning and the national strategic forest documents
- **National Strategy for Development of the Forest Sector in the Republic of Bulgaria 2013 – 2020**
 - Priority 4 Usage of the potential of the forest sector for development of the green economy; Measure 4.1 Sustainable production and usage of biomass as RES with the following expected results:
 - Developed and introduced programme, including evaluation of the necessities and the real possibilities for production and usage of biomass from forest territories for production of heating energy and electricity
 - Developed National scheme for sustainable production and usage of wood biomass for energy needs;
- **Strategic plan for development of the forest sector 2014 – 2023**
 - Operational objective 17 “Sustainable production and usage of biomass as RES“



ИЗПЪЛНИТЕЛНА АГЕНЦИЯ ПО ГОРИТЕ



Contracting, drafting and discussion

- PPP for contracting of external executor
- Development of first draft of the AP - CoM guidelines and EFA best practices
- Public discussion of the first draft :
 - Two regional round tables
 - www.strategy.bg and www.iag.bg
 - Parallel conducting of official meetings of the LSG
 - All comments, proposals, etc. published in public register
- Including of all registered comments in the final version of the Action plan
- Approval of the AP by EFA Expert council and presenting to Executive Director for adoption
- Presenting the adopted AP to the society and media coverage
- Monitoring of the AP within the BIO4ECO project

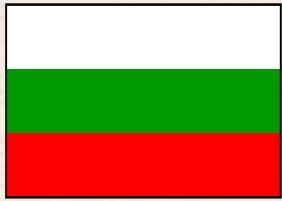


ИЗПЪЛНИТЕЛНА АГЕНЦИЯ ПО ГОРИТЕ



Optional structure

- Strategic and Programme documents analyses
- Analyses of the potential of the wood biomass in Bulgaria
- Balance of the production and consumption of wood in Bulgaria
- PEST, SWOT, etc.
- Strategic framework
 - Vision – what we want to achieve at the end of the AP
 - Mission – how we are going to achieve it
 - Priorities (up to 5-6)
 - Activities (up to 10 per priority)
 - Expected results for each activity
 - Implementation indicators
 - Deadlines
 - Necessary sources of financing
 - Responsible institutions/ organizations
- Monitoring rules
- Best EU practices



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Thank you for your attention!

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Bulgarian Ports – our infrastructure to transport biomass over the Danube River

**28 June 2017, Ruse
Anna Natova**



Bulgarian Ports Infrastructure Co

BPICo – Status and Activity

BD6

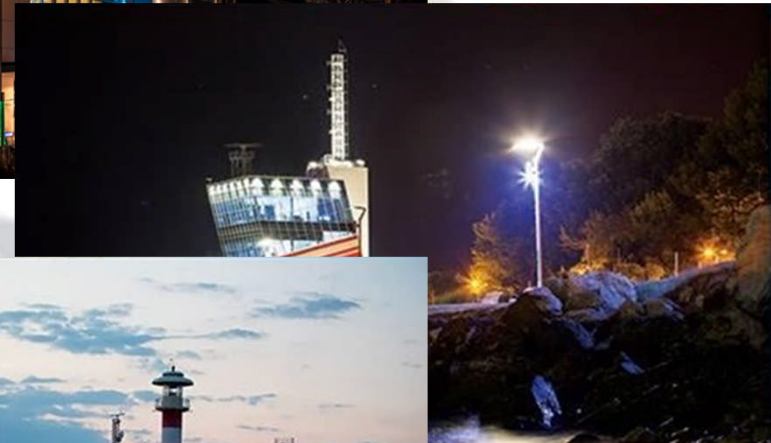
- BPICo is a statutory company;

BD9

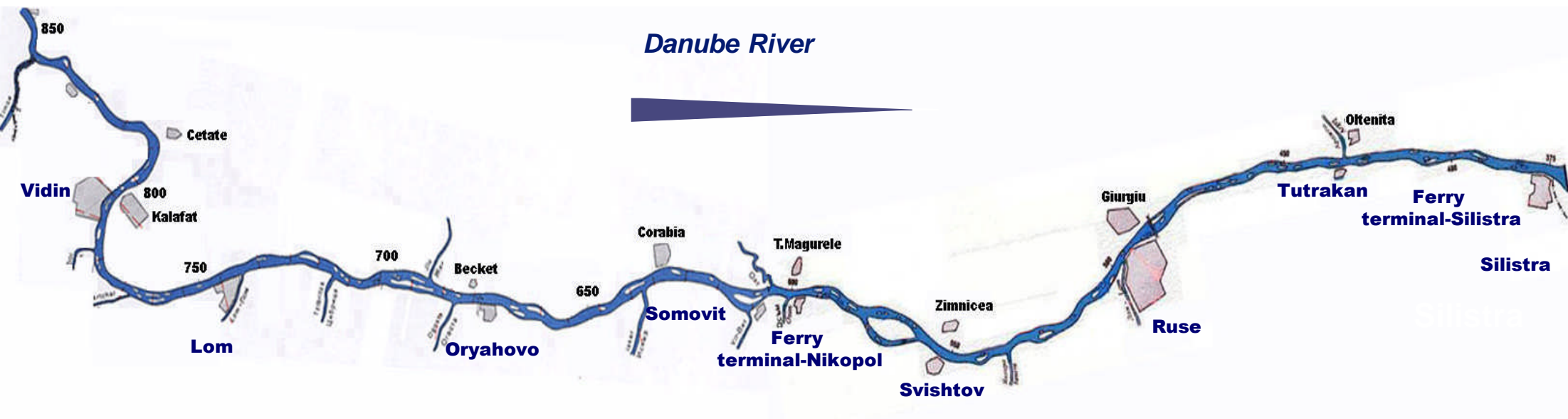
- 4 Branches – Territorial Directorates;

BD10

- 2 Specialized Directorates.



- BD6** Bulgarian Ports Infrastructure Company (BPI Co) manages the port infrastructure of the public transport ports of national importance in accordance with the Maritime Spaces, Inland Waterways and Ports of the Republic of Bulgaria Act and is responsible for provision of information on traffic management and information services for shipping, distribution of marine information on safety and maintenance.
Boginya Dimitrova; 26.06.2017
- BD9** BPI Co has four Branches – Territorial Directorates in Ruse, Lom, Burgas and Varna.
Boginya Dimitrova; 26.06.2017
- BD10** Specialized Directorate Vessel Traffic Management - Danube River and Specialized Directorate Vessel Traffic Management - Black Sea
Boginya Dimitrova; 26.06.2017



The Bulgarian Danube River Ports

RP26
RP36

- Length - 471 km
- 15 Ports
- Well developed rail and road connection
- Well maintained infrastructure
- Well developed RIS System

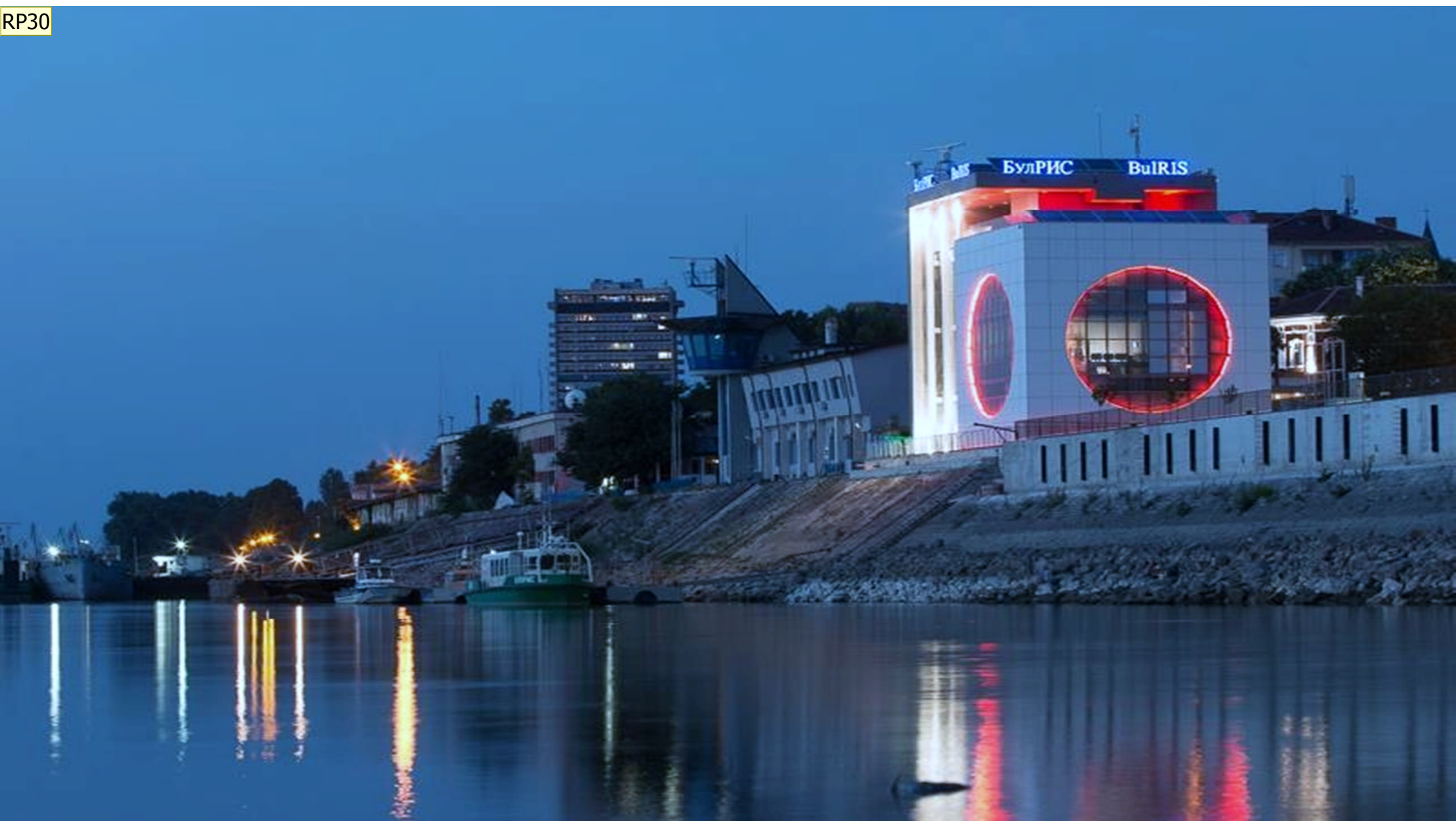
RP26 The Bulgarian section on the River Danube is between km 845,650 and km 374,100. On the right bank of the Danube River

Radostina Petrova; 06.06.2017

RP36 Benefits of using the IWW transport for transporting Biomass: Cost efficient transport solution, especially for bulk cargo

- High loading capacity of Danube vessels compared to other modes of transport
- Well established transport chains
- High density of Danube ports with efficient handling and storage facilities for agricultural products

