Inception Meeting
of the Preparation Phase of the
GEF supported project

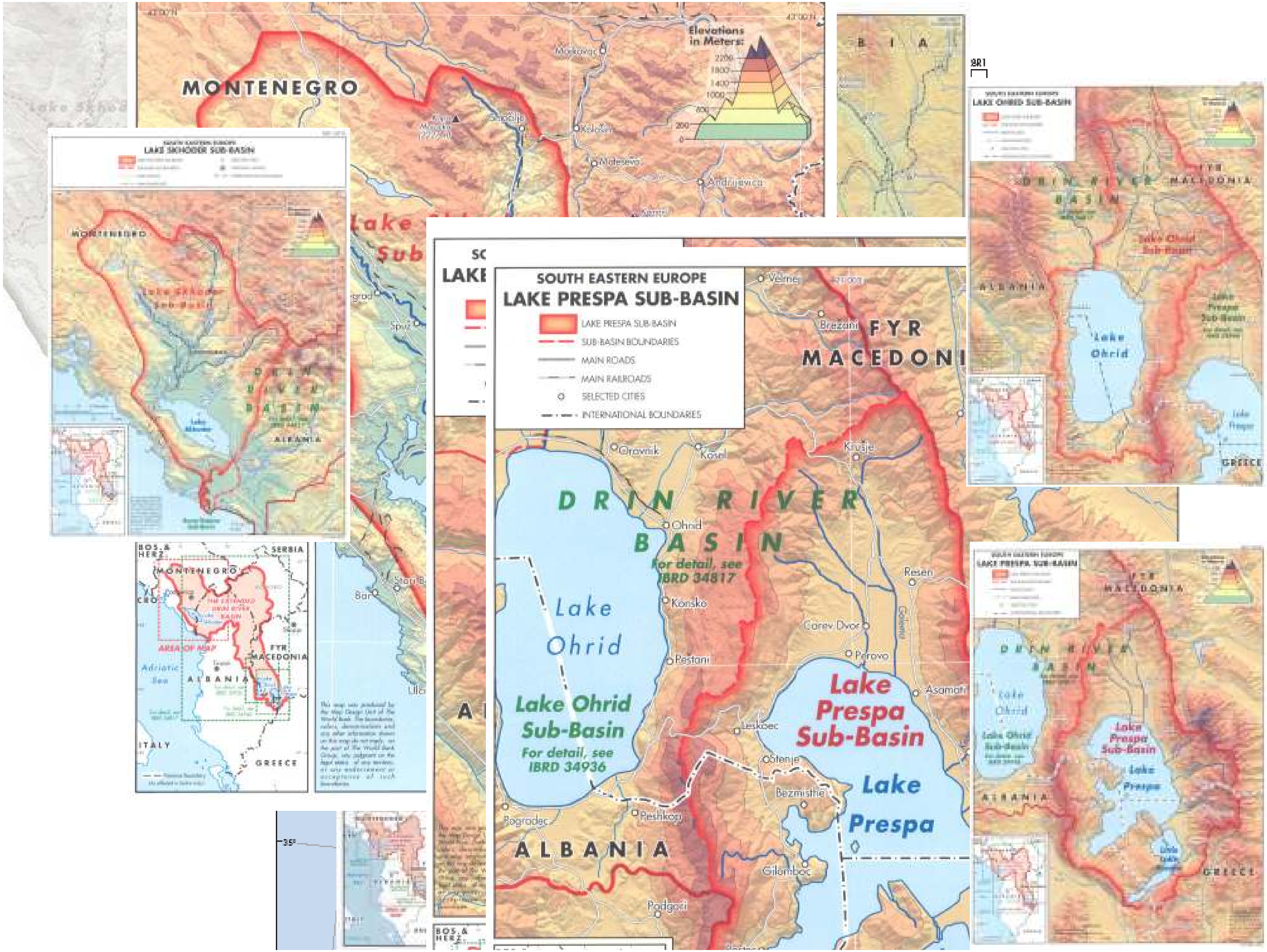
"Enabling Transboundary Cooperation and Integrated Water Resources Management in the Extended Drin River Basin"

Tirana, 27-28 May 2013

Dimitris Faloutsos

Programme Coordinator for South Eastern Europe

Global Water Partnership Mediterranean



SOUTH EASTERN EUROPE
LAKE PRESPA SUB-BASIN
LAKE PRESPA SUB-BASIN
SUB-BASIN BOUNDARIES
MAIN ROADS
MAIN RAILROADS
SELECTED CITIES
INTERNATIONAL BOUNDARIES
DRIN RIVER BASIN
For detail, see IBRD 34817
Lake Ohrid
Lake Ohrid Sub-Basin
For detail, see IBRD 34936
Lake Prespa Sub-Basin
Lake Prespa
FYR MACEDONIA
ALBANIA
Velmej
Brežani
Oravisk
Kosel
Krušje
Ohrid
Konsko
Resen
Carev Dvor
Perovo
Pestani
Asamati
Leskoec
Stenje
Bezmišthe
Peshkopi
Pogradec
Gilomboc
Podgori
MONTENEGRO
Elevations in Meters:
2200
1800
1400
1000
600
200
0
Mojkovac
Kolašin
Andrijevica
Mateševo
SOUTH EASTERN EUROPE
LAKE SKHODER SUB-BASIN
SOUTH EASTERN EUROPE
LAKE OHRID SUB-BASIN
BOS. & HERZ.
SERBIA
MONTENEGRO
THE EXTENDED DRIN RIVER BASIN
AREA OF MAP
FYR MACEDONIA
Adriatic Sea
ALBANIA
ITALY
GREECE

IWRM in shared basins depends largely on national water management frameworks

Institutional and legal frameworks in the (non EU members) Drin Riparians

Revised or under an on-going revision process

Basis for this reform process: *the EU accession Process*
EU Water Framework Directive (WFD)

Transposition of the EU WFD in the legal framework of the countries :

- Expected to have a positive effect on the cooperation for the management of transboundary water resources
- (Eventually / In principle) Harmonized legal framework

Riparians, have progressed at a different pace depending on the evolving cooperation framework with the EU, prevailing socio-economic situation and administrative capacities

Overall reforms: considerable. Nevertheless, deficiencies in the area of implementation and enforcement. The reasons are manifold.

Prespa

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Diversion of Devoll River in Albania (in the 70's)
[*Micro Prespa*]

- Logging
- Extensive collection of firewood
- Grazing
- Unsustainable forest management

[*South-West part of the sub-basin*]

Unsustainable agricultural practices
[*Macro Prespa – East / North-East / North part of the sub-basin*]

Deforestation - deterioration of forests

Prespa

Increased Sediment loads - Sedimentation

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Prespa

Permanent **alteration of hydrological system** (blocked underground springs)
[almost the total of the Albanian part of Micro Prespa Lake transformed from a shallow lake into a wetland]

Increased Sediment loads - Sedimentation

Contributing factor for the destruction of the wetlands
[Micro Prespa Lake]

Good for wildlife (avifauna) but **accelerates ageing and succession processes** of the lake

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Prespa

[*Micro Prespa*]

Natural hydrological cycle -pressures due to irrigation are currently minimal in this part of Albania [*Micro Prespa*]

Decrease of the water level over the years

[*Macro Prespa*]

Changes in precipitation patterns
+ Underground water flow from Prespa to Ohrid watershed
+ Additional losses due to overuse of water for irrigation
[*East / North-East / North part of the sub-basin* / in *South-West part of the sub-basin* : water for irrigation and household use - insignificant effect]

Oscillation - Decrease of the water level over the years

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Prespa

Decrease of the water level over the years

[*Micro Prespa*]

Shift in the habitats and probably some alteration in the composition of the ecosystem.

[*South-West part of the sub-basin*]

Oscillation - Decrease of the water level over the years

[*Macro Prespa*]

Shift or loss of priority shoreline and wetland habitats

- Reed biotope remained on dry terrain

[*East / North-East / North part of the sub-basin*]

- Spawning areas destroyed, impacting the fish population, especially of the carp
- Changes in the food chain potentially endangering the overall balance of the aquatic ecosystem

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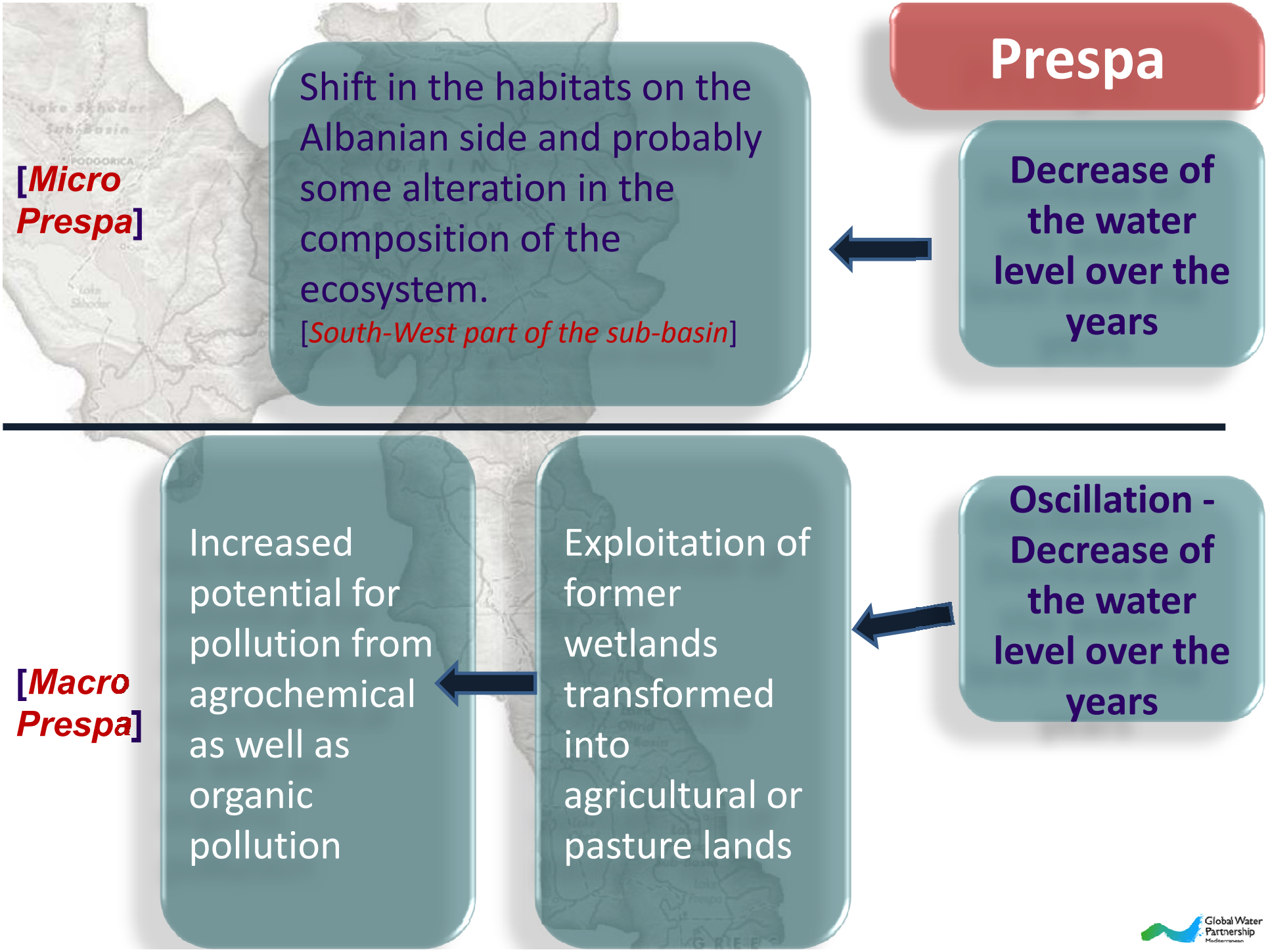
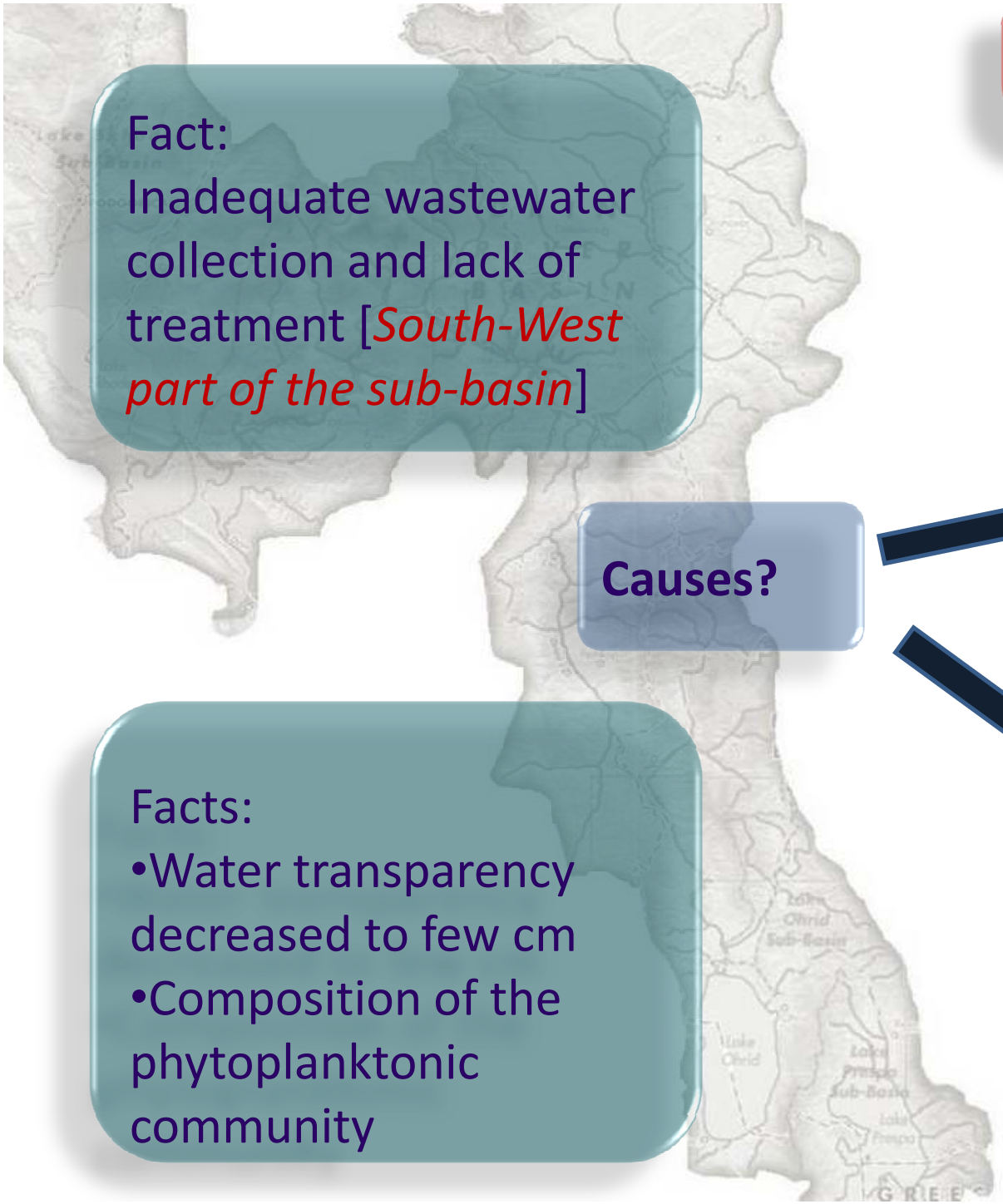

