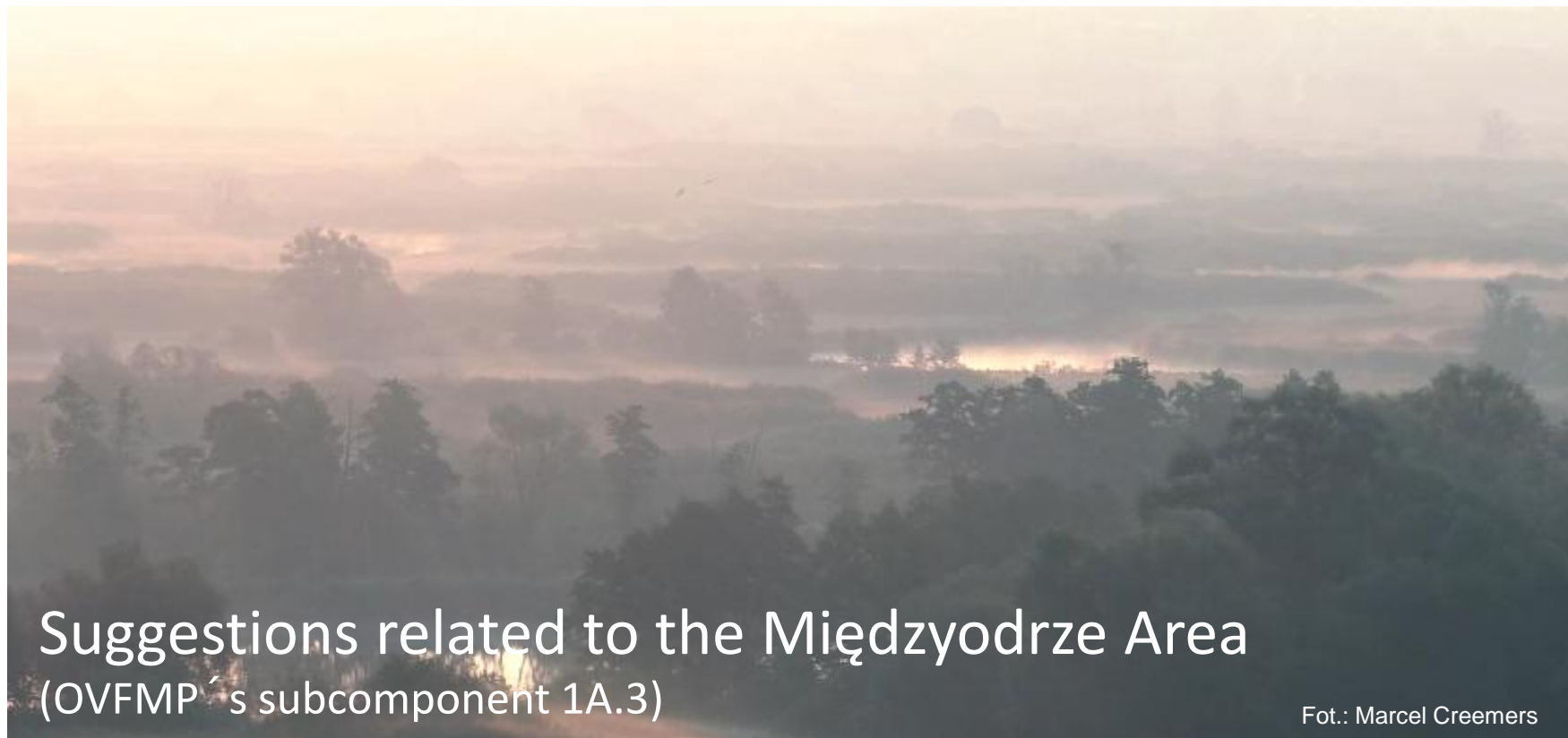




**koalicja  
ratujmy  
rzeki**



## Suggestions related to the Międzyodrze Area (OVFMP's subcomponent 1A.3)

Fot.: Marcel Creemers

»  
Artur Furdyna,  
Koalicja Ratujmy Rzeki (KRR)

Jonathan Rauhut,  
consultant to the German League for Nature and Environment (DNR)



**koalicja  
ratujmy  
rzeki**



**DNR**  
DEUTSCHER  
NATURSCHUTZRING

# Międyodrze: Flood Protection

„Secondly, as part of the strategy to protect the Szczecin region *that is exposed to a combination of sea tide-driven and river-based flood waves*, the large existing Międzyodrze wetland, upstream of the city and its port, *will be rehabilitated to facilitate the Odra drainage (which will assist to mitigate winter floods) and accommodate high-water volumes (which will assist in summer and winter flood conditions when the northerly winds create very high tides that can last for 24 hours).*“

The World Bank's PAD1203: 38.

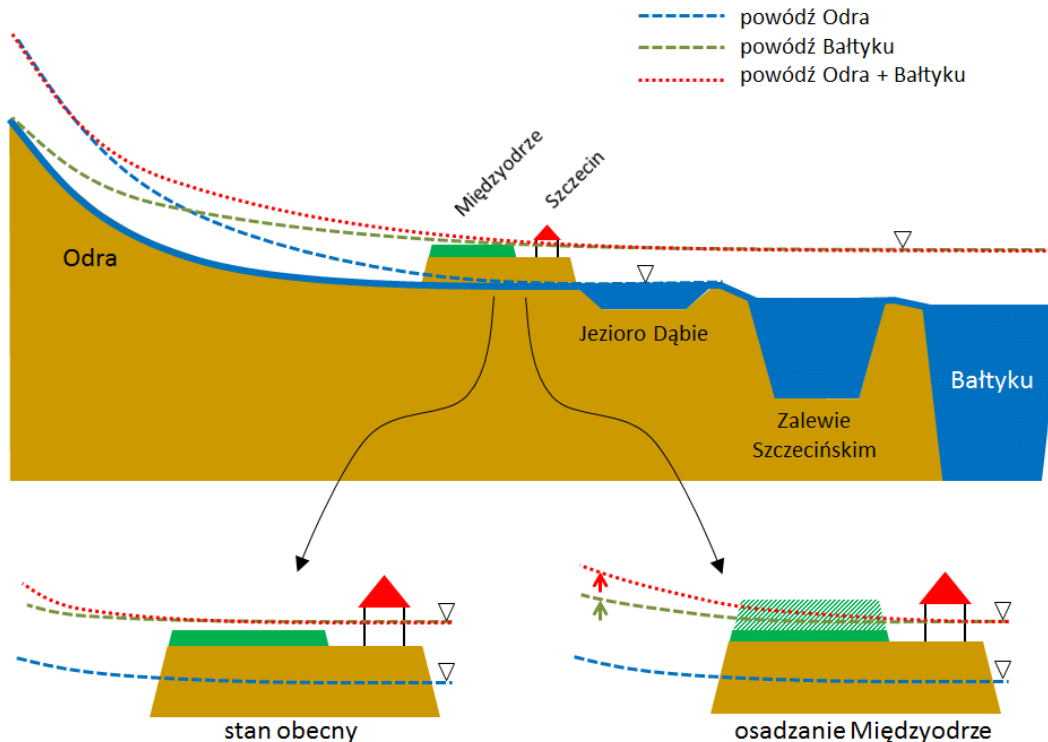
<http://documents.worldbank.org/curated/en/320251467986305800/pdf/PAD1203-PAD-P147460-R2015-0142-1-Box391498B-OUO-9.pdf>

