

Bosnia power generation sector includes 4 major old coal fired power plants which are planning the investment cycle in order to harmonize with LCP and IED directives. SO<sub>2</sub> emissions are originated dominantly from large combustion plants, coal fired power plants. Second biggest polluters are industry and commercial resident sector. Large combustion plants with furnaces bigger than 50MW are dominant polluters in Bosnia and Hercegovina.

LCP directive sets the border values for this plants. This directive is focused only on power generation facilities. Directive on Industrial Emissions IED includes all facilities which are part of the industrial activities. IED has even lower border values of emissions compared with LCPD.

Bosnia and Hercegovina as part of the Energy Community Treaty is obliged to implement the emissions directive, often called energy environment package of EU rules.

Ministerial council of Energy Community adopted in 2013 two decisions, implementation of rules LCPD which includes IED and decision on IED implementation for new facilities.

Existing power generation facilities are the ones for which the permits are issued before 1992 and new facilities are the ones with permits issued after that date. New facilities have obligation to follow stricter border values of emissions, new facilities are the ones with expected permits issuance after 1.1.2018.

All power plants in Bosnia are existing facilities. There are three options for emission reduction from large combustion plants:

1. harmonization with border values until 1.1.2018
  2. Implementation of NERP \* National Emission Reduction Plan\* 1.1.2018-31.12.2027
  3. Limited operation life span of power plants. Starting from 1.1.2024 the power plants needs to be decommissioned or start the harmonization with IED border values directive
- In BiH in total 12 LCP have the obligation to reduce the emissions. Power utility Elektroprivreda BiH with seven power plants, Elektroprivreda RS with two power plants and Natron Hayat with three plants. All operators opted for options 2 or 3, NERP implementation or opt out regime.

According to the instructions for NERP preparation, the rules are the following:

Border sealing values of emissions are calculated for LCP for SO<sub>2</sub>, NO<sub>x</sub> and hard particles for each year between 2018-2027

Emissions borders are calculated as per border values which are being decreased during time span. Alternative for border values of emissions is the minimum flue gas desulphurization. Heat power of facility are being calculated jointly if connected to the same chimney. Emissions border values of each entity/state ( BiH Federation, Republika Srpska)

are being calculated jointly. The beginning of annual reporting on NERP implementation is 1.1.2019

Total investment costs in Power utility ERS Elektroprivreda Republike Srpske for the implementation of environment modernization of power plants for the period of 15 years are estimated at 145MEUR. Total costs for TPP Gacko are estimated at 2,1EUR/MW and for Ugljevik 10,26EUR/MW.

Total investment costs in Power utility EPBiH Elektroprivreda Bosne i Hercegovine for the implementation of environment modernization of power plants for the period of 15 years are estimated at 200MEUR. Costs for TPP Tuzla are 4,29EUR/MW and for TPP Kakanj 8,05EUR/MW. Additional measures for emission reduction: reduction of operating working hours of TPP Tuzla unit 4 and use of coal with less percentage of sulphour and planed entrance of new units in Tuzla and Kakanj.

The biggest costs are the FGD Flue gas desulphurization projects for both EPBiH and ERS and are estimated at 265MEUR, De NO<sub>x</sub> projects estimated at 52,6MEUR and reduction of particles emissions estimated at 20,4MEUR.