Co-funded by the Erasmus+ Programme of the European Union

PRODUCTION OF RENEWABLE ENERGY FROM OTHER LOCALLY AVAILABLE (NON-BIOLOGICAL) RENEWABLE POWERS

CORRESPONDING MODULE 3

Introduction

There are many sources of renewable or so-called “green energy”. The best known are wind turbines, photovoltaic installations, hydroelectric power plants, and the energy that is extracted from biomass. Using the Sun for energy needs has been utilised for many years. It is the largest renewable source of electricity. There is a wide range of active and passive solar technologies that capture and distribute solar energy or convert it into solar power. They apply in different spheres of life - residential, commercial and industrial, agriculture and transport. Solar energy

Co-funded by the Erasmus+ Programme of the European Union

PRODUCTION OF RENEWABLE ENERGY FROM OTHER LOCALLY AVAILABLE (NON-BIOLOGICAL) RENEWABLE POWERS

CORRESPONDING MODULE 3

is generated by photovoltaics and photovoltaic systems.

Project Number:
2021-1-FR01-KA220-VET-00034605

Co-funded by the Erasmus+ Programme of the European Union

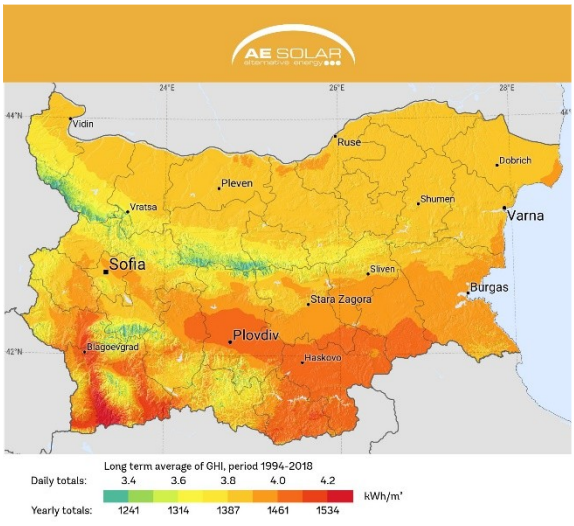
PRODUCTION OF RENEWABLE ENERGY FROM OTHER LOCALLY AVAILABLE (NON-BIOLOGICAL) RENEWABLE POWERS

CORRESPONDING MODULE 3

Description

In the field of renewable and green energy, Bulgaria is among the 12 EU members that reached the renewable energy targets. According to Eurostat Bulgaria has not just reached the required 16%, but managed to ensure even better performance with 19% share of green energy production. In 2018 Bulgaria ranked 12th in the EU in terms of the share of energy from renewable sources. In 2018, renewable energy represented 18% of the energy consumed in the EU. In Bulgaria, renewable energy represented 20.5% of the total energy consumed in this country for the period, which was above the level of 18.7% reached in 2017 and far above the target share of 16% for 2020.

Bulgaria has a high potential for solar irradiation. The southern part of the country generally receives higher irradiation compared to the northern part of the country. It started its renewable energy expansion in 2007 with most of it being hydropower. Solar power installation started in 2009 and reached a total of 100 Megawatts (MW) in 2011.



Project Number:
2021-1-FR01-KA220-VET-00034605

Co-funded by the Erasmus+ Programme of the European Union

PRODUCTION OF RENEWABLE ENERGY FROM OTHER LOCALLY AVAILABLE (NON-BIOLOGICAL) RENEWABLE POWERS

CORRESPONDING MODULE 3

In recent years the annual growth of the solar sector has been 40% year on year, says Bulgarian Photovoltaic Association. And the future of solar is in urban projects and transport. In Bulgaria, the photovoltaic installed capacity is set to triple by 2030. Solar PV will drive the RES sector, projected to grow to 27% of gross energy consumption by 2030. As part of the ambitious EU target of 32% share for renewables, Bulgaria is updating its policy to promote investments.

