



# ***Klub Przyrodników (Naturalists' Club)***

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## **Preliminary Risk Analysis of the Influence of the Government “Strategy for the Development of Inland Waterways in Poland in Years 2016-2020 with an Outlook to the Year 2030” on Protected Natural Areas**



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This analysis is based on the presentations of the “Strategy for the Development of Inland Waterways in Poland in Years 2016-2020 with an Outlook to the Year 2030” publicly shown by the representatives of the Ministry of Maritime Economy and Inland Navigation between 11<sup>th</sup> April and 30<sup>th</sup> June 2016, and on the “Objectives for the Development of Inland Waterways in Poland in Years 2016-2020 with an Outlook to the Year 2030” adopted with the Resolution No. 70 of the Council of Ministers dated 14<sup>th</sup> June 2016 (Monitor Polski from 22<sup>nd</sup> July 2016, item 711).

Due to the preliminary and general character of the documents, the possibility for analysis is limited with the lack of full information concerning what specific river transformations and investments are being considered. Based on the contents of the presentations and documents, the goals are as follows:

- Make the Oder a Va class waterway with connection to the Czech Republic and to the Oder-Danube-Elbe canal. For this purpose, the expectations include constructing dams throughout the whole section of the current Oder flowing freely from Malczyce down to Cedynia and adjusting the geometry of the river bed. In short-term perspective, dams in Lubiąż and Ścinawa would be constructed;
- Construction of the Silesian Canal and modernisation of the Gliwice Canal;
- Construction of dam cascade on the Vistula from Warsaw to Gdańsk (the elements of this cascade would include: the existing dam in Włocławek and the planned dam in Siarzewo). In short-term perspective, the dam in Siarzewo would be constructed. In long-term perspective, this concerns “preparation of documentation for the cascade of the Middle Section of the Vistula” and “the waterway between Dęblin and Terespol;”
- Modernisation of the upper canalised Vistula (Oświęcim-Kraków) and construction of a dam in Niepołomice;
- “preparation for modernisation” of the waterway through the Warta, the Noteć and the Bydgoszcz Canal;
- “preparation for modernisation” of the waterway through the Nogat;
- “preparation for construction” of the Warszawa-Brześć waterway through the valley of the Bug<sup>1</sup>, reaching navigability class IV.

The “construction or modernisation to parameters of at least navigability class IV and meeting the requirements of inland water transport infrastructure for TEN-T network” are planned for the aforementioned sections.

The objectives stipulate, in short-term perspective, updating the Water Management Plans<sup>2</sup> for the inclusion of the planned investments in Polish inland waterways.

On the basis of the assumed Objectives, concepts and feasibility studies are to be developed for specific inland waterways and the missing connections that will be proceeded in accordance with legal requirements, including strategic analyses of influence on the environment.

**In the protected areas over the lower Oder** (the areas of Natura 2000 The Lower Oder PLH320037 and the Valley of the Lower Oder PLB320003, The Landscape Park of the Lower Oder, the valley of the Oder in Cedynia Landscape Park and in the Warta Estuary Landscape Park):

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<sup>1</sup> This is the way this waterway is presented in current government documents, quoting also the Blue Book prepared as part of the AGN agreement in 1998, indicating the Bug as the bottleneck of Polish waterways. However, it is known that the course of the waterway is also considered via the Vistula to Dęblin and further on, via artificial canal, towards Brześć. Other parts of the document concern (contrary to the maps) the “Dęblin-Terespol waterway” and the “cascade of the middle Vistula.” This would cause additional, total destruction of the integrity of the Natura 2000 areas over the middle Vistula, the key element of which is the natural river bed with the accumulation of sandbars and point bars.

<sup>2</sup> On the date of accepting the “Objectives” by the Council of Ministers, the current Water Management Plans were not even approved.

