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# The Sava River Multi-Purpose Development Project (“Program Sava”)

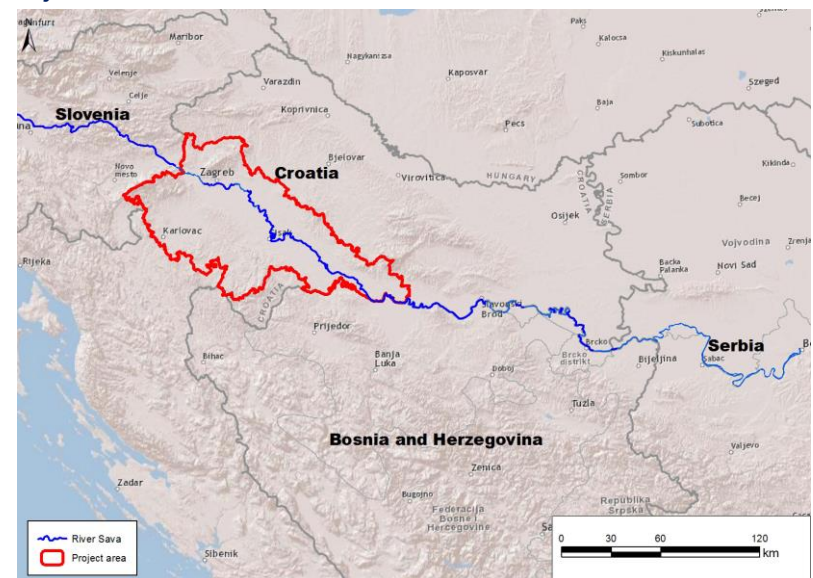
## SEA: The WBIF-IPF perspective

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Project area:



## Basic data:

Area: **7981 km<sup>2</sup> (14% of total area of Croatia)**

River length: **approximatly 272 km**

Population (No. of inhabitants, census 2011): **1,327,111 (urban 56% rural 44%), 30.9% of total Croatia's population**

## Programme objectives include:

1. flood protection and control;
2. replenishment of groundwater aquifers;
3. stabilization of the riverbed and riverbanks;
4. power generation;
5. urban regeneration;
6. transport;
7. and irrigation and drainage.



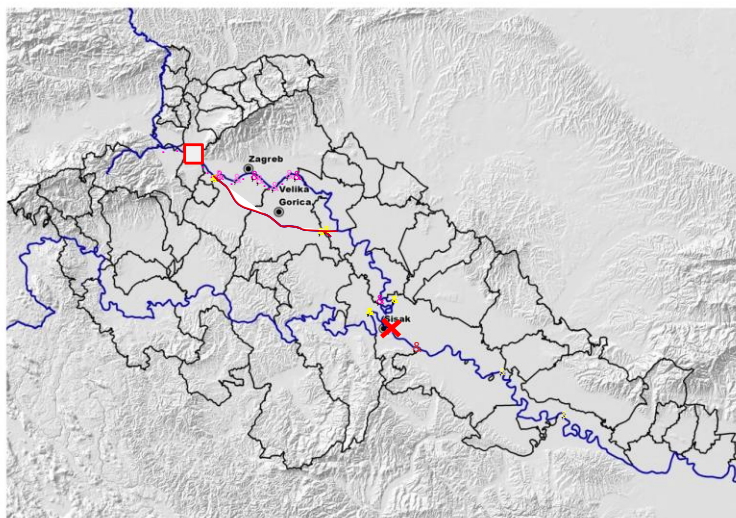
## The Sava River Multi-Purpose Development Project ("Programme Sava")

Three options were developed during the conceptual solution development phase:

1. One option without Hydropower Plants
2. Two options with Hydropower Plants

Comprehensive SEA Scoping - Scoping Report - Scoping decision





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## Option 2: preliminary financial indicators (IPF3 calculations)

The need for renewable power generation is established in Croatia's National Renewable Energy Action Plan

Hydropower plants	Energy produced	Installed costs	Capacity factor	Levelized cost
	GWh	€ / kWh		€ / kWh
HPP PODSUSED	170.20	6,275	15.75%	0.122
HPP PREČKO	172.40	4,189	17.10%	0.075
SHPP JARUN	52.00	5,936	23.26%	0.080
SHPP ŠANCI	52.00	5,146	23.26%	0.069
SHPP PETRUŠEVEC	52.00	4,815	23.26%	0.065
SHPP IVANJA REKA	52.00	6,451	23.26%	0.087
HPP SISAČ	85.10	9,777	13.17%	0.228
<b>Total</b>	<b>635.70</b>	<b>6,153</b>	<b>17.55%</b>	<b>0.108</b>