Radostina Petrova; 16.06.2017



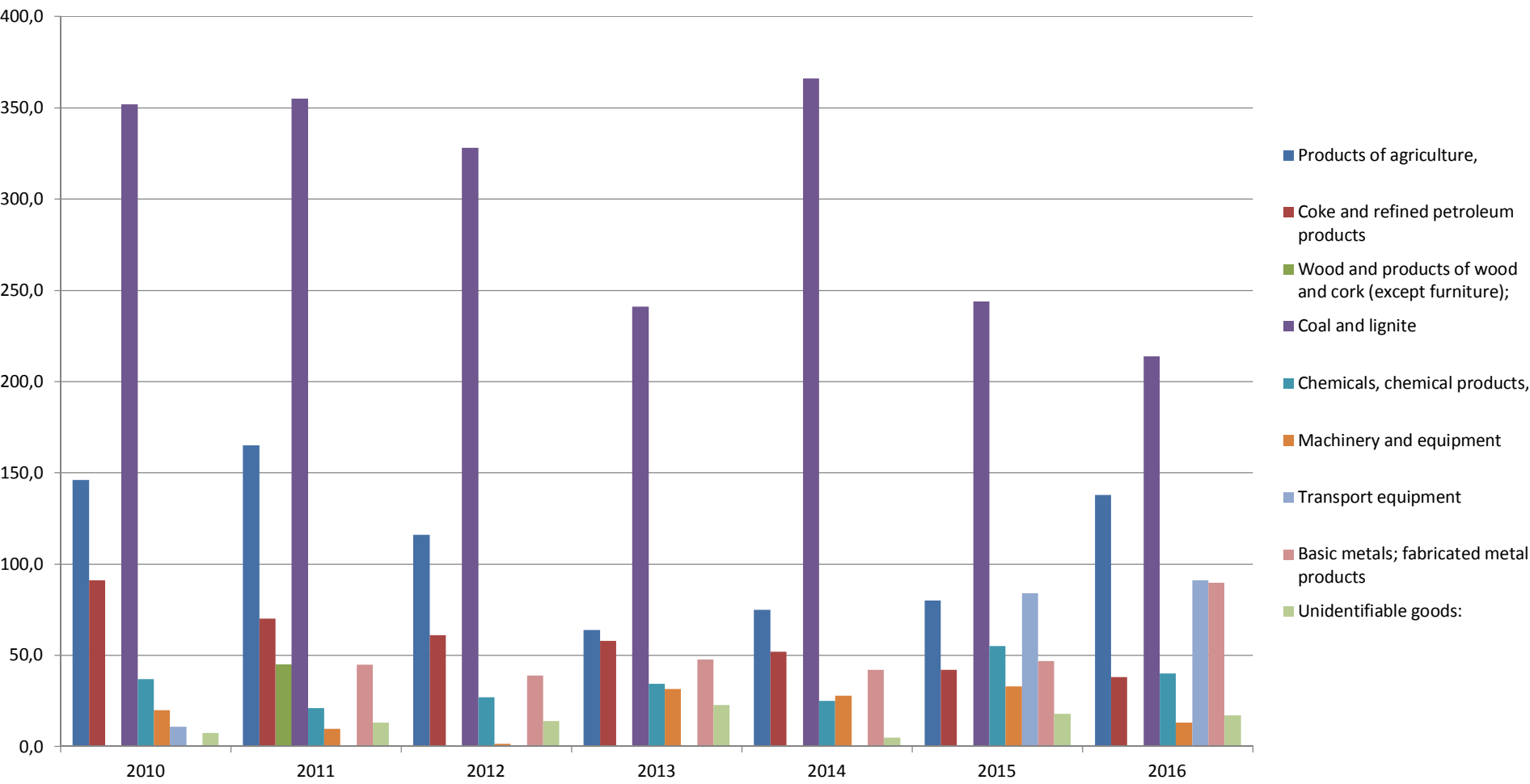
RP30

Provision of river information services in real time is essential to reduce the risks for vessels pass through critical sections on the Danube and thus – to increase the level of safety for shipping. The system creates conditions also for increasing the efficiency of transport on inland waterways. BULRIS is an important element of the complex of measures for control and prevention of pollution in Europe's largest river. Deployment of information technologies in management of logistics and transport processes is a key element of modern transport.

River information services (RIS) are navigation systems, serving ships and institutions responsible for traffic management, waterway maintenance, safety of navigation, environmental protection and others. The currently traditional track record communication between the ships and various shore offices serving shipping was implemented through radio, telephony, visual surveillance and other traditional methods. RIS is an environment where modern electronic navigation can be implemented, which is a practice in maritime transport. The systems for vessel traffic monitoring that are integrated into BULRIS provide real-time information for the coastal services and the data necessary for safe navigation: AIS data, radar images and video surveillance with optional for thermal image.

Radostina Petrova; 15.06.2017

Transport volume on the Bulgarian Danube



RP39

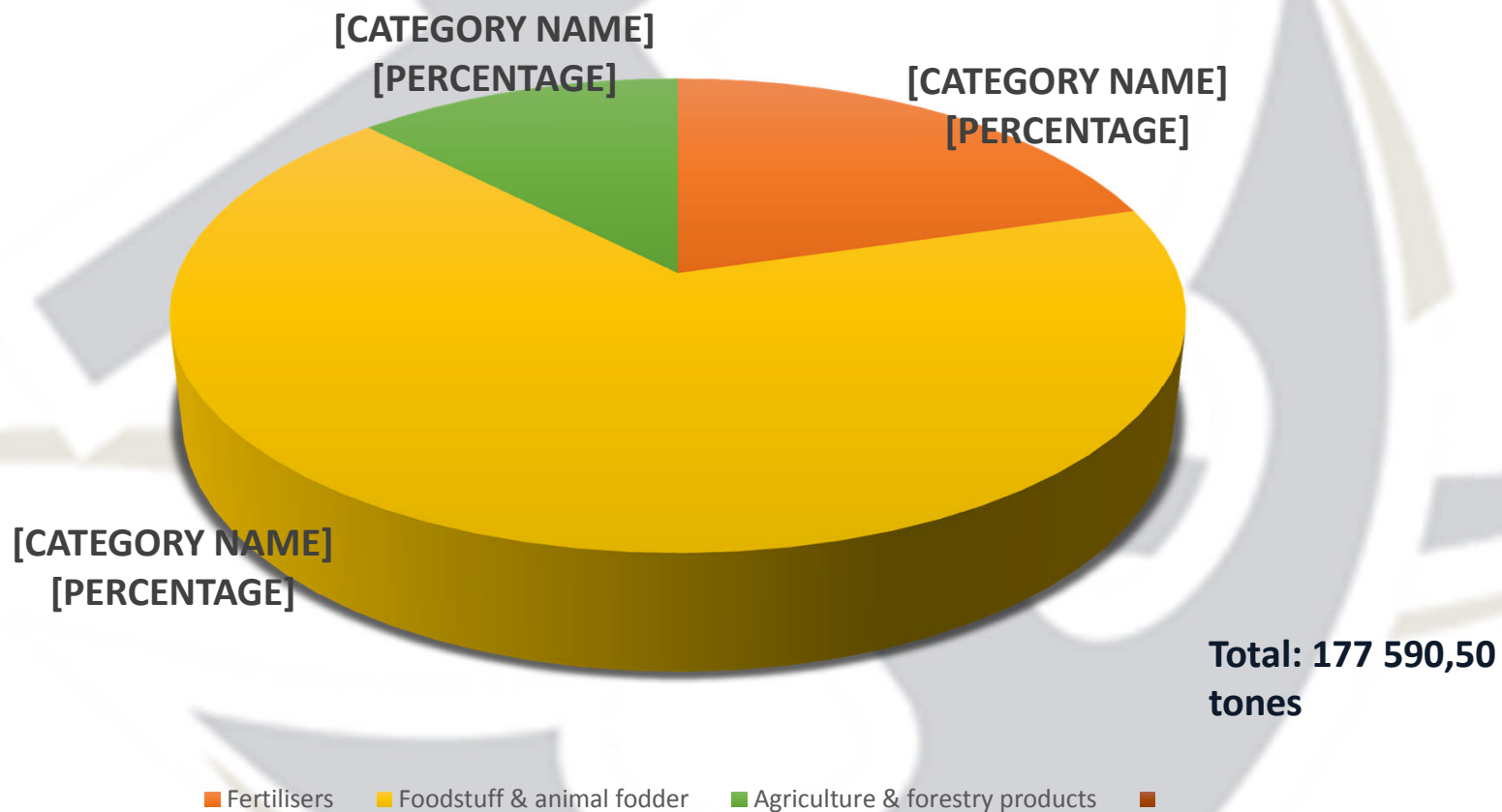
The main types of cargo, which are processed in the Bulgarian ports on the Danube River (mostly imports) are coal, with a share of 53% of the total freight volume.

We note that there is also a significant increase in bulk handling at some of the ports compared to 2010.

As for the export, mainly agricultural products are processed, with a relative share of 45% of the total freight volum.

Radostina Petrova; 16.06.2017

Transport volume on the Bulgarian Danube by commodity group in 2015



Agriculture areas in Bulgaria

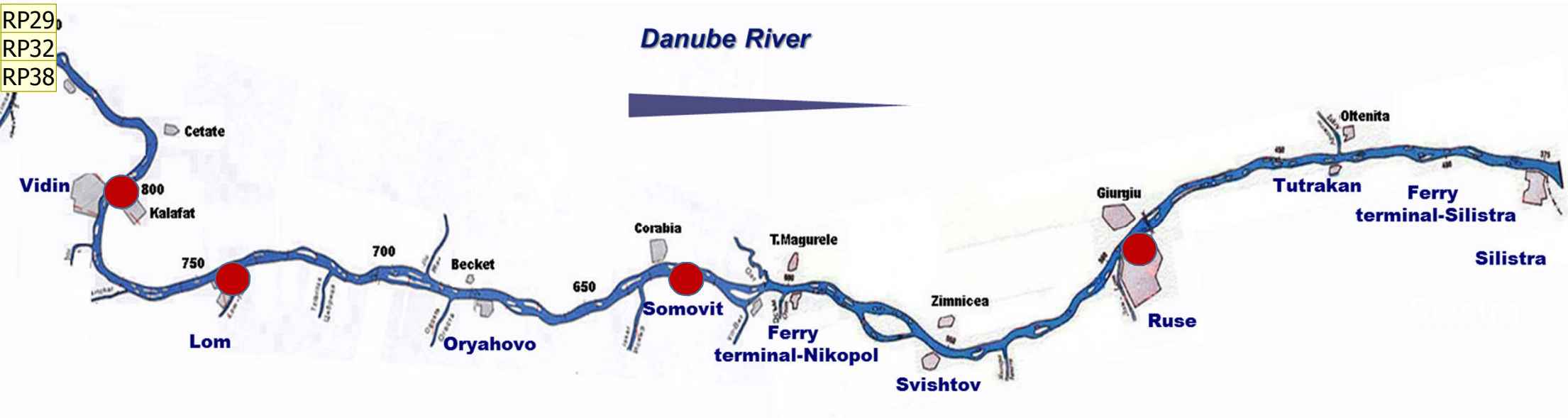


RP31

As it is shown, most of the agriculture areas in Bulgaria are situated in the Danube River region, which makes the use of INW transport easier.