- As a result of the planned cascading of the Oder above (depending on the variant) Bielinek, Cedynia or Siekierki, in the section above these locations the basic ecological factors of the current protected areas will be completely lost – periodic river overflows and the transport of river rubble. All the alluvial habitats will be lost, including all the resources of the natural river habitat with muddy banks 3270 in the cascaded section. The key basic ecological factor for natural habitats will be lost: willow, poplar and alder flood-meadows 91E0, ash-elm flood-meadows 91F0, cnidium meadows 6440, currently existing in the inter-levee area. All of the resources of the oxbow lakes 3150 in the current inter-levee area will be either destroyed or excluded from the beneficial influence of periodical floods renewing them. The resources of numerous natural habitats located in the investment zone will be directly destroyed.
- Habitats of most of the protected bird species will be lost as a result of eliminating periodic river floods and the marshes and flooded areas that are of key importance for migrating birds. Flood plain meadows are key habitats (nesting site, feeding ground, resting place, roost site) for numerous species protected in the bird area PLB320003, including, among others, whooper swan *Cygnus cygnus* (one of the 3 most important areas for migration and wintering in Poland), greylag goose *Anser anser*, taiga bean goose *Anser fabalis* and greater white-fronted goose *Anser albifrons* (one of the 4 most important areas for migration and wintering in Poland), gadwall *Anser strepera* (the second most important area in Poland in breeding period), northern pintail *Anas acuta* (the second most important area in Poland in migration period), spotted crake *Porzana porzana* (one of the 10 most important areas for breeding period in Poland), common crane *Grus grus* (one of the 3 most important areas for migration in Poland).
- The hydrological regime of the remaining short section of the lower Oder will be completely changed (equalised), which will also limit the basic ecological factor on this section – river floods. As a consequence, the conditions for all alluvial natural habitats, such as willow, poplar and alder flood-meadows 91E0, cnidium meadows 6440, rivers with muddy banks 3270, and habitats of most of the protected bird species (influences analogous to the aforementioned) will be significantly deteriorated;
- As a consequence, the integrity of the Natura 2000 protected areas of the Lower Oder PLH320037 and the Valley of the Lower Oder PLB320033, The Lower Oder Landscape Park, and large parts of the Cedynia Landscape Park and in the Warta Estuary Landscape Park will be completely lost, without any possibility of compensation for this loss.
- Fish migration will be made difficult, including the migration of salmon *Salmo salar* and European river lamprey *Lampetra fluviatilis* to all of their breeding areas in the Oder river basin, which will have negative influence also on other Natura 2000 areas in the river basin.

**In the protected areas of the Lower Oder** (Natura 2000 areas of the Valley of the Middle Oder PLB080004, Ślubice Flood-Meadows PLH080013, Krosno Valley of the Oder PLH080072; Nowa Sól Valley of the Oder PLH080012, Kozióróg in Czerna PLH020010, Krzesin Landscape Park, the valley of the Oder in the Warta Estuary Landscape Park):

- As a result of the planned cascading of the Oder throughout this section, the basic ecological factor of the current protected areas will be lost – the periodic river floods. All the alluvial habitats will be lost, including all the resources of the natural river habitat with muddy banks 3270 in the whole section. The key basic ecological factor for natural habitats will be lost: willow, poplar and alder flood-meadows 91E0, ash-elm flood-meadows 91F0, cnidium meadows 6440, currently existing in the inter-levee area. All of the resources of the oxbow lakes 3150 in the current inter-levee area will be either destroyed or excluded from the beneficial influence of periodical floods renewing them. The potential changes in ash-elm and oak flood-meadows 91F0 and in molinia meadows 6410 on the land side of the levee are difficult to predict, they can be the result of changed hydrological conditions. The resources of numerous natural habitats located in the investment zone will be directly destroyed. In the current inter-levee area, habitats of most of protected bird species will be lost as a result

of eliminating periodic river flooding and the loss of periodic marshes and flooded areas or due to direct taking over for investment;

- Adjustment of the course of river bed of the Oder in compliance with the requirements of the assumed navigability class may require local changes of the course of river bed, with direct destruction of: willow, poplar or alder flood-meadows (91E0), ash-elm flood-meadows (91F0), cnidium meadows (6440) or riparian herbaceous plants (6430) in the Natura 2000 areas. The small area of Kozioróg in Czerna (protecting flood-meadow forests 91F0 and populations of great capricorn beetle and hermit beetle) may be in this way significantly affected;
- As a consequence, the integrity of the following protected areas: the Valley of the Middle Oder PLB080004, Słubice Flood-Meadows PLH080013, Krosno Valley of the Oder PLH080072; Nowa Sól Valley of the Oder PLH080012 and Krzesin Landscape Park will be completely lost, without any possibility of compensation for this loss.
- As a result of complete transformation of the river, habitats of protected lampreys will be lost: European river lamprey *Lampetra fluviatilis* and brook lamprey *Lampetra planeri*, as well as spined loach *Cobitis taenia*, Amur bitterling *Rhodeus sericeus amarus*, European weatherfish *Misgurnus fossilis*. There may be a negative influence on breeding habitats and wintering grounds of asp *Aspius aspius*.
- Fish migration will be hampered, specifically salmon *Salmo salar* and asp *Aspius aspius* will be at risk, and this also concerns migration to the Natura 2000 areas listed above.

