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Floating photvolataics, a solution to combine hysro- and solar power

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Achieving carbon-neutrality is increasing the demand of renewable electricity which is raising the competition for land and associated acquisition costs. Installation of floating photovoltaic (FPV) on existing hydropower reservoirs offers one solution to limited land availability while providing solar electricity, leveraging water bodies, and reducing water evaporation losses. This work assesses the potential electricity output of FPVs at regional and national levels on 337 hydropower reservoirs in the EU considering four scenarios and two types of floaters. Evaporation, water losses and water savings due to FPVs installation are also estimated using climatic parameters for the year 2018. The reservoirs' total water losses are estimated at 9380 mcm. The installation of FPVs of equal installed capacity as the hydropower plants, has the potential to generate 42.31 TWh covering 2.3% of the total reservoir area. In this case, up to 557 mcm could be saved by installing FPV. The FPVs' multiple benefits and the potential offered by existing hydropower reservoirs are compatible with the EU's goals for net zero emissions and more autonomy from imported fossil fuels and energy transformation.