Radostina Petrova; 15.06.2017

RP29
RP32
RP38



Danube Ports with capacity to provide biomass services

Folie 8

RP29

All off them have good connections to national road and railroad infrastructure. The infrastructure is well maintained.

Radostina Petrova; 15.06.2017

RP32

Radostina Petrova; 15.06.2017

RP38

There are 4 Ports: Ruse, Somovit, Lom and Vidin which could offer a Biomass services.

Radostina Petrova; 16.06.2017

Transport Handling and Processing Storage Transshipment



Port of Somovit

BD11



Port of Lom

BD12



Port of Vidin

BD13



Port of Ruse

RP35 All of the 4 ports provide Transport, Handling and Processing, Storage and Transshipment.

Radostina Petrova; 16.06.2017

BD11 The port terminal of Somovit is located from km 607,700 to km 607,300. It is specialized for processing general and bulk type of cargo. It disposes:

- 3 berth places – one of them with pontoon;
- 9 700 sq. m. open and 2 175 sq. m. covered storage area;
- 4 portal cranes with capacity of 5 tons;
- a 120 tone railweighbridge;
- a 80 tone autoweighbridge;
- supporting machinery & equipment.

Boginya Dimitrova; 27.06.2017

BD12 The port terminal of Lom covers a territory from km 743,000 to km 741,800 along the Danube. It is specialized for processing passengers, ship supply, general and bulk type of cargo. It consists of 13 berths. Berths 1, 2 and 3 are allocated at the Danube. There are three pontoons. Berths from 4 to 13 are allocated at the harbor basin.

The terminal has several covered and open storage areas situated in the port: 54 853 sq. m. open and 9 468 sq. m. covered storage area; 25 portal cranes with a lifting capacity between 5 to 20 tons.

Boginya Dimitrova; 27.06.2017

BD13 The port of Vidin is situated from km 793,500 to km 785,400. It incorporates one passenger and two cargo port terminals as follows:

- Port terminal of Vidin-North;
- Port terminal of Vidin-Centre;
- Port terminal of Vidin-South;
- Ro-Ro Terminal – Vidin.

- Port terminal of Vidin-North is specialized in general and bulk cargoes. The port terminal disposes: 1 berth place and 10 000 sq. m. open storage area.

- Port terminal of Vidin-Centre consists of 4 berths (pontoons) for mooring of vessels. The port terminal is specialized in passenger transport services and ship Supply.

- Port terminal of Vidin-South is specialized in general and bulk cargoes. It disposes: 2 berth places and 9 600 sq. m. open storage area.

- Ferry complex-Vidin is specialized in Ro-Ro transport. It consists of 1 berth, with width 40 m, for mooring of Ro-Ro vessels and processing passengers and land vehicles.

Boginya Dimitrova; 27.06.2017



Port's location

between km 505,000 to km 480,000 along the Danube.

Port cargo terminals

- Port terminal Ruse East – between km 490,200 to km 489,300
- Port terminal Ruse West – between km 497,180 to km 496,000

Folie 10

RP27

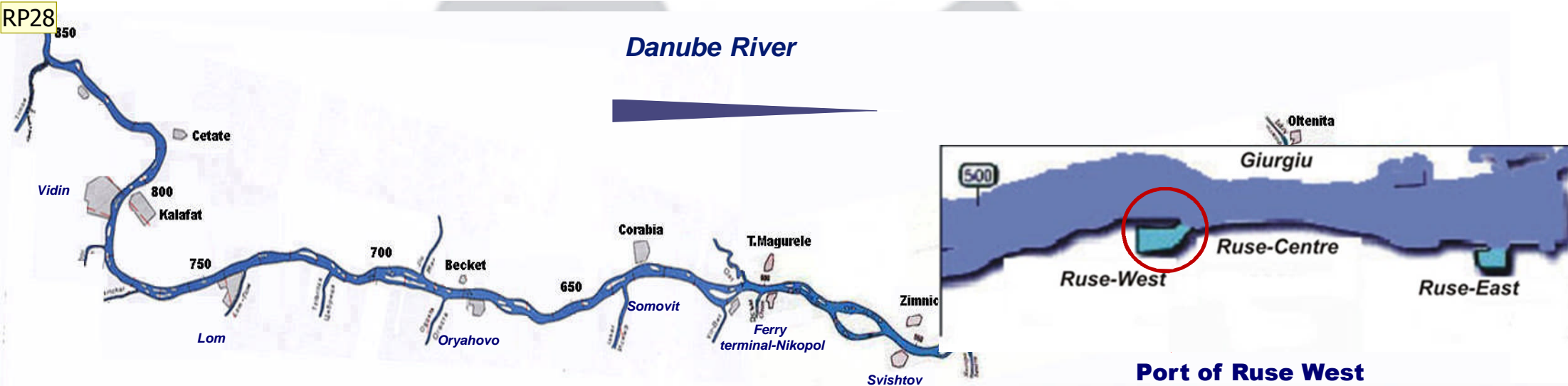
Radostina Petrova; 06.06.2017

RP37

The port of Ruse is the biggest Bulgarian Port on the Danube River. It has 3 terminals, two of them (terminals Ruse East and Ruse West) are currently under concession.

Radostina Petrova; 16.06.2017

RP28

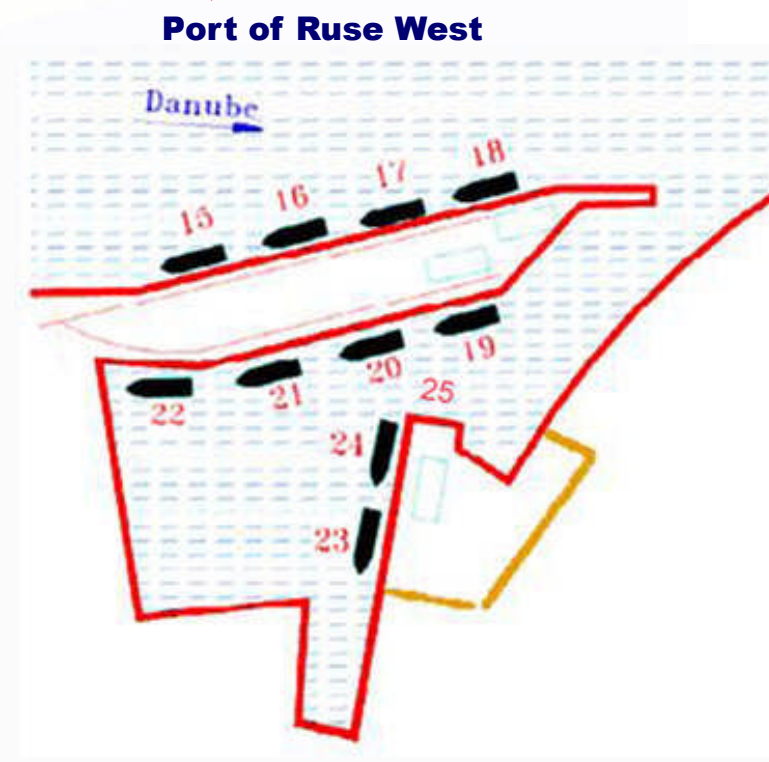


Port features

- 11 berths
- min. depth - 2,5m.

Cargo

- bulk
- general
- liquid cargoes



Folie 11

RP28 Port terminal of Ruse-West is specialized in bulk, general and liquid cargoes. It consists of 11 berths and min. 2,50 m.
Radostina Petrova; 13.06.2017

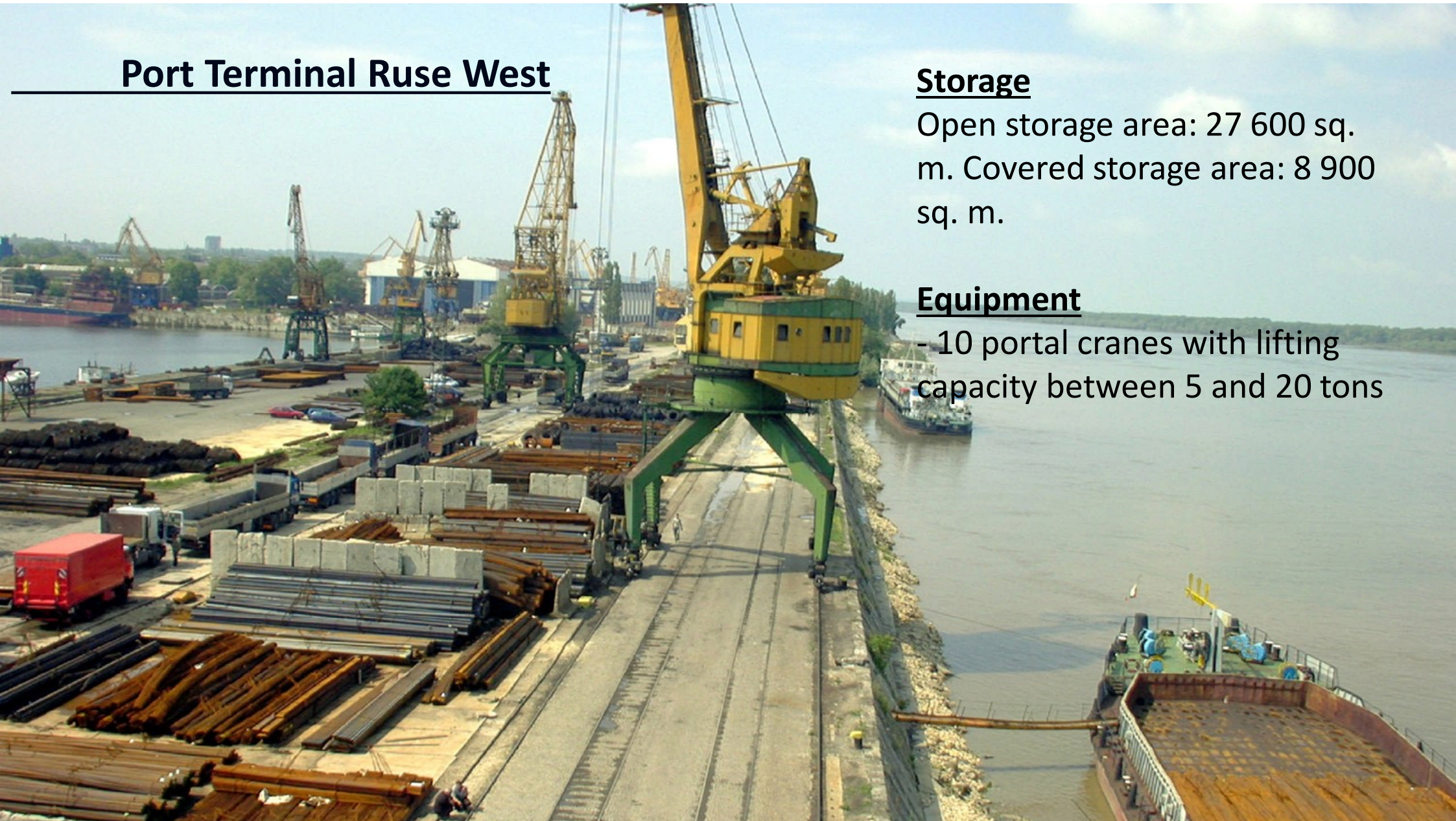
Port Terminal Ruse West

Storage

Open storage area: 27 600 sq. m. Covered storage area: 8 900 sq. m.