(Highlightings by me)



koalicja  
ratujmy  
rzeki

# Międzyodrze: Flood Protection



Summary of the alternative flood protection reports, KRR & DNR 2018: 4, Fig. 1.  
Available under [http://www.ratujmyrzeki.pl/dokumenty/19-06-2018\\_OderProjekt\\_Zusammenfassung-final\\_PL\\_final.pdf](http://www.ratujmyrzeki.pl/dokumenty/19-06-2018_OderProjekt_Zusammenfassung-final_PL_final.pdf)

*Both SWECO / Wody Polskie and the NGO found out, that the flood protection purpose of Międzyodrze is fully functioning and can't be improved.*

**- Międzyodrze fully functions as natural widening of Odra's cross-section during higher flood waves from upstream, reducing flood water level for the adjacent towns!**

This effect was planned by the historical german hydroengineers, therefore they built the dykes of this agricultural polder lower than HHQ / related HHW.

- Flood waves from upstream arriving at Międzyodrze have no rough peak, so that the cutting of the peak would be inefficient and even dangerous, raising the water level upstream.

- The Międzyodrze is much too small to have an influence on the water level of the backwater of the Baltic Sea.



**koalicja  
ratujmy  
rzeki**

# Międzyodrze: Nature Conservation

**Dredging / Excavation of water arms** (natural rivers arms, artificial channels) would cause:

- *Danger of drainage of the huge peatlands:*  
**Changing a CO<sub>2</sub>-sink with positive effects on Climate Change mitigation into a CO<sub>2</sub>-Source with negative effects on Climate Change mitigation!**
- *Danger, that water would not flow through the wetlands anymore, but only through the water arms:*  
**Loss of filter function for nutrients!**  
▶ **Further Deterioration of water quality of Odra river and Baltic Sea (Beach tourism!)**

**Also no gain for flood protection,**

- *because **cross-section of Międzyodrze for flood water discharge is nearly not raised by excavation of the river arms** (neither the water retention capacity)*



**koalicja  
ratujmy  
rzeki**

# Międzyodrze: Nature Conservation

**Drainage / Excavation of water arms** (natural rivers arms and artificial channels) would cause:

- *Destruction of vegetation and river bed structure of the water arms – endangering*

**Ramshorn Snail** (*Anisus vorticulus*, EU Habitats Directive Annex II and IV)

**Mud Loach / Weather-Fish** (*Misgurnus fossilis*, EU Habitats Directive Annex II)

**Black Tern** (*Chlidonias niger*, EU Birds Directive Annex I)

**White-winged Black Tern** (*Chlidonias leucopterus*)

**Water Soldiers / Water pineapple** (*Stratiotes aloides*)



**koalicja  
ratujmy  
rzeki**

# Międzyodrze: Nature Conservation

## Possible small-scale investments:

**Removal of smaller parts of the old dyke rests** (e.g. beside the old, open flood gate rests)

### **Benefits for nature conservation and water quality (Water Framework Directive, Natura 2000 Directives):**

- **No drainage effect**, since non-excavated river arms avoid drainage from Miedzyodrze to Western Odra

AND simultaneously

- **Ecological connectivity** between river arms and Eastern and Western Odra is not deteriorated, because rests of old flood gates stay always open
- **Higher oxygen level in the river arms** due to raised water currency during higher water levels (however, oxygen level will never become high, since in natural peatlands the oxygen level is naturally low)
- **Filter function of the wetlands** is not deteriorated, probably even improved
- **No Endangering of Natura 2000 Habitats / Species**

### **Benefits for flood protection:**

- Due to removal of parts of the dykes, **ice floe / ice sheet retention** from Eastern Odra to Miedzyodrze may be improved, reducing danger of ice barriers in Eastern Odra / Gryfino
- During **both summer and winter flood, water discharges may be improved**



koalicja  
ratujmy  
rzeki

# Międzyodrze: Tourism and Regional Development

*We need to change our perspective: Are our wild areas really obstacles for economy?  
Aren't our wild areas a natural capital of an outstanding value for regional development?*

*Countries like Norway, Sweden, Canada, Australia, New Zealand, the U.S., Switzerland show:*

*Both new inhabitants as well as tourists choose a combination of*

- economy (this is what they need)*
- ecology and wilderness (this is what they love!)*



Source: [www.szczecin.eu](http://www.szczecin.eu), [www.wloczykij.com](http://www.wloczykij.com)

*We can develop our region in the same way:*

- Economy: We have a strong economy and enough places for large-scale investments in our classical urban areas.*
- Ecology: We have wilderness areas which are unique in Western Europe – developing more wilderness areas and small-scale tourist investments in these wilderness areas makes sense – **large-scale investments in these areas would have negative effects on our economy!***



**koalicja  
ratujmy  
rzeki**

# Międzyodrze: Suggestions

*We suggest to*

- ***Leave Międzyodrze basically as it is*** – no excavation of river arms, no drainage, no reconstruction of the flood gates, no reconstruction of the dykes – Międzyodrze functions already fantastic for flood protection, as growing CO2 sink, as nutrient filter for the Baltic Sea – ***and the existing wild wetlands are of an outstanding attractivity in Western Europe, let's use this natural capital for the economic development of our region!***
- ***Create a National Park in the Międzyodrze***, as prof. Jasnowska, prof. Jasnowski and prof. Succow suggested already in the early 1990ies – a „National Park“ label would label our region with an international highly appreciated quality label for tourism!
- ***Small-scale investments – nature conservation:*** Removal of small parts of the old dyke rests
- ***Small-scale investments - tourism:*** Role model Biebrza - Small paths to watch towers, canoe guides, public support for local inhabitants to open / marketing tourist accomodations – ***no big investments in the area and its surroundings – this would destroy the area's wild beauty and attractivity!***

