

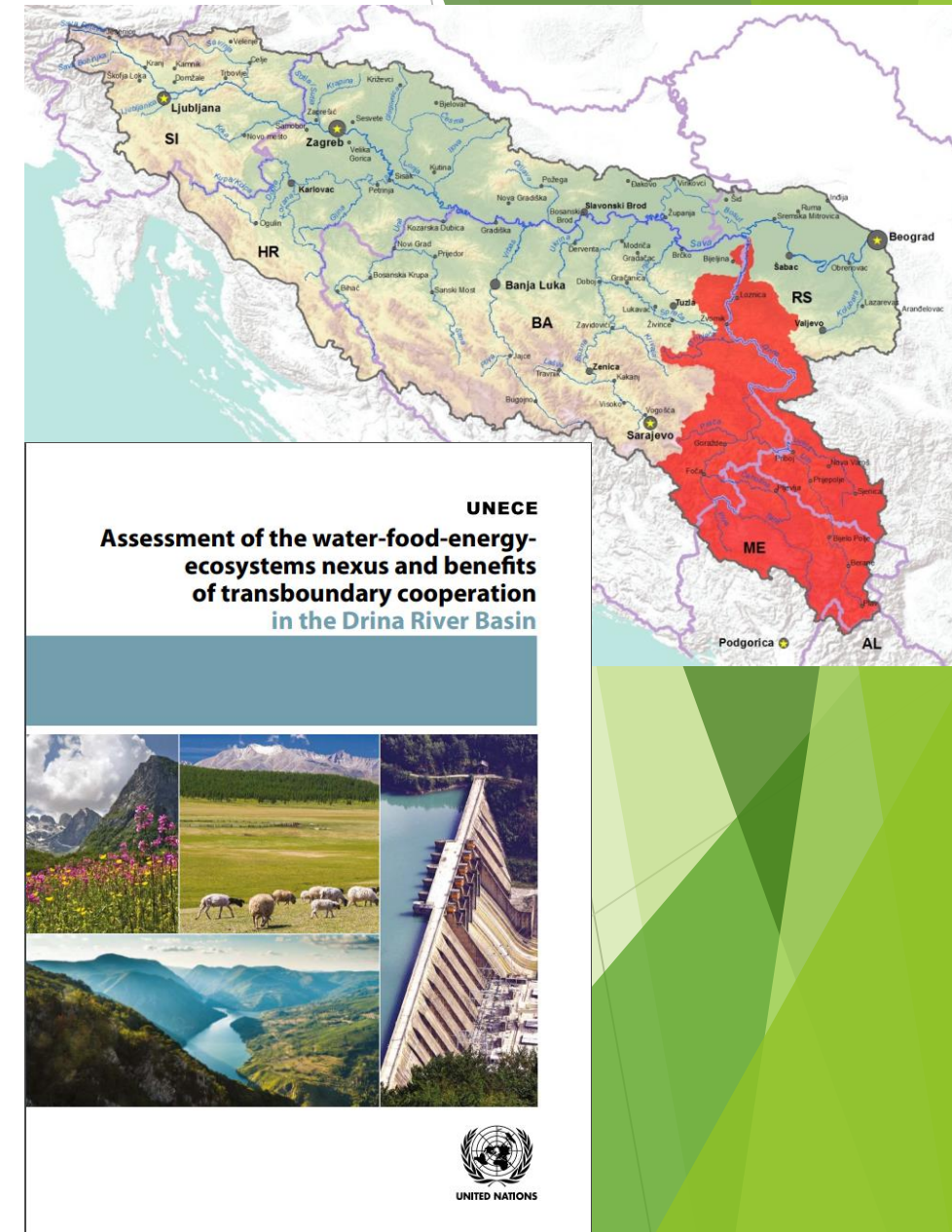
RES development challenges in the Drina basin