**In the area of the Oder Flood-Meadows**, i.e. in the section Brzeg Dolny-Głogów (Natura 2000 areas: the Oder flood-meadows PLB020008 and the Oder flood-meadows PLH020018):

- Cascading the whole section of the Oder below Malczyce will fundamentally change the hydrological regime of the river. The functioning conditions of habitats in flood-meadow forests will be completely changed: willow, poplar and alder flood-meadows 91E0 and ash-elm flood-meadows 91F0, leading to significant deterioration of their protection and complete loss of certain parts. The basic ecological factor of the current protected areas will be completely lost – the periodic river floods. All the alluvial habitats will be lost, including all the resources of the natural river habitat with muddy banks 3270 in the whole section. The results of hitherto projects aimed at restoring flooding of breeding grounds, e.g. Domaszków-Tarchalice polder, will be destroyed. The negative changes will affect one of the biggest and better developed ash-elm flood-meadow complexes in Europe. Habitats of all bird species dependent on periodic flooding will be lost. As a result of lateral river erosion, the habitats of common kingfisher will be lost.
- Transformed riparian habitats can prove inadequate for the protected white-finned gudgeon *Romanogobio albipinnatus*, Amur bitterling *Rhodeus sericeus amarus*, spined loach *Cobitis taenia*. There may be a negative influence on breeding habitats and wintering grounds of asp *Aspius aspius*.
- The construction of dams below Malczyce will destroy the objectives of the binding environmental decision concerning the construction of the Malczyce dam, issued after the evaluation of the influence on the Natura 2000 areas and conditioned by performing specific minimising activities;
- As a consequence, the integrity of the following protected areas: the Oder Flood-Meadows PLB020008 and the Oder Flood-Meadows PLH020018 will be fundamentally affected, without any possibility of compensation for these negative influences.
- Fish migration will be hampered, especially in the cases of salmon *Salmo salar*, asp *Aspius aspius*.

**In the Wrocław section of the Oder** (Natura 2000 areas: Widawa Valley PLH020036 and Pilczyce Forest PLH020069):

- The change of hydrological regime will be smaller than in the section of the Oder below Malczyce, as the hydrological regime of the Oder in Wrocław section is already controlled. However, adjustment of the course of river bed of the Oder in compliance with the requirements of the assumed navigability class may require local changes of the course of river bed, with direct destruction of: willow, poplar or alder flood-meadows (91E0), ash-elm flood-meadows (91F0), wet-ground forests (9170), cnidium meadows (6440) or riparian herbaceous plants (6430); Habitats of 7 species of invertebrates protected in these areas, including the only confirmed habitat of cinnabar flat bark beetle in the region and habitats of hermit beetle, may be partially destroyed;
- As a consequence, this may have significant negative influence on these areas;
- There is risk of destruction of the effects of environmental compensations applied with the reconstruction of the Wrocław Water Node.

**In the area of the Oder Wet-Ground Forests**, i.e. in the Opole-Wrocław section (Natura 2000 areas: the Oder Wet-Ground Forests PLB020002 and Wet-Ground Forests in the Valley of the Oder PLH020017, valley of the Oder in Stobrawa Landscape Park):

