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## INVESTING IN A BETTER FUTURE

At EPCG, we believe that by harnessing renewable energy, we can create a brighter future for our planet, our communities, and our economy.

Clean energy is not just good for the planet, it's also good for business. By embracing innovation and entrepreneurship, we can create new opportunities for growth, job creation and economic development.

We are committed to working with our partners worldwide, both public and private sectors, to accelerate the adoption of renewable energy and create a more sustainable energy future for all.

Join our mission to make a global step forward towards a world driven by clean and sustainable energy. Let's shape a brighter future together.



## ABOUT US

Electroprivreda Crne Gore AD Nikšić (EPCG) is a state-owned electric power company established to carry out economic activities, electricity generation and supply.

### OUR VISION

To lead Montenegro's economic development, to be competitive on the European market and actively participate in new market challenges by investing in manpower, green energy, new technologies and capacities, maintenance and optimal use of resources and the Company's digital transformation

### OUR MISSION

To provide reliable and high-quality electricity generation, supply, and trading while meeting the needs and requirements of both our customers and other stakeholders, to raise awareness on environmental protection and social responsibility; to improve business operations by compliance with the highest professional and ethic standards, responsible running of the business activity, in accordance with applicable regulations, gaining trust both in EPCG and wider business environment.

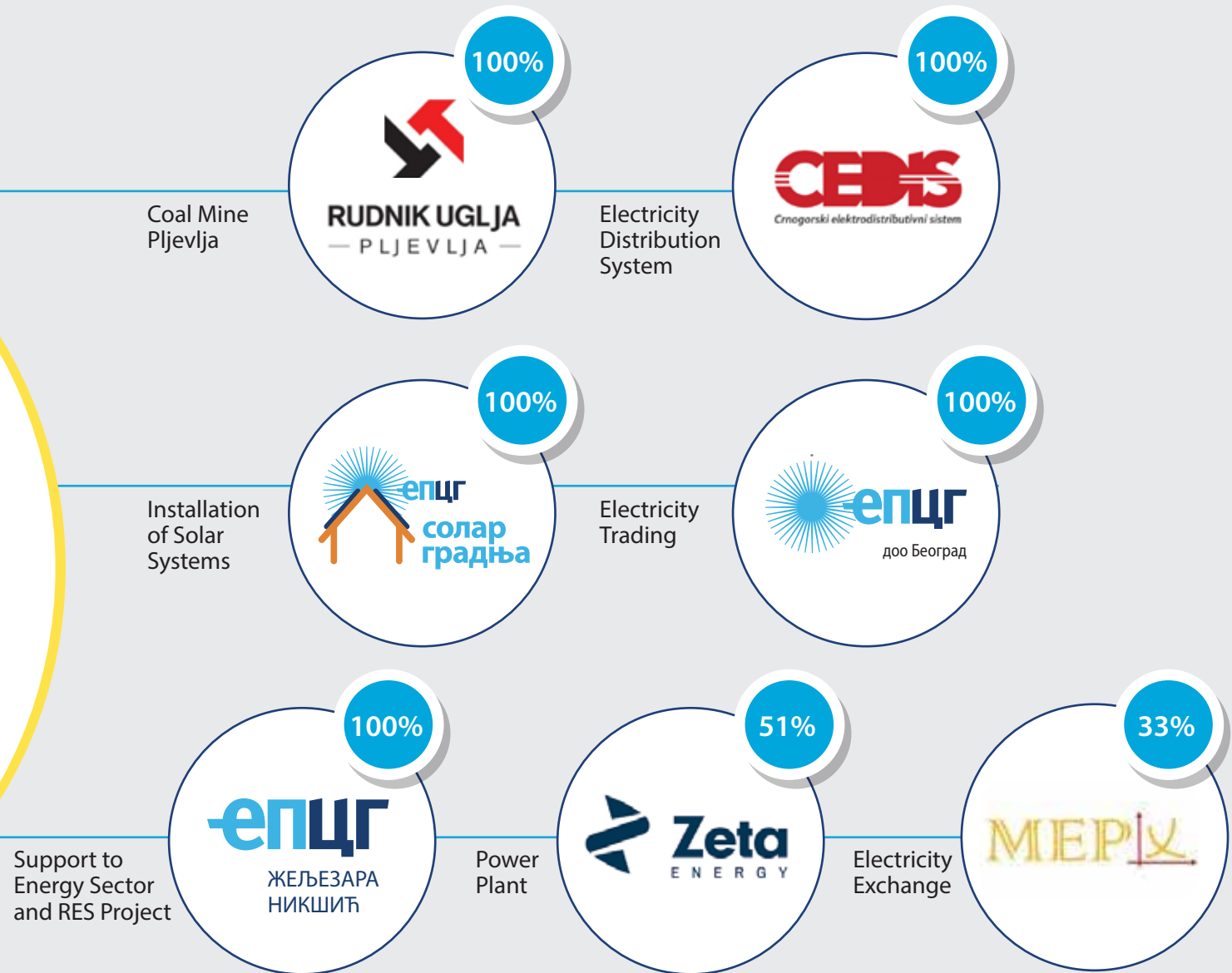
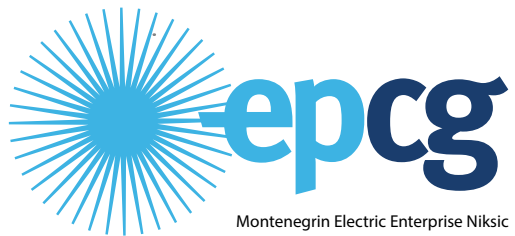
### OUR STRATEGY

To strengthen relationship with the customers, employees and other stakeholders, to meet the requirements of standards applicable in the area of business quality, occupational health and safety, environmental protection and social responsibility.

### GENERAL OBJECTIVES

Safe and reliable electricity supply; reliable and efficient generation; increase in business efficiency and effectiveness; satisfied customer; increase in energy efficiency of all generation segments; efficient energy management - energy trading and resource management; attractive employer; meeting environmental standards; meeting OHS standards; entering foreign markets.