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The Drina River Basin

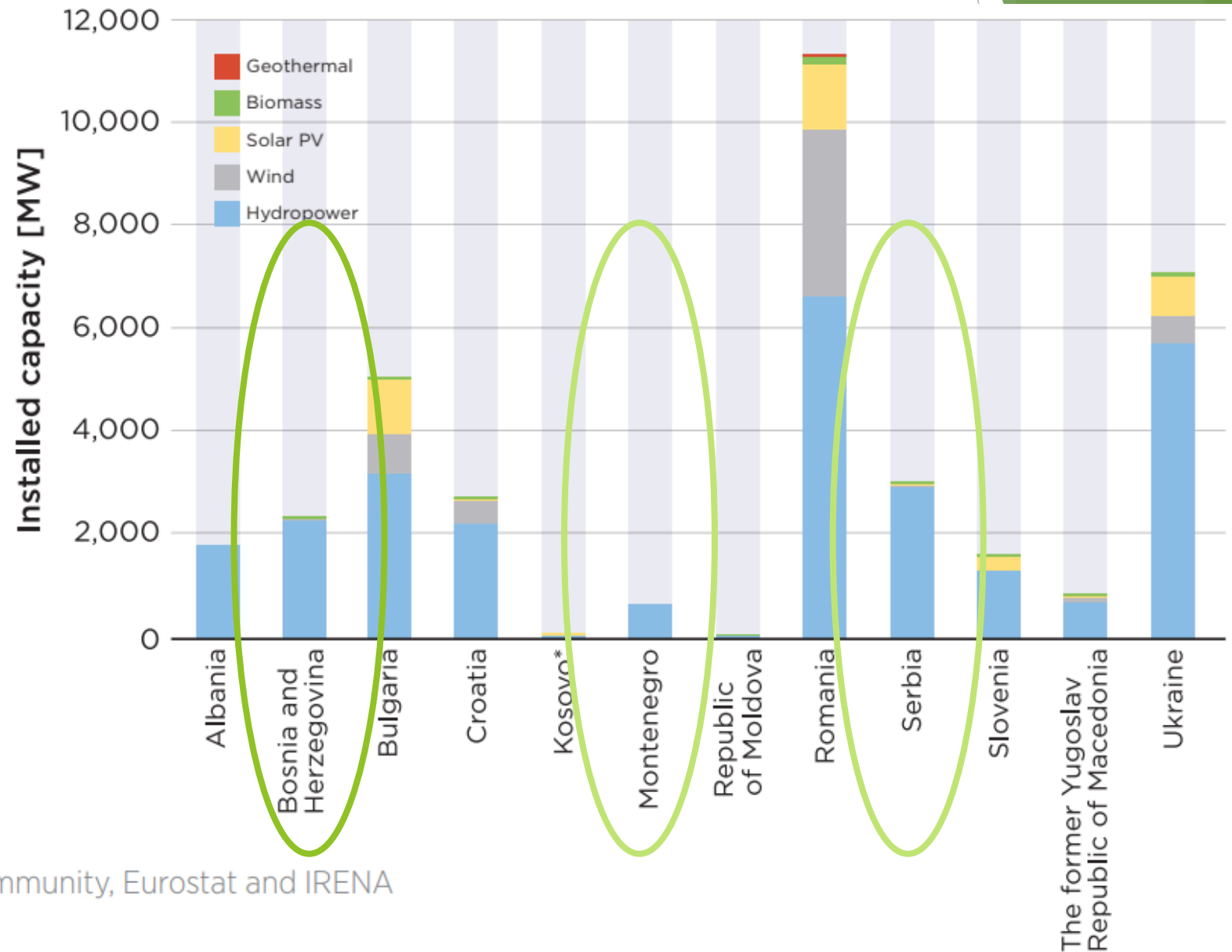
- ▶ **Riparian countries**
 - ▶ Bosnia and Herzegovina, Serbia and Montenegro
 - ▶ A sub-basin of the Sava River Basin
- ▶ **Transboundary cooperation framework (broader)**
 - ▶ International Sava River Basin Commission
- ▶ **Nexus Assessment of the Drina (2016-2017)**
 - ▶ Carried out under the Water Convention, implemented by UNECE
 - ▶ Funded by Ministry for Environment, Land and Sea, Italy
 - ▶ Nexus analysis by KTH Royal Institute of Technology, Sweden; UN University Institute for Integrated Management of Material Fluxes and of Resources, Germany; CEU Central European University, Hungary



RE capacity in the power sector 2015 in SEE

Hydro by far the most established renewable source in the three riparian countries

Eight hydropower plants (and many smaller ones) in the Drina River Basin, accounting for 1,772 MW of power installed



Based on Energy Community, Eurostat and IRENA

RE potential in the Drina River Basin - hydropower

The Drina countries share an interest in the continuing development of hydropower. 60% of the basin's capacity is still unexploited (estimated by World Bank, 2015).

