



Montenegro
Ministry of Economy

WINTER 2019/2020 SECURITY OF ELECTRICITY SUPPLY IN MONTENEGRO

Vienna, 11 December 2019



ENERGY BALANCE OF MONTENEGRO FOR 2020

- This week **the Energy Balance of Montenegro** for 2020 has been submitted to the Government of Montenegro for adoption.
- Overall **planned consumption** of electricity in Montenegro in 2020 is 3.615 GWh, which is 1,7% more in comparison with the planned consumption in this year.
- Total **planned generation** of electricity in Montenegro in 2020 is 3.454 GWh, which is 1,3% more in comparison with the planned generation in this year.
- **Planned net electricity import** in 2020 is 161 GWh, which is 4,4% of the total planned consumption.
- **EPCG and direct consumers will import** insufficient quantity of electricity on time.
- **Measures to be taken for safe operation of the power system and secure supply** of consumers are defined in the Energy Balance.



OPERATIONAL PREPAREDNESS OF POWER GENERATION FACILITIES

- Operational preparedness of **TPP „Pljevlja”** (218,5 MW) – I
- **Annual overhaul** of TPP „Pljevlja” facilities was carried out and now it is in full operational readiness.
- **Preparations for winter operation** of the TPP „Pljevlja” will be executed in the last week of December
- In the course of the first 11 months of this year, the index of reliability of TPP „Pljevlja” facilities amounted to 97,46% and index of availability amounted to 76,86%.



OPERATIONAL PREPAREDNESS OF POWER GENERATION FACILITIES

- Operational preparedness of **TPP „Pljevlja” (218,5 MW) - II**
- TPP „Pljevlja” has **good operational readiness** and it is technically ready to operate during the following period without any stoppage planned, until the planned annual overhaul in April of 2020. when is usually the lowest consumption.
- With regard to the situation with **energy sources** necessary for operation of TPP „Pljevlja”, all the stocks currently available are **at the level of the planned** ones.
- All the **activities** have been undertaken and **implemented** in order to ensure operating readiness of TPP “Pljevlja” during the following 2019/2020 winter.





OPERATIONAL PREPAREDNESS OF POWER GENERATION FACILITIES

▪ Operational preparedness of HPP “Perućica” (307MW) - I

• In order to maintain operating readiness of the plant, the following has been performed:

➤ the planned **annual overhauls** of facilities and plants of HPP “Perućica” are **finished**;

➤ the larger portion of planned **spare parts, materials and equipment** was **procured**, and procurement of the remaining part is underway;

➤ the **vehicles** underwent service maintenance and all the necessary interventions on **building machinery** performed.

• In the course of the first 11 months of this year, the index of reliability of HPP “Perućica” facilities amounted to 99,83% and the index of availability amounted to 71,16%, as a result of completed overhaul and regular and proper equipment maintenance



OPERATIONAL PREPAREDNESS OF POWER GENERATION FACILITIES

▪ Operational preparedness of **HPP “Perućica”** (307MW) - II

• The following was done for the equipment to operate in winter conditions:

➤ **Mobile pump units** and supporting equipment to drain water from auxiliary plants and auxiliary units were prepared;

➤ **Heating systems** of the equipment which requires to be heated during winter were checked (heaters, thermostats, fuses);

➤ **Water impermeability** of the equipment exposed to an exterior weather impact was checked;

➤ **The connection system** underwent control.