# EPCG GROUP



## OUR CORE BUSINESS ACTIVITIES



ELECTRICITY PRODUCTION



ELECTRICITY SUPPLY



ELECTRICITY TRADING



CONSTRUCTION AND MAINTENANCE OF ELECTRIC POWER FACILITIES



DESIGNING AND SUPERVISING RES PROJECTS



# OUR OPERATING MAP: Locations and Regions

## POWER PLANTS OWNED BY EPCG

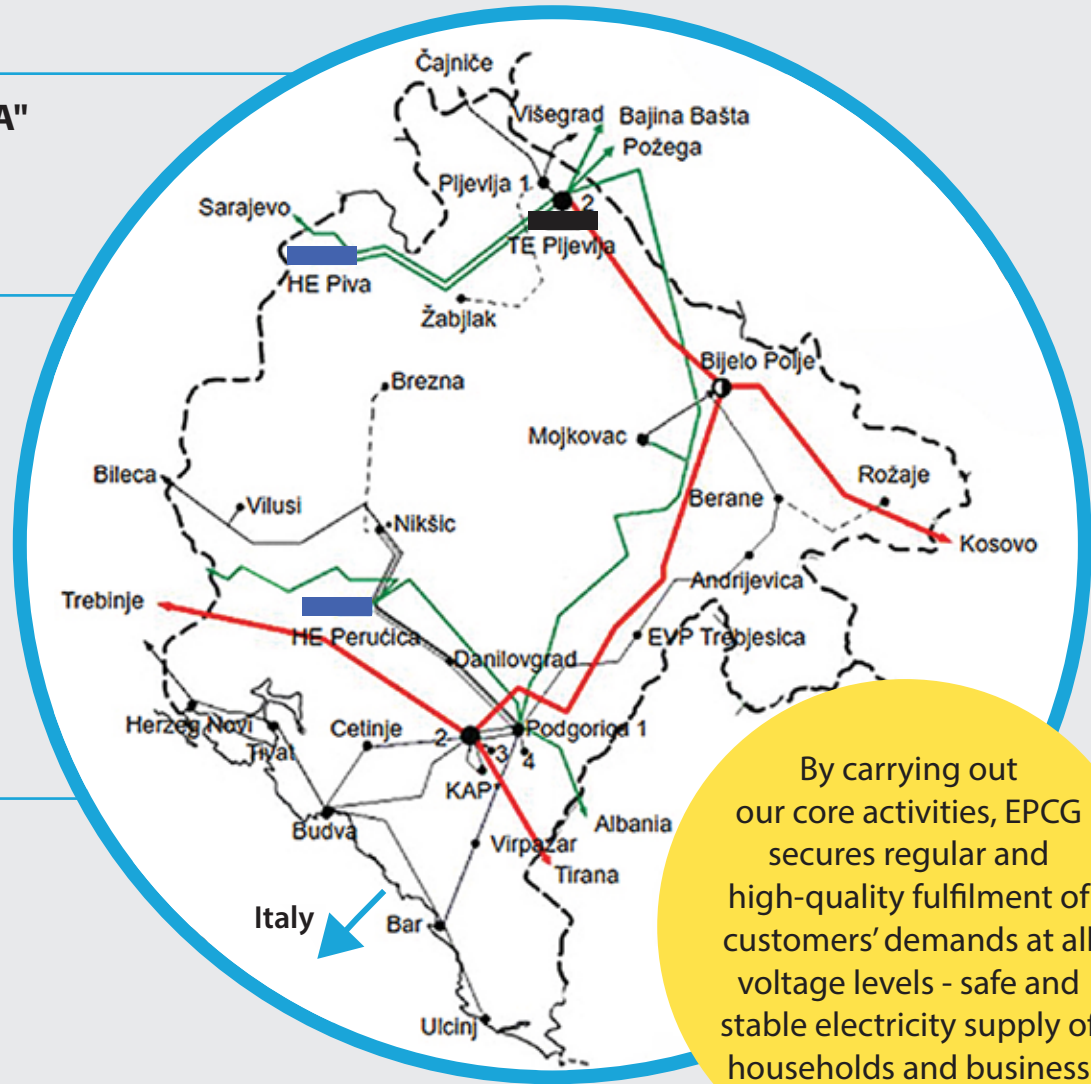
- Hydro | **HPP "PERUĆICA", HPP "PIVA"**
- Thermal | **TPP "PLJEVLJA"**

## TRANSMISSION LINES

- Maritime Cable  
Interconnection of Montenegro with Italy
- 400kV
- 220kV
- 110kV single
- 110kV duple
- 110-35kV

## TRANSFORMERS

- 400/200-400/110kV
- 22/110kV
- 110/xkV
- 35/10kV
- 400kV



By carrying out our core activities, EPCG secures regular and high-quality fulfilment of customers' demands at all voltage levels - safe and stable electricity supply of households and business entities

## THE FOUNDATION OF OUR SUCCESS: Our Key Strengths

Our goal – to diversify electricity generation by constructing as many renewable energy sources as possible (primarily focusing on wind and solar)

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	Installed capacity (MW)	Annual generation (GWh)
HPP Perućica	307	920 (max 1435, min 539)
HPP Piva	342	750 (max 1286, min 360)
TPP Pljevlja	225	1350
Small HPP Zeta Energy	6,56	18,5
Small HPP EPCG	2,46	5,5
<b>Total</b>	<b>883</b>	<b>3044,5</b>



## HPP "PERUĆICA"

- Installed capacity **307 MW**
- 3-year generation about **1.300 GWh**
- Active storage capacity **225 million m<sup>3</sup>**
- Catchment area of HPP Perućica covers **850 km<sup>2</sup>**

### HPP Perućica consists of the following facilities:

- System of canals
- Settling tank
- Compensation basin
- Intake tunnel with the intake structure
- 3 penstocks
- Powerhouse for eight units
- 110 kV and 220 kV switchyards
- 3323.27 meter long intake tunnel
- Penstock P3 with a diameter of 2.65 + 2.5 meters
- Krupac and Slano reservoirs and Vrtac retention



## HPP "PIVA"

### Key features about HPP Piva

- Installed capacity **342 MW**
- Total storage capacity -  **$824 \times 10^3 \times 10^3 \text{ m}^3$**
- Active storage capacity -  **$746 \times 10^3 \times 10^3 \text{ m}^3$**
- Planned annual electricity generation - **860 GWh**
- Energy storage capacity **275 GWh**