### Benchmarks

Large	990 - 7,220	25% - 90%	0.02 - 0.19
Small	1,200 - 7,500	20% - 95%	0.02 - 0.25

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## “Programme Sava”

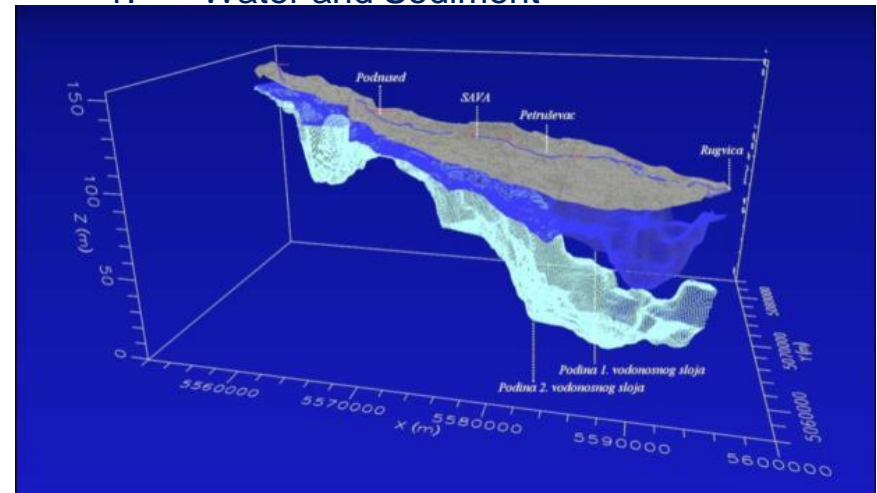
Strategic Themes under the 2 options with Hydropower Plants:

1. Water and Sediments
2. Ecosystems
3. Local Communities
4. Landscape
5. Energy



Each strategic theme needs to be analysed in the light of sustainability objectives - HPPs generate change rather than only electricity – and climate change considerations, as well as specific issues for assessing risks and impacts.

## 1. Water and Sediment



## 1. Water and Sediments

Issues for assessing risks and impacts:

1. Value of **groundwater** as strategic resource – in connection with **climate change**
2. National plans and deadlines for **flood protection** measures
3. Insufficient **technical data on sediment**
4. Upstream: Slovenia; downstream: Croatia south to Sisak, Bosnia Herzegovina and Serbia
5. Due to the number of structures in the chain thus the **length of construction cycle**: upstream-downstream effects within the chain to be considered during the construction period

## 2. Ecosystems



### 3. Local Communities

**Sustainability objectives:** Maintaining a vital (living) cultural diversity (ways of living) and heritage of importance to riparian communities; Maintaining and enhancing diversity and productivity of agricultural systems and fisheries resources; Ensuring economic growth and development, and equitable distribution of economic benefits including to vulnerable effected groups and areas

**Issues for assessing risks and impacts:**

1. **Social Impacts** (Resettlement/Expropriation) due to flooding of certain areas and HPP access roads
2. **Social Opportunities:** Social (access) and Economic Development (Urban regeneration, Agriculture via improved Irrigation, Tourism and recreation, Transport development)

### 4. Landscape

**Existing problems:** riverbed deepening – visual impact

**Sustainability objectives:** Preservation of Landscape material, spiritual and cultural values

**Issues for assessing risks and impacts:**

Different impacts according to project sub-areas:

**Upstream** (Podsused/Zapresic): flood protection (2 line of dykes)

**Channel:** excavations, empty in summer season (visual impact)

**City of Zagreb:** urban regeneration does not mean “real estate development”

**Downstream** (Sisak): hydropower development or development of other appropriate structures to consider development of Port of Sisak and commercial navigability downstream

## 5. Energy

**Existing problems:** Dependence on import

**Sustainability objectives:** Ensuring a secure and diverse energy supply from renewable resources without losses in the sustainability of social and natural systems

**Issues for assessing risks and impacts:**

1. Contribution to **Economy and RES requirements**
2. Lower **Emissions**
3. **Noise**
4. **Connection to Grid** (visual impact)

## Institutional and Policy framework:

SEA process initiated in a context of divergent views on new hydropower development, reflecting **different sectoral mandates and missions of line ministries and agencies:**

**Ministry of Economy:** (leads the SEA): energy generation development, economic development

**Croatian Waters:** implements the Water Framework Directive and the Floods Directive, not concerned with other Program's "purposes"

**Ministry of Environment:** Conducts SEA/EIA process, implements the Habitats and the Birds Directive, not concerned with other Program's "purposes"



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Thank You!

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