Prespa
Decrease of the water level over the years
Shift in the habitats on the Albanian side and probably some alteration in the composition of the ecosystem.
[South-West part of the sub-basin]
[Micro Prespa]
Oscillation - Decrease of the water level over the years
Exploitation of former wetlands transformed into agricultural or pasture lands
Increased potential for pollution from agrochemical as well as organic pollution
[Macro Prespa]



Micro Prespa

Fact:
Inadequate wastewater collection and lack of treatment [*South-West part of the sub-basin*]

Causes?

Facts:
- Water transparency decreased to few cm
- Composition of the phytoplanktonic community

Currently heading towards eutrophicati on

- Major pressure on fish population
- Effect on the balance of the ecosystem

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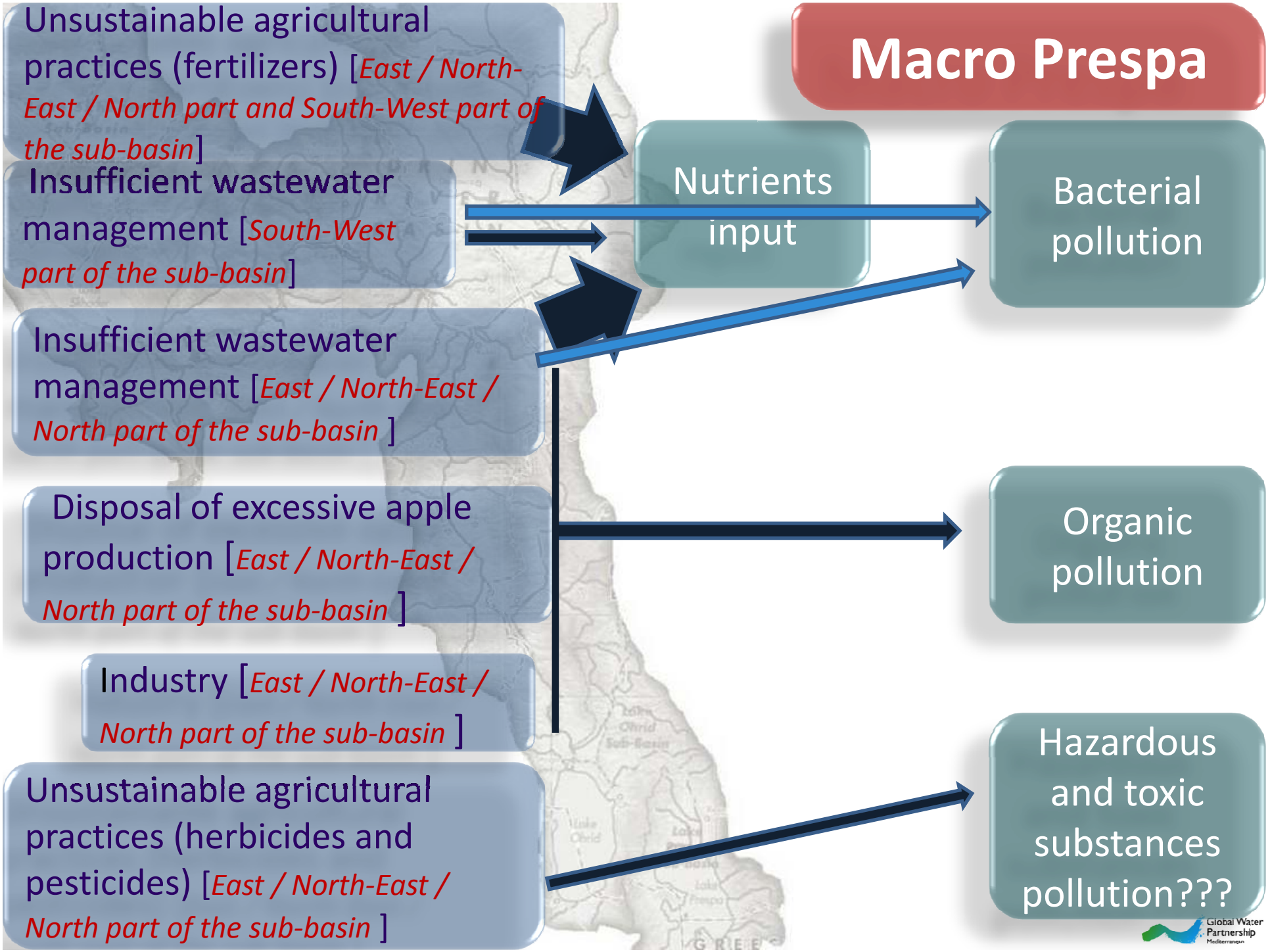
Macro Prespa
Unsustainable agricultural practices (fertilizers) [East / North-East / North part and South-West part of the sub-basin]
Insufficient wastewater management [South-West part of the sub-basin]
Insufficient wastewater management [East / North-East / North part of the sub-basin]
Disposal of excessive apple production [East / North-East / North part of the sub-basin]
Industry [East / North-East / North part of the sub-basin]
Unsustainable agricultural practices (herbicides and pesticides) [East / North-East / North part of the sub-basin]
Nutrients input
Bacterial pollution
Organic pollution
Hazardous and toxic substances pollution???
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Macro Prespa

Mesotrophic; indications (composition of the diatom population community) suggest that it is in process for eutrophication

Nutrients input

Bacterial pollution

Effect on the balance of the ecosystem

Depleted dissolved oxygen concentrations – particularly in summer

Organic pollution

No adequate information available regarding the concentrations in the lake

Hazardous and toxic substances pollution???

But some suggest that there are alterations of the ecosystem

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Macro Prespa

Inappropriate means of fishing (inappropriate nets)

Poaching during spawning periods

Introduction of non-native or exotic species

Over-fishing

- Decline of native fish stocks
- Changes in the structure of fish populations
- Changes in the species composition

Overall fish biomass may be constant (or even increasing) - commercial fish stocks are under threat

Facts:

- *Limited statistics on fish numbers and catches*
- *Albania: fishing is exercised by part of the population to complement its income or for house consumption*

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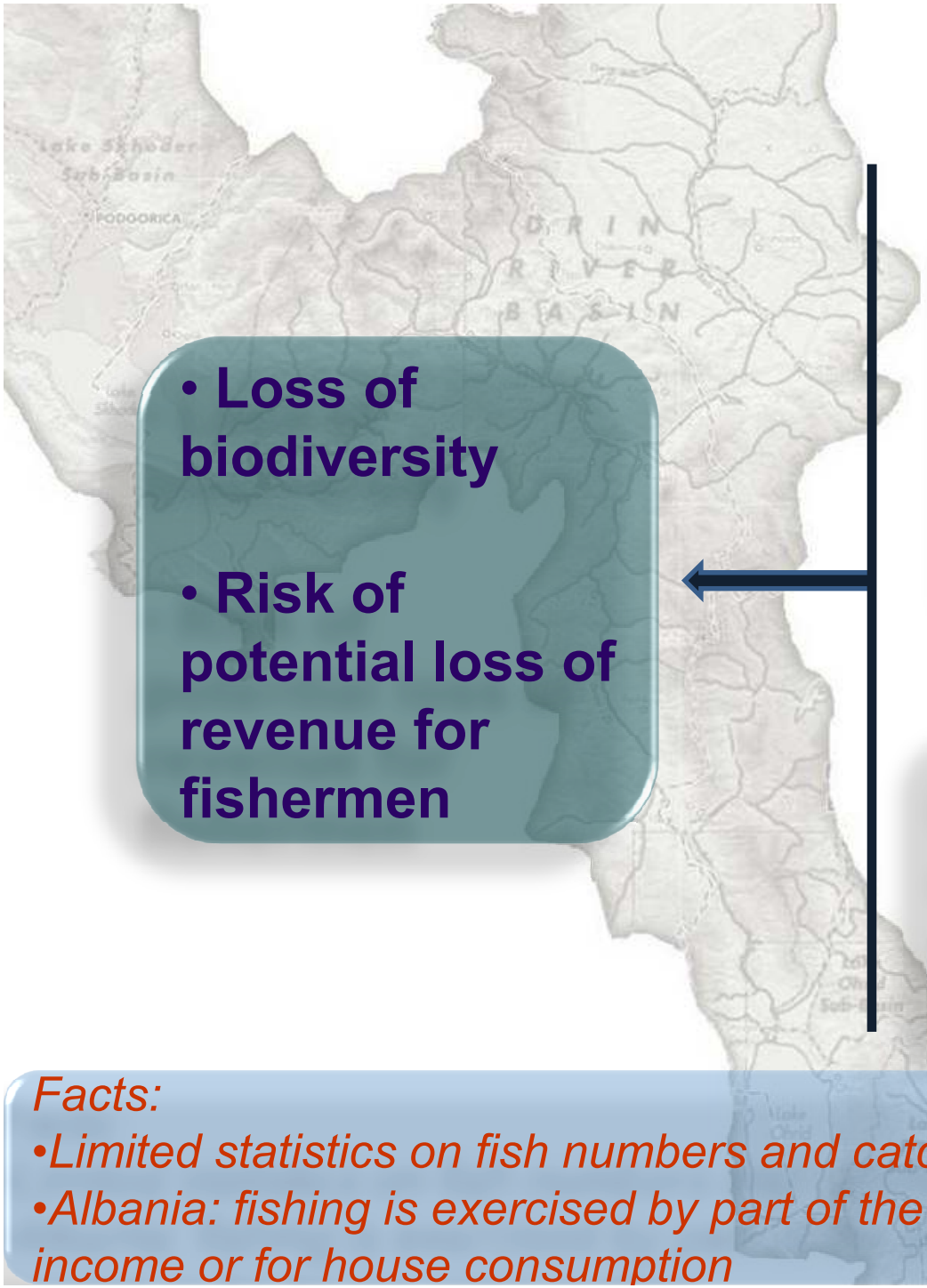

Macro Prespa

- Decline of native fish stocks
- Changes in the structure of fish populations
- Changes in the species composition

- **Loss of biodiversity**
- **Risk of potential loss of revenue for fishermen**

Overall fish biomass may be constant (or even increasing) - commercial fish stocks are under threat

Facts:

- *Limited statistics on fish numbers and catches*
- *Albania: fishing is exercised by part of the population to complement its income or for house consumption*