The largest installed solar facility is The Karadzhalovo Solar Park which has a capacity of 60.4 MW. Karadzhalovo Solar Park is a ground-mounted solar project which is spread over an area of 100 hectares. The solar farm generates 81,000 MW of electricity and supplies clean energy to nearly more than 20000 households. This offsets more than 40000 CO2 emissions a year.

The rapidly increasing number of photovoltaics installed is explained by the higher purchase price of electricity from these sources. The problem is that over the time photovoltaics are losing their operating efficiency. It is normal for a quality panel to reduce its efficiency by 40 percent in 25 years and only then to replace it.

Project Number:
2021-1-FR01-KA220-VET-00034605

PRODUCTION OF RENEWABLE ENERGY FROM OTHER LOCALLY AVAILABLE (NON-BIOLOGICAL) RENEWABLE POWERS

CORRESPONDING MODULE 3

Advantages and challenges

While it has been widely criticized for being expensive or inefficient, solar energy has now proved to be extremely beneficial - not only for the environment but also for the private economy. Thanks to available solar panel grants, as well as, the increasingly competitive prices in the market, solar energy has become the main source of energy for more and more families. The technology has been drastically improved the last years and has been complemented by solar battery storage systems, turning solar into a significantly more efficient source of clean energy.

The solar power key advantages are outlined in the following points:

- Renewable energy source
- Reduces electricity bills
- Diverse application
- Low maintenance costs
- Technology development

According to the Hydrology and Meteorology (IHM) of the

PRODUCTION OF RENEWABLE ENERGY FROM OTHER LOCALLY AVAILABLE (NON-BIOLOGICAL) RENEWABLE POWERS

CORRESPONDING MODULE 3

Bulgarian Academy of Sciences (BAS) has estimated the solar energy potential of the country, which is around 12,995 million metric tons of oil equivalent. It has been estimated that the county has never used the solar capacity to its full potential at all. Such a high potential is expected to provide solar energy companies a significant opportunity to tap into this market in the future. The downside is the higher installation costs which have been preventing companies to tap into the market. To overcome this barrier the government is updating its policy to promote investments.

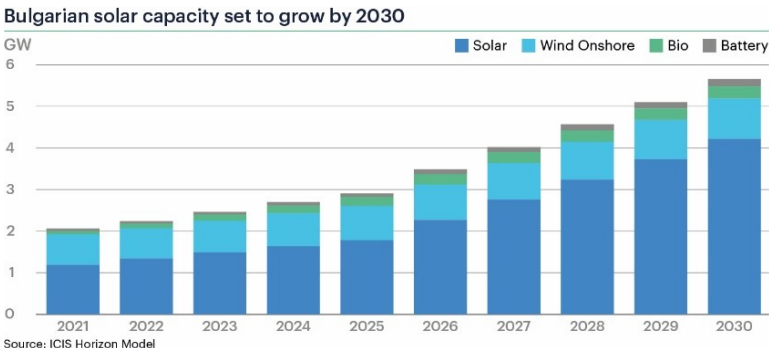
As a part of the EU's ambitious plans to become carbon neutral by 2050, Bulgaria is trying to promote low tax rates, low land prices, and favorable policies for installation for renewable energy sources.

The growing RES sector and Solar PV attract investors in Bulgaria due to the country's favourable conditions and location, low tax rates, low land prices and favourable policies and legislation.