### HPP Piva consists of the following facilities:

- Three spiral turbines with vertical shaft (**250 rpm**), Francis type
- Three 3-phase generators with a vertical shaft (**250 rpm**), **120 MVA** each
- Three 3-phase transformers (**15,75 / 220 kV**), **120 MVA** each
- Concrete arc dam, constructive height **220 m**, hydraulic height **190 m**, arch length at the dam crest **268,6 m**, bottom arc length **40m**
- Normal water level elevation - **675,25 m.a.s.l.**
- Minimum operating elevation - **595,0 m.a.s.l.**
- Maximum net head - **181,95 m**
- Minimum net head - **99,90 m**
- Installed discharge -  **$3 \times 80 \text{ m}^3/\text{s}$**
- Catchment area **1.760 km<sup>2</sup>**



## TPP PLJEVLJA

### Key features about TPP Pljevlja

- TPP Pljevlja is the first Montenegrin condensation thermal power plant designed with two units of **225 MW** each
- Constructed at **760 m.a.s.l.**
- **250 m** high chimney, the outlet exceeds **1,000 m.a.s.l.**

### TPP Pljevlja consists of the following facilities:

- Thermal power plant is supplied with water for cooling and other purposes from the Otilovići reservoir, the capacity of which is **18 mil.m<sup>3</sup>**
- It is situated on the Ćehotina River, at about **8 km** away from the thermal power plant with which it is connected by asphalt road
- **59 m** high concrete-arc dam



## CURRENT STATE OF ELECTRICITY GENERATION IN MONTENEGRO

<b>BALANCING ELEMENTS</b>	<b>2018 GWh</b>	<b>2019 GWh</b>	<b>2020 GWh</b>	<b>2021 GWh</b>	<b>2022 GWh</b>
<b>EPCG - Generation</b>	3484	3011	2819	3161	2909
<b>Montenegro - Generation</b>	3677	3265	3224	3650	3235
<b>Montenegro - Consumption</b>	3489	3486	3302	3481	3100

## CURRENT AND FUTURE PROJECT PLANS

### EPCG Renewable Energy Sources

As a key industry leader, we strive to be a head of and accelerate European initiative and promotion of sustainable development principles in the field of hydro power, its role and significance in RES systems throughout the Balkans region, as well as to combat climate changes.

Elektroprivreda Crne Gore AD Nikšić became a Silver Member of the International Hydropower Association on 3 December 2020, in the category of state-owned electric power companies, of up to 2,000 MW installed hydro capacity.

The European Committee identified four specific projects to be supported under the **Flagship - 4 - RENEWABLE ENERGY**, including the Project on Construction of HPP Komarnica.

The European Commission's Economic and Investment Plan for the Western Balkans was adopted on 6 October 2020, and was aimed at boosting the region's economic recovery, supporting green and digital transition, regional integration and convergence in the European Union.



## EPCG NEW RES PROJECTS

POWER PLANT	INSTALLED CAPACITY (MW)	GENERATION(GWh/g)	YEAR OF COMMISSIONING
WF Gvozd	54,6	150	2025
SPP Briska Gora	50+200	90+360	2025/2027*
HPP Komarnica	171,9	213	2029
HPP Perućica-A8	58,5	-50	2025
sHPP Otilovići	3,3	11,4	2024
HPP Kruševo	90/120	230/320	2030
SPP Velje Brdo	150	240	2024*/2027*
SPP Vilusi I	30	45**	2024*
SPP Dragalj/Vilusi II	80	140**	2027*
SPP Slano floating	39	65**	2024*
3000+/500+	30	46,7	2022/2023*
SPP dam Slano SPP dam Vrtac	2,5+1,5	3,3+2,2**	2024* 2024*
<b>TOTAL</b>	<b>961,3</b>	<b>1.646,6</b>	

## SOLAR POWER PLANTS

Solar 3000+ i 500+

Solar 5000+

Solar 10000+

SPP dam Slano

SPP dam Vrtac

SPP Obala Krupac

SPP Slano- floating

SPP Velje Brdo

SPP Briska Gora

SPP Vilusi I

SPP Dragalj/Vilusi II



## PROJECT SOLARI 3000+ and 500+

**30 MW, 46.7 GWh**

This project envisages installation of 3,000 solar systems at rooftops of residential buildings and 500 solar systems at rooftops of buildings owned by legal entities.

EPCG and the ECO Fund signed the agreement on joint financing and implementation of Solari 3000+ and 500+ Project, according to which the ECO Fund will grant 20% subsidy to end users out of total value of the solar system.

Solari 3,000+ and 500+ Project is fully funded through a loan by a selected financial institution, in accordance with the EPCG's Invitation to Tender for submission of bids to secure funds for the concerned investment worth EUR 30 million.





## PROJECT SOLAR 5,000+

- Installed power **70 MW**
- Estimated production **105 GWh**
- Investment value **EUR 70 mil**

## PROJECT SOLARI 10,000+

The project envisages installation of 10,000 solar systems on residential rooftops.

- Estimated capacity would reach approximately **85 MW**
- Estimated generation **110.5 GWh**
- Total value of the investment – **EUR 90 million**
- The Project has been nominated on the SPP list 2021/22 to be financed from the EU funds.

