

At the Round Table Conference held by the SPD on July 6, 2019

Final Declaration prepared by the Contributions of Speakers and Participants



Incentives for the development of our country's HEPP Potential and guarantees for a period of payment at fixed prices (feed-in tariff) have caused a rapid increase in the number of River and Channel type and Reservoir's HEPPs in the last 10 years.

However, despite this increase in the installed capacity and the number of HEPPs, energy production from both river and channel type and reservoir's HEPPs did not increase as planned. The realization rates and capacity factors of the planned production in these energy facilities in the last 4 years have been very low.

In this roundtable meeting the causes of these low realization rates in the power generation and lower capacity factors of HEPPs were discussed, it was evaluated that our HEPPs were not able to operated efficiently.

The results obtained from the Technical Analysis on this subject are listed below.



DETERMINATIONS

1. The weighted average capacity factor of 259 river and channel type hydro power plants was obtained as 29% for the last 4 years.operation.
2. In the same study, the average capacity factor of 41 Reservoir's HEPPs for the last 4 years was 27%.
3. The average working hours of the river and channel type HEPP is 2450 , the capacity factor was 28%, while reservoir's HEPP of 2000 hours and average capacity factor was 23%.
4. The realization rate of the planned production in these river and channel type HEPPs has been 60% on average in the last 4 years.
5. Reservoir HEPPs examined in this study have realized an average of 75% of their planned production in the last 3 years.
6. Approximately 50 river and channel type hydroelectric power plants with a total installed capacity of 750 MW have achieved half of their planned production in the last 4 years.
7. The weighted production efficiency values (Weighted Average Capacity Factors as of 25 %) of the investigated river channel type and Reservoir's HEPPs, has been 50% lower than the world average.
8. It has been observed that the realization rates of the planned annual production are lower especially in the Mediterranean and Aegean regions.



9. Recently, the purchase guarantee (Feed-in Tariff) given to the production in thermal power plants encouraged the supply of base energy needs with these power plants and the production of the large dam hydroelectric power plants in peak hours. It is considered that the decrease in the production realization rate and capacity factor in the dam HEPPs may be caused by this reason.

10. Recent procurement guarantee for production in thermal power plants has encouraged companies that have both hydraulic and thermal power plants to meet their base energy needs with natural gas, domestic coal power plants and to produce Reservoir's HEPPs at peak hours. It is considered that the decrease in the production realization rate and capacity factor in the Reservoir's HEPPs may be caused by this reason.
11. In the river and channel type HEPP projects carried out in the last 10 years, the problems have started from planning stage and turned into operational inefficiencies. Hydrological Factors and Operational Factors are the most effective factors in the low realization rate of production in our HEPPs.

These observed reasons are listed below;

- a. Failure to comply adequately with the hydrological principles during the planning phase and insufficient engineering hydrology studies,
 - b. Failure to determine the flow regime as comprehensive as possible with sufficient flow measurements in the project section,
 - c. The fact that the change in the flow rate during the year and over the years has not been examined properly,
 - d. The temporal variation of the current has not been evaluated within the whole river basin where the plant is located.
 - e. There was no synchronous operation planning in successive HEPPs while they were planning
 - f. A Basin Scale Energy generation optimization plan has not been developed.
 - g. The impact of climate change on water resources is not taken into account adequately in the Feasibility Reports.
12. In Turkey, disruptions in planning, management and supervision prevent the activities to be sustainable.
 13. All development activities on a basin scale need to be considered within the scope of a Regional Plan in which the basin is located. Noncompliance with the Regional Plan and Environmental Plan has been effective on the problems experienced today.



RECOMMENDATIONS ;

1. In the dry period of 2015, the realization rates in the annual generation of Reservoir's HEPPs as well as River and Channel type HEPPs remained below 50%. This situation seems to be caused by the conflict of sectoral needs, necessitates. Therefore more realistic approach to sectoral water allocation is strongly needed in the coming period.
2. It would be useful to examine the differences in capacity factor and production realization rate of HEPPs by region. HEPPs, whose production realization rate is continuously low, should be re-examined by considering the future climate change effect in that region and alternative proposals should be developed.
3. Operation and Energy Optimization Planning study need to be prepared on the Basin Scale, it will be useful to consider the Report of the Effects of Climate Change on Water Resources prepared by the General Directorate of Water Management.
4. Due to the low average production efficiency of HEPPs, it would be beneficial to control the amount of water that should be released for natural life especially from HEPP's in the Mediterranean and Aegean regions.
5. "Operation and Energy Optimization Plans need to be prepared for the existing power plants in order to evaluate the real energy potential of our basins by preserving the natural life in the basin.



12 July 2019