PRODUCTION OF RENEWABLE ENERGY FROM OTHER LOCALLY AVAILABLE (NON-BIOLOGICAL) RENEWABLE POWERS

CORRESPONDING MODULE 3

Main data



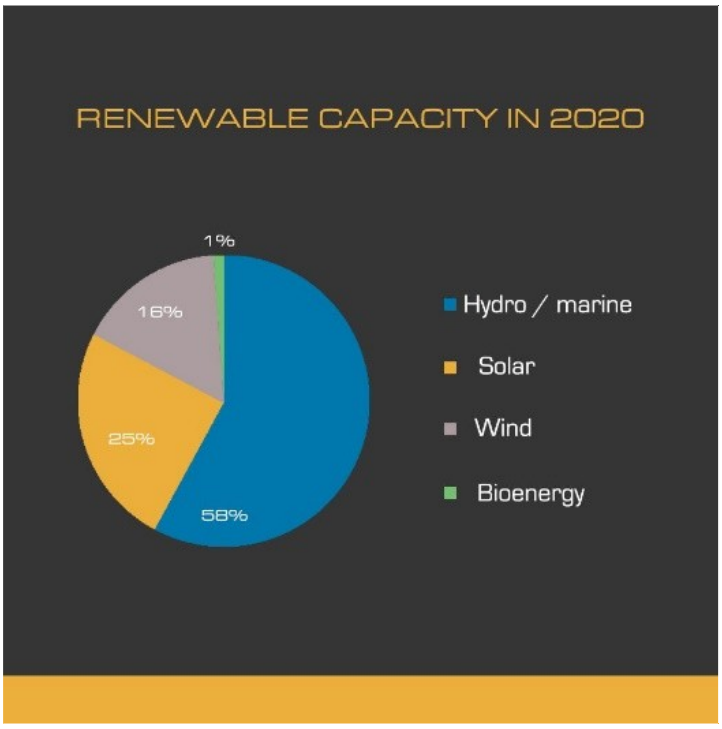
According to Eurostat, in the remote 2004 renewable energy represented only 9.2% of the total energy consumed in Bulgaria. Since then, this share has been constantly increasing and in 2018, it reached a peak of 20.5%. We should keep in mind that the share of renewable energy sources in the gross end consumption of energy is among the main indicators in the Europe 2020 strategy. According to the targets, the renewable energy should represent 32% of the total energy consumed by 2030.

References:

1. https://bnr.bg/en/post/101221046
2. https://lawfirm.bg/en/publications
3. https://medium.com/@nikolaypeshev/bulgaria-is-taking-the-eu-renewable-energy-lead-dbda087d8afb
4. https://ae-solar.com/bulgaria-solar-energy-market

PRODUCTION OF RENEWABLE ENERGY FROM OTHER LOCALLY AVAILABLE (NON-BIOLOGICAL) RENEWABLE POWERS

CORRESPONDING MODULE 3



The hydropower makes more than 50% of the renewable capacity generation. Non-hydropower makes about 2.3 GW of Bulgaria's 12.6 GW power generation fleet.

PRODUCTION OF RENEWABLE ENERGY FROM OTHER LOCALLY AVAILABLE (NON-BIOLOGICAL) RENEWABLE POWERS

CORRESPONDING MODULE 3

According to the IRENA (International Renewable Energy Agency), the country had 94 MW of installed PV capacity in 2020 in total. In 2021 Bulgaria installed a capacity of 77 MW of solar energy so far Bulgaria has added 1100 MW of Solar energy. It aims to increase its capacity of over 2500 MW by 2024, and is targeting a further 2,645 MW of installed electricity generation capacity from renewable sources, mostly photovoltaic plants, by the end of 2030. The capacity would include around 2.3 GW of solar and wind projects. This is done in line with the EU's goals for the green energy transition. According to the Association for production, storage and trading of electricity (APSTE) which was founded by Bulgaria and other international companies in 2019, the country has the potential of adding 4650 MW of solar capacity by 2030 and bringing the share of the country’s renewable energy sources to 58% of the total mix which includes offshore wind farms and other renewable sources.

ANNEX - STRUCTURE OF MODULE CONTENT TO PREPARE SLIDES

Module Name : The name of the partner: Country:

The name of the module	
Target group involved	
Current information about the topic	
Principles of the specific module	
Basic terms / measures of the module / topic	
Training materials (tasks , case studies , exercises)	
Short description of the materials	
Link of the online resources (film or video resources)	
Specific images (to support the purpose of the resources)	
Duration	
Materials	
No of Learners / Representatives	
Individual or group work	
Step by step guide	