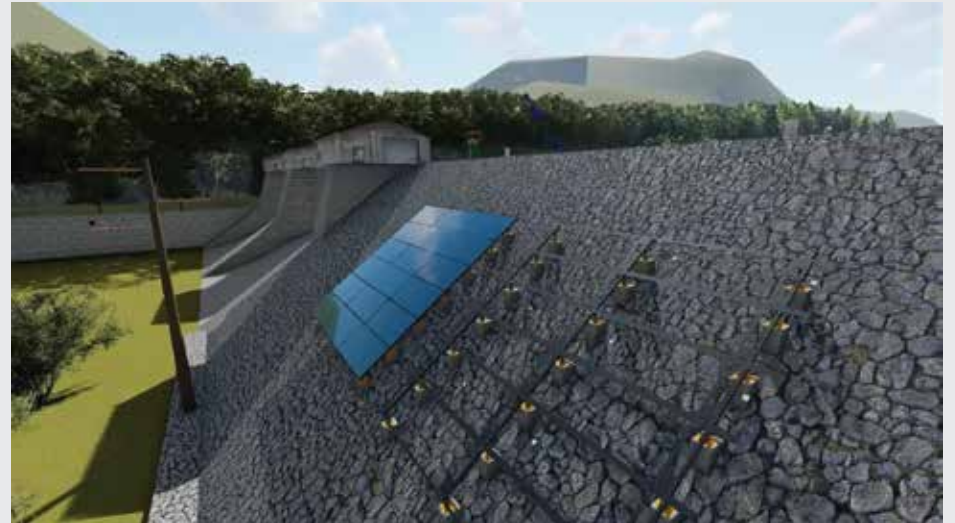


## SPP DAM SLANO



**PLANNED INSTALLED CAPACITY (MW) 2,5+1,5 | PLANNED ANNUAL GENERATION (GWh/y) 3,3+2,2\*\***

## SPP DAM VRTAC



## FSP SLANO – FLOATING SOLAR

When it comes to securing funds from financial institutions, due diligence process began in January 2022. On 1 April 2022, the project concept for the floating solar power plant on the Slano Lake was approved by the EBRD.

EBRD will support the Project through financing the technical, financial and environmental study

**UP TO 39 MW, PLANNED ANNUAL GENERATION 65 GWhh/y**

The final version of the Montenegro Initiative EPCG Slano Floating PV Project, which was initially prepared by the bank, was also agreed upon. A conceptual design is to be completed first, followed by a preliminary design which will be used to apply for further investment in the Project.



## SPP VELJE BRDO

The Assembly of the Capital City of Podgorica adopted the local study location “Velje Brdo-solar power plant”.

The Committee entrusted with activities on construction of SPP Velje Brdo prepared the tender documents seeking long-term lease of the state-owned land for the construction the previously mentioned solar power plant.

**Total SPP installed capacity:**

**Phase I - 50 MW**

**Phase II - 100 MW**



## SPP BRISKA GORA

Planned site for SPP Briska Gora – Briska Gora, the Municipality of Ulcinj Consortium EPCG, Fortum Corporation Finland and Sterling&Wilson India

### Construction of the power plant by phases:

Phase I – 50 MW, estimated annual generation 90 GWh (18 months)

Phase II – 200 MW, estimated annual generation 360 GWh (36 months)



Total investment value is cca. EUR 210 M

## SPP VILUSI

The initiative for preparing an analysis of the technical solution for connecting new generation facilities from PV solar systems to the electric power system of Montenegro - specifically in the Municipality of Nikšić has been launched by EPCG.

### Estimated power-plant capacity:

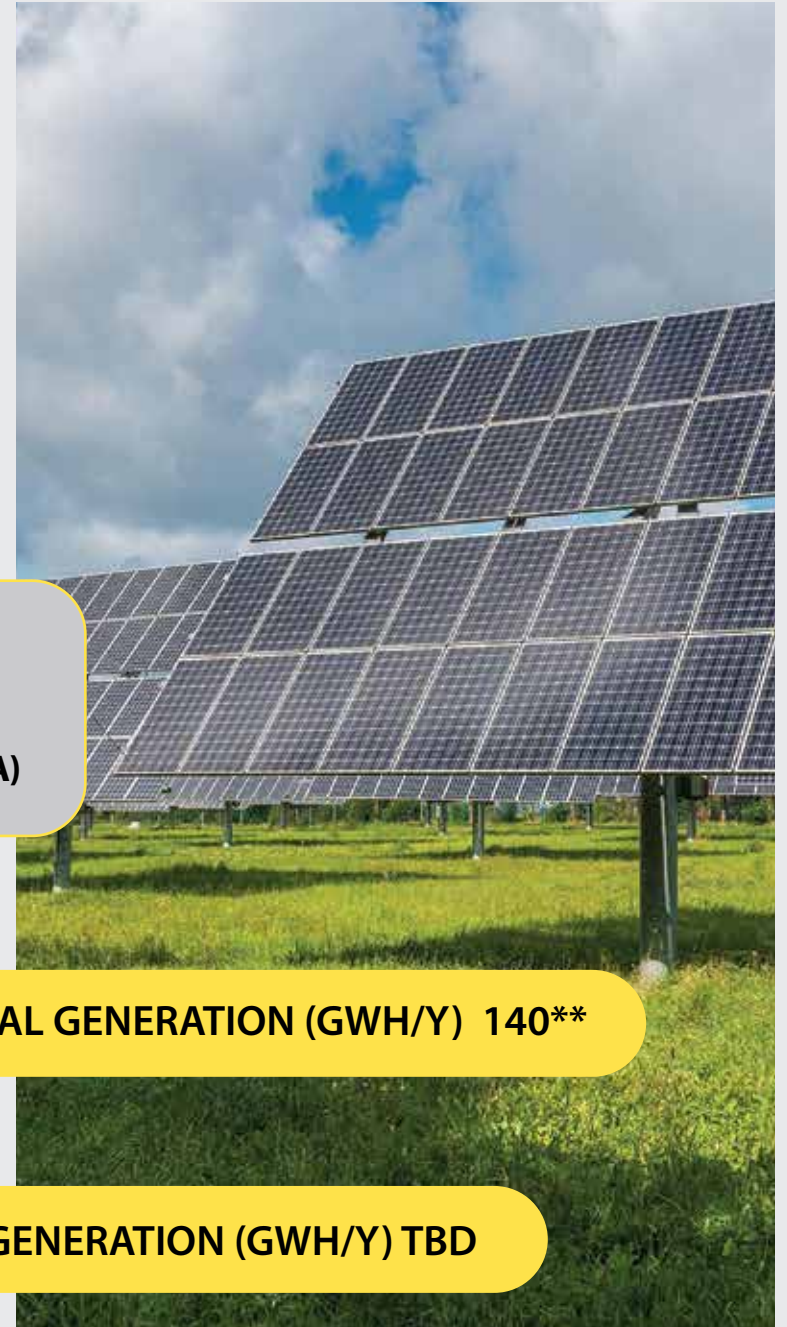
SPP Stražište, phase I - installed capacity **30 MW**,  
connection according to the input – output principle to the **110 kV**  
transmission line “Vilusi – Bileća”, cross-section Cu **120 mm<sup>2</sup> (89,4 MVA)**