OPERATIONAL PREPAREDNESS OF POWER GENERATION FACILITIES

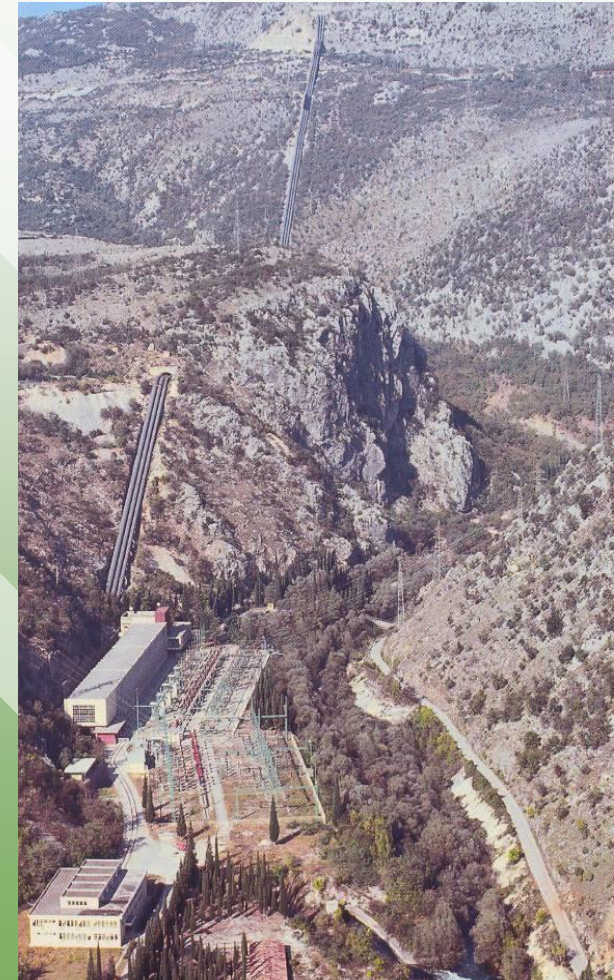
▪ Operational preparedness of HPP “Perućica” (307MW) - III

• Facilities located in the field of Nikšićko

The following has been performed to ensure operation of the plant in winter conditions:

➤ Valve Chambers

- The heating systems of the equipment and valve chamber rooms underwent control;
- The heating system of spilling flap gates at Vrtac valve chamber underwent control;
- The liquid preventing freezing (anti-freeze) of diesel units have been poured into.
- Diesel fuel was purchased in case of a longer interruption of supplying valve chamber with electricity;
- It has been planned to purchase necessary quantities of salt mixed with fine sand that will be distributed to the valve chambers.





OPERATIONAL PREPAREDNESS OF POWER GENERATION FACILITIES

▪ Operational preparedness of HPP “Perućica” (307MW) – IV

➤ Machinery of HPP “Perućica”

- Preparation of the machinery of HPP „Perućica“ to operate in winter conditions was completed.
- All the vehicles are equipped with winter tires and other equipment for winter weather conditions.

➤ Road infrastructure

- HPP “Perućica” has been maintaining roads leading to certain facilities in the field of Nikšićko.
- Maintenance of roads in winter period is particularly problematic due to insufficient machinery available to HPP “Perućica”. Maintenance of roads in extraordinary weather conditions will require engagement of the machinery from broader social community.

▪ HPP “Perućica”, together with all the pertaining facilities and equipment, **is ready to operate during winter conditions** of 2019/2020.



OPERATIONAL PREPAREDNESS OF POWER GENERATION FACILITIES

- **Operational preparedness of HPP “Piva” (342 MW) - I**
 - **In order to maintain operating reliability of HPP “Piva” during the next winter, the following has been performed in 2019:**
 - One aggregate (A1) is currently available. The completion of the overhaul of aggregates is expected at the beginning of December and in January the completion of the overhaul of the aggregates, after which they will be available
 - the majority of the foreseen **spare parts**, materials and equipment has been procured, whereas procurement of the remaining portion is underway;
 - sufficient quantity of a **diesel fuel** for operation of the diesel electrical unit for auxiliary supply of the plant with electricity, designed for cases when it is not possible to ensure supply from other sources, have also been procured;
 - **servicing of vehicles** has been done and necessary interventions on building machines for snow cleaning and removal of rock falls completed;
 - **repair of the boat** used for transport of employees to HPP “Piva” at times of snow banks and lack of passable roads to power plant has been done.