***The vicinity of large wild areas close to high-developed cultural centres like Szczecin and Berlin is the locational factor for the development of our region!***



**koalicja  
ratujmy  
rzeki**



# Area east of Święta: Flood Protection

„Secondly, as part of the strategy to protect the Szczecin region *that is exposed to a combination of sea tide-driven and river-based flood waves*, the large existing Międzyodrze wetland, upstream of the city and its port, *will be rehabilitated to facilitate the Odra drainage (which will assist to mitigate winter floods)* and *accommodate high-water volumes (which will assist in summer and winter flood conditions when the northerly winds create very high tides that can last for 24 hours).*“

The World Bank's PAD1203: 38.

<http://documents.worldbank.org/curated/en/320251467986305800/pdf/PAD1203-PAD-P147460-R2015-0142-1-Box391498B-OUO-9.pdf>

(Highlightings by me)

***As both SWECO / Wody Polskie and NGO found out, Międzyodrze can't solve the task to reduce water levels while a flood wave from upstream coincides with higher backwaters from the Baltic Sea.***

***Międzyodrze fully functions already for flood protection and can't be further improved.***

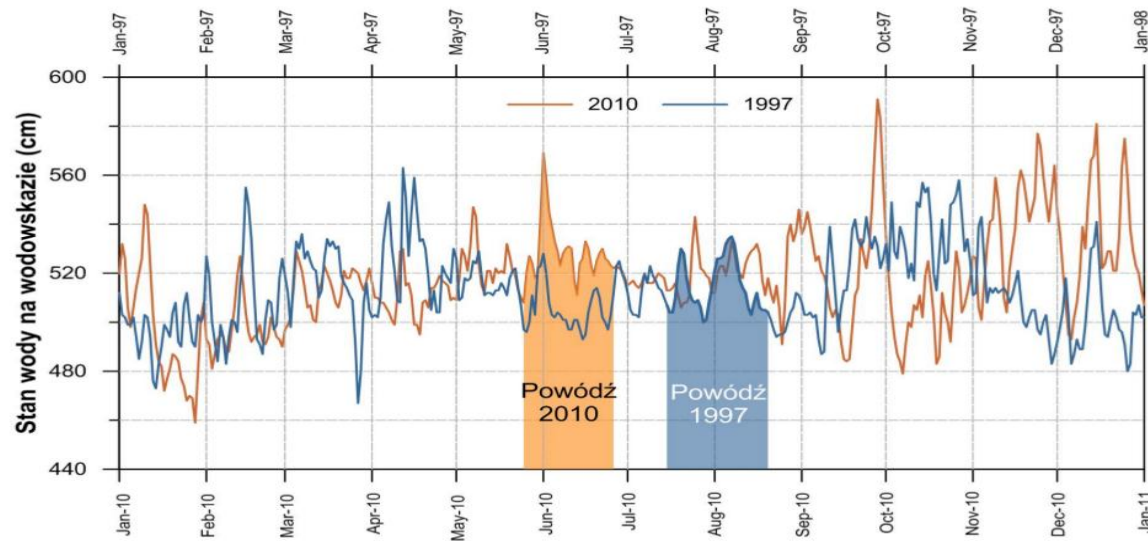


**koalicja  
ratujmy  
rzeki**

# Area east of Świąta: Flood Protection

*When an upstream flood wave coincides with higher backwaters from Baltic Sea the Danger of a higher water level is real:*

**Compare 1997 flood wave with 2010 flood wave in Zalew Szczeciński.**



Ilustracja 10: Hydrogramy roczne lat 1997 i 2010 w przekroju wodowskazowym Ueckermünde (Stettiner Haff). Kolorem zaznaczono okres wezbrania powodziowego dla poszczególnego roku (źródło danych: /10/)

Schnauder & Domagalski 2018: 16, Fig. 10.

Available under: [http://www.ratujmyrzeki.pl/dokumenty/Bericht\\_gIR\\_180606\\_PLx.pdf](http://www.ratujmyrzeki.pl/dokumenty/Bericht_gIR_180606_PLx.pdf)



**koalicja  
ratujmy  
rzeki**

# Area east of Świąta: Flood Protection

Can the area east of Świąta replace Międzyodrze as OVFMP-Subcomponent:

*Can the area east of Świąta solve the flood protection task which Międzyodrze should have solved as part of the OVFMP?*



**We have no clear answer, but some details of the area east of Świąta look promising for fulfilling exactly these flood protection tasks, which Międzyodrze should have fulfilled within the OVFMP, therefore we highly recommend to further examine these details.**