### SPP DRAGALJ/VILUSI II 80 MW

**PLANNED INSTALLED CAPACITY (MW) 80 | AVERAGE ANNUAL GENERATION (GWH/Y) 140\*\***

### SPP ČEVO 100 MW

**PLANNED INSTALLED CAPACITY (MW) - AVERAGE ANNUAL GENERATION (GWH/Y) TBD**

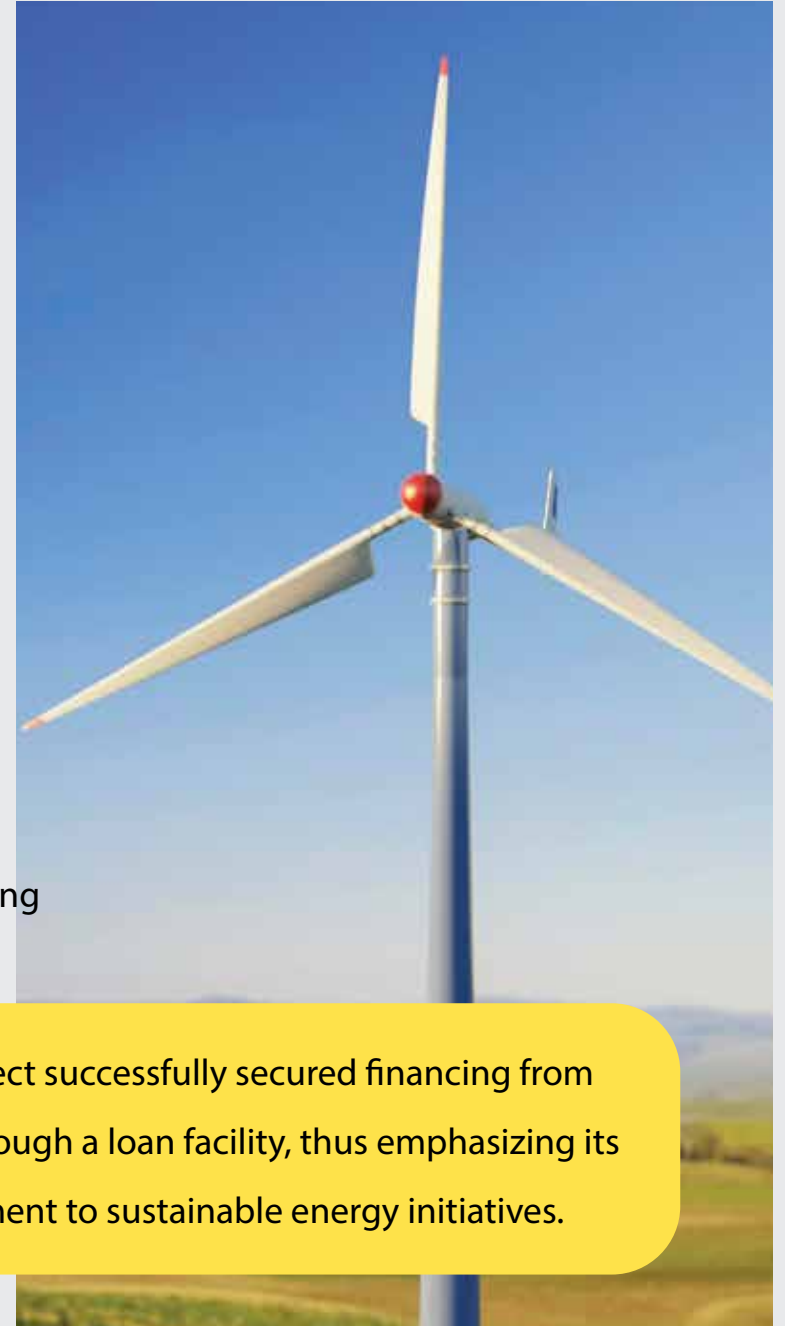


## WPP GVOZD

### 13 wind turbines, 54.6 MW, 150 GWh/g

- 13 wind turbines in addition to construction of standard plateaus for installation of wind turbines and foundations on which to install wind turbine towers
- 110/33 kV "Gvozd" substation on the project site
- Reconstruction of 110/33 kV "Krnovo" substation
- Construction of a single line 110 kV SS "Gvozd" – SS "Krnovo", 3,125 m long
- Construction of 110 kV single line SS "Gvozd" – SS "Nikšić", 14,730 m long
- Reconstruction of 110/35 kV "Nikšić" substation

This project successfully secured financing from EBRD through a loan facility, thus emphasizing its commitment to sustainable energy initiatives.