- The change of hydrological regime will be smaller than in the section of the Oder below Malczyce, as the hydrological regime of the Oder in this section is already controlled by the existing dams. However, adjustment of the course of river bed of the Oder in compliance with the requirements of the assumed navigability class may require local changes of the course of river bed, with direct destruction of: willow, poplar or alder flood-meadows (91E0), ash-elm flood-meadows (91F0), wet-ground forests (9170), cnidium meadows (6440), molinia meadows (6410) or riparian herbaceous plants (6430); and also habitats of ten-odd protected species in both of these Natura 2000 areas;
- Transformation of the (located higher) Racibórz Dolny reservoir from a dry anti-flood reservoir active only in extreme conditions into a multifunctional „wet” reservoir is going to standardise flows of the Oder to a greater degree, limiting more extensively periodic flooding, which will mean significant deterioration of ecological conditions of alluvial habitats: willow, poplar or alder flood-meadows (91E0), ash-elm flood-meadows (91F0), and cnidium meadows (6440). Expression conditions of habitat 3270: river with muddy banks will be significantly deteriorated.
- As a consequence, this will have significant negative influence on these areas.
- The landscape of the valley of the Oder in the landscape park would be significantly transformed.

**In the Opole section of the Oder** (Natura 2000 areas: Żywocice Flood-Meadows PLH160019 and Zdieszowice Flood-Meadow PLH160011):

- Adjustment of the course of river bed of the Oder in compliance with the requirements of the assumed navigability class may require local changes of the course of river bed, which would be connected to direct destruction of: willow, poplar or alder flood-meadows (91E0), ash-elm flood-meadows (91F0), wet-ground forests (9170), cnidium meadows (6440), molinia meadows (6410) or riparian herbaceous plants (6430);
- Transformation of the (located higher) Racibórz Dolny reservoir from a dry anti-flood reservoir active only in extreme conditions into a multifunctional „wet” reservoir is going to standardise flows of the Oder to a greater degree, limiting more extensively periodic flooding, which will mean significant deterioration of ecological conditions of alluvial habitats: willow, poplar or alder flood-meadows (91E0), ash-elm flood-meadows (91F0), and cnidium meadows (6440). Expression conditions of habitat 3270: river with muddy banks will be significantly deteriorated. The change of the design of the Racibórz Dolny reservoir would destroy the objectives of the binding environmental decision issued after the evaluation of the influence of the reservoir on the Natura 2000 areas and conditioned by performing specific minimising activities;

- As a consequence, this may have significant negative influence on these areas.

**On the Oder in the area of Racibórz** (Natura 2000 areas: Forest near Tworkowo PLH240040 and Wielikąt Ponds and Tworkowo Forest PLB240003);

- If the Racibórz Dolny reservoir is transformed from a dry anti-flood reservoir active only in extreme conditions into a multifunctional “wet” reservoir, the Natura 2000 area Forest near Tworkowo PLH240040 will be completely destroyed, as it will be located in the reservoir basin. This will result in complete destruction of its protected features: willow and alder flood-meadows (91E0), ash-elm flood-meadows (91F0), wet-ground forests (9170), and the populations of protected forest insects living in these areas: cinnabar flat bark beetle *Cucujus cinnaberinus* and hermit beetle *Osmoderma eremita*. The change of the design of the Racibórz Dolny reservoir would destroy the objectives of the binding environmental decision issued after the evaluation of the influence of the reservoir on the Natura 2000 areas and conditioned by performing specific minimising activities;
- In the area of Wielikąt Ponds and Tworkowo Forest PLB240003 the forest part would be destroyed, but this will not lead to the loss of protected resources, as they are restricted to the species connected to the ponds.

**On the Oder at Polish-Czech border** (Natura 2000 area: The Border Meander of the Oder PLH240013)

- The construction of waterway to Czech Republic will cause complete destruction of the character of the area, the integrity of which is maintained by spontaneous meandering and the natural dynamics of the Oder in this section.
- The construction of waterway will require destroying at least part of the natural habitats protected as part of the area: willow, poplar or alder flood-meadows (91E0), ash-elm flood-meadows (91F0), cnidium meadows (6440), fresh meadows (6510), riparian herbaceous plants (6430), and habitats of cinnabar flat bark beetle and hermit beetle.
- This would mean a significant negative influence on the area, if not its complete destruction.