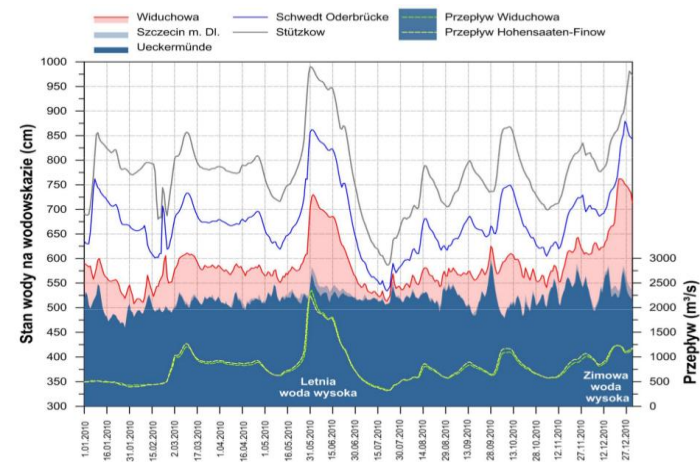
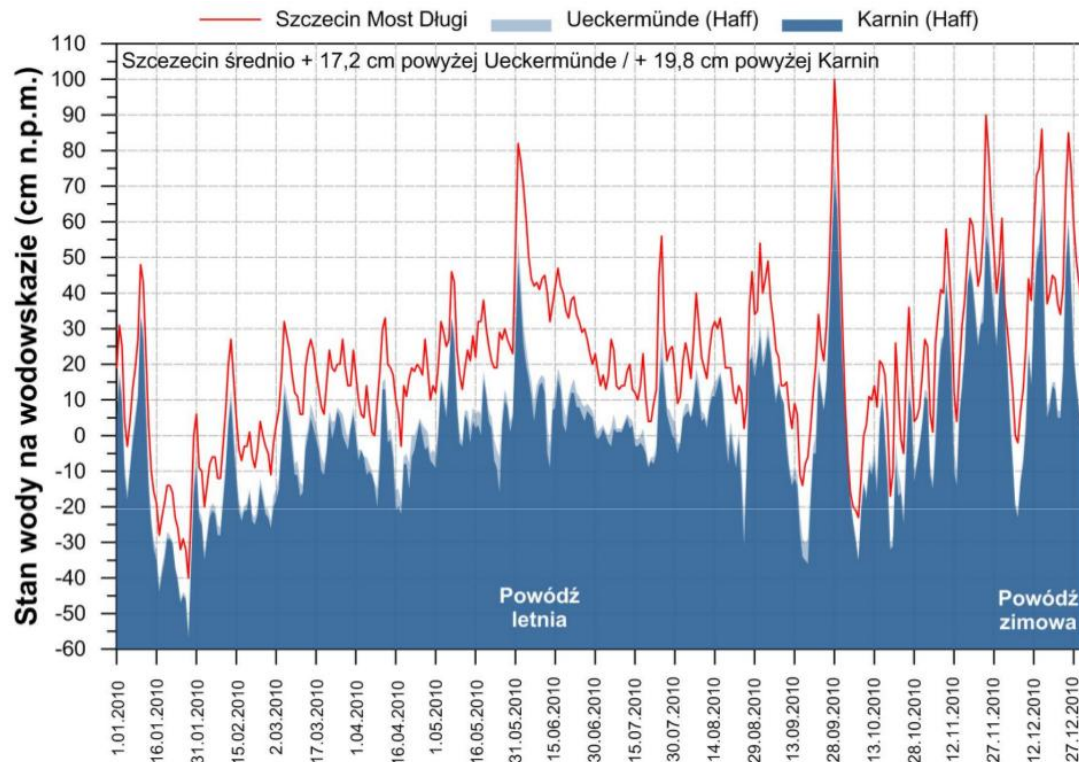


**koalicja  
ratujmy  
rzeki**

# Area east of Świąta: Flood Protection

„Stan wody w Szczecinie (Odra Zachodnia) leży średnio o ok. 17 cm wyżej niż stan Zalewu Szczecińskiego (Ueckermünde), maksymalne różnice stanów mogą jednak dochodzić nawet do 39 cm, jak to miało miejsce podczas powodzi w czerwcu 2010 roku (Ilustracja 58).“

Schnauder & Domagalski 2018: 17. Available under: [http://www.ratujmyrzeki.pl/dokumenty/Bericht\\_gIR\\_180606\\_PLx.pdf](http://www.ratujmyrzeki.pl/dokumenty/Bericht_gIR_180606_PLx.pdf)



Ilustracja 11: Stany i przyływy z roku 2010 mierzone na wodowskazach dolnej Odry i Ueckermünde / Zalew Szczeciński (źródło danych: /10/ /11/)

Schnauder & Domagalski 2018: 17, Fig. 11.

Available under:

[http://www.ratujmyrzeki.pl/dokumenty/Bericht\\_gIR\\_180606\\_PLx.pdf](http://www.ratujmyrzeki.pl/dokumenty/Bericht_gIR_180606_PLx.pdf)

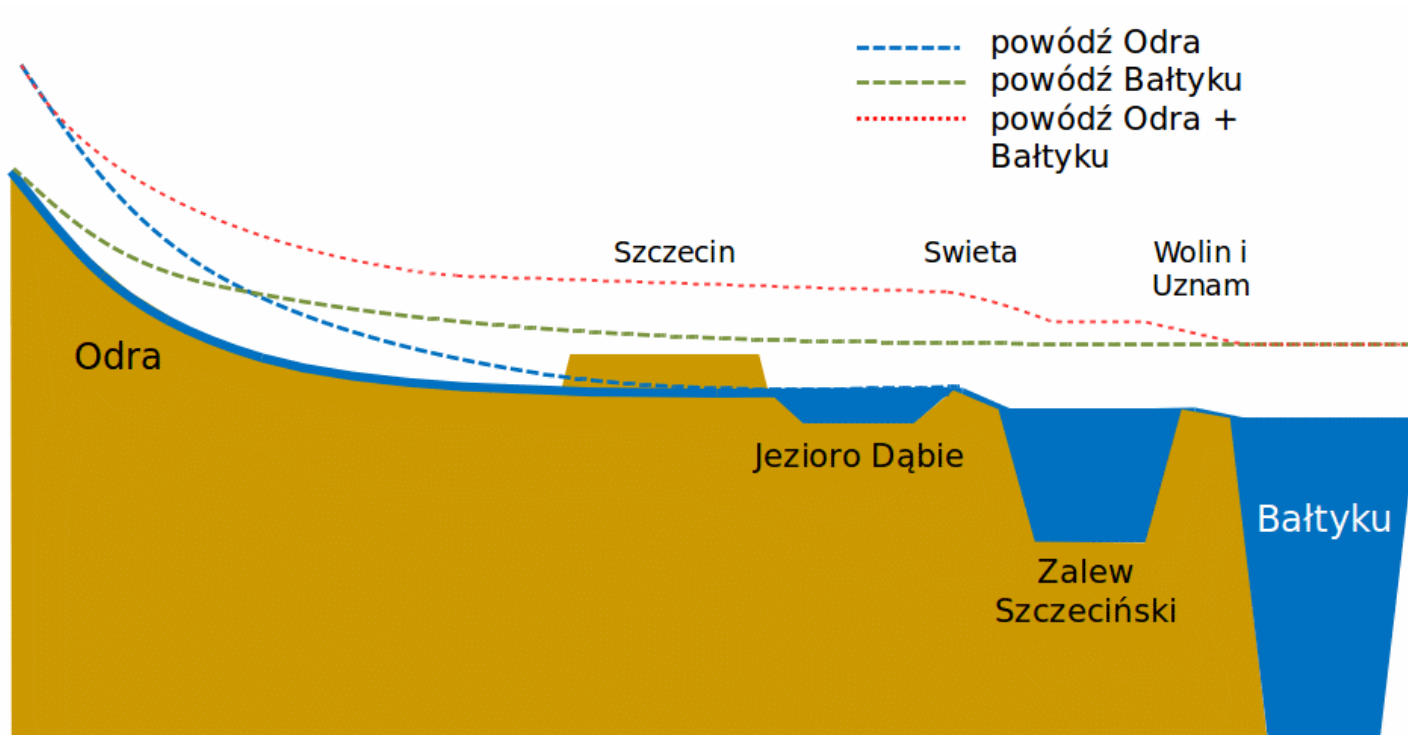
Ilustracja 58: Stany wody w 2010 roku na Zalewie Szczecińskim i na Odrze Zachodniej w Szczecinie