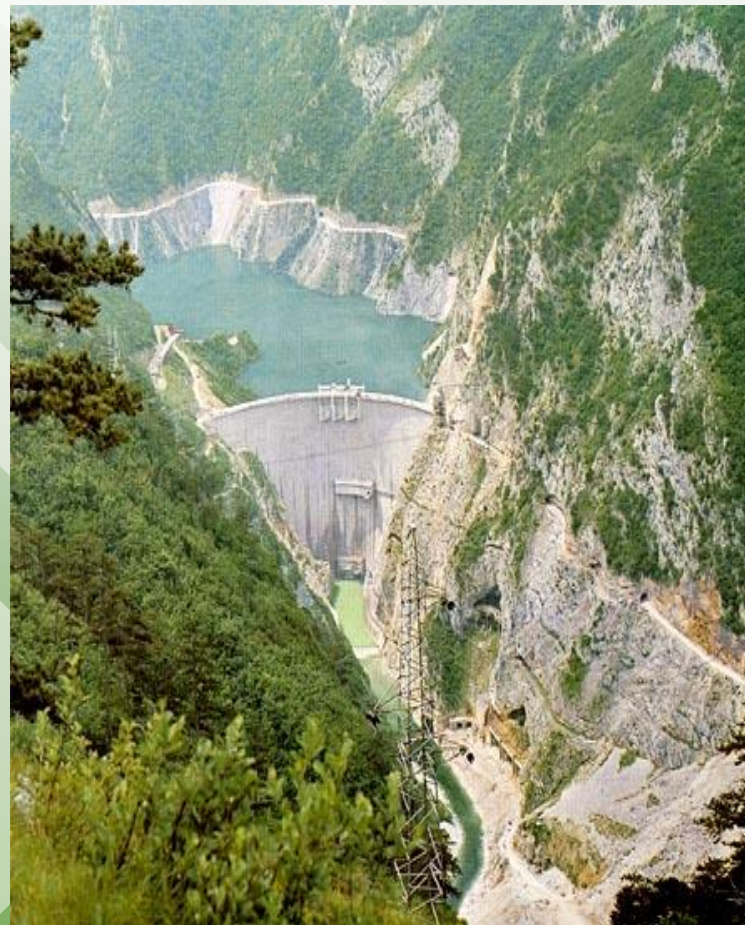
OPERATIONAL PREPAREDNESS OF POWER GENERATION FACILITIES

▪ Operational preparedness of **HPP** **“Piva” (342 MW) - II**

- During the upcoming winter season there will be no problems in **electricity generation** of HPP “Piva” since a **water inflow** to the reservoir during this month reached almost maximum level

- For 11 months of 2019:
 - **Availability** index is 71,01%
 - **Reliability** index is 99,39%

- As a result of performed overhaul and regular and proper equipment maintenance, **high level of operational readiness and availability** of HPP “Piva” has been achieved.





ACCUMULATION LEVEL OF HPP “PIVA” AND HPP „PERUĆICA“

- Current Accumulation levels are at overflow
- The amount of potential electricity contained in Accumulation of HPP Perucica is 186 GWh or 98% of the maximum, which is 112 GWh more than planned.
- The amount of potential electricity contained in Accumulation of HPP Piva is 220 GWh or 82% of the maximum, which is 68 GWh more than planned.
- The plan for utilization of reservoirs of HPP Perućica and HPP Piva was made on the basis of long-term inflow into reservoirs, taking into account water losses at high angles and air temperatures in summer, lake discharge regime during critical periods, system needs and balancing monthly balances



OPERATIONAL PREPAREDNESS OF POWER GENERATION FACILITIES

- In the previous years, the construction of two wind power plants with a total installed capacity of 118 MW was completed, one located on Krnovo, near Nikšić installed capacity of 72 MW, and another located on Možura, near Ulcinj installed capacity of 46 MW.
- Production of electricity from Krnovo wind farms for 2020 is planned at 201 GWh, which is equal to the 2019 realization estimate. Krnovo wind farms in 2019 achieved a plan of 101.3%.
- On 15 November 2019 wind farm on Možura obtained a use permit, and it was put into commercial operation. The production of electricity from these wind farms in 2020 is planned at 112 GWh.
- The total production from these two wind farms is 313 GWh which representing a share of 8,6 % of total consumption.
- Both wind farms are ready to operate during winter conditions of 2019/2020