**On the Vistula above the current reservoir in Włocławek** (Natura 2000 areas: The Valley of the Middle Vistula PLB140004 and Kampinos Valley of the Vistula PLH140029, natural reserves: Kiełpin Point Bars, Kazuń Towheads, Zakroczym Meander, Raków Towhead, Antonin Towhead, Zakrzew Islands, Białobrzegi Islands, Wyków Towhead, Troszyn Point Bars):

- Meeting the requirements of a waterway will cause the destruction of 9 natural reserves located near each other in this section of the Vistula. These reserves protect the sand point bars on the Vistula or towheads in a more advanced degree of succession, along with valuable ornitofauna – the basis for their integrity and the basis for maintaining their character is the natural dynamics of the river and accumulation of sand point bars, which cannot be reconciled with the requirements of navigation.
- The integrity of the western section of the Natura 2000 bird area of The Valley of the Middle Vistula, which is currently functioning in accordance with the natural dynamics of the river – specifically the dynamic system of sandbars, towheads, distributaries, eroded banks, periodically flooded riparian meadows – will be completely destroyed. In this section, almost all bird species protected in this area would be threatened. Specifically, the greatest threat is to the following species: common shelduck *Tadorna tadorna*, Eurasian oystercatcher *Haematopus ostralegus*, little ringed plover and common ringed plover *Charadrius dubius* and *Charadrius hiaticula*, Mediterranean gull *Larus melanocephalus*, common gull *Larus canus*, common tern *Sterna hirundo*, little tern *Sterna albifrons*, common kingfisher *Alcedo atthis*, sand martin *Riparia riparia*.
- The resources of the natural habitat: river with muddy banks 3270 will be destroyed. Part of the resources of willow, poplar and alder flood-meadows 91E0 and elm-ash flood-meadows would be destroyed. There is a risk that the investment activities will involve and destroy

parts of the patches: oxbow lakes 3150, riparian herbaceous plants 6430, psammophilic vegetation 6120, molinia meadows 6410, fresh meadows 6510.

- Transformations of the river bed may deteriorate the condition of fish habitats, specifically: asp *Aspius aspius* (especially breeding and wintering grounds), Amur bitterling *Rhodeus serioceus amarus*

**In the Vistula from Włocławek to Gdańsk** (Natura 2000 areas: Włocławek Valley of the Vistula PLH040039, Nieszawa Valley of the Vistula PLH040012, Dybowo Valley of the Vistula PLH040011, Solec Valley of the Vistula PLH040003, The Lower Vistula PLH020033, The Valley of the Lower Vistula PLB04003, Vistula Landscape Park):

- The integrity of the bird Natura 2000 area will be completely destroyed at all of its length – from Włocławek to the estuary. Currently, functioning of this area is conditioned by the natural dynamics of the river – specifically by the periodic flooding of riparian meadows and the presence of periodic marshes and flooded areas, as well as the dynamics of the river bed – the presence of systems of sandbars, towheads, distributaries, eroded banks. Almost all bird species protected in this area would be threatened. Specifically, the greatest threat is to the breeding grounds of little ringed plover *Charadrius dubius*, common sandpiper *Acitis hypoleucos*, common kingfisher *Alcedo atthis*, whiskered tern *Chlidonias hybridus*, black tern *Chlidonias niger*, common tern *Sterna hirundo* and little tern *Sterna albifrons*, Eurasian oystercatcher *Haematopus ostralegus*, common gull *Larus canus*, and also the biotopes of river marshes of key importance for many bird species during migration and wintering.
- Cascading the river will cause complete transformation of the current inter-levee area and the destruction of its current natural habitats: oxbow lakes 3150, willow, poplar and alder flood-meadows 91E0, riparian herbaceous plants 6430.
- As a result of taking over this area for investments and flooding, part of the resources of natural habitats and species habitats, also outside the current inter-levee area, will be directly destroyed.
- Complete transformation of the river into a network of reservoirs will have negative influence on fish habitats: asp *Aspius aspius*, spined loach *Cobitis taenia*, white-finned gudgeon *Romanogobio albipinnatus*, and European weatherfish *Misgurnus fossilis*. There is a great risk of losing the key functional locations for these species (wintering grounds, breeding grounds) and of a larger part of the population protected in five Natura 2000 areas.
- Fish migrations will be significantly hampered, even with fish passes in the planned dams. The possibilities of salmon *Salmo salar* migrations to all the breeding grounds in the Vistula river basin will be decreased and the plans for restoring breeding areas of this species in Poland will be destroyed. Probably the breeding grounds of allis shad *Alosa alosa* and twait shad *Alosa fallax* in the Vistula will be destroyed (their precise locations are still unknown). Migration conditions of the following species in Natura 2000 areas will be deteriorated: European river lamprey *Lampera fluviatilis* (anadromous species) and asp *Aspius aspius* (monobiotic species, but requiring local migration possibilities). The chances of restoring Atlantic sturgeon *Accipenser oxyrinchus* throughout the Vistula river basin will get extremely restricted.