koalicja  
ratujmy  
rzeki

# Area east of Świąta: Flood Protection

The raised difference between the water level at Szczecin and the water level at Zalew Szczeciński during the flood wave 2010 is illustrated below.



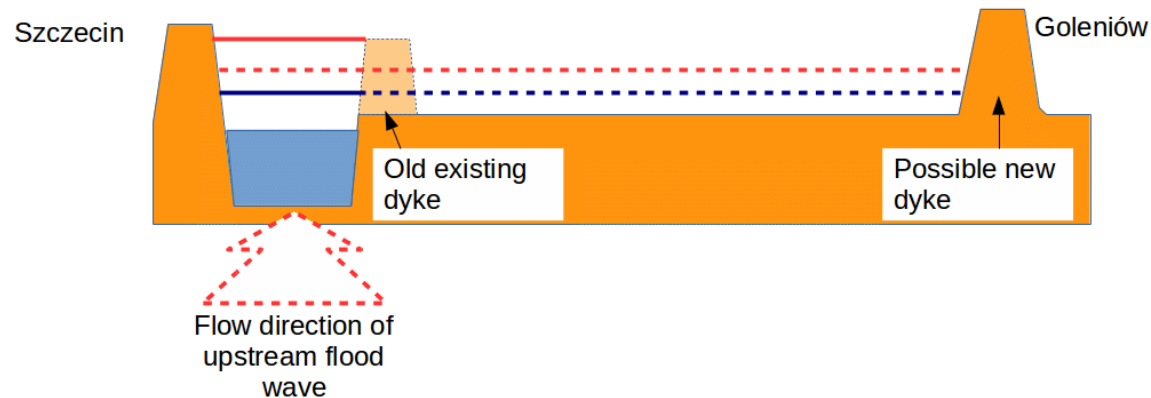
Own modification of Fig. 1 of the summary of the alternative flood protection reports, KRR & DNR 2018: 4.



**koalicja  
ratujmy  
rzeki**

# Area east of Świąta: Flood Protection

*Can a dyke relocation sufficiently widen the cross-section of Odra during high water levels, so that the water level of the upstream flood wave could be reduced?*



- - - - = additional water level from upstream flood wave after dyke relocation
- — — = additional water level from upstream flood wave without dyke relocation
- — — = higher water level from Baltic Sea
- ▭ = normal water body without any flood



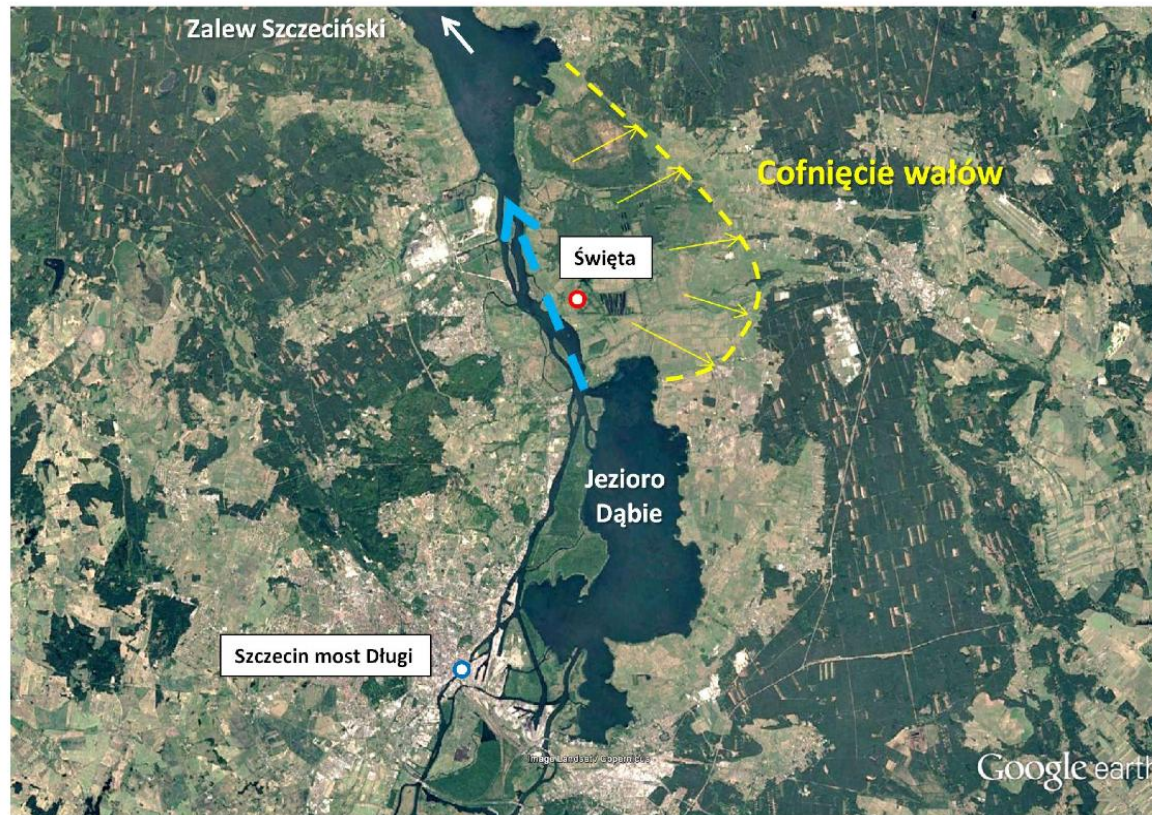
**koalicja  
ratujmy  
rzeki**



# Area east of Świąta: Flood Protection

## **Possible Area of Dyke Relocation?**

Dyke at Eastern border, Ring Dykes around the villages in the western part – as it is already conducted as part of OVFMP subcomponent 1A.1 at Chlewice further upstream – also realised at the village of Kamp on the german side of Zalew Szczeciński