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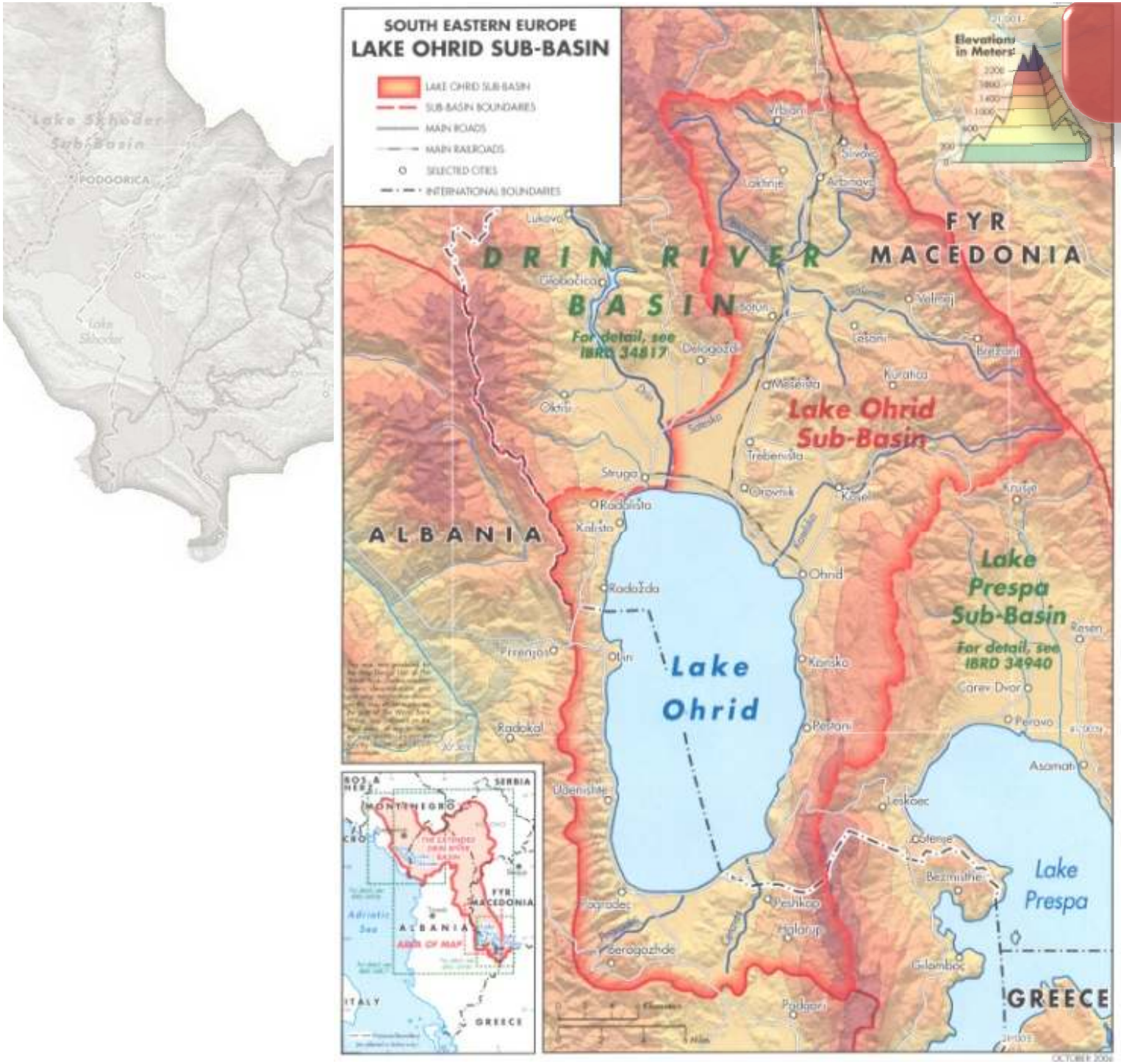
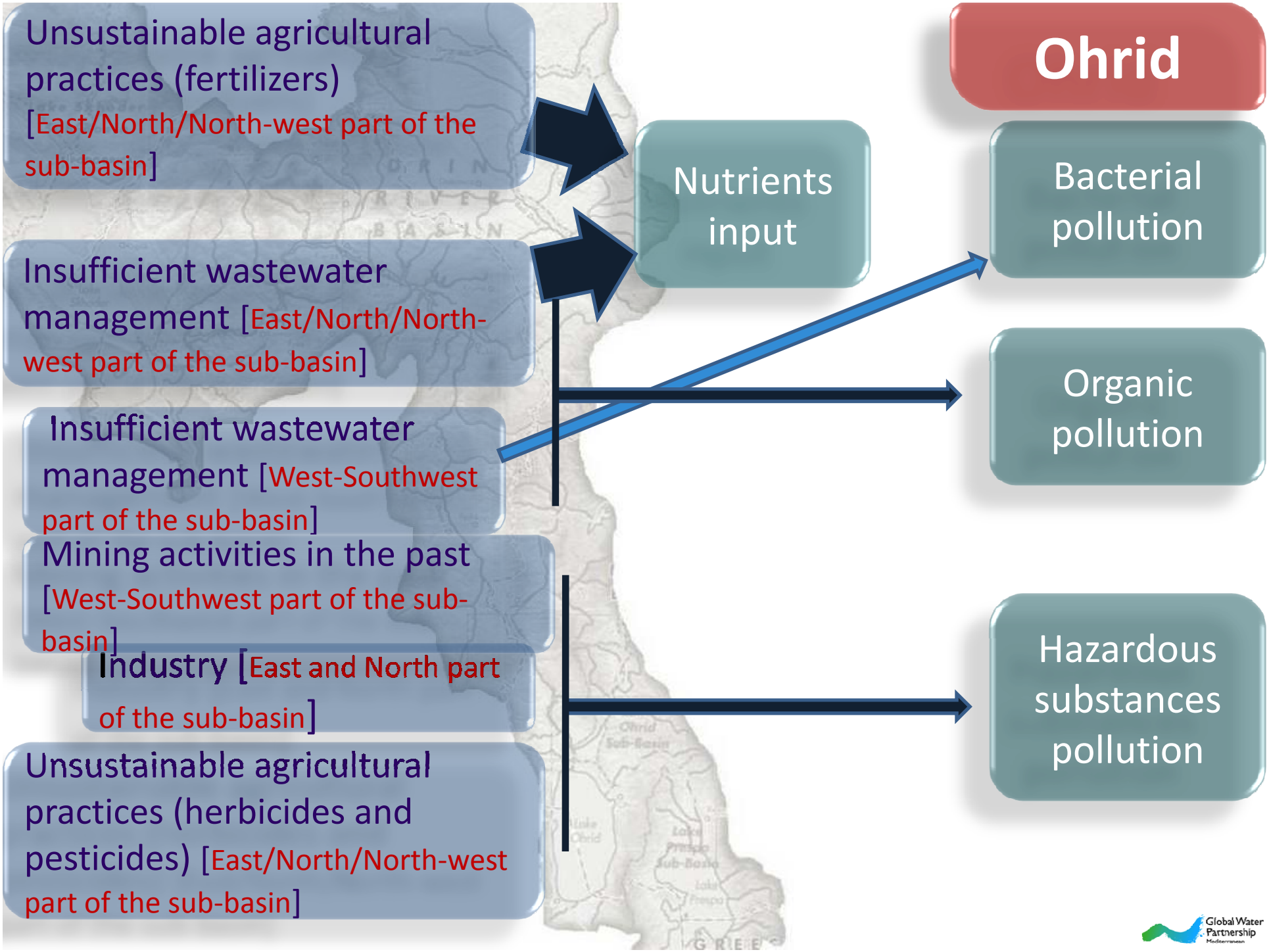
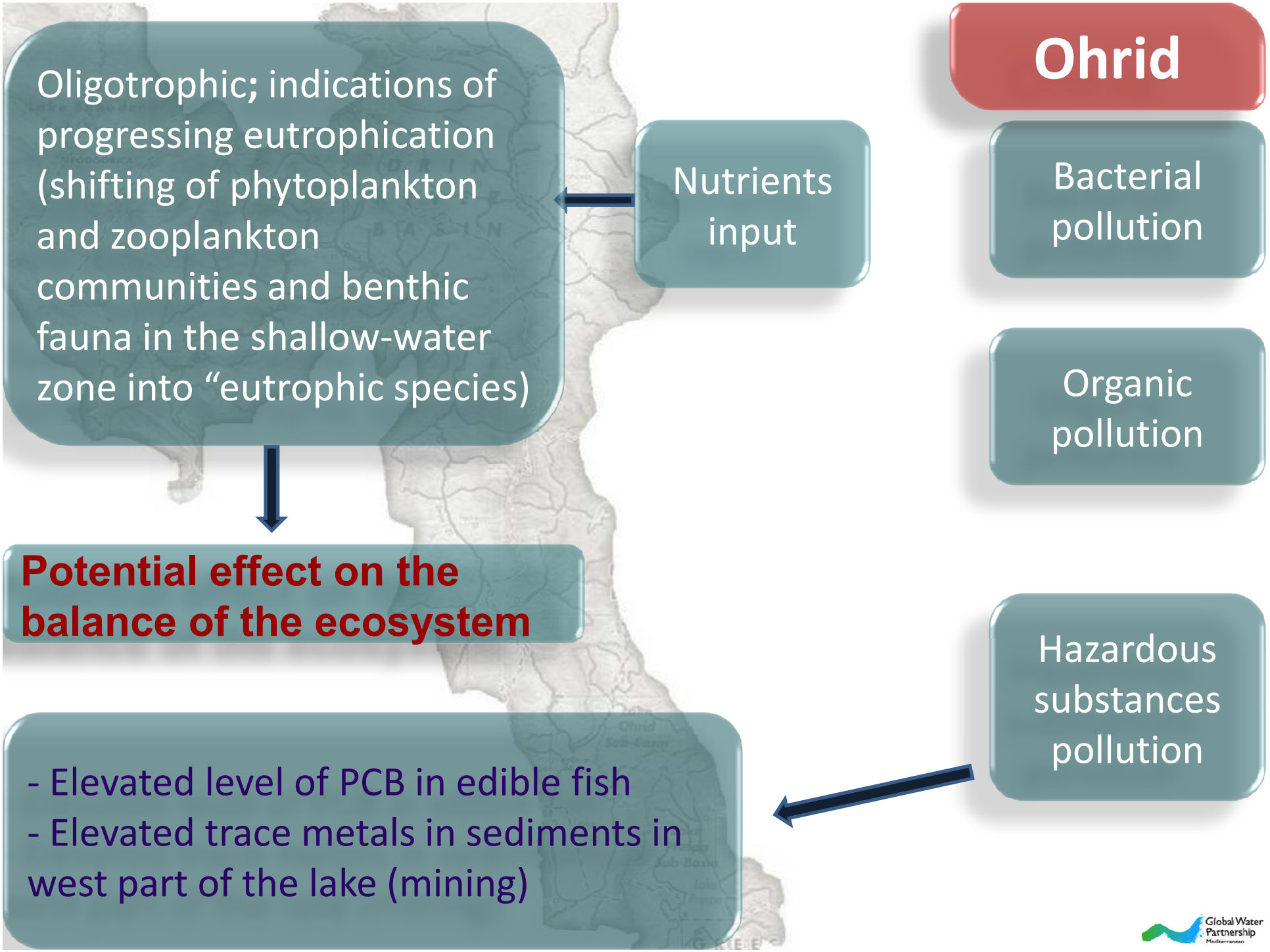
Ohrid




Unsustainable agricultural practices (fertilizers) [East/North/North-west part of the sub-basin]
Insufficient wastewater management [East/North/North-west part of the sub-basin]
Insufficient wastewater management [West-Southwest part of the sub-basin]
Mining activities in the past [West-Southwest part of the sub-basin]
Industry [East and North part of the sub-basin]
Unsustainable agricultural practices (herbicides and pesticides) [East/North/North-west part of the sub-basin]
Nutrients input
Ohrid
Bacterial pollution
Organic pollution
Hazardous substances pollution


Ohrid
Oligotrophic; indications of progressing eutrophication (shifting of phytoplankton and zooplankton communities and benthic fauna in the shallow-water zone into “eutrophic species)
Nutrients input
Bacterial pollution
Organic pollution
Potential effect on the balance of the ecosystem
Hazardous substances pollution
- Elevated level of PCB in edible fish
- Elevated trace metals in sediments in west part of the lake (mining)
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Ohrid

Over-fishing

Fishing ban ?