**In the Vistula estuary** (Natura 2000 areas: The Vistula Estuary PLB220004 and Refugium in the Vistula Estuary PLH22004, Seagull Sandbar natural reserve)

- Cascading of the Lower Vistula will limit the transportation of river rubble, which will result in the disappearance of sandbars in the river estuary. These sandbars are currently a key habitat deciding on the character of the protected areas of the Vistula Estuary. Their disappearance would cause the complete loss of natural values of the estuary, including the only permanent habitat of grey seal *Halichoerus grypus* in Poland and the only Polish colony of sandwich tern *Thalasseus sandvicensis*, biotopes of little tern *Sterna albifrons*, little ringed plover *Charadrius dubius* and Eurasian oystercatcher *Haematopus ostralegus*; feeding and

resting grounds of numerous other bird species; the remarkable location of unique seaside species in Poland. The Seagull Sandbar natural reserve, the goal of which is to protect the sandbars accumulated in the Vistula estuary, will be completely destroyed.

- The change in the hydrological regime of the Vistula and in the transport of river rubble will interfere with the functioning of the protected natural habitat of the estuary (1130).

#### **On the Upper Vistula**

- The works would probably include modernisation of the currently existing waterway, i.e. they could be realised without fundamental changes of its course. There is a potential threat to the Natura 2000 area of the Valley of the Lower Skawa PLB120005, although its key natural values are related more to the complex of fish ponds and the valley of the Skawa, and not to the Vistula.
- However, the project is against the objectives of the considered and environmentally desirable programme of revitalising the Upper Vistula.
- The construction of the Niepołomice dam would hamper the restoration of the migration trail for migrating fish (potentially including salmon *Salmo salar*) from the Soła to the Skawa.

#### **On the Warta and the Noteć** (Natura 2000 areas: The Warta Estuary PLC080001, The Valley of the Lower Noteć PLB080002, The Noteć Flood-Meadows PLB30003, The Valley of the Middle Noteć and the Bydgoszcz Canal PLB300001, The Noteć Estuary PLH080006, The Valley of the Noteć PLH300004)

- The objectives for the lower Warta may infringe the integrity of the Warta Estuary National Park and the Warta Estuary Natura 2000 area PLC080001. The Warta in this section flows through a national park. The functioning of the whole geo-ecosystem of the Słońsk Polder in the Warta Estuary National Park and its unique natural values, including the quality of the habitats of several dozen of protected bird species, depend on the Warta flooding the polder, which currently takes place with medium water levels. Modernisation of the waterway would surely also include the restoration or even raising river walls preventing such floods. Interfering with the river bed may be a threat to local feeding, breeding and wintering grounds of asp *Aspius aspius*, white-finned gudgeon *Gobio albipinnatus*, spined loach *Cobitis taenia* and Amur bitterling *Rhodeus sericeus*. It is difficult to assess other influences, as there is no information on specific investment plans.
- Modernisation of the waterway on the Noteć and of the Bydgoszcz Canal may locally require corrections of the course of the river bed of the Noteć (meanders) and reconstruction of the existing dams. We cannot exclude the influence on the entire water management system in the valley of the Noteć and the Bydgoszcz Canal, and, therefore, on the primary biotopes of the area – the complex of wet meadows, pastures, bushes and fragments of flood-meadow forests. If the water conditions of the valley changed, this would have influence on several dozen bird species that are protected here. Locally, due to investment, patches of habitats may be destroyed, specifically willow and alder flood-meadows (91E0), riparian herbaceous plants (6430), and valley dunes (2330).
- In the periods of low water resources, there may be competition for water between the waterway and the pond complexes in the valley. The ponds are a key habitat for ten-odd protected bird species.