## HPP KRUŠEVO

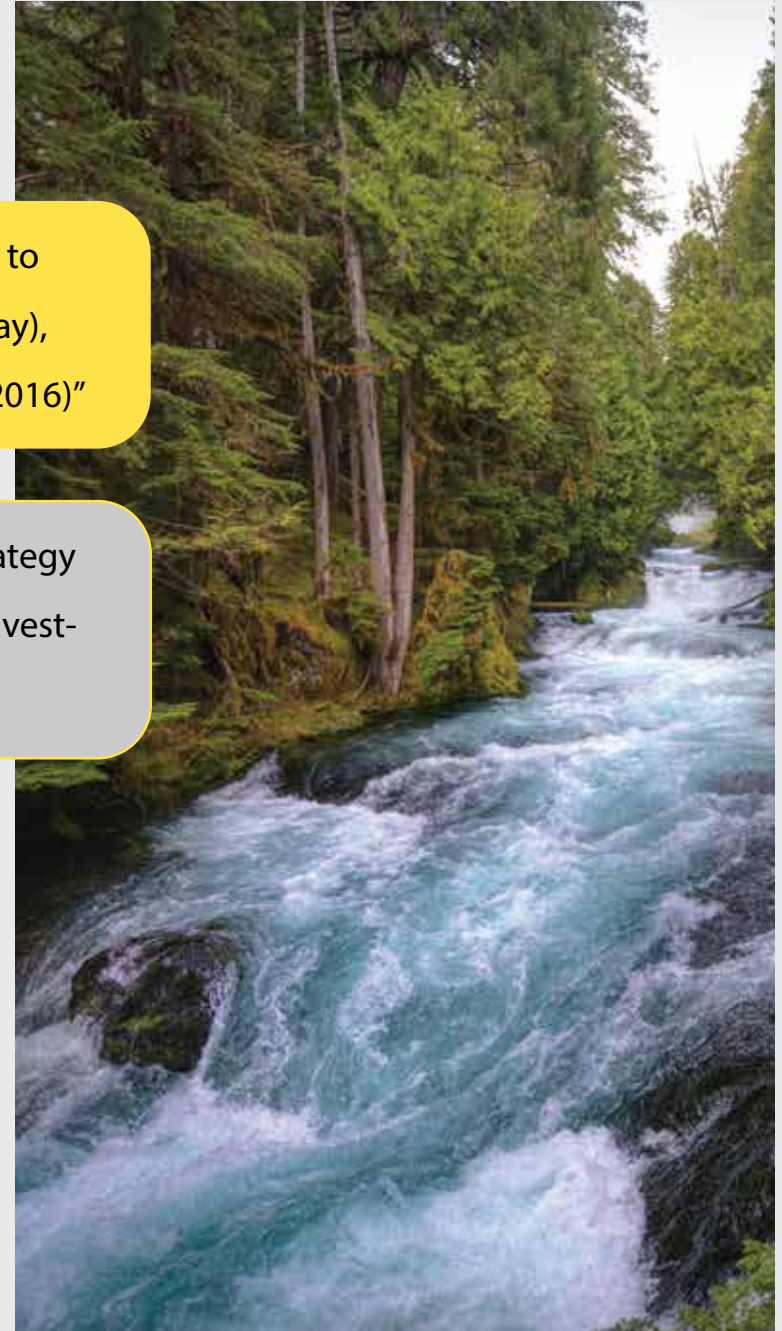
HPP Kruševo was analysed as part of the World Bank's project "Support to Water Resources Management in the Drina River Basin: COWIAS (Norway), STUCKYLTD (Switzerland) and "Jaroslav Černi" Water Institute (Serbia) (2016)"

HPP Kruševo was also analysed as part of the documents "Regional Strategy for Sustainable Hydropower in the Western Balkans-Western Balkans Investment Framework: Mott Macdonald and IPF Consortium, (2017)"

The contract on development of the study on the utilization of hydropower potential of the Piva River downstream of HPP Piva was signed with the "Jaroslav Černi" Water Institute.

### The study will explore the two possible variants:

- HPP Kruševo Gornje, installed capacity approximately **90-100 MW** and expected annual generation **230-265 GW**
- HPP Kruševo Donje, installed capacity approximately **120 MW** and expected generation **320 GWh**





## HPP KOMARNICA

The European Commission identified, under the **Flagship-4-RENEWABLE ENERGY**, four specific projects to be supported, including the Project HPP Komarnica Construction.

### Technical features of HPP Komarnica

Concrete arc dam, powerhouse at the toe of the dam, frontal spillway with gates and outlet tunnel in the left abutment of rock mass.

- Normal water level elevation: **811 m.a.s.l.**
- Reservoir capacity: **227 mil. m3**
- Dam height: **171 m**
- Installed discharge: **130+8 m3/s**
- Generators' capacity: **2 x 81 MW+ 9.9 MW**
- Maximum capacity: **171,9 MW**
- Annual generation: **213 GWh**
- Investment value: **EUR 260 – 290 million**



## HPP BOKA-SUTORINA

EPCG and ERS representatives held a meeting and verified unequivocal intention to enter a transaction on joint implementation of the Energy Project HPP Boka-Sutorina with Mješoviti Holding “Elektroprivreda Republike Srpske”.

The project implementation will create conditions to enhance the cooperation, aimed at increasing efficiency and profitability of both power systems, as well as to provide joint valorisation of water potential for energy purposes and improve water supply for certain part of the Montenegrin coast.

**INSTALLED CAPACITY 250 MW**  
**PROJECT VALUE EUR 300 M**



## PUMPED STORAGE PLANT LAKE SKADAR

Numerous studies have examined water potential of Lake Skadar, for activities such as water supply, fishing, agriculture and tourism.

However, the potential use of this natural resource for energy generation has not been explored.

Lake Skadar is a massive water reservoir, holding the distinction of being the largest lake in the Balkans and one of the largest lakes in Europe.

As a part of the RES project plan, the suggested location for the powerhouse of pumped storage plant is on the western bank of Lake Skadar. As for the proposed pumped storage power plant, there should be two reservoirs, whereof Lake Skadar would be the lower reservoir while an artificial reservoir created in a natural valley would be the upper reservoir.

A diversion tunnel, approximately 2.3 km long, would connect the powerhouse to the upper reservoir.



The Project's installed power capacity:

**250 MW, total value estimated at EUR 300 million**

## GAS POWER PLANTS

A new investment project has been launched by EPCG and, accordingly, the Board of Directors passed the decision on development of the study encompassing elaboration of technical solutions and a Pre-feasibility study for gas-fired power plants in Montenegro.

**The subject study includes an analysis of the following:**

- Hybrid power plant based on a gas turbine, minimum capacity 50 MW nearby the Port of Bar, along with potential renewables
- Combined gas-fired power plant, minimum capacity 150 MW, inside the area of Aluminium Plant Podgorica (KAP), combined with prospective renewables
- Gas-fired power plant in Pljevlja, capacity up to 200 MW



## GAS-FIRED POWER PLANTS

Analysis of the entire life cycle of the proposed technical solutions was carried out based on both the Study elaborating technical solutions and the Pre-feasibility study.