Equipment

- 10 portal cranes with lifting capacity between 5 and 20 tons



Contacts

Bulgarian Ports Infrastructure Company

Head Office

Phone: +359 2 8079 999; Fax: +359 2 8079 966

E-mail: office@bgports.bg

Web page: www.bgports.bg

Territorial Directorate-Ruse

Phone: +359 82 818 988 Fax: +359 82 821 862

E-mail: office.rousse@bgports.bg

Territorial Directorate-Lom

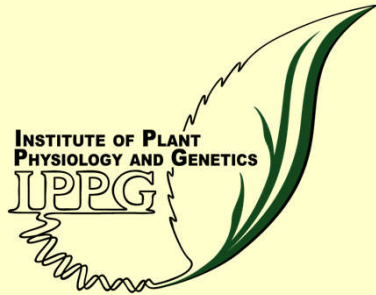
Phone: +359 971 68 380; Fax: +359 971 66 972

E-mail: office.lom@bgports.bg

River Information Service - <http://www.bulris.bg/en>



Thank you for your attention!



Institute of Plant Physiology and Genetics - BAS

Laboratory 'Experimental algology'

Assistant Professor Ivanina Vasileva, PhD student

Biomass from microalgae in Bulgaria



Rupite in the 1970s



Chlorella production in Varvara



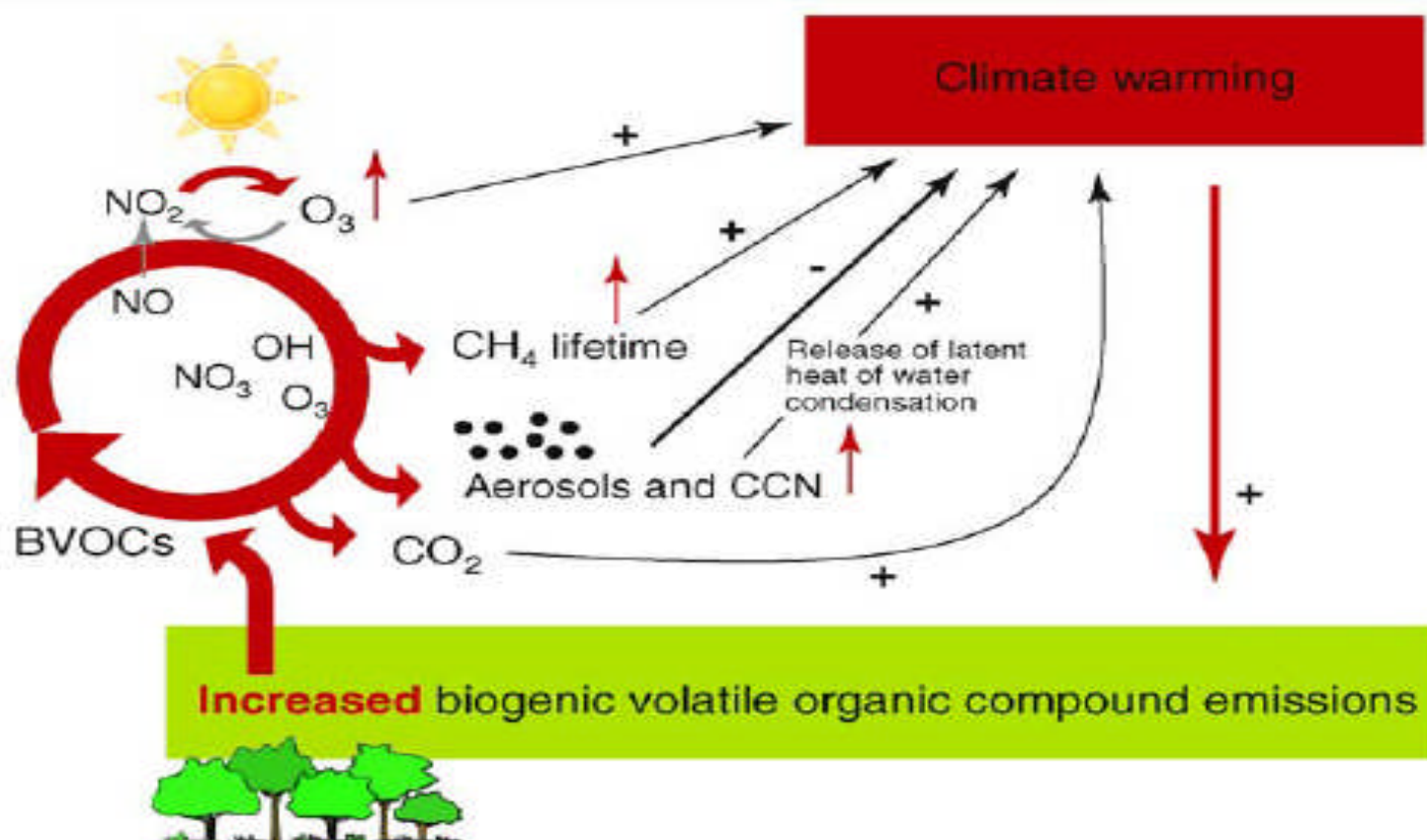
Spirulina production in Septemvri

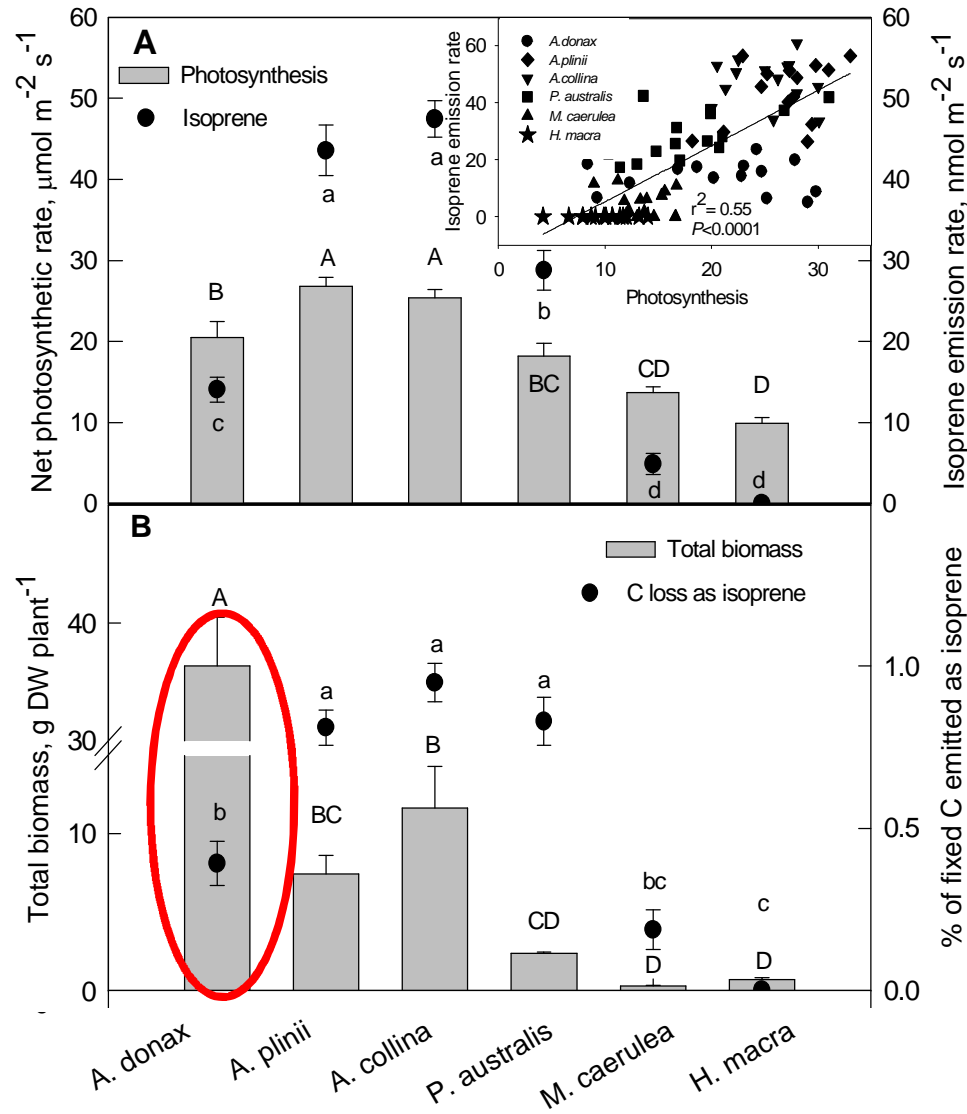
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***Arundo donax* (“giant reed”) – a promising candidate for biomass and biofuel production**



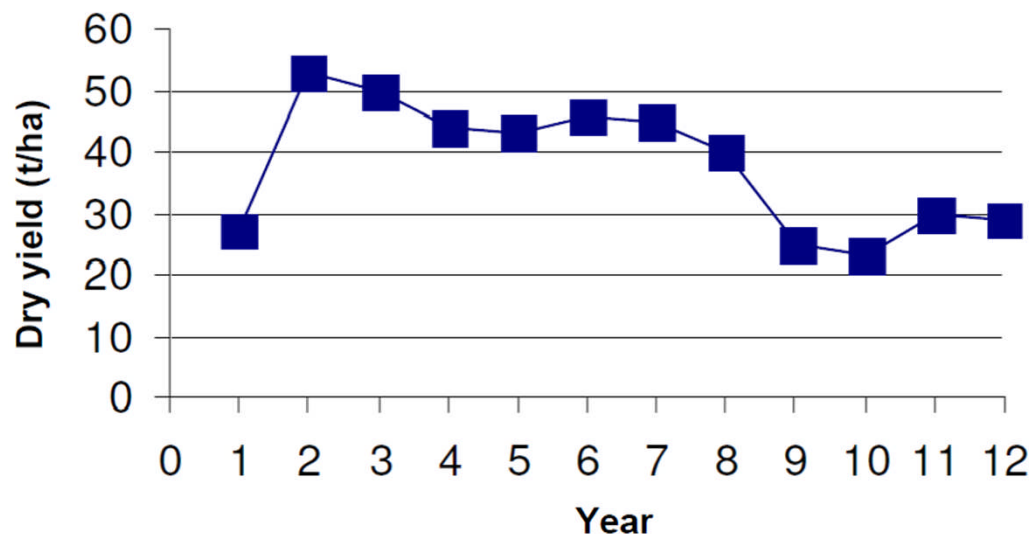


Arundo donax



CULTIVATION

- 20 000 rhizomes or seedlings per hectare
- Price – 1 euro/rhizome, seedling → high initial investments cost
- 10-12 years
- Average biomass production per year $\approx 40 \text{ t ha}^{-1} \text{ DM}$
(Coetto and Di Candilo 2010; Corno et al. 2014)
- USA, Australia, India, Spain, Greece, Italy, but not yet in Bulgaria