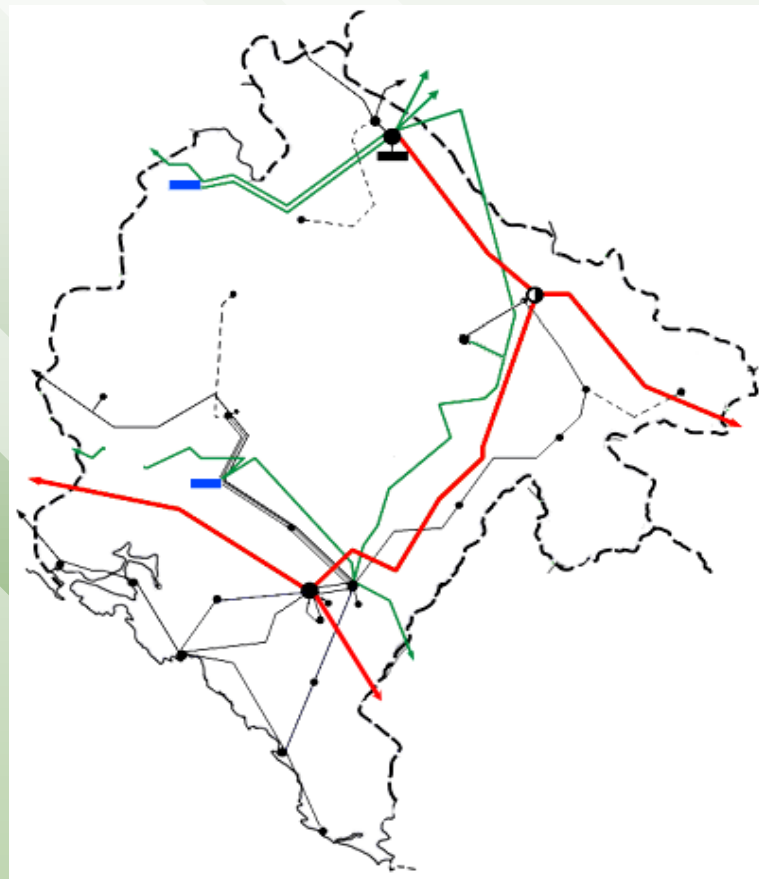
OPERATIONAL PREPAREDNESS OF TRANSMISSION SYSTEM (I)

- In order to increase the security of electricity supply, **Transmission System Operator of Montenegro - CGES**, has done the following activities during 2019:
 - all the **repairs, reconstruction and replacement of equipment** in accordance with Maintenance plan for 2019
 - creating the conditions for connection of **Wind Power Plant Možura (46 MW)**
 - conclusion of **contracts** on providing of **ancillary services** and electricity for covering of **losses** in transmission system
 - Commissioning HVDC Monita (Italy-Montenegro)
 - Part of Monita project is new SS 400/110/35kV Lastva



OPERATIONAL PREPAREDNESS OF TRANSMISSION SYSTEM (II)

- **use of services** of the **SEECAO** and the Security Coordination Center Ltd. Belgrade (**SCC**)
- **exchange of tertiary reserve** with EMS and NOS BiH and preparation of similar cooperation with Terna and OST
- **CGES harmonized maintenance schedule 2020** of transmission system elements with neighboring system operators





OPERATIONAL PREPAREDNESS OF DISTRIBUTION SYSTEM

- Montenegrin Electricity Distribution System (CEDIS) was founded in June 2016 as a distribution system operator that performs electrical distribution and is responsible for the operation, maintenance and development of the distribution system.
- As part of the preparation for the 2020 winter season Maintenance Service has carried out maintenance activities for the facilities identified in the 2019 Maintenance Plan.
- Checking the correctness of the pillar elements (checking and replacement of insulating chains, checking of current bridges, checking and replacement of damaged conductors, installation of missing structural parts and replacement of damaged structural components).



OPERATIONAL PREPAREDNESS OF DISTRIBUTION SYSTEM

- During the previous years, Montenegrin DSO implemented **numerous significant investment projects** and carried out **overhauls** and **activities on maintenance** of the existing distribution network facilities.
- Considerable part of the **planned activities** aimed at the best possible preparation of the distribution network for the upcoming winter season **has been implemented.**
- Construction of important distribution facilities taking place in the past years coupled with regular maintenance let us conclude that Montenegrin DSO - CEDIS is **ready for the forthcoming 2019/2020 winter season.**



CONCLUSION

- According to the above mentioned, it can be concluded that the electricity generating facilities, the transmission facilities of CGES and the distribution facilities of CEDIS are **operationally good and ready** for the following winter season **2019/2020**.



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Thank you for your attention !