Schnauder & Domagalski 2018: 76, Fig. 59. Available under:  
[http://www.ratujmyrzeki.pl/dokumenty/Bericht\\_gIR\\_180606\\_PLx.pdf](http://www.ratujmyrzeki.pl/dokumenty/Bericht_gIR_180606_PLx.pdf)



**koalicja  
ratujmy  
rzeki**

# Area east of Święta: Flood Protection

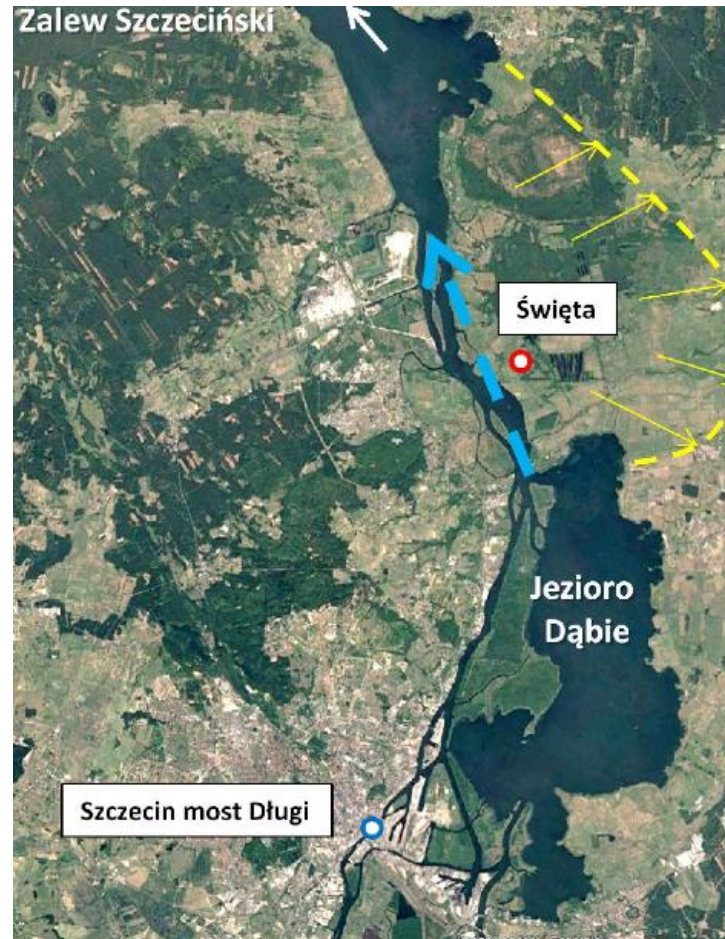
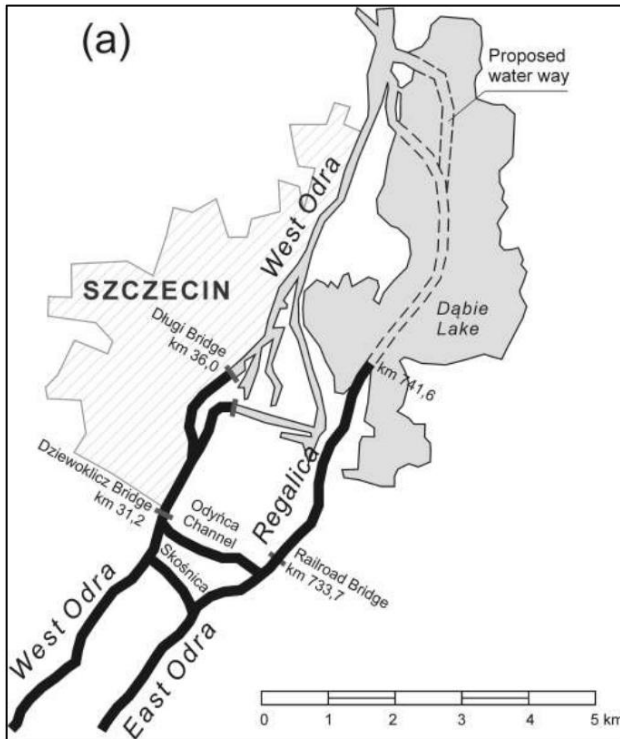
## Additional Benefit for Ice Flood protection?

Area east of Święta is **north(!)** of Jezioro Dąbie(!):

During higher backwater from Baltic Sea, the area east of Święta would

- **raise the cross-section** for higher water discharges
- **and raise retention space** for ice sheets arriving from Odra and Jezioro Dąbie.

This could **reduce the danger of ice jams / ice barriers** around Szczecin.



Kolerski 2018: 468, Fig. 1. In: Proceedings of the 24 th IAHR International Symposium on Ice, 466-473. Available under: [https://www.dvfu.ru/upload/medialibrary/a92/PROCEEDINGS\\_of\\_the\\_24th\\_IAHR\\_INTERNATIONAL\\_SYMPOSIUM\\_on\\_ICE.pdf](https://www.dvfu.ru/upload/medialibrary/a92/PROCEEDINGS_of_the_24th_IAHR_INTERNATIONAL_SYMPOSIUM_on_ICE.pdf)



**koalicja  
ratujmy  
rzeki**



# Area east of Świąta: Flood Protection

Can the area east of Świąta replace Międzyodrze as OVFMP-Subcomponent:

*Can the area east of Świąta solve the flood protection task which Międzyodrze should solve as part of the OVFMP?*

As stated above, we have no clear answer, but some details look promising.

*Therefore we highly recommend to model the widening of the cross-section at Świąta*

- and its influence on summer flood waves coming from upstream, especially on their water levels between Świąta and Szczecin, when in the same time also high backwaters from the Baltic Sea occur,*
- and its influence on water discharge and especially on ice sheet retention during winter for ice sheets flowing from Odra and Jezioro Dabie to Zalew Szczeciński, when in the same time also high backwaters from the Baltic Sea occur.*



koalicja  
ratujmy  
rzeki

# Area east of Świąta: Nature Conservation

## **Benefits of a large-scale Dyke-Relocation for Climate Change Mitigation, Water Quality and Nature Conservation:**

- **Peatlands as growing Carbon Storage - Climate Change Mitigation:**

Big parts of the Peatlands are actually drained → destruction of the peatlands (endangering also agriculture in the mid term!) → significant CO<sub>2</sub>-Emissions.