Biomass production (dry yield)
of *A. donax* in a 12 years field
experiment (Angellini et al. 2009)

Potential energy production per surface unit obtainable from different usses of *A. donax* as energy feedstock (Corno et al. 2014)

Bio-methane		Bio-ethanol		Combustion	
Biomass production ^a	37.7 Mg ha ⁻¹ DM	Biomass production ^a	37.7 t ha ⁻¹ DM	Biomass production ^a	37.7 t ha ⁻¹ DM
Bio-methane production ^b	<u>351 Nm³ CH₄ Mg⁻¹ DM</u>	Bio-ethanol production ^e	<u>299 L Mg⁻¹ DM</u>	Moisture content ^h	50%
Plant efficiency ^c	80.8%	CH ₃ CH ₂ OH density ^f	788 kg m ⁻³	Water specific heat	4.18 kJ kg ⁻¹ K ⁻¹
				Water latent heat vaporization	2.27 MJ kg ⁻¹
LHV ^d	31.6 MJ m ⁻³	LHV ^g	26.8 MJ kg ⁻¹	LHV ⁱ	16.8 MJ kg ⁻¹
Energy yield	338 GJ ha ⁻¹	Energy yield	238 GJ ha ⁻¹	Energy yield	<u>268 GJ ha⁻¹</u>

Advantages:

- High biomass yields per ha.
- Adaptation to different kinds of environments and soils.
- Use of marginal lands.
- Vegetative reproduction by rhizomes.
- Strong reduction in using chemicals.
- More biogas and bio-ethanol production per cultivated area.

Disadvantages:

- High initial investment costs.
- Potential weed in no-agricultural area.
- Isoprene emission.
- Lower biogas production per dry matter ton than traditional crops.
- Biomass pretreatment is needed because of the lignocellulosic material.



National Biomass Association BGBIOM

Short presentation

Facts



The National Biomass Association (**BGBIOM** – Bulgaria) was created in the autumn of 1998.

In October the same year **BGBIOM** became member of European Biomass Association (**AEBIOM**).

BGBIOM is non-governmental, non-profit making organisation.

Aims



BGBIOM promotes renewable energy sources, mainly biomass, plant residues and animal manure as energy sources for sustainable society.

The aim of **BGBIOM** is to propagate the growth of different plants for non- food use. **BGBIOM** aims also to co-ordinate and facilitate the research and development works in the fields of biomass resources, biofuel product on technologies, biofuel market in the transport, heat and energy sector, as well as in the field of biomass non-energy products.

LATEST PROJECTS



BGBIOM intends to realise its aims by taking part in different EU programs.

B4B – Uptake of Solid Bioenergy in European Commercial Sectors (Industry, Trade, Agricultural and Service Sectors) – Bioenergy for Business - ending on August 31st, 2017

BioRES – Sustainable Regional Supply Chains for Woody Bioenergy – ending on June 30th, 2017

INEMAD – Improved Nutrient and Energy Management through Anaerobic Digestion – Finished in March, 2016

CONTACT US



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Facebook: www.facebook.com/bgbiom

Twiter: [@BGBIOM_ORG](https://twitter.com/BGBIOM_ORG)

LinkedIn: [bgbiom-plovdiv](https://www.linkedin.com/company/bgbiom-plovdiv)

BIOENERGY4BUSINESS

Uptake of solid bioenergy in European commercial sectors (industry, trade, agricultural and service sector)

WORKSHOP BARGE PROJECT, RUSSE, 28.06.2017

THE FRAMEWORK PROGRAMME FOR REASEARCH INNOVATION

HORIZON 2020



PRESENTATION OF THE PROJECT BIOENERGY4BUSINESS

28.06.2017

- Bioenergy4Business is a project, funded by framework programme Horizon2020 of the European Union
- Under the call Horizon 2020 CALL FOR COMPETITIVE LOW-CARBON ENERGY
 - LCE-14 Market uptake of existing and emerging sustainable bioenergy

Objective

- Switch-off from fossil fuels for bioheat

Очакван ефект от проекта

- *Заместване изкопаеми горива с устойчива, печеливша и висококачествена топлинна биоенергия*

PRESENTATION OF THE PROJECT BIOENERGY4BUSINESS

28.06.2017

Objectives

- Increasing the usage of bioenergy for heating in business sectors and district heating
- Replacement of fossil fuels at existing and new sites by solid biomass (at least partly)
- Support to market activities focused on promising businesses/markets
- Building a bridge between policies and markets for supporting
 - the creation of an enabling environment
 - the use of sound business and financing models
 - the careful assessment and implementation of bioenergy heat applications

PRESENTATION OF THE PROJECT BIOENERGY4BUSINESS

28.06.2017

Approach/Scope

- Learning from countries being advanced in solid biomass usage
- Focus is on most economic project set-up
 - At market segments where a business case seems to be “most likely”
 - Usage of solid biomass assortments that work in advanced countries (by-products of wood-based industries, pellets, wood-chips and straw)
 - Larger existing (fossil fuel fired) or new plants (from 100 kW to 10 MW)
- Activities shall build-up a demand pull rather than a supply push
- Intensive cooperation with market actors and policy actors

PRESENTATION OF THE PROJECT BIOENERGY4BUSINESS

28.06.2017

Instruments

- Interviews with stakeholders from wood biofuel production and supply (by-products of wood-based industries, pellets, wood-chips and straw)
- Interviews with stakeholders from objects that switch-off from fossil fuels for bioheat
 - As a result identifying the most promising sectors for switch-off
 - Identification of barriers and needs
- Three training seminars for the representatives of most promising sectors with field visits of best practices
- Two visits of best practice examples for heating with straw in Denmark and with wood chips and pellets in Finland
- Two national information days – in Plovdiv in 2016 and in Sofia in 2017

Most promising sectors

- Public/ municipality buildings (schools, hospitals, kindergartens, etc)
- Hotels and restaurants
- Wood processing factories, furniture, etc
- Agriculture and forestry

Barriers

- Complicated procedure for public procurement implementation.
- The biomass market is insecure, unstable, reacts to political situation.
- The current legislative framework does not promote/ support investments on biomass heating projects.
- The high costs of initial investment are a big obstacle for many potential investors.
- There is a lack of funds for the purchase of heating installations.
- Insufficient information about efficient technologies for biomass heating

Lessons learned

- The municipality buildings, hotels and wood processing plants have significant potential for the successful energy efficiency project implementation.
- Public procurement is proved economic and ecological contractual form and warranties benefits to the municipalities.
- The implemented fuel switch project is highly efficient, environmental friendly and will improve the quality of live.
- The analysis shows that this type of projects is profitable with very good return of project costs.

Building of favourable conditions

Several instruments have been created for calculation of parameters of wood fuels and evaluation of feasibility. These can be found on the site of the project

www.bioenergy4business.eu

Or on the site of BGBIOM:

www.bgbiom.org

Благодаря за вниманието!

Анна Аладжаджиян

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LEGAL DISCLAIMER

This document is funded under the LCE 14 2014 Support Programme "Market uptake of existing and emerging sustainable bioenergy", as part of the Horizon 2020 Framework Programme by the European Community.

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THE FRAMEWORK PROGRAMME FOR RESEARCH INNOVATION

HORIZON 2020





Центрове за логистика и търговия с биомаса - Концепция за създаване на устойчива регионална доставка на дървесна биомаса

Национална Асоциация по Биомаса - България



www.bgbiom.org

Работен семинар - проект ENERGY BARGE
28 Юни 2017 г., гр. Русе, България



Проект BioRES: Създаване на устойчиви регионални вериги на снабдяване с дървесна биомаса

www.bioresproject.eu

9 партньора от 8 държави (Германия, Австрия, Белгия, Финландия, Словения, Хърватско, Сърбия и Бългрия) за периода Януари 2015 - Юни 2017 (30 месеца)

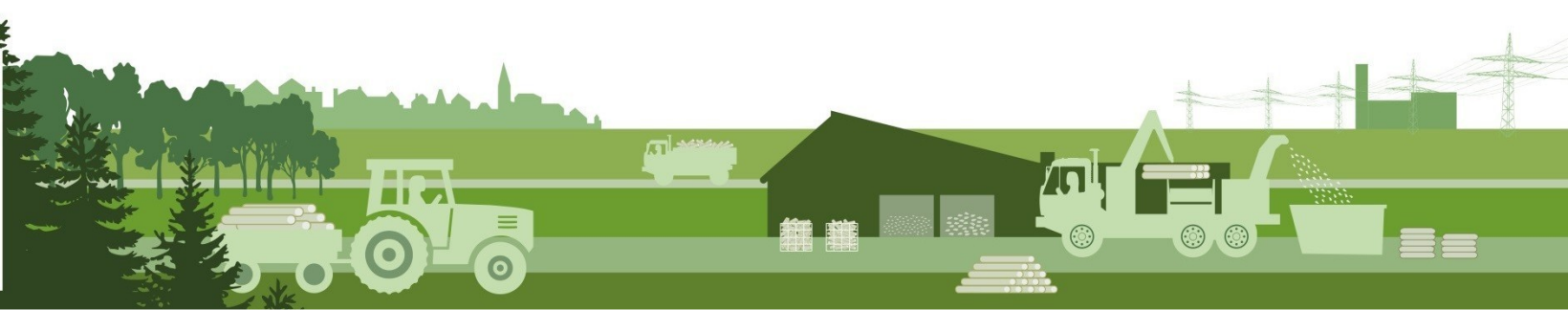


Проектът е финансиран от Европейския Съюз по Договор № 645994 чрез програмата Хоризонт2020



European
Commission

Horizon 2020
European Union funding
for Research & Innovation



Основна цел:

Повишаване на:

- на дяла на *местните снабдителни канали* за *качествени* твърди биогорива
- *консумацията* на твърди биогорива на *местно ниво*