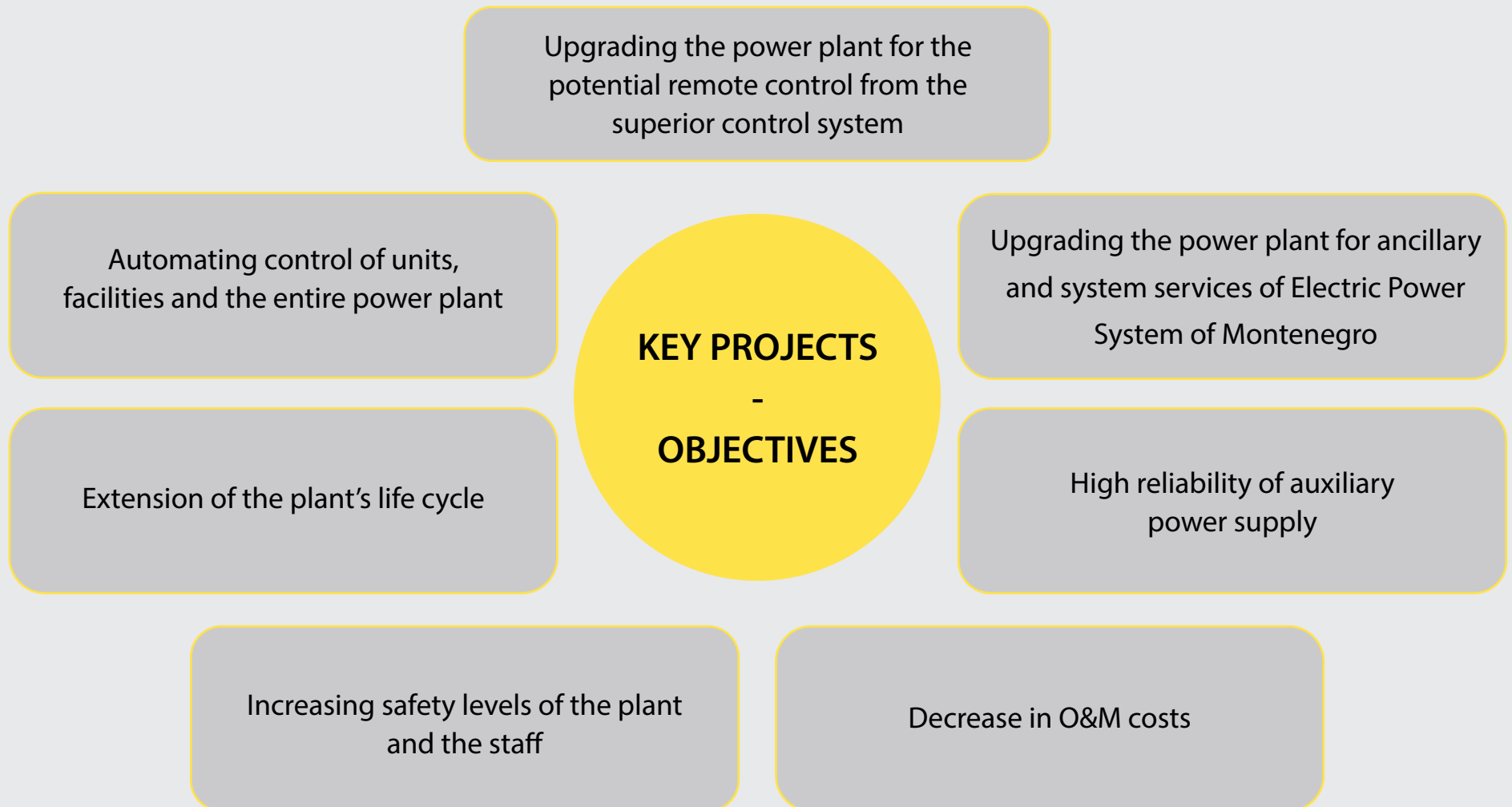
The Study encompassed the Strategy for conversion of power plants' operation through phases, beginning with natural gas to reaching integration with renewables and prospective conversion thereof into the so-called neutral CO<sub>2</sub> operation mode.

In addition to the development of technical solutions, the Study also includes the feasibility study.



## PROJECTS ON RECONSTRUCTION AND MODERNISATION OF HPPs

### HPP Piva – Phase II and HPP Perućica – Phase II



## HE PIVA-PHASE II

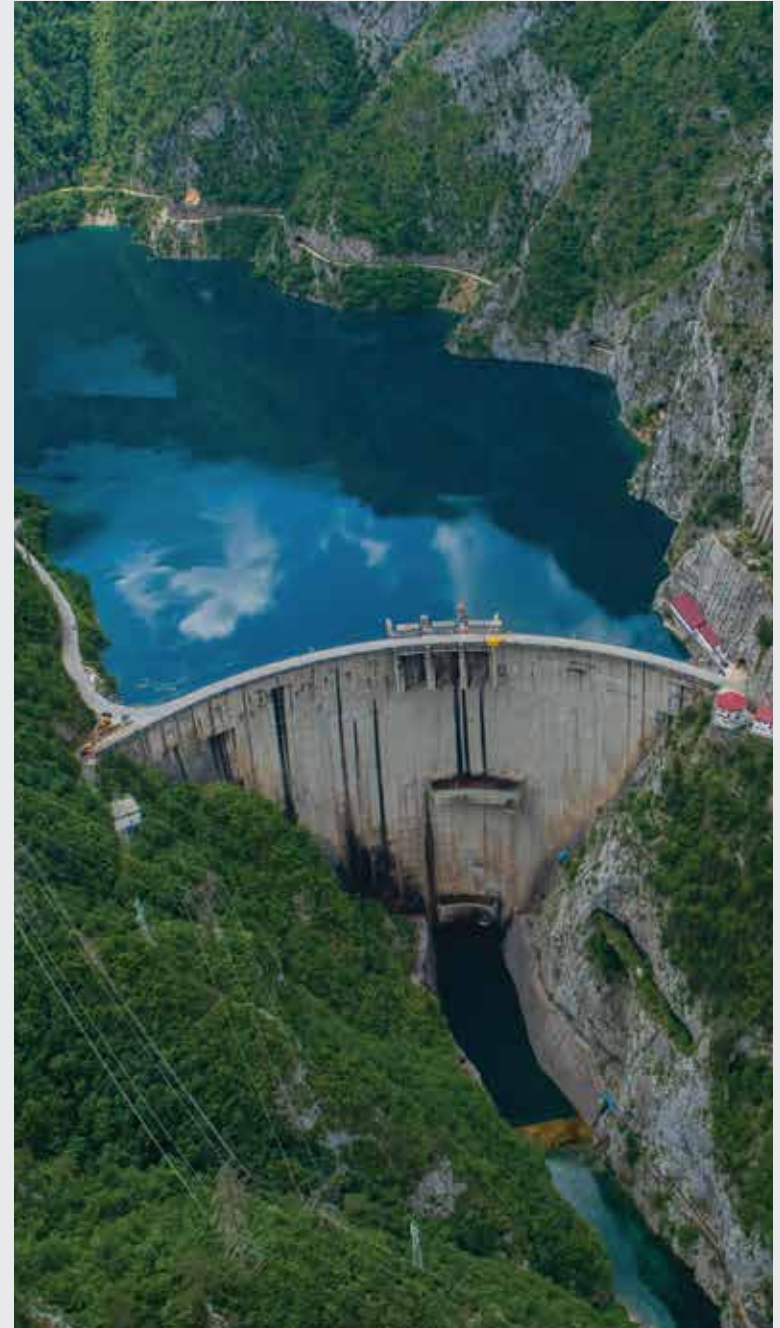
Refurbishment of hydro mechanical and electrical equipment on U1, U2 and U3, and auxiliary power supply