#### **In the valley of the Bug** (Natura 2000 areas: The Valley of the Lower Bug PLB140001, The Bug Refugium PLH140011, The Bug Landscape Park):

- So far, the nature of the construction of the waterway along the Bug – using and adjusting the river bed of the Bug for navigation, or constructing a lateral canal with the river bed left as it is – has not been specified. In both cases, however, the integrity of the protected areas along the Bug would be critically infringed.
- If the river bed of the Bug is used as a waterway, a fundamental intervention in its hydrological regime (adjustment of the Bug, probably construction of dams, equalising the

flow) and transformation of the course of the river bed (milder meanders) would be required. This would mean the loss of the primary integrity factor of the protected areas in the valley of the Bug, which currently is the natural hydrological regime and the dynamics of river-bed creation processes of a large, only slightly transformed river – one of the most natural rivers of this size in the European Union. Currently, the Bug is a typical non-adjusted lowland river with numerous meanders and oxbow lakes; with local sandbars and sandy escarpments with or without willow or poplar flood-meadows, with well-developed willow scrubs. This character would be lost. The mechanisms of creating and maintaining natural habitats would be destroyed: valley dunes (2330), river with muddy banks (3270), oxbow lakes (3150), riparian herbaceous plants (6430), cnidium meadows (6440), willow, poplar and alder flood-meadows (91E0), elm-oak-ash flood-meadows (91F0) and habitats of thick shelled river mussel *Unio crassus*. The habitats of the following fish species would be significantly transformed: habitats of white-finned gudgeon *Romanogobio albipinnatus*, asp *Aspius aspius*, Amur bitterling *Rhodeus sericeus*, spined loach *Cobitis taenia*. Limiting floods would have a negative influence of the habitats of ten-odd bird species protected here. The mechanisms of creating and maintaining habitats of common tern *Sterna hirudo*, little tern *Sterna albifrons*, little ringed plover *Chardarius dubius* and common ringed plover *Chardarius hiaticula* in the river bed; common kingfisher *Alcedo atthis* and sand martin *Riparia riparia* on river banks.

- If a later canal is constructed, due to only taking up the area, patches of natural habitats and species habitats protected as part of the area could be destroyed. The key issue would be water distribution between the natural river bed and the canal; if hydrological regime of the Bug is changed, all the aforementioned influences would take place.
- Regardless of the variant, the landscape of the half-natural valley of a great river, which is protected as part of the Bug Landscape Park, would be significantly transformed.
- Connecting the Bug with the Dniestr will open the door for migrating Ponto-Caspian species that are foreign to our waters. These species are a strong competition for native species.

#### RECAPITULATION

In the valley of the Oder, the realisation of the Strategy would lead to weaken the integrity of the whole network of the protected areas along the Oder (17 Natura 2000 areas and 4 landscape parks), from the border with Czech Republic all the way to Szczecin. Most of the areas would lose the primary factor of their functioning, i.e. periodic flooding of the Oder, which is of key importance for natural habitats: willow, poplar or alder flood-meadows (91E0), ash-elm flood-meadows (91F0), cnidium meadows (6440), and also significant for oxbow lakes (3150) and other types of habitats. All the Oder resources of the habitat 3270 – rivers with muddy banks – would be lost. With the loss of periodic marshes and flooded areas, the habitats of bird species protected in the Natura 2000 areas would significantly deteriorated. Some patches of the protected natural habitats would be physically destroyed in connection with the necessity of adjusting the course of the river bed to the desired navigability class. The negative influences would affect one of the most valuable complexes of flood-meadow forests (91F0) in Europe. The integrity of the Natura 2000 network infringed in this way would be impossible to compensate.

On the Oder, the realisation of the Strategy would infringe the environmental goals of the currently realised investments: the Malczyce dam, the Wrocław Water Node and the Racibórz Dolny reservoir, which have been allowed after the influence on the Natura 2000 areas had been assessed, under the condition of performing specific activities minimising this influence. If the Strategy is realised, these minimising activities could not be performed at all or their effects would be completely destroyed.