Introduction of non-native or exotic species

- Fish populations under pressure
- Decline of commercial species stocks

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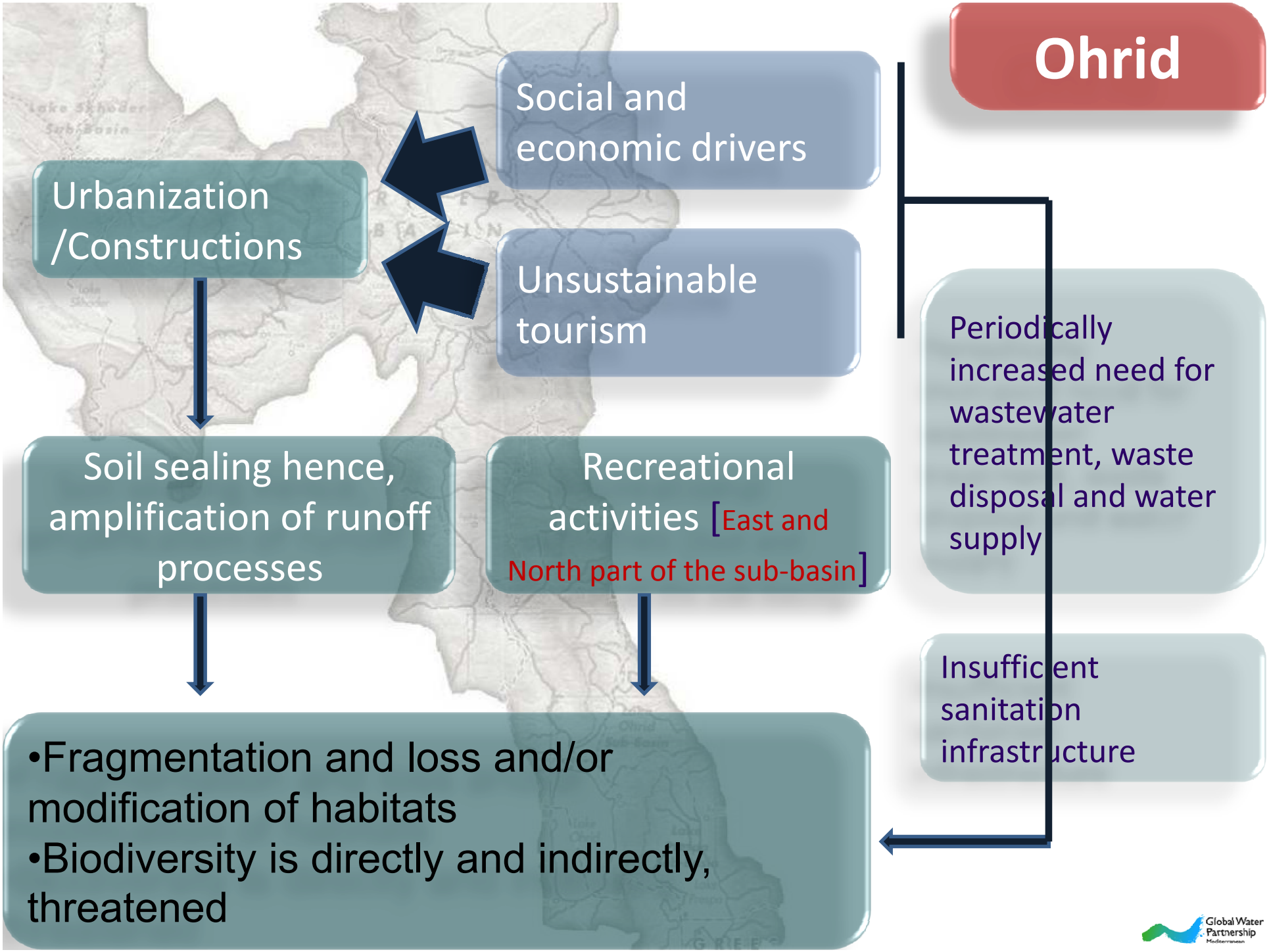
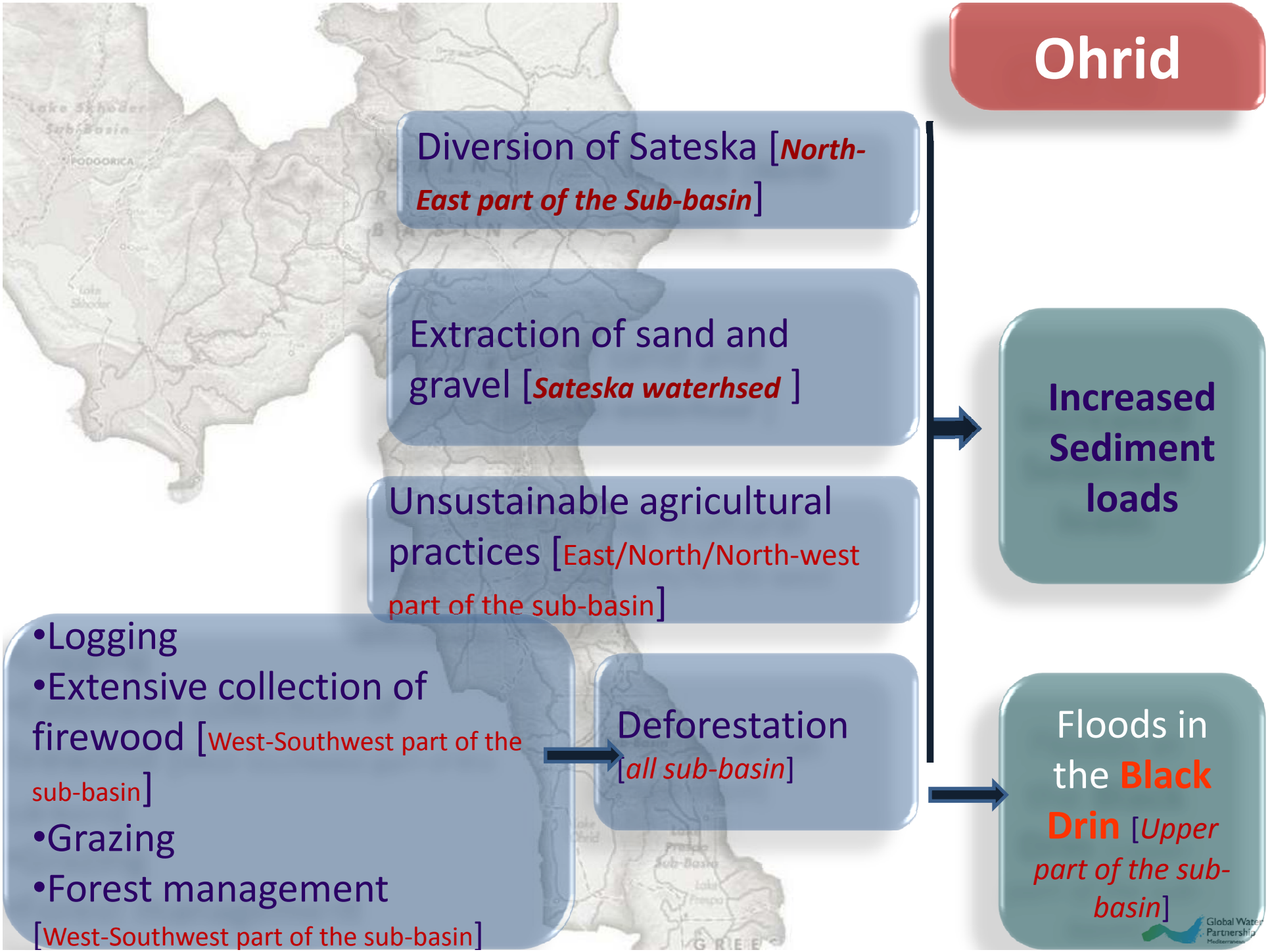
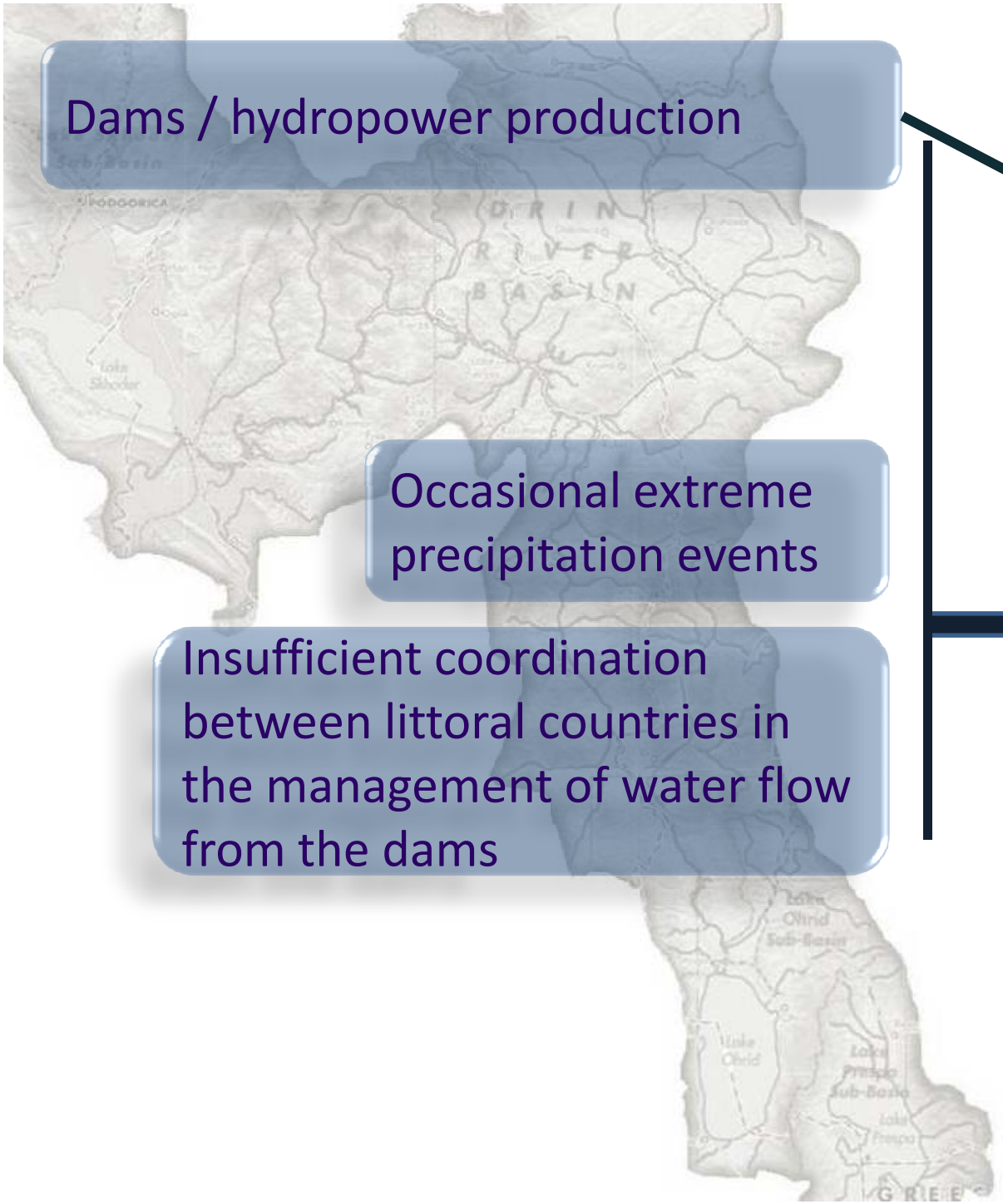
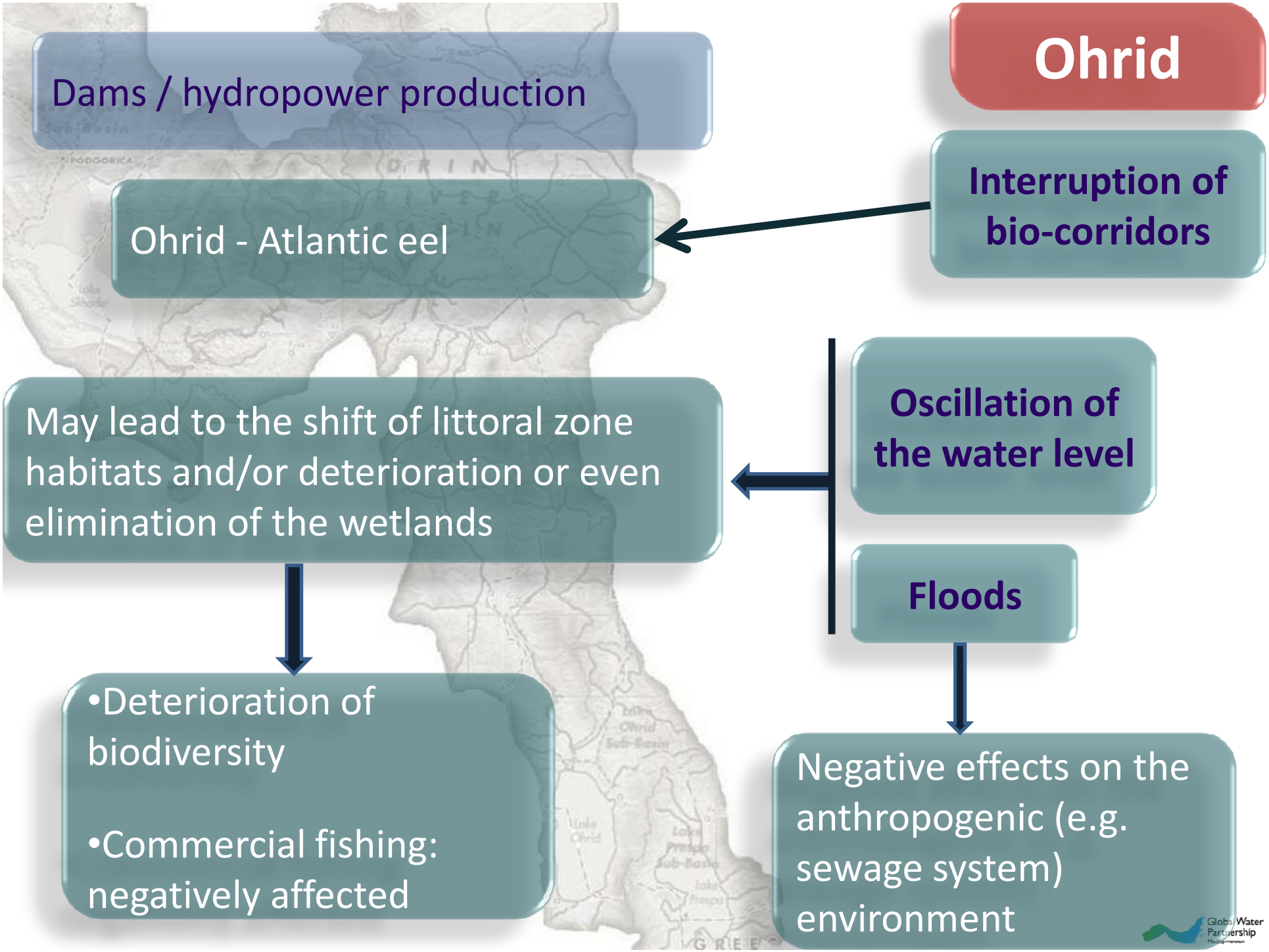

Ohrid
Social and economic drivers
Urbanization /Constructions
Unsustainable tourism
Periodically increased need for wastewater treatment, waste disposal and water supply
Soil sealing hence, amplification of runoff processes
Recreational activities [East and North part of the sub-basin]
Insufficient sanitation infrastructure
•Fragmentation and loss and/or modification of habitats
•Biodiversity is directly and indirectly, threatened


Ohrid
Diversion of Sateska [North-East part of the Sub-basin]
Extraction of sand and gravel [Sateska waterhsed]
Unsustainable agricultural practices [East/North/North-west part of the sub-basin]
•Logging
•Extensive collection of firewood [West-Southwest part of the sub-basin]
•Grazing
•Forest management
[West-Southwest part of the sub-basin]
Deforestation [all sub-basin]
Increased Sediment loads
Floods in the Black Drin [Upper part of the sub-basin]