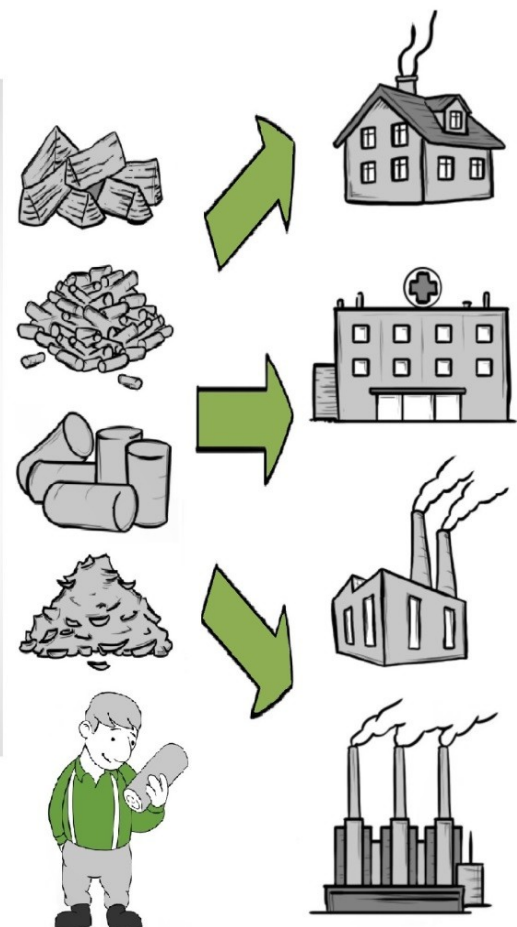
чрез практическата реализация на иновативната концепция за “*Центрове за Логистика и Търговия с Биомаса*” (ЦЛТБ)

Специфични цели:

- създаване на минимум между **6 и 8 ЦЛТБ** в България, Хърватска и Сърбия;
- общ обем на договорени продажби с консуматорите в регионите на действие на ЦЛТБ на общо **8 000 тона твърди биогорива на година**;
- да бъдат обучени най-малко **400 потенциални участници** в производствена верига на дървесна биомаса;



Център за търговия и логистика с биомаса (ЦЛТБ)





**Основни
източници на
снабдяване със
суровина**

Гори

дървесни трупи,
вършина

**Дърво-
обработвателната
промишленост**
трици, стърготини,
трески и изрезки

**Район на действие –
в радиус от 40-50 км**

ЦЛТБ

**Производство, търговия
и/или логистика на:**

- Дърва за горене
- Дървесен чипс
- Дървесни пелети
- Дървесни брикети

+

**Гарантиране на качество
и устойчивост**

Консуматори

- Централа за производство на енергия
- Публични и обществени сгради
- Предприятия и хотели
- Малък бизнес и домакинства



Гарантиране на качеството на твърдите биогорива в ЦЛТБ

- международни и европейски стандарти **ISO** и **EN** (за всички твърди биогорива)
- сертификати за качество **ENplus** и **DINplus** (за дървесни пелети)

Твърдо биогориво	Основни изисквания за качество на твърдите биогорива	Стандарт
Дърва за горене	Клас A1: съдържание на влага под 25 % над 90 % от дървата да са нацепени без видимо гниене	EN ISO 17225-5:2014
Дървесен чипс	Клас A1 / A2: съдържание на влага под 35 % съдържание на пепел под 1,5 % съдържание на малки трески под 15 %	EN ISO 17225-4:2014
Дървесни пелети	Клас A1: съдържание на влага под 10 % съдържание на пепел по-малко от 0,7 % механична стабилност повече от 97,5 %,	EN ISO 17225-2:2014



Изисквания за устойчивост в ЦЛТБ

Системи за сертифициране:

- Съвет за Стопанисване на Горите
Forest Stewardship Council – FSC

- Програма за Подкрепа Горската
Сертификация
*Programme for the Endorsement of
Forest Certification - PEFC*

Сертификати за устойчивост

- Сертификат за устойчиво и
отговорно горско управление

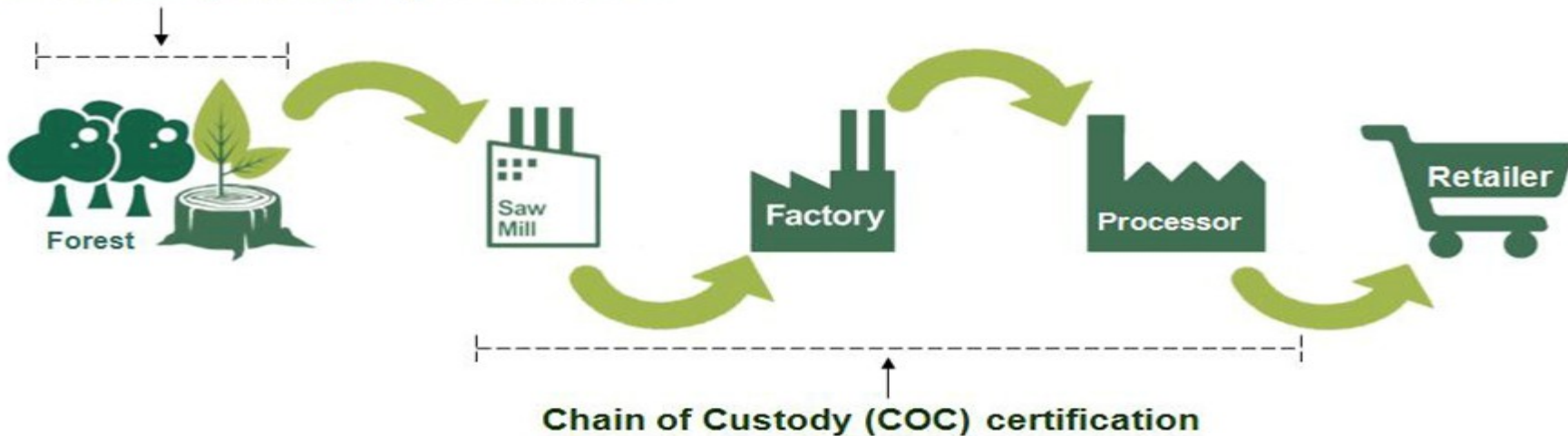
Forest Management Certification

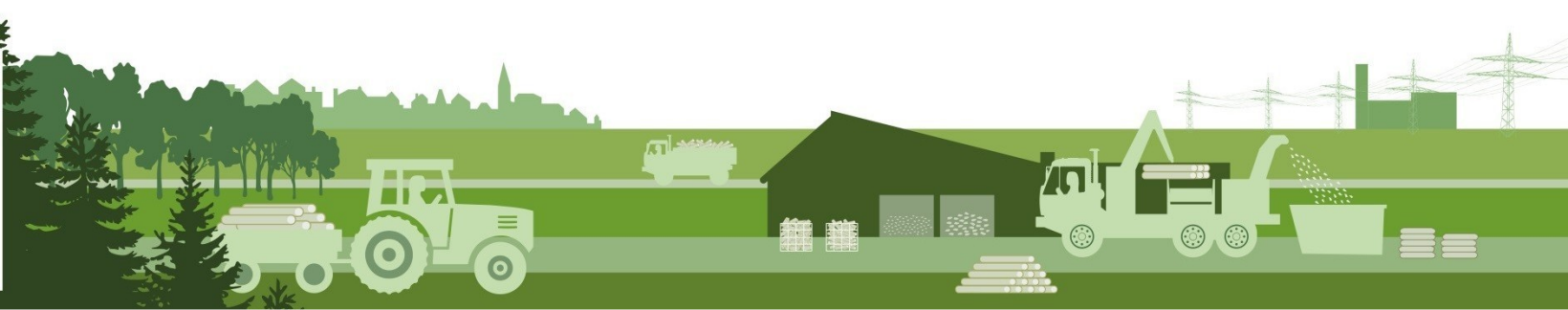
- Сертификат за проследяване на
производствената верига
Chain of Custody Certification



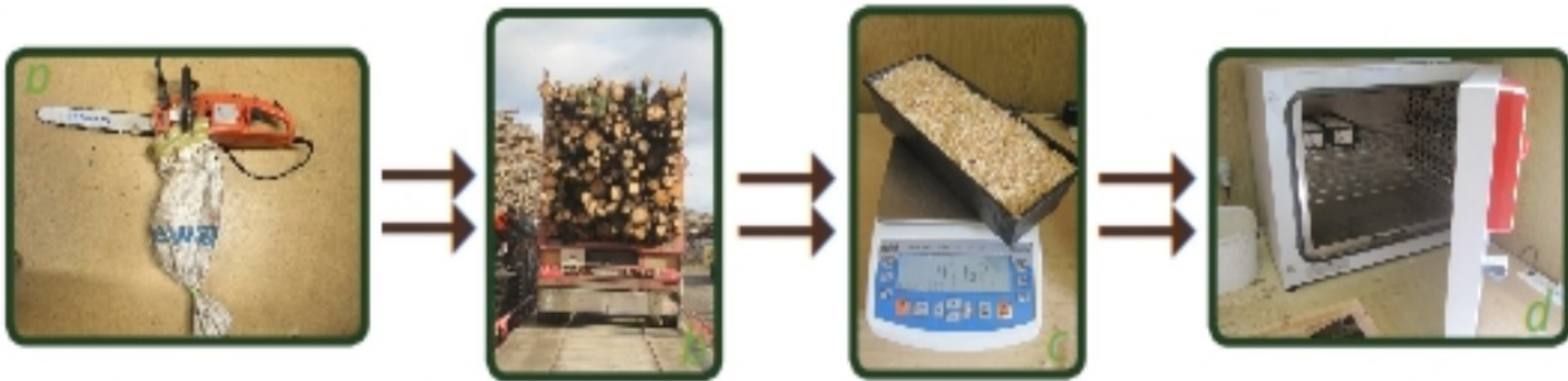
Сертификатът за проследяването на производствената верига (*Chain of Custody Certification*) гарантира, че дървесната суровина, използвана при производството на биогорива, може да бъде проследена обратно до нейния източник - сертифицираната гора. Снабдяването с дървесина от гора, притежаваща **сертификат за устойчиво и отговорно горско управление** (*Forest Management Certification*), е основна предпоставка за издаване на сертификат за проследяване на производствената верига.