*Restoring the natural hydrology in this area → would turn this CO<sub>2</sub>-source into a large CO<sub>2</sub>-sink  
→ storing more and more Carbon permanently in the growing peat!*

- **Restoration of Natural Nutrient Filter – Improving Water Quality also along Baltic Sea Beaches:**

Restoring natural hydrology → re-activates the filter function of the large wetlands → natural storage of nutrients (N, P,...) in the plants and the peat

*→ improving water quality of Odra and Southern Baltic Sea → positive influence also on beach tourism!*

- **Nature Conservation – Improving Wetland Biodiversity on a large scale:**

Natural hydrologic processes could happen again → positive influence on many wetland species and habitats on a large area!

*A large and beautiful wetland inhabited even by **Moose(!)** – unique in Western Europe – would be restored → Positive Influence on regional attractivity for both wilderness tourists and new inhabitants of our region!*



**koalicja  
ratujmy  
rzeki**

# Area east of Świąta: Nature Conservation

*Imagine...*



*Ina river mouth could be relocated to its historical place, to Jezioro Dabie (also avoiding sediment transport into the shipping channel of Odra)*



*Renaturalisation of Krępa river wetlands, already today habitat of Moose (*Alces alces*)...*



**koalicja  
ratujmy  
rzeki**

# Area east of Święta: Infrastructure and Land Use

## ***How to avoid adverse effects of the dyke relocation on settlements, infrastructure and land use?***

### ***New, higher Dykes:***

- ***One new high backward Dyke at Eastern border: From west of Lubczyna via west of Modrzewie via west of Kąty via south and west of Budzień to south and west of Stepnica.***
- ***One new high ring dyke around Święta and Kamieniska***
- ***One new high ring dyke around Bolesławice and Przeroślina***

Positive examples for ring dykes: Ring dyke around Chlewice - part of OVFMP subcomponent 1A.1; ring dyke around Kamp on German side of Zalew Szczeciński - large dyke relocation on former agricultural land created > 6.000 ha wild wetlands directly connected to Zalew Szczeciński.

### ***Removal of old, lower dykes at the western border and in the area***

***Agriculture:*** More than 2.000 ha in the area have become already new wilderness areas.

The other part of the area contain meadows – biggest part of revenue here arises from EU agricultural subsidies - here we suggest two different alternatives:

- ***Compensation payments, using EU subsidies, to farmers who voluntarily create new wild areas***
- ***Forms of wetland agriculture (Paludiculture: Tauros Cattle / Water Buffalo / Konik or Hucul horses; or mowing wetland plants as in Bagna Rozwarowskie) for farmers who want to continue agriculture***



**koalicja  
ratujmy  
rzeki**

# Area east of Świąta: Infrastructure and Land Use

## *How to avoid adverse effects of the dyke relocation on settlements, infrastructure and land use?*

### *Road connecting Modrzewie and Świąta:*

- **First alternative: Leave the road as it is, because it is high enough during normal floods.**  
During a high Odra flood plus high backwaters from Baltic Sea (the situation which is described in this presentation) the road will be flooded, raising Odra's cross-section for discharge of Odra's flood wave. However, such a high flood is an HHQ flood scenario, happening less than 1 time per 100 years.
- **Second alternative: Build a new, higher road on bridges, so that water discharge of Odra during an HHQ flood is not reduced**  
*Attention!* The road is built on more than 10 km of peatland, so it should not be built for more traffic than today! If it is built for more traffic, a *strong bridge of more than 10 km length* is needed, otherwise the road will sink into the peat, as happened with the A 20 highway in Germany at Tribsees, crossing only 1 km peatland!

Autobahn 20: Wenn eine Straße im Boden versinkt



<https://www.ndr.de/nachrichten/mecklenburg-vorpommern/Umleitung-A-20-Jetzt-rollen-die-Bagger,autobahn2154.html>



**koalicja  
ratujmy  
rzeki**



# Area east of Święta: Tourism, Regional Development

*We need to change our perspective: Are our wild areas really obstacles for economy?  
Aren't our wild areas a natural capital of an outstanding value for regional development?*

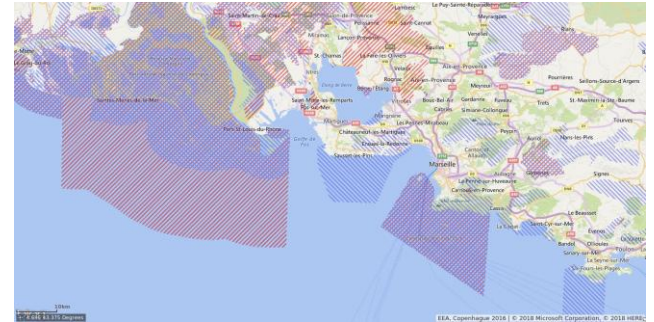
*Countries like Norway, Sweden, Canada, Australia, New Zealand, the U.S., Switzerland show:*

*Both new inhabitants as well as tourists choose a combination of*

- economy (this is what they need)*
- ecology and wilderness (this is what they love!)*

*An example of intelligent spatial planning – Marseille (France):*

*Situated between the large Camargue wetland in the west, the new National Park Calanques in the East and further large Natura 2000 areas in the North – Raising the international attractiveness of the region of Marseille!*



*We can develop our region in the same way:*

- Economy: We have a strong economy and enough places for large-scale investments in our classical urban areas.*
- Ecology: We have wilderness areas which are unique in Western Europe – developing more wilderness areas and small-scale tourist investments in these wilderness areas makes sense – **large-scale investments in these areas would have negative effects on our economy!***



**koalicja  
ratujmy  
rzeki**

# Area east of Święta: Tourism, Regional Development

*On the german side of Zalew Szczecinski, a large-scale dyke-relocation at the Peene river, its river mouth and „Anklamer Stadtbruch“ have created a new wild wetland of more than 6.000 ha on former agricultural land, being directly influenced now by the waters of Zalew Szczecinski.*



Source: <https://www.urlaub-peenetal.net/poi/naturschutzgebiete/anklamer-stadtbruch/>

*As a direct result, many small wilderness tourism businesses have developed along the Peene river, labelling the Peene river as „Amazon of the North“, attracting many tourists from different European Countries.*