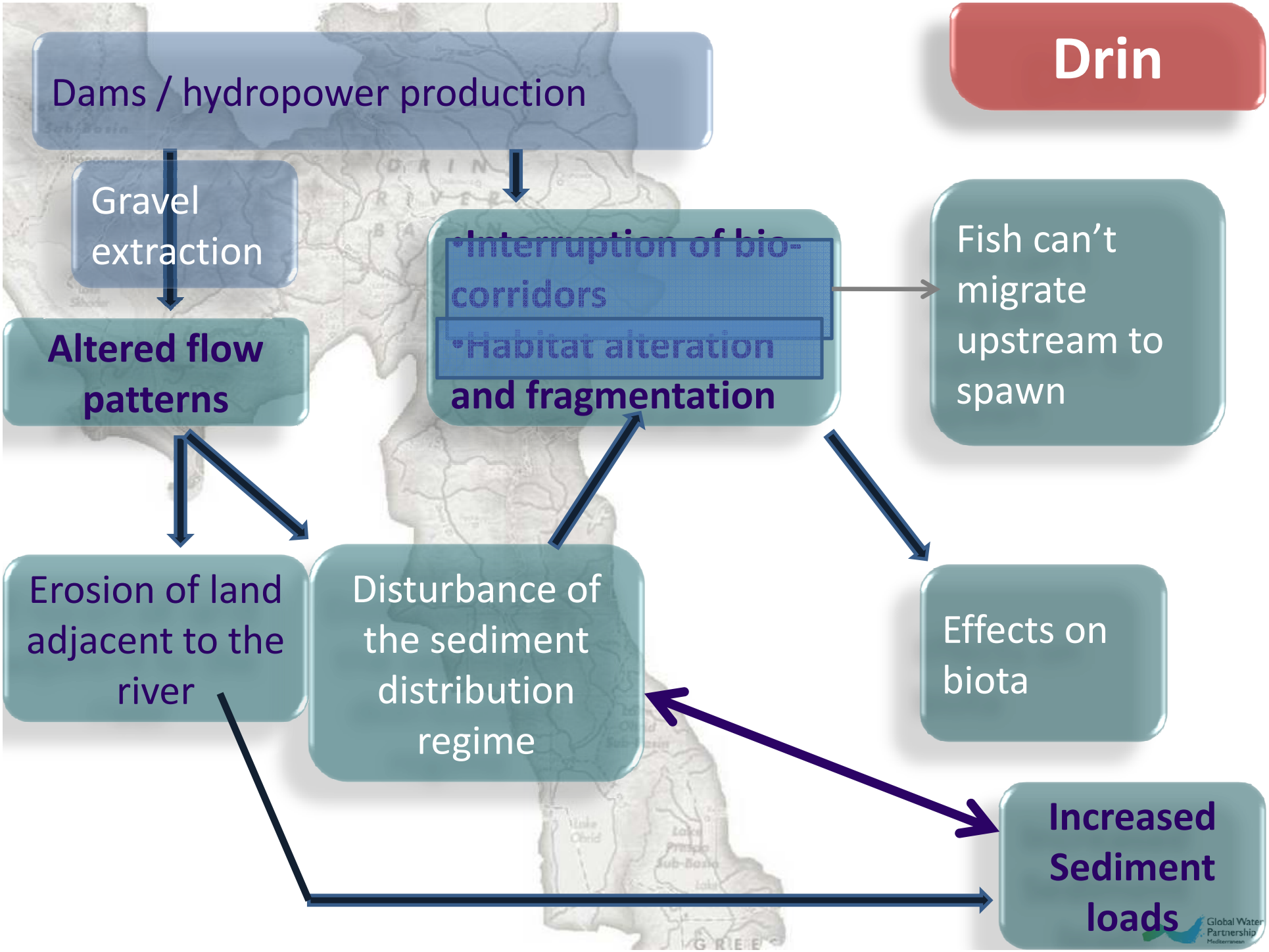

Dams / hydropower production
Occasional extreme precipitation events
Insufficient coordination between littoral countries in the management of water flow from the dams
Ohrid
Interruption of bio-corridors
Oscillation of the water level
Floods


Dams / hydropower production
Ohrid
Ohrid - Atlantic eel
Interruption of bio-corridors
May lead to the shift of littoral zone habitats and/or deterioration or even elimination of the wetlands
Oscillation of the water level
Floods
•Deterioration of biodiversity
•Commercial fishing: negatively affected
Negative effects on the anthropogenic (e.g. sewage system) environment

Drin


Lake Skhoder
Sub-Basin
PODGORICA
Lake Skhoder


SOUTH EASTERN EUROPE
THE EXTENDED DRIN RIVER BASIN
S E R B I A
M O N T E N E G R O
Lake Skhoder
Sub-Basin
PODGORICA
DRIN
RIVER
BASIN
Lake Skhoder
Adriatic
Sea
F Y R
M A C E D O N I A
A L B A N I A
Lake Ohrid
Sub-Basin
Lake Ohrid
Lake Prespa
G R E E C E


Drin
Dams / hydropower production
Gravel extraction
Altered flow patterns
•Interruption of bio-corridors
•Habitat alteration and fragmentation
Fish can't migrate upstream to spawn
Erosion of land adjacent to the river
Disturbance of the sediment distribution regime
Effects on biota
Increased Sediment loads
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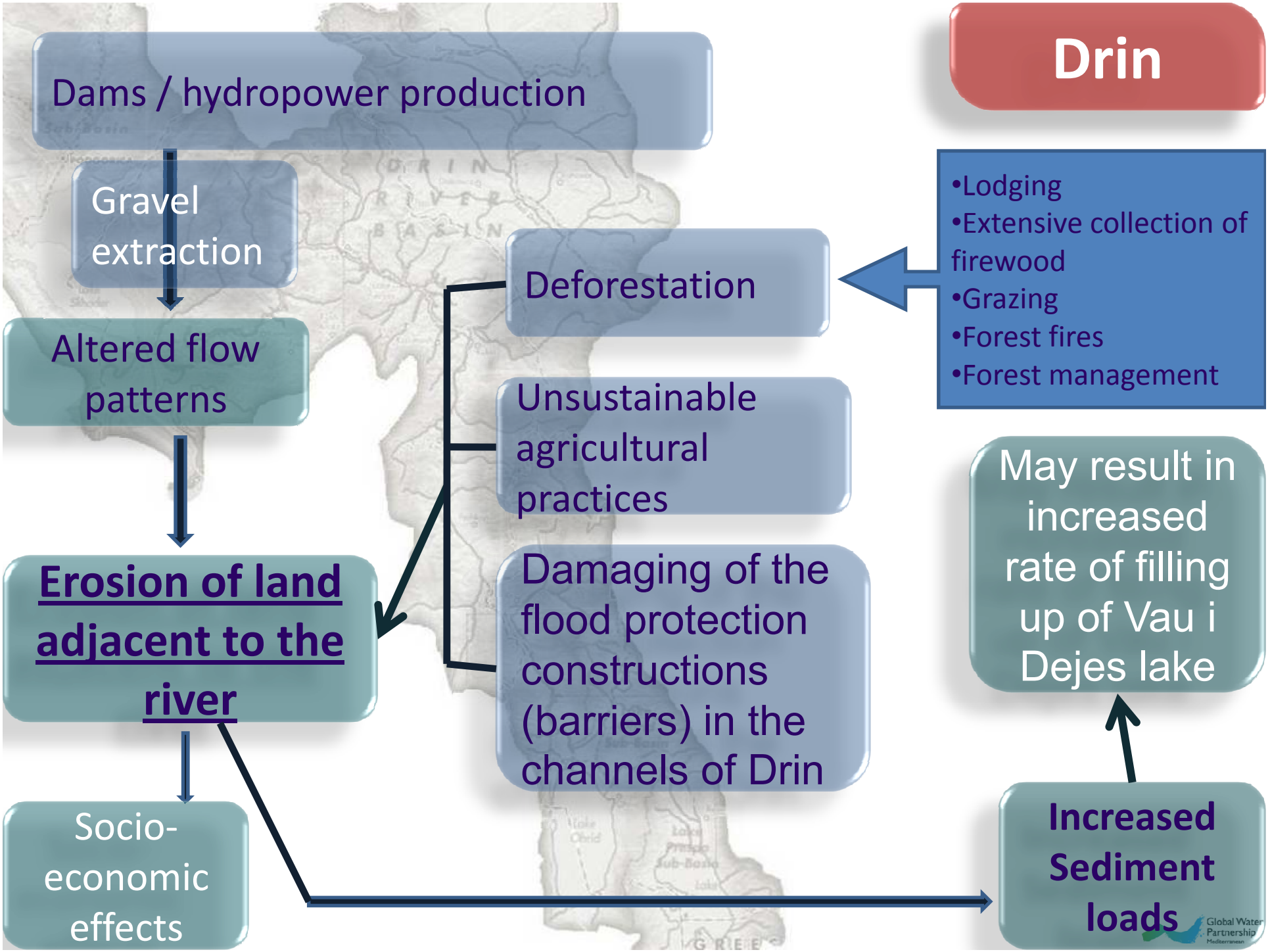
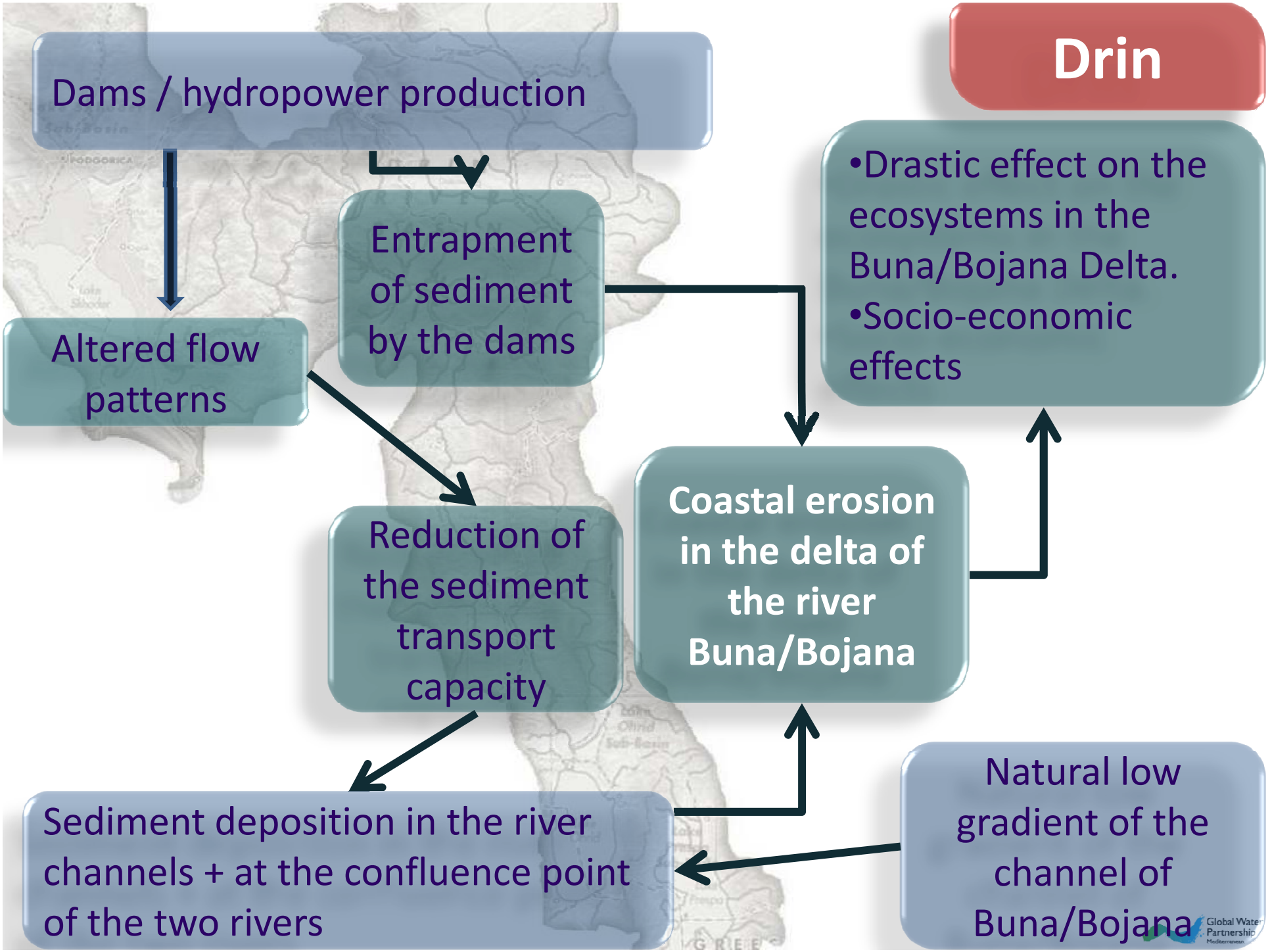

Drin
Dams / hydropower production
Gravel extraction
Altered flow patterns
Erosion of land adjacent to the river
Socio-economic effects
Deforestation
Unsustainable agricultural practices
Damaging of the flood protection constructions (barriers) in the channels of Drin
•Lodging
•Extensive collection of firewood
•Grazing
•Forest fires
•Forest management
May result in increased rate of filling up of Vau i Dejes lake
Increased Sediment loads
Global Water Partnership Mediterranean


Drin
Dams / hydropower production
Entrapment of sediment by the dams
Altered flow patterns
•Drastic effect on the ecosystems in the Buna/Bojana Delta.
•Socio-economic effects
Reduction of the sediment transport capacity
Coastal erosion in the delta of the river Buna/Bojana
Sediment deposition in the river channels + at the confluence point of the two rivers
Natural low gradient of the channel of Buna/Bojana