However:

- ▶ Many of the planned hydropower plants are located on river stretches of high conservation value
- ▶ The existing flow regulation is not coordinated and can be considered sub-optimal (potential aggravated effects of flooding and low flows)
- ▶ Hydropower development is controversial because of the trade-offs and environmental impacts (even small hydro has cumulative effects)
- ▶ *“Reaching Interstate agreements [in the Drina] is crucial for the development of a significant portion of identified projects”* (Regional Strategy for Sustainable Hydropower in the Western Balkans)
- ▶ Existing plants have refurbishment/modernization needs

Planned hydropower in the Drina River Basin

- ▶ Gornja Drina cascade 225.0
- ▶ Foca Bosnia and Herzegovina 44.2
- ▶ Paunci Bosnia and Herzegovina 43.2
- ▶ Buk Bijela Bosnia and Herzegovina 93.5

RE potential in the Drina River Basin (BiH side) - other renewables



There are no large-scale plans for solar or wind energy in the basin area (Podgorica, April 2016)

However:

- ▶ non-hydro RE potential has not been assessed specifically at basin level
- ▶ and the potential for sustainable biomass and fuelwood seems promising

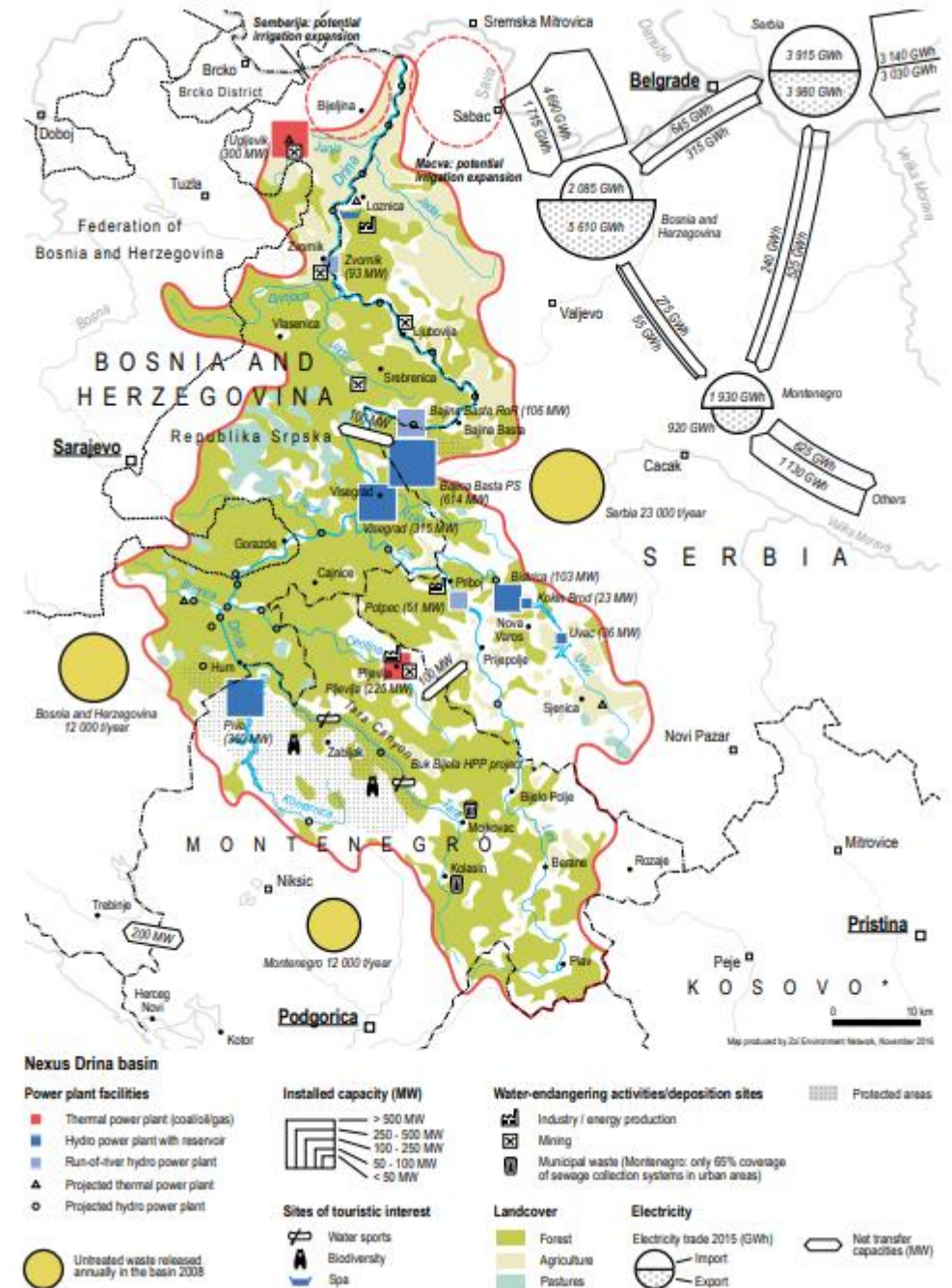
RE development in the Drina Nexus Assessment

