Due to the many obstacles and issues which needs to be resolved before the construction of new hydro power plants, old ideas on modernization and capacity increase of existing HPPs come up the surface. Existing hydro power plants in the area of former Yugoslavia are relatively old as they are being explored in average around 45 years already.
Activities which may secure their future work is the modernization and overhaul of the key equipment, specially the energy chain: turbine-generator-transformer. Basic step is the overhaul of turbine and turbine regulation. Actual world practice impose as imperative to increase the power and production in hydro power plants within the existing equipment sets. With overhaul and modernization of hydro power plants the exploration life is being extended, decrease of losses, increase of availability and reliability, existing of static and dynamic stability. Beside this effects the modernization cycle leads to the decrease of costs and operational problems in HPPs exploration cycle. With some additional construction works of existing hydro power plants and inflow of additional water capacities the production of the plant could be increase as well.
Economic feasibility of the hpps modernization is obvious as these plants in their original designs already predicted the possibility of exchange of equipment in accordance with its amortization cycles. Amortization cycle for the electric machining equipment is 20-30 years and for the hydro mechanical equipment 30-40 years. The return of the investments into modernization of the plant is feasible within 3-5 years and sometimes ever faster.
During the evaluation of the feasibility for modernization of the hpps general condition of the plant should be assessed using the following indicators: the age of the plant, condition of the components, periods of failure, availability of the facility and dynamics of water transfers. The condition of the equipment is being checked, turbines, generators, transformers and key civil construction parts (damns, tunnels and channels), pipelines, hydro mechanical equipment.
There are some examples of such capacity increase projects in the region.
On-going are the activities on the project on Zeta river water transfer into accumulation of Krupac and Slano in Montenegro. With additional construction of tunnels and water channels additional water inflows will be used in HPP Perucica in Montenegro.
Analysis of Energoprojekt company shows that with additional water inflows from Zeta river to HPP Perucica additional 62,7 to 102,6 water m3 could be gained on annual basis and this would mean the increase of production from 77,75-127 Gwh/ annually which means the increase of total production in HPP Perucica for 1 4,7%.
In hydro system of Trebisnjica river in Republika Srpska the lift of water level was done on damn Grancarevo on accumulation Bileca from 400meters to 402meters which expanded

the accumulation for 60m3 and increase the energy value of this lake for 52Gwh. Beside this project from Gornji Horizonti water system additional water inflow was secured which may increase the HPP Trebinje 1 production for around 50Gwh.
Hydro power plant Bajina Basta in Serbia was projected for installed power of 368MW (4x92MW) and potential production of 1487Gwh. After 47 years of exploration its modernization was completed which lasted 4 years. With this project HPP BB got additional power of 52MW and increase of production for 70Gwh while the operation life cycle is expanded for 40 years.
Hydro power plant Zakucac, biggest HPP in Croatia (since 1962) is projected for installed power of 486MW (2x108MW and 2x135MW) with potential production of 1770Gwh. After modernization which is planed to be completed in 2015 its power will be increased for 52MW and production for 58Gwh and operating cycle for 30-50 years.
Hydro power plant Zvornik in Serbia, projected for power capacity of 96MW and potential production of 428Gwh is in operation since 1955. After completed modernization and overhaul its installed power was increased for 33.6MW. Production was increased for 70Gwh and operating cycle for 30 years. HPP Zvornik is unique example of getting the maximum effects of modernization and overhaul.
Hydro power plant Djerdap in Serbia (in operation since 1972) has the installed power of 1058MW and potential production of 4819Gwh. Modernization and overhaul is in progress, complete cycle is expected to be completed by 2017. It is estimated that the power capacity of this HPP will; be increased for 10% which is equivalent to HPP Zvornik installed power.
HPP Vrutok Macedonia (4×37.5MW) 4 generetors and block transfer will be replaced as well as the additional damn on Mavrovo lake. This activities will ensure the power increase for 18.31MW and increase of production for 50GWH.
In HPP Ozbalt Slovenia (since 1970) modernization of equipment is completed which allowed the power increase for 24MW.