Drin

Dams / hydropower production

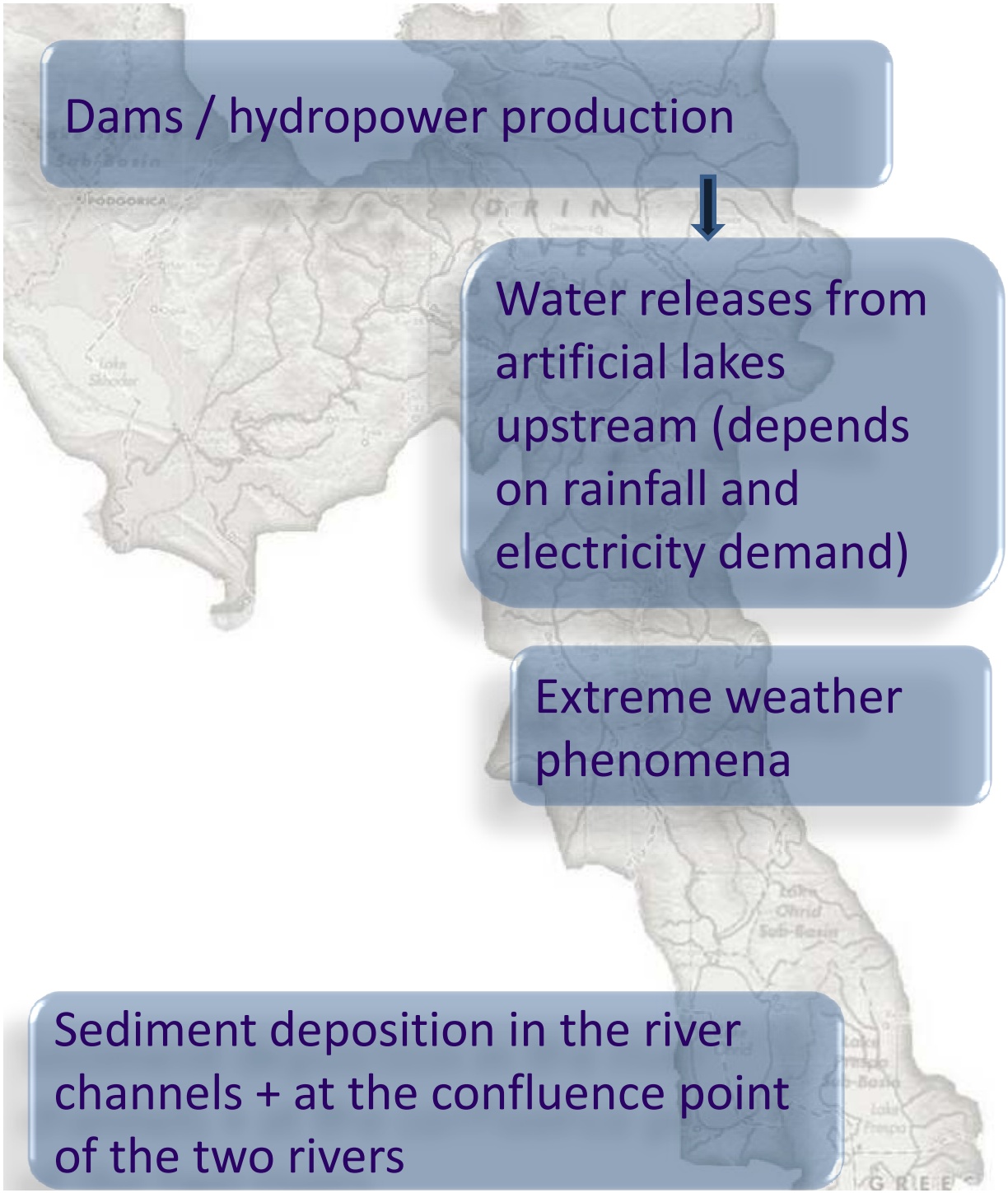
Water releases from artificial lakes upstream (depends on rainfall and electricity demand)

Altered patterns of oscillation of the water level of **Shkoder/Skadar Lake**

Extreme weather phenomena

Increased flow in the Drin River

Sediment deposition in the river channels + at the confluence point of the two rivers



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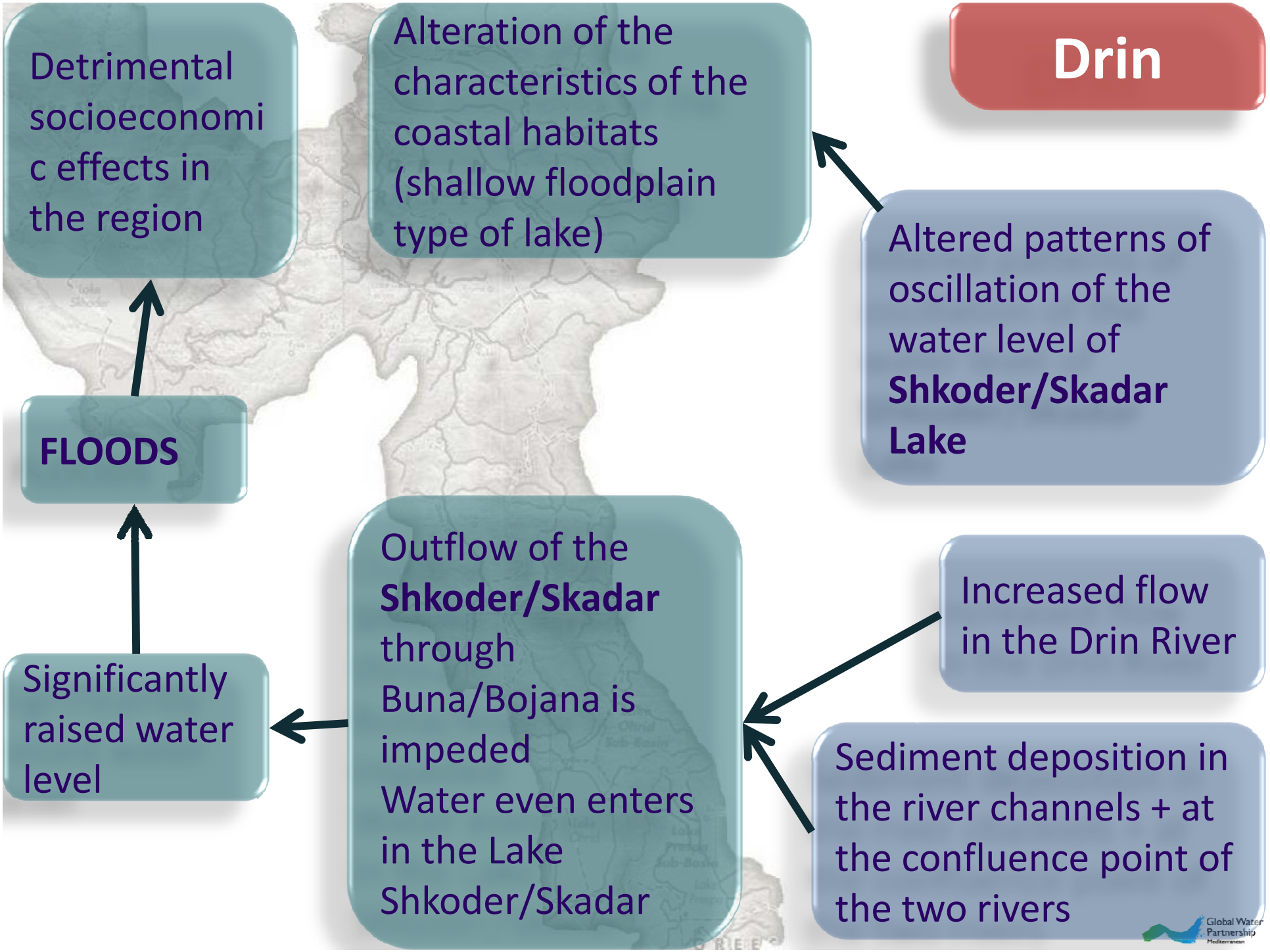
Drin
Alteration of the characteristics of the coastal habitats (shallow floodplain type of lake)
Altered patterns of oscillation of the water level of **Shkoder/Skadar Lake**
Detrimental socioeconomic effects in the region
FLOODS
Significantly raised water level
Outflow of the **Shkoder/Skadar** through Buna/Bojana is impeded
Water even enters in the Lake Shkoder/Skadar
Increased flow in the Drin River
Sediment deposition in the river channels + at the confluence point of the two rivers
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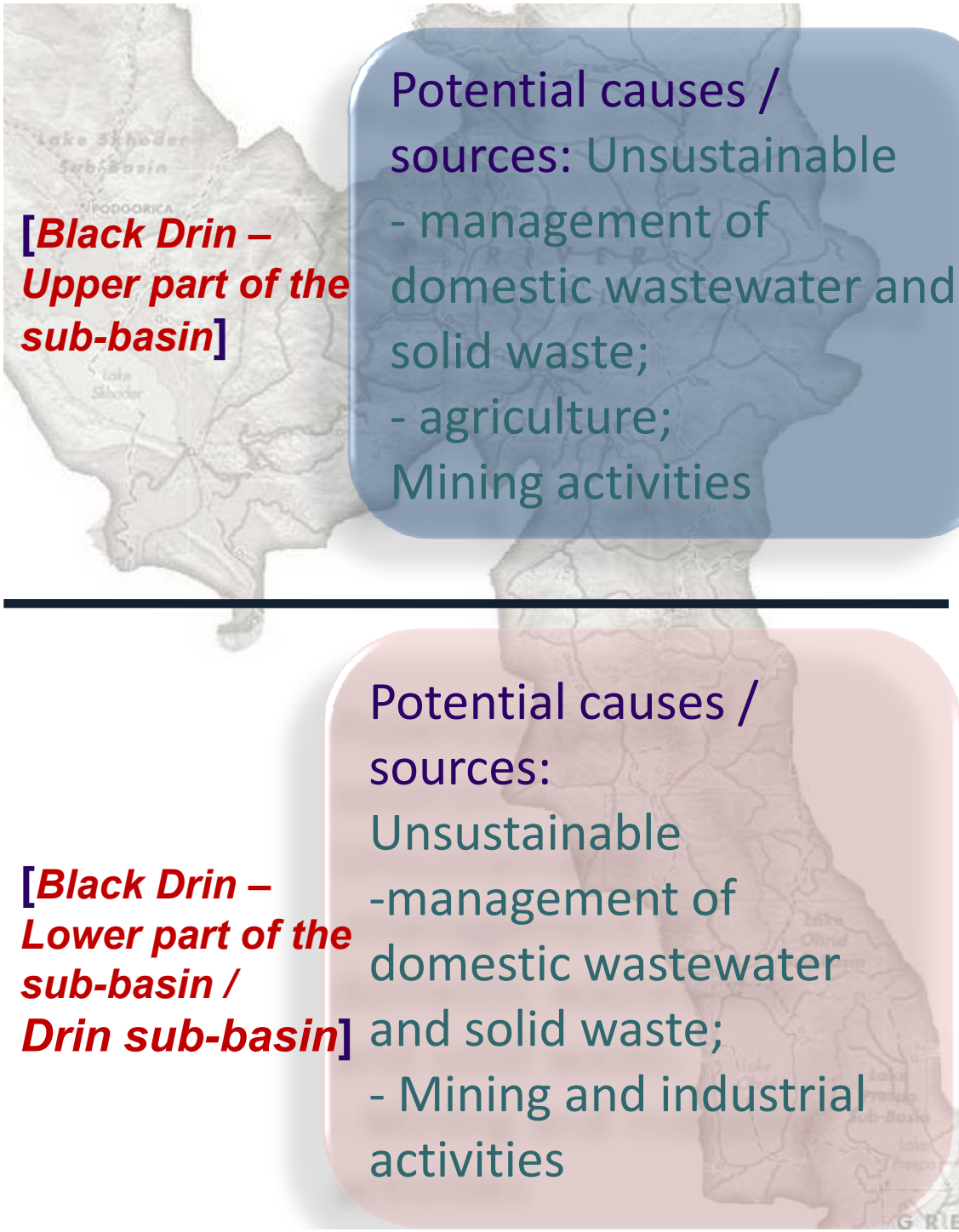
Drin



[***Black Drin – Upper part of the sub-basin***]

Potential causes / sources: Unsustainable
- management of domestic wastewater and solid waste;
- agriculture;
Mining activities

[***Black Drin – Lower part of the sub-basin / Drin sub-basin***]

Potential causes / sources:
Unsustainable
-management of domestic wastewater and solid waste;
- Mining and industrial activities

No adequate information available with regard to water quality

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Drin

[***Black Drin – Upper part of the sub-basin***]

Potential causes / sources: Unsustainable
- management of domestic wastewater and solid waste;
- agriculture;
Mining activities

According to some data: Nutrient levels appear to be low if compared to the other sub-basins of the Drin River basin.