The Drina Nexus Assessment highlighted the potential for RE development in the basin as means of:

- ▶ Effective solutions to power agriculture and tourism sustainably
- ▶ Pumped storage potential for integrating renewable energy in the grid

Furthermore, since the electrical grid is interconnected, energy development - including RE - outside the basin are also relevant:

- ▶ They can indirectly affect the use of water for energy production in the basin (thermal cooling and hydro)
- ▶ Drina hydropower can play a role in the integration of variable renewables (wind and solar).



Nexus. A number of policies at national level..

- ▶ Adaptation Strategy to climate change and low emission development (2014)
- ▶ **National Renewable Energy Action Plan (2016)**
- ▶ **Framework Energy Strategy of Bosnia and Herzegovina until 2035 (2018)**
- ▶ National Environmental Action Plan
- ▶ The Strategy and Action plan for the protection of biodiversity (2015-2020)
- ▶ Action Plan for Flood Control and River Management 2014-2017
- ▶ Sustainable Forestry Management Strategy
- ▶ Strategic Plan for Harmonization of B&H Agriculture, Food and Rural Development (2008 -2011)
- ▶ Action Plan for implementation of the Strategic Plan for Harmonization of B&H Agriculture, Food and Rural Development (2008 -2011)
- ▶ Action Plan for Environmental Protection (2003)

.. and at entity level

Federation of Bosnia and Herzegovina

- ▶ Water Management Strategy 2012- 2020
- ▶ Strategy of Agricultural Land Management (2011)
- ▶ Medium term development strategy of agricultural sector 2015-2019
- ▶ **Strategic plan and program for energy sector development (2008)**
- ▶ **Action Plan on Renewable Energy Sources Spatial Plan (2018- 2028)**
- ▶ Environmental Protection Strategy (2008-2018)
- ▶ Federal Waste Management Plan (2012-2017)
- ▶ Tourism Development Strategy (2008-2018)

Republika Srpska

- ▶ Strategic plan for the development of agriculture and rural areas 2016-2020
- ▶ Agricultural Development Strategy up to 2015
- ▶ Action Plan for implementation of the Strategy Agriculture Development
- ▶ **Energy strategy up to 2030**
- ▶ **Action Plan on Renewable Energy Sources Spatial Plan up to 2015**
- ▶ Nature Protection Strategy
- ▶ Sectoral Strategy of Industrial Development (2009-2013)
- ▶ Integrated Water Management Strategy, 2014-2024
- ▶ Tourism Development Strategy (2010-2020)
- ▶ Air Protection Strategy

Policies and plans may not take into account each other

Different sectors: energy, water, agriculture, environment..

Different scales: regional, national, entity, municipal..

Different timelines for planning. For example:

- ▶ Energy planning and GHG mitigation target-setting is typically undertaken with an outlook of several decades or more
- ▶ River basin management activities typically have a shorter time horizon (4-6 years)
- ▶ River Basin Management Plans may not take into account *future* energy developments!

Challenge: How to ensure that different sectoral plans inform each other?

Coordinated approach is key for
accelerated achievement of renewable
energy targets and environmental
protection

Conclusions

- ▶ Hydropower production is crucial and the potential being discussed but any future developments involve trade-offs and risk controversy
- ▶ Non-hydro underdeveloped, potential non quantified at basin level
- ▶ Clear need for rural development in the basin and potential to support it with RE development
- ▶ RE development (inside and outside the basin) affects the basin's water resources
- ▶ Need to coordinate State level planning, entity planning, and river basin management

Thank you