Loan Agreement signed with KfW bank worth

**€16M**

EPCG signed a contract with a contractor Litostroj Power, Slovenia and ABB, Italy Contract value:

**€10.3M**



## HE PERUĆICA –PHASE II

### **PHASE 1) Completed in 2019**

EPCG and KFW bank signed a loan agreement valued at EUR 33M to finance the Phase II of the Project

### **PHASE 2) Completed in December, 2022**

EPCG signed a contract with Voith Hydro, Austria, where the scope of works for Phase II of the Project encompasses:

- Reconstruction and modernisation of hydro-mechanical and electrical equipment on U5, U6 and U7
- System for hydrological-hydraulic measurements
- Heightening and recovery of Opačica and Moštanica canals
- Installation of an integrated information system
- Reconstruction and modernization of system structures





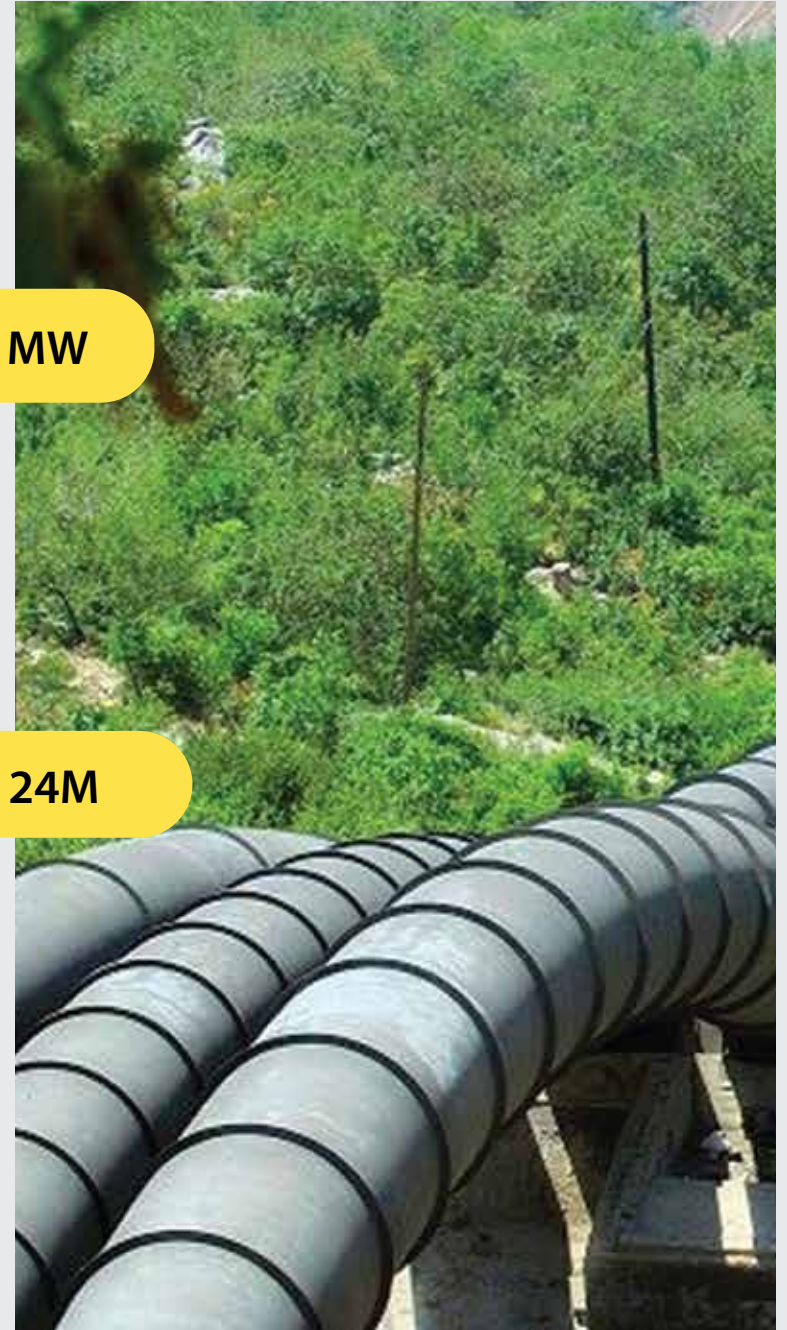
## HPP PERUĆICA – INSTALLATION OF U8

**58.5 MW**

Installation of U8 will increase total installed capacity of HPP Perućica and expand capacity from 307 MW to 365.5 MW

**The value of total investment approx. € 24M**

Indicative offer from KfW Bank received



## TPP PLJEVLJA

Phase III will be funded from the Company's own resources in cooperation with Pljevlja Municipality on the one hand and financially assisted by the investment bank on the other side.

**With this refurbishment the following will be achieved:**

- Eco-refurbishment of the TPP Pljevlja
- District heating of the Municipality of Pljevlja
- Reclamation of the Maljevac landfill

These efforts are primarily focused on the eco-refurbishment of TPP Pljevlja, district heating of the Municipality of Pljevlja and reclamation of the Maljevac landfill.



## IN FOCUS -NECP

### IN FOCUS – NECP

To comply with the EU's energy and climate targets for 2030, EU Member States are required to develop national energy and climate plans (NECP) for the ten-year period from 2021 to 2030. NECPs outline the strategies EU Member States plan to adopt while addressing five key areas: energy efficiency, renewable energy sources, emission reduction, interconnection, research and innovation.

GIZ, Fraunhofer and the Energy Community are providing support to Montenegro in implementing its NECP.



**THANK YOU FOR YOUR ATTENTION**



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