Forest Management (FM) certification



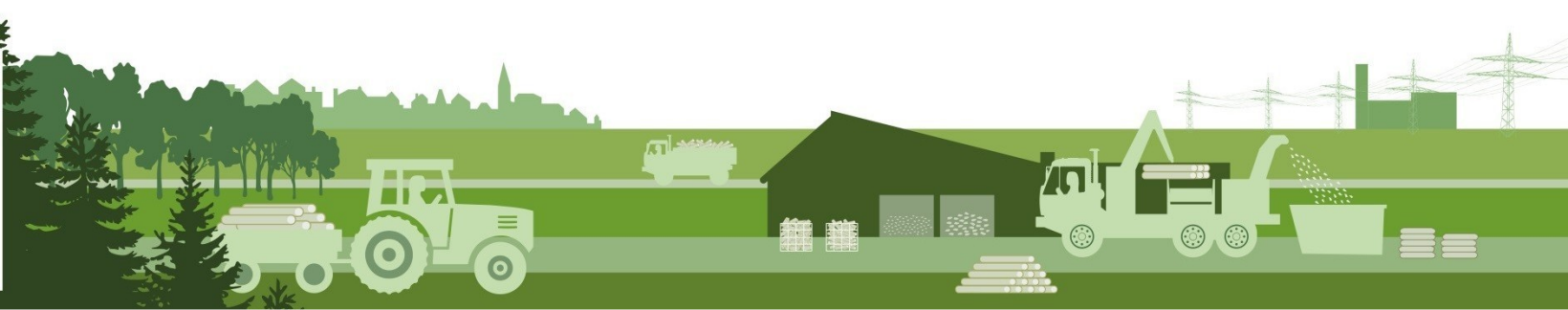


Съдържанието на влага е най-важният фактор, определящ енергийните свойства на дървесната биомаса. В ЦЛТБ съдържанието на влага се измерва чрез метода на сушене в електрическа пещ.



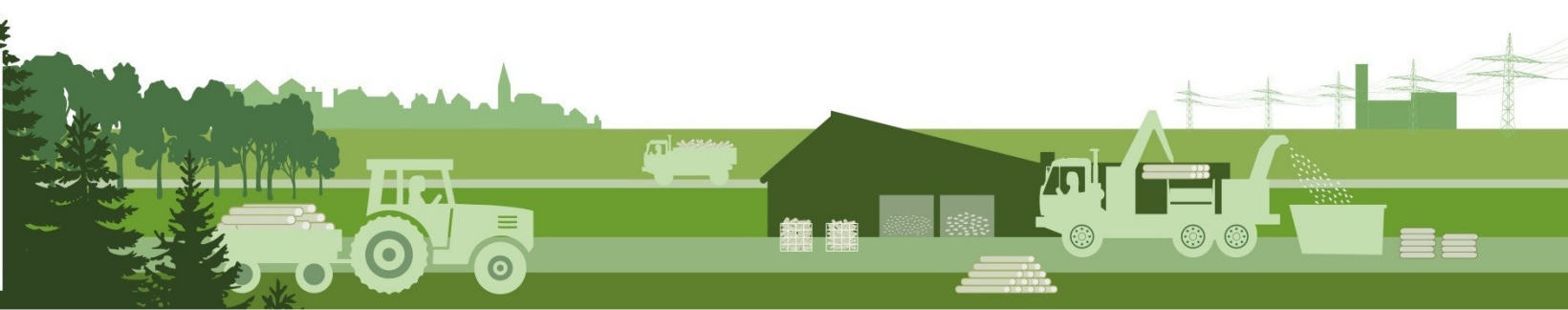
Абсолютно сухата маса е най-справедливата и точна и за двете страни по сделката за снабдяване или доставка единица за измерване.

$$\text{Абсолютно суха маса (сух тон)} = \frac{\text{Общо тегло на сурова дървесина/ суров дървен материал (тон)}}{\text{100 \% - Съдържание на влага(\%)}}$$



Горите в България:

- Над 4 000 000 ха горски площи (37 % от площта)
- 74% държавни, 11% частни, 13% общински
- Над 600 хиляди частни собственика със средно по 0.74 ха
- 150 юридически лица притежават 185 FSC и 7 PEFC сертификата
- Потенциал от 650 милиона куб м. дървесна биомаса
- Лежаща мъртва дървесина от 5 - 6 милиона куб. м. годишно с потенциал да нарасне до 14 милиона
- Над 150 000 тона годишна продукция на пелети, повечето за износ към Италия, Гърция и Турция (по данни от 2014).

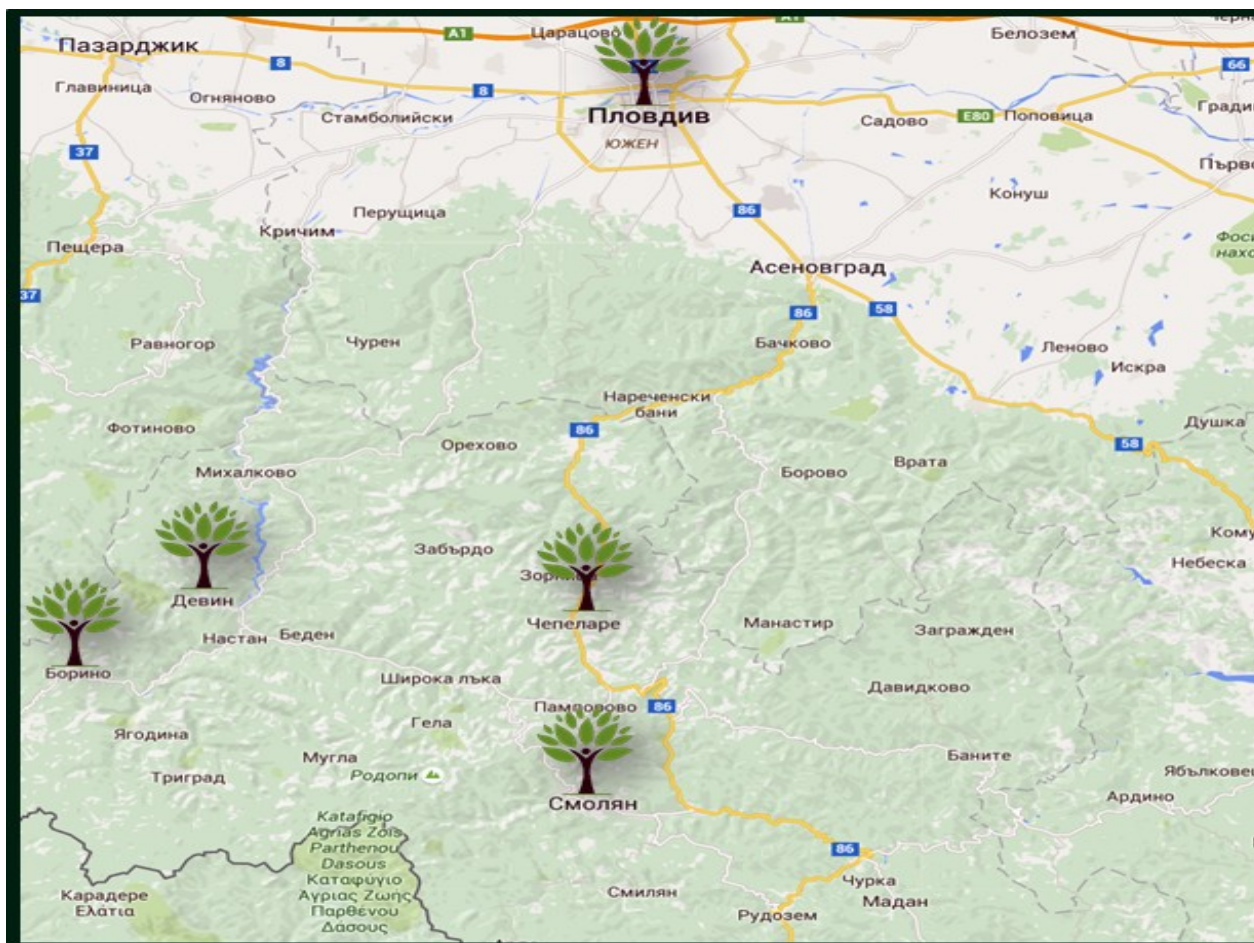


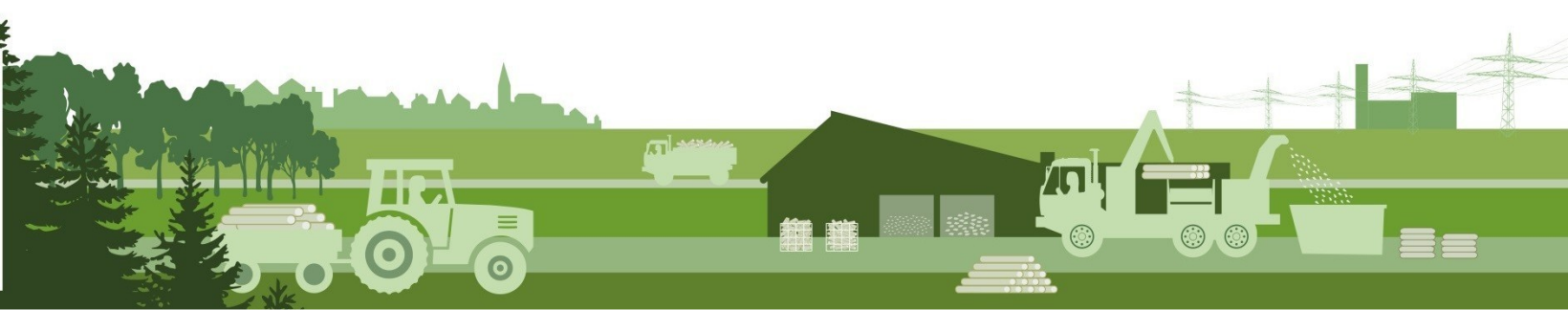
Дейности по проекта:

- Анализ на потенциала на дървесна биомаса различни области в България
 - http://bioresproject.eu/wp-content/uploads/2015/07/deliverable_3.1_web_BLG.pdf
- В разговори със заинтересовани лица от областта на горска промишленост, дърводобив, дървообработка, производство и пласмент на дървесни енергийни продукти, се представиха добри практики от:
 - Назарье, Словения:
<http://bioresproject.eu/wp-content/uploads/2016/02/BioRes-presentation-BLTC-Nazarje.pdf>
 - Льобен, Австрия:
<http://bioresproject.eu/wp-content/uploads/2016/02/Biomassehof-Leoben-Best-Practice-2.pdf>
 - Йоенслу, Финландия:
<http://bioresproject.eu/wp-content/uploads/2015/08/Best-practice-from-Finland-Eno-Wood-Energy-Cooperative-2015.pdf>
- След представянето на добрите практики се проведеха интервюта и се изпълни анализ на силните и слабите страни от прилагане на тези примери в различни региони от България.
- На база на резултатите се избраха региони за реализиране на проекта