[***Black Drin – Lower part of the sub-basin / Drin sub-basin***]

Potential causes / sources:
Unsustainable
-management of domestic wastewater and solid waste;
- Mining and industrial activities

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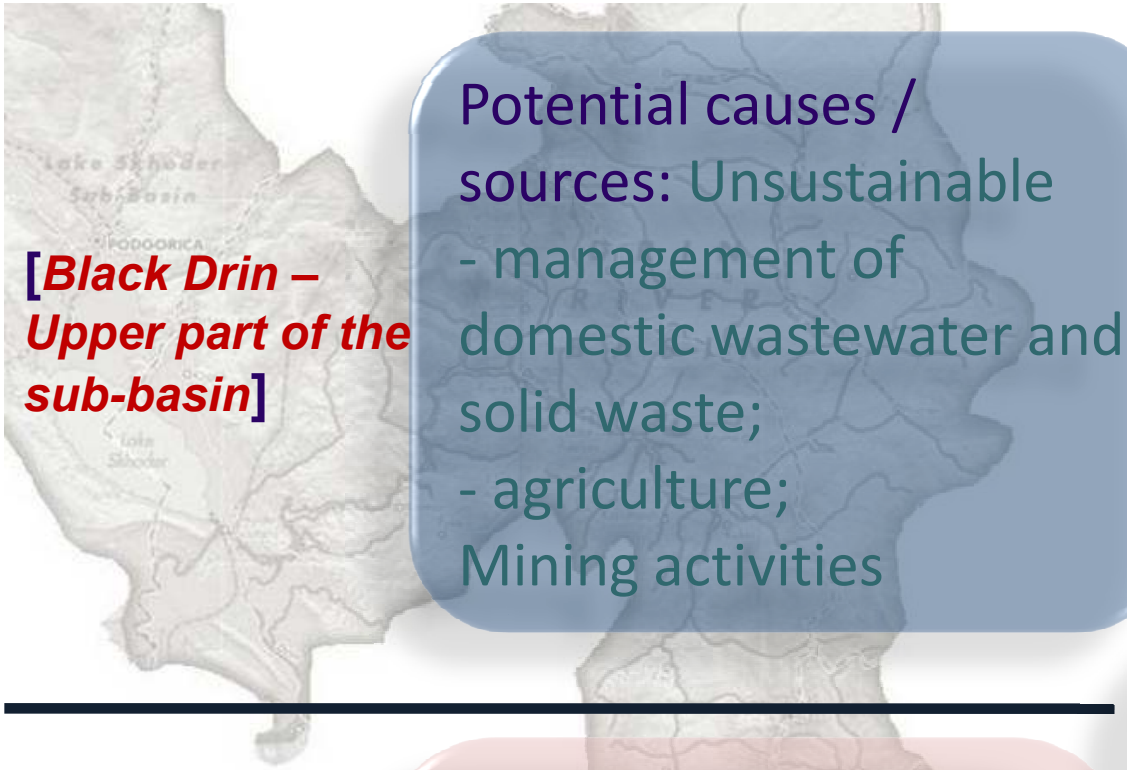
Drin



[***Black Drin – Upper part of the sub-basin***]

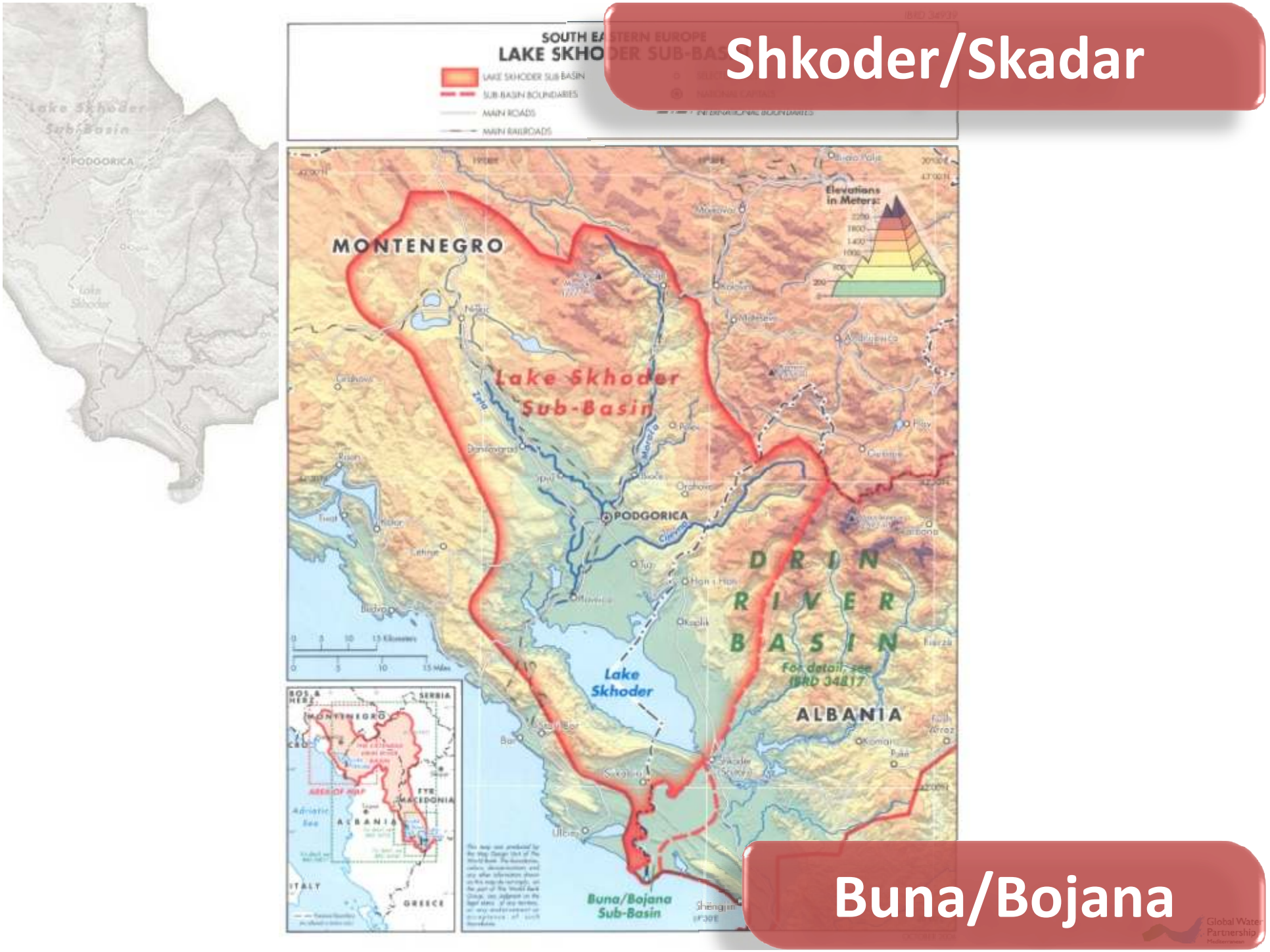
Potential causes / sources: Unsustainable
- management of domestic wastewater and solid waste;
- agriculture;
Mining activities

[***Black Drin – Lower part of the sub-basin / Drin sub-basin***]

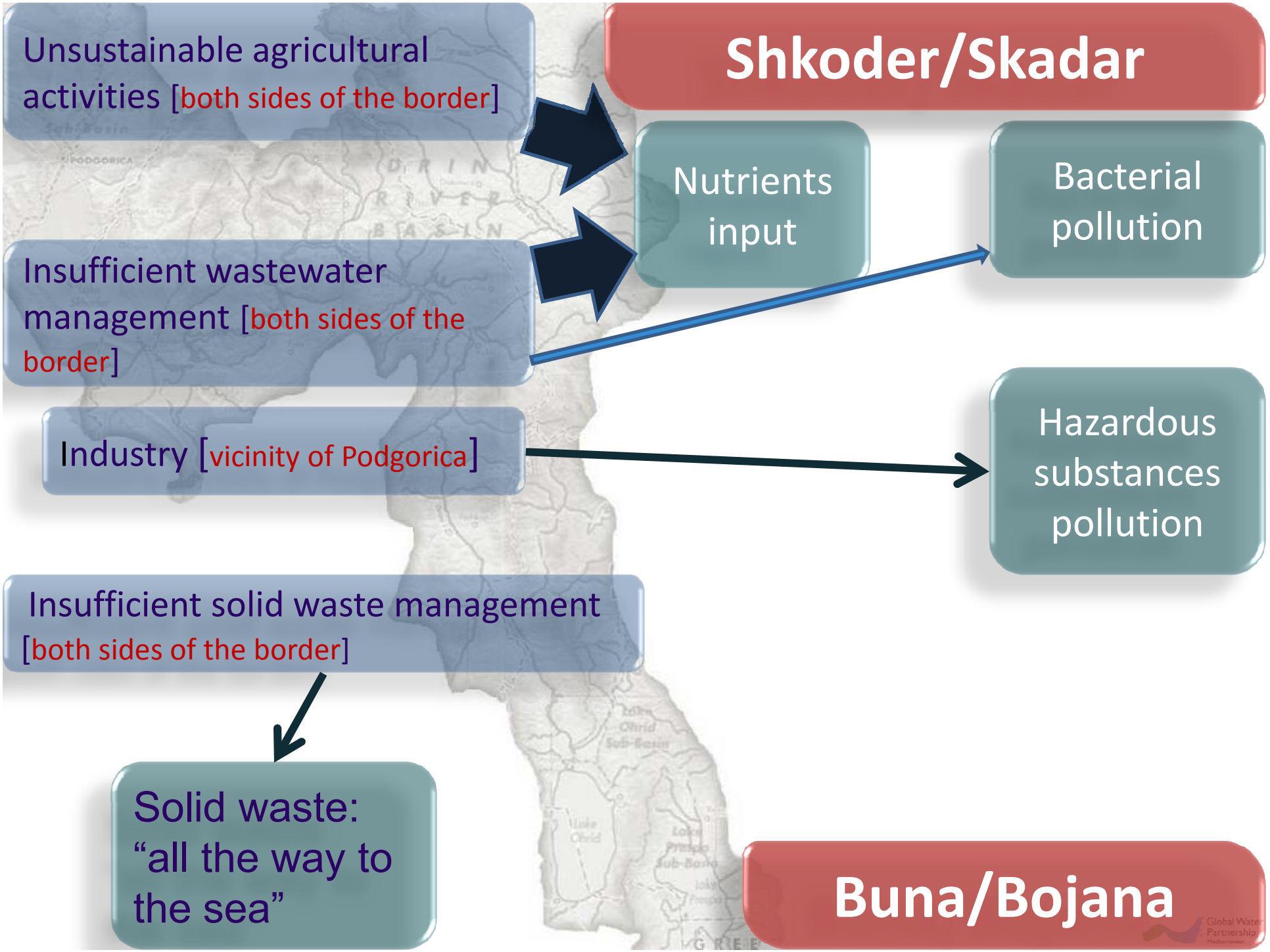
Potential causes / sources:
Unsustainable
-management of domestic wastewater and solid waste;
- Mining and industrial activities

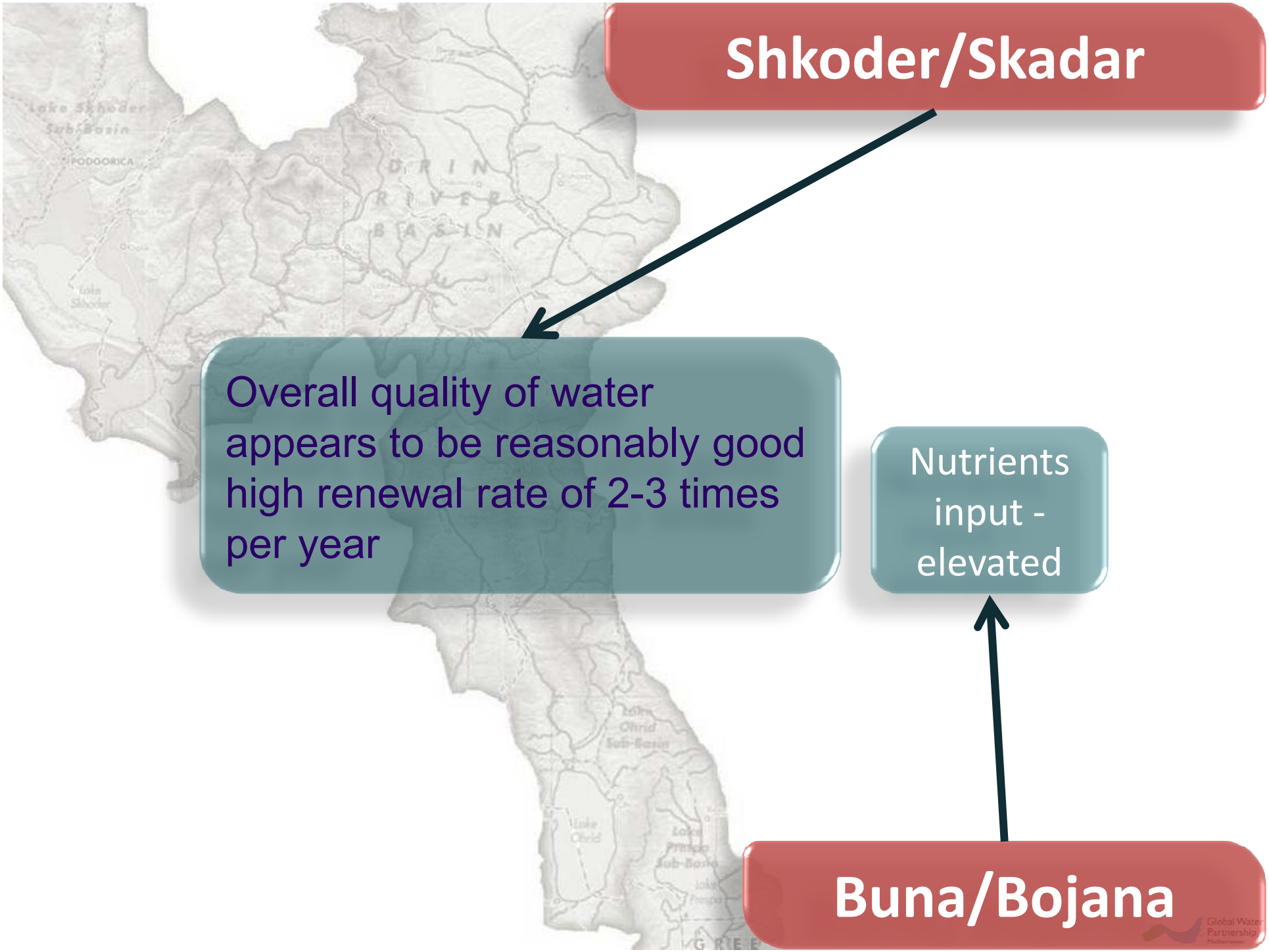
According to some publications concentrations of nutrients are high compared to values observed in Prespa and Ohrid.
Overall water quality in the Drin River is good (Albanian MoEFWA).