*Could this also happen at the area east of Swieta?*

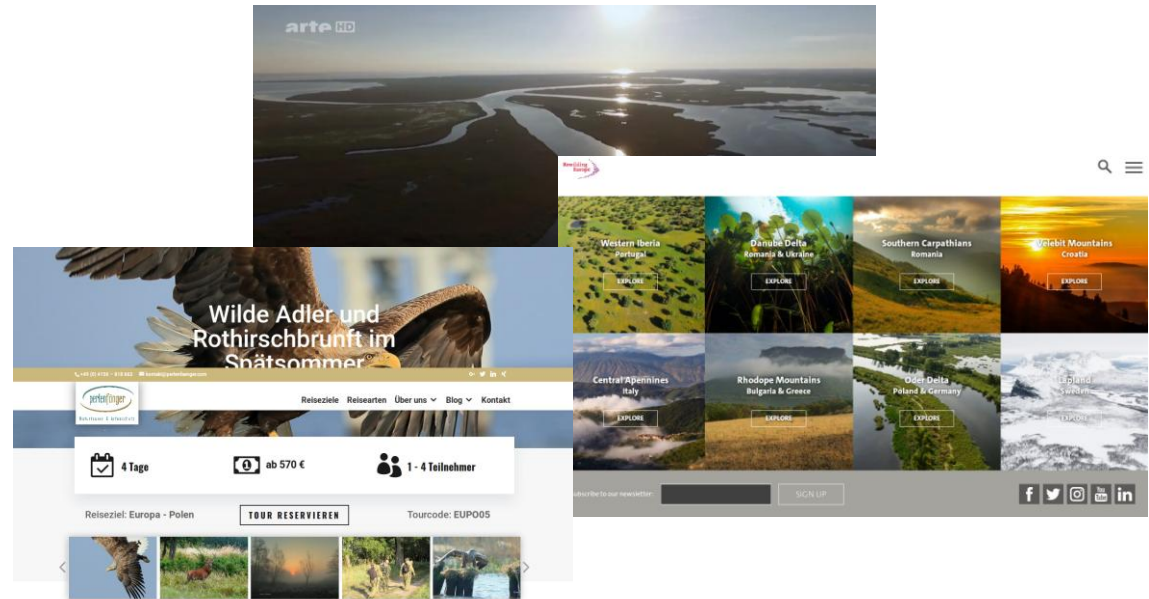


**koalicja  
ratujmy  
rzeki**

# Area east of Świąta: Tourism, Regional Development

*...it has already started, also at Świąta!*

**More and more Wilderness tourists, TV filmers and press photographs from different European countries visit Stepnica, Świąta, Międzyodrze and the Drawsko region for watching free-living White-tailed Eagle, Sea Trout and Salmon, Red Deer, Beaver and Bison!**



**Our region „Oder Delta“ is already named today together with areas such as *Central Appenines, Rhodopes, Danube Delta, Velebit, Carpathians!***

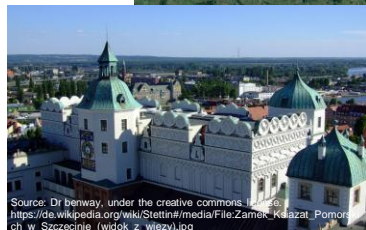
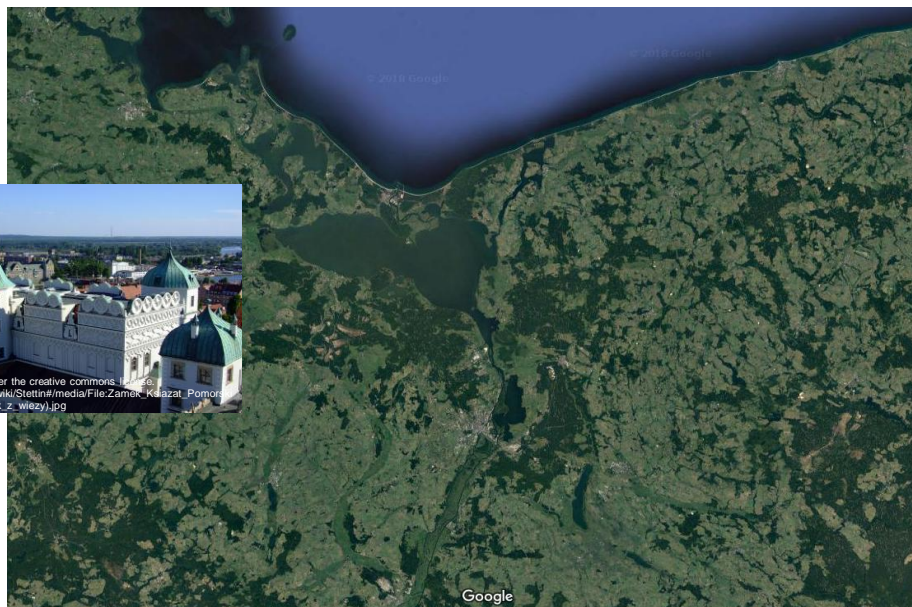
**Our region has been chosen as one of eight European regions of outstanding natural beauty!**





# Natural Capital strengthening the Regional Development - from the Lower Odra to the Baltic Sea -

***Protecting and developing sustainable the wild beauty of the region – from Międzyodrze via Jezioro Dabie, Święta, Stepnica to Wolinski National Park – could create the „Everglades“ of Western Europe!***



Source: Df berway, under the creative commons license.  
[https://de.wikipedia.org/wiki/Steetlin#/media/File:Zamek\\_Kaszal\\_Pomorski\\_w\\_Szczecinie\\_\(widok\\_z\\_wiezy\).jpg](https://de.wikipedia.org/wiki/Steetlin#/media/File:Zamek_Kaszal_Pomorski_w_Szczecinie_(widok_z_wiezy).jpg)



***Could a Biosphere Reserve fit to the region, stretching from Międzyodrze via Jezioro Dabie, Święta, Stepnica, Wolin to the Baltic Sea?***

***A Biosphere Reserve with Core Zones (National Parks or Wilderness areas) at Międzyodrze, Święta, Wolin?***



**koalicja  
ratujmy  
rzeki**



koalicja  
ratujmy  
rzeki



*Dziękuję za uwagę!*

Fot.: Marcel Creemers

[www.ratujmyrzeki.pl](http://www.ratujmyrzeki.pl)