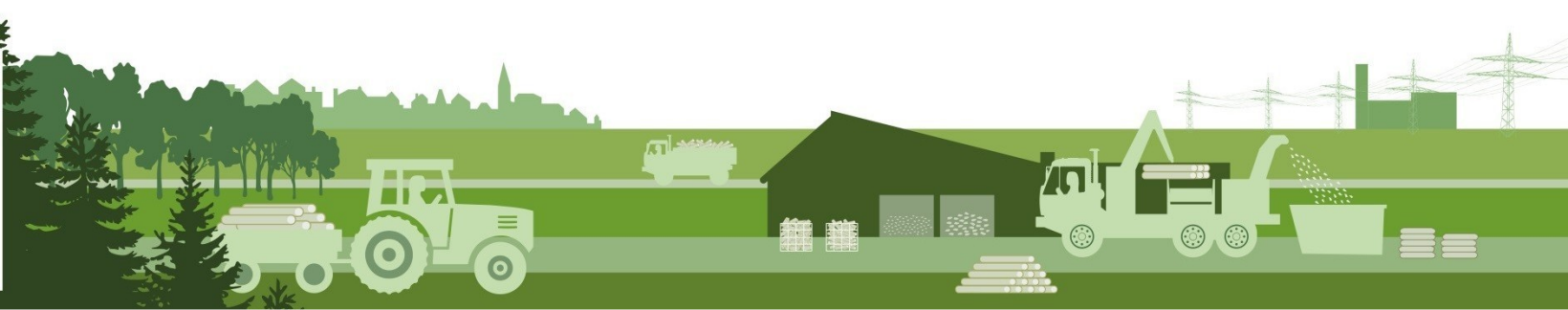


Райони на реализацията на концепцията за ЦЛТБ



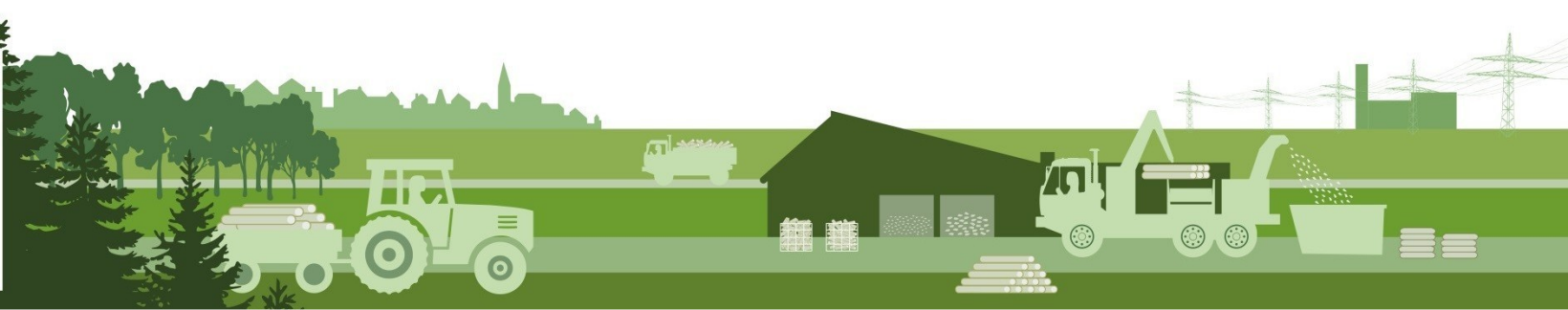


- В избраните региони се определиха ключови партньори и се поканиха през декември 2015 на Обучително пътуване в Словения, Австрия и Германия, за да видят как ЦЛТБ работи на практика.
 - http://bioresproject.eu/wp-content/uploads/2016/03/rev-D-6-1-BioRES-study-tour-and-technology-transfer-workshop_Dec2015-v2-3.pdf
 - <http://bgbiom.org/bg/%D1%80%D0%B5%D0%B7%D1%83%D0%BB%D1%82%D0%B0%D1%82%D0%B8-%D0%BE%D1%82-%D0%BE%D0%B1%D1%83%D1%87%D0%B8%D1%82%D0%B5%D0%BB%D0%BD%D0%BE%D1%82%D0%BE-%D0%BF%D1%8A%D1%82%D1%83%D0%B2%D0%B0%D0%BD%D0%B5-%D0%BF/>
- Информацията от обучителното пътуване беше обобщена в Ръководство
 - <http://bioresproject.eu/wp-content/uploads/2016/01/D6.2-BioRES-BG-%D0%A0%D1%8A%D0%BA%D0%BE%D0%B2%D0%BE%D0%B4%D1%81%D1%82%D0%B2%D0%BE.pdf>
- С помощта на посетителите на обучителното пътуване и отпечатаното ръководство се проведеха 7 семинара в България:
 - 26.01.2016 – АУ Пловдив (42 участници) – лектор Г. Лечов
 - 26.02.2016 – ПГГСТ Чепеларе (37 участници) – лектор М. Радев
 - 19.03.2016 – ГПК “Борика” - Стойките (68 участника) – лектор Т. Шукеров
 - 25.03.2016 – НТС Пловдив (26 участника) – лектор Т. Шукеров
 - 29.09.2016 – Пловдивски Панаир (19 участника) – лектор Т. Шукеров
 - 16.12.2016 – ГПК “Ела 2001” - Широка Лъка (46 участника) – лектор Т. Шукеров
 - 01.02.2017 – Експо Хотел Пловдив (20 участника) – лектори от партньорите по проекта



Във всеки от регионите се определиха инвеститори и оператори на потенциалните ЦЛТБ и за всеки от тях:

- се извършиха задълбочени пред-пазарни проучвания
- предложиха модели за договори за доставка
- подготвиха бизнес планове
- проведеха се консултации за устойчивост и качество на продуктите и се изготвиха две брошури:
 - <http://bgbiom.org/bg/wp-content/uploads/2016/02/D5.3-Bulgarian-Web.pdf>
 - http://bgbiom.org/bg/wp-content/uploads/2016/10/BioRES_BG_Pages_WEB.pdf



- Проведоха се Информационни дни за консуматорите, съпътстващи големи местни събития:
 - Събор “Св. Илия”, Гела – над 200 местни посетители
 - Фолклорен фестивал “Орфически мистерии”, Триград – над 1700 посетители
 - Фолклорен фестивал “Гайдарско надсвирване”, Гела – над 6000 посетители
 - Международен панаир Пловдив – над 2000 души на щанд
 - “Картофен Фестивал”, Чепеларе – над 1000 посетители
- На посетителите беше представена брошура за предимствата от отопление на дървесни биогорива
 - http://bioresproject.eu/wp-content/uploads/2016/08/consumer_information_bg.pdf
- Сред посетителите се направиха 350 анкети относно начините на отопление:
 - 60% от анкетираните предпочитат да се отопляват на дърва, 11% на пелети
 - 22 % използват електричество за отопление, а 6% централно парно, като над 70% от са готови да превключат на биоенергия
 - Основните пречки пред превключването на биоенергия са несигурността на пазара и високата начална инвестиция

Към проекта бяха разработени и множество помощни материали

- Джобен наръчник за добив на биомаса:
<http://bgbiom.org/bg/pocket-guide-bg/>
- информационна система за цени на биогорива:
<http://bioresproject.eu/index.php/market-information/?lang=bg>
- Уеб платформа за опериране на ЦЛТБ
- Анимационно видео за предимствата на ЦЛТБ:
<https://www.youtube.com/watch?v=Oqy50OnmX6U>
- Андроид приложение



КАЛКУЛАТОР ЗА БИОМАСА		КАЛКУЛАТОР ЗА ЛОГИСТИКА	
Дървесни видове	Дъб		
Влажност (%)	45		
Необходима енергия (kWh)	2000		
Количеството енергия е равно на			
Тона дървесна биомаса	0.77		
Като подреден m³ обла дървесина	0.64		
Като насилини m³	1.6		

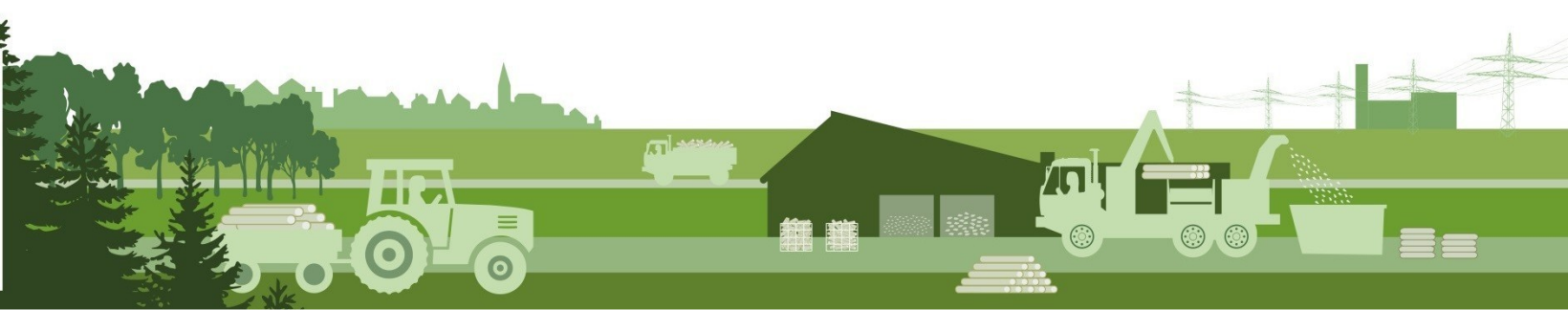


Предимства от прилагане на концепцията за ЦЛТБ В България

**От местния регион за местния регион
(добавената стойност остава в региона)**

Справедлива и прозрачна цена

**Гарантирано снабдяването с качествени
биогорива**

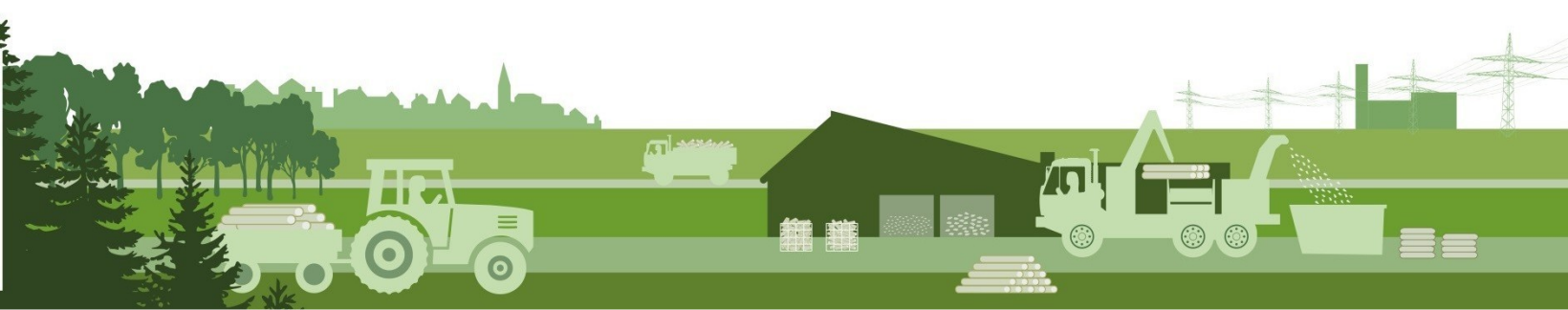


Основни проблеми:

Намиране на атрактивни източници
на външно финансиране

Трудности в убеждаването на местните
инвеститори да работят в по-близко
сътрудничество

Липса на мотивация на местния бизнес
и горски собственици да добиват горска биомаса



Благодаря за вниманието!