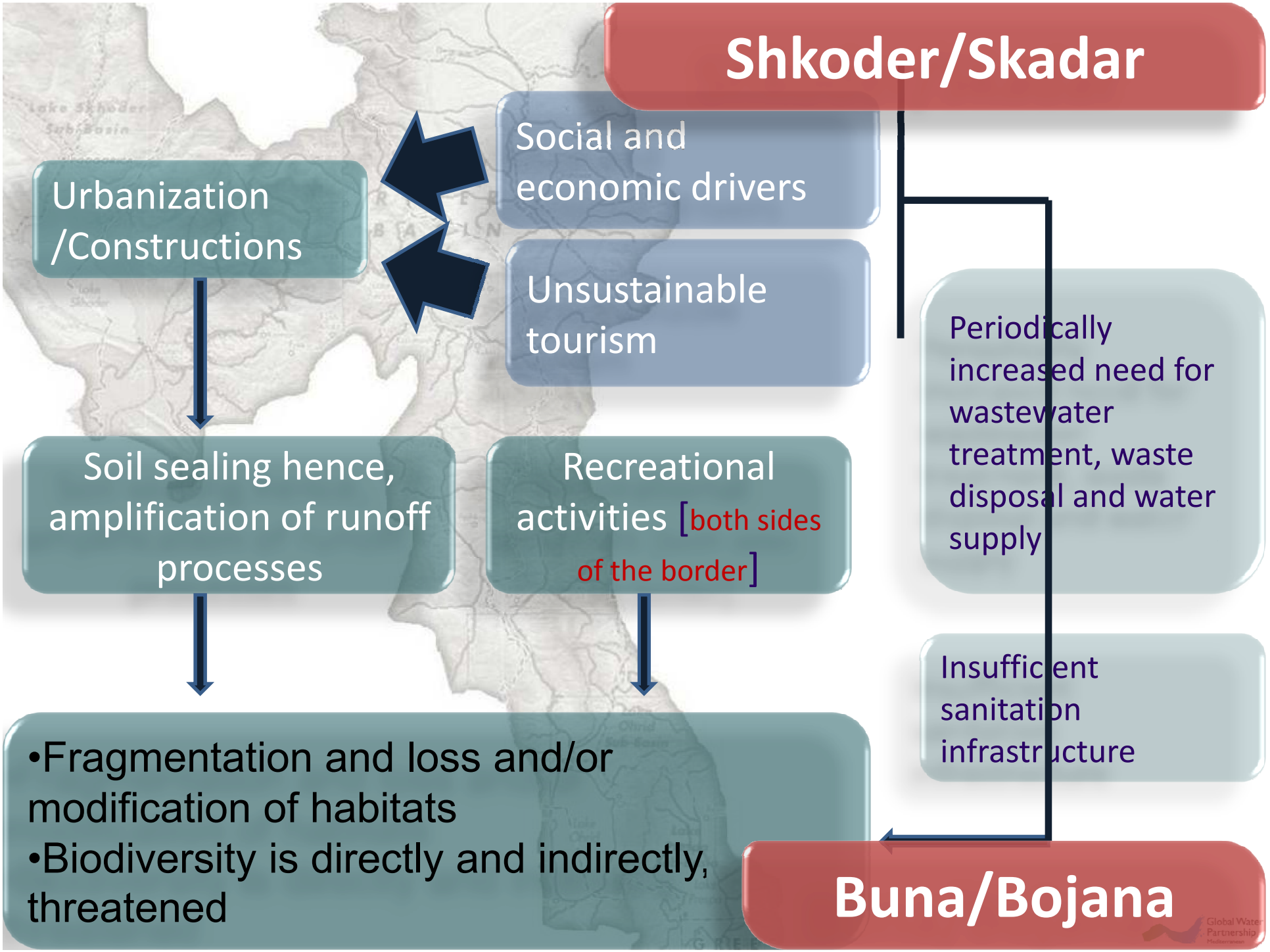
Shkoder/Skadar



Buna/Bojana


Unsustainable agricultural activities [both sides of the border]
Shkoder/Skadar
Nutrients input
Bacterial pollution
Insufficient wastewater management [both sides of the border]
Industry [vicinity of Podgorica]
Hazardous substances pollution
Insufficient solid waste management [both sides of the border]
Solid waste: "all the way to the sea"
Buna/Bojana


Shkoder/Skadar
Overall quality of water appears to be reasonably good high renewal rate of 2-3 times per year
Nutrients input - elevated
Buna/Bojana


Shkoder/Skadar
Social and economic drivers
Urbanization /Constructions
Unsustainable tourism
Periodically increased need for wastewater treatment, waste disposal and water supply
Soil sealing hence, amplification of runoff processes
Recreational activities [both sides of the border]
Insufficient sanitation infrastructure
•Fragmentation and loss and/or modification of habitats
•Biodiversity is directly and indirectly, threatened
Buna/Bojana

Shkoder/Skadar

Hunting leads to major pressure to the ecosystem

Buna/Bojana

Drin, Skadar/Shkoder, Buna/Bojana Vau I Dejes

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Drin, Skadar/Shkoder, Buna/Bojana Vau I Dejes

- Over-fishing
- Inappropriate means of fishing (inappropriate nets)
- Non-discriminatory and destructive fishing methods: explosives, high voltage, electrical shock and poisons
- Poaching during spawning periods
- Introduction of non-native / exotic species
- Water regime disturbances and water pollution

→

- Decline of fish stocks
- Changes in the structure of fish populations
- Reduction in the number of fish species
- Changes in the species composition
- Etc.

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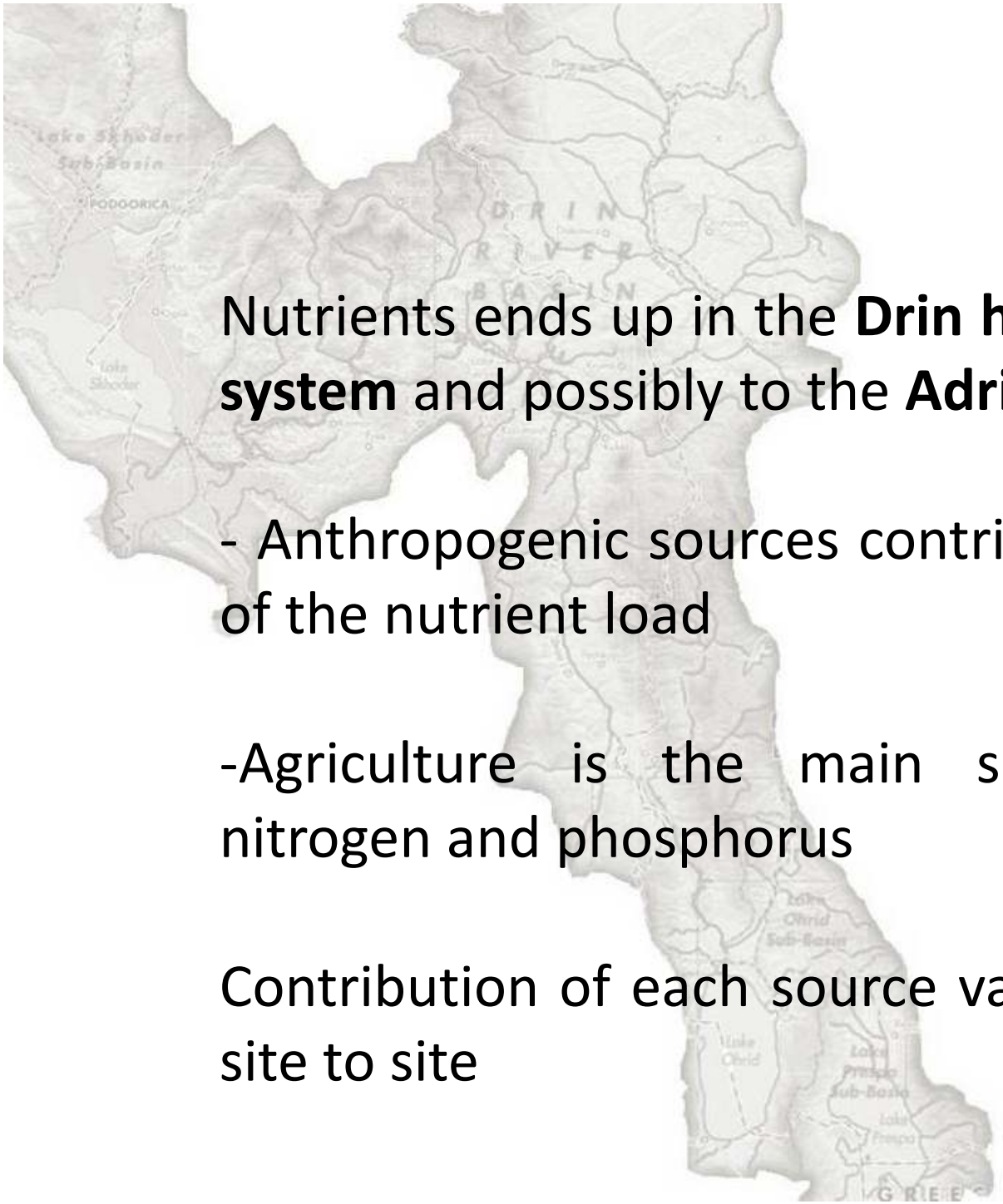
Drin



Nutrients ends up in the **Drin hydrologic system** and possibly to the **Adriatic Sea**

- Anthropogenic sources contribute 95% of the nutrient load

-Agriculture is the main source of nitrogen and phosphorus

Contribution of each source varies from site to site

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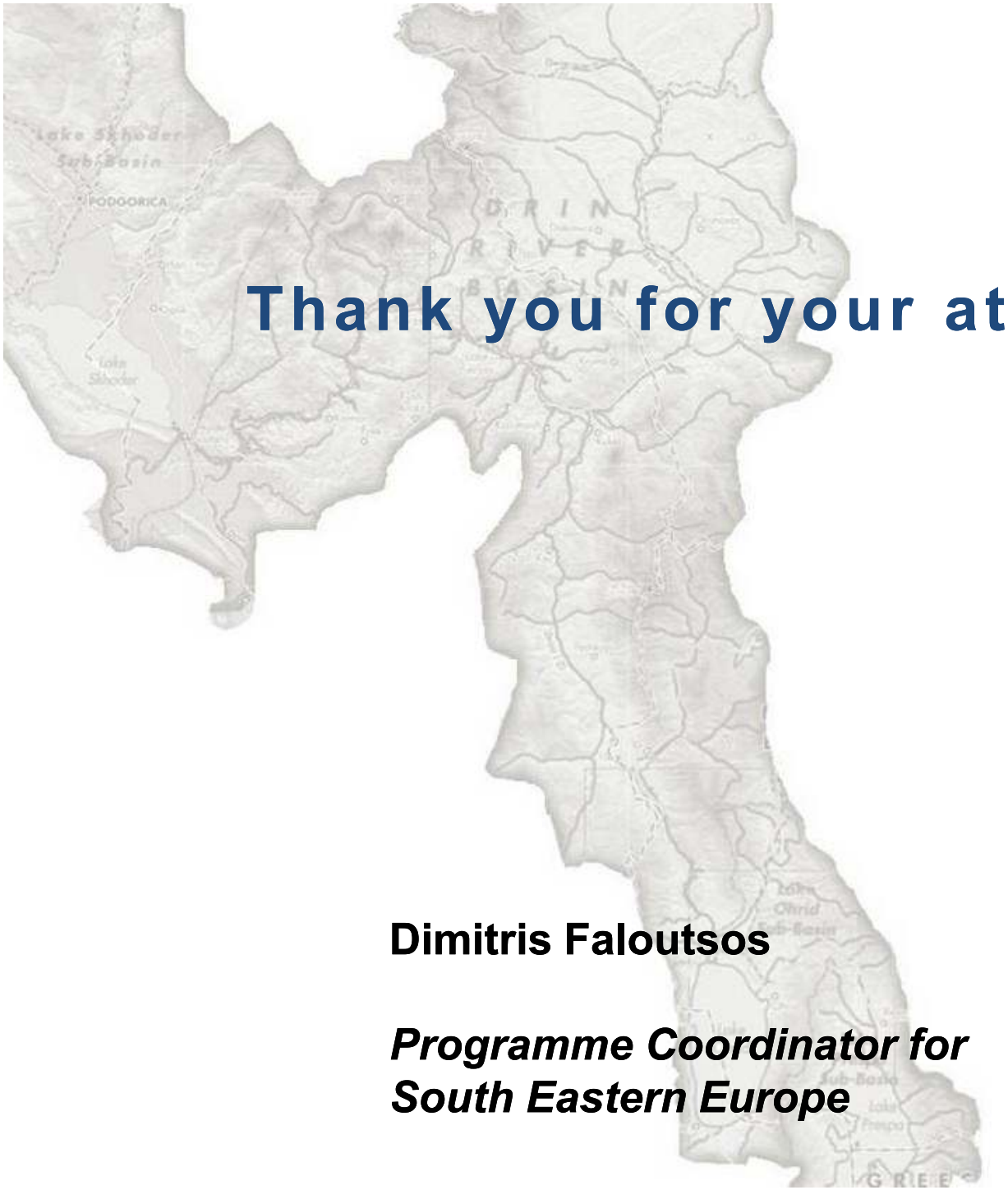

Thank you for your attention!

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Programme Coordinator for South Eastern Europe

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