In the valley of the Vistula, the realisation of the Strategy would cause the destruction of the whole network of protected areas (10 Natura 2000 areas, a landscape park, 10 natural reserves) between Warsaw and the Vistula Estuary. The character of the river in this section and all the

environmental values related to its current character – are conditioned by the natural dynamics of the river – specifically the dynamic system of sandbars, towheads, distributaries, eroded banks, periodically flooded riparian meadows – would be completely destroyed. A significant part of domestic resources of habitats of common shelduck *Tadorna tadorna*, Eurasian oystercatcher *Haematopus ostralegus*, little ringed plover and common ringed plover *Charadrius dubius* and *Charadrius hiaticula*, Mediterranean gull *Larus melanocephalus*, common gull *Larus canus*, common tern *Sterna hirundo*, little tern *Sterna albifrons* would be destroyed. Habitats of fish species protected as part of Natura 2000 areas in this whole section of the Vistula would be destroyed. An indirect, but inevitable influence would be the disappearance of sandbars in the Vistula Estuary, which would cause the complete loss of natural values of the estuary, including the only permanent habitat of grey seal *Halichoerus grypus* in Poland and the only Polish colony of sandwich tern *Thalasseus sandvicensis*. The integrity of the Natura 2000 network infringed in this way would be impossible to compensate.

In the valley of the Warta and the Noteć, there is a risk of affecting the water conditions of the whole peaty Toruń-Eberswalde Ice-Marginal Valley, thus affecting almost all protected resources of the network of 6 Natural 2000 areas in this ice-marginal valley.

The construction of the waterway in the valley of the Bug, regardless of the adopted solution, would fundamentally infringe the integrity of the Natura 2000 areas and the landscape park that stretches all along the valley.

The construction of a series of dams in the Vistula and in the Oder would affect (even with fish passes) the possibilities of migration of migrating fish, limiting the access of anadromous fish to virtually all – with the only exception of the rivers of Przymorze – breeding grounds in Poland. Such a general influence throughout Poland would specifically involve salmon *Salmo salar* and European river lamprey *Lampetra fluviatilis*, and it would also prevent the restoration of Atlantic sturgeon *Accipenser oxyrinchus* in most of Polish rivers.

The integrity of the Natura 2000 network in Poland infringed by the realisation of the Strategy could not be restored by means of compensation measures. The negative influence, including the loss of a significant part of domestic resources, would affect specifically natural habitats and species connected to the valleys of great rivers, and there are no more valleys of this kind in Poland that would not be affected by the Programme and that could be the target of potential compensation measures.

Especially exposed habitats:

Code	Name	Risk
1130	Estuaries	***
2330	Inland dunes with psammophilic vegetation	*
3150	Oxbow lakes and natural eutrophic bodies of water with Nympheion, Potamion communities	**
3270	Flooded muddy river banks	****
6410	Variable-moisture molinia meadows (Molinion)	*
6430	Alpine herbaceous plants (Adenostylion alliariae) and riparian herbaceous plants (Convolvuletalia sepium)	**
6440	Cnidium meadows (Cnidion dubii)	***
6510	Extensively exploited lowland and alpine fresh meadows (Arrhenatherion elatioris)	*
91E0	Willow, poplar, alder and ash flood-meadows (Salicetum albo-fragilis, Populetum albae, Alnenion glutinoso-incanae, spring alder carrs)*	***
91F0	Flood-meadow oak-elm-ash forests (Ficario-Ulmetum)	***

Species especially vulnerable (r – breeding population, c – periodic concentrations, w – wintering population):

		Risk
Angelica palustris	Marsh angelica	*
Castor fiber	Eurasian beaver	*
Halichoerus grypus	Grey seal	****
Lutra lutra	Eurasian otter	*
Bombina bombina	European fire-bellied toad	*
Triturus cristatus	Northern crested newt	*
Alosa fallax	Twait shad	***
Aspius aspius	Asp	***
Cobitis taenia	Spined loach	**
Cottus gobio	European bullhead	*
Gobio albipinnatus	White-finned gudgeon	***
Lampetra fluviatilis	European river lamprey	****
Misgurnus fossilis	European weatherfish	**
Rhodeus sericeus amarus	Amur bitterling	***
Salmo salar	Atlantic salmon	***
Cerambyx cerdo	Great capricorn beetle	**
Cucujus cinnaberinus	Cinnabar flat bark beetle	**
Eriogaster catax	Eastern eggar	*
Euphydryas aurinia	Marsh fritillary	*
Euphydryas maturna	Scarce fritillary	*
Lycaena dispar	Large copper	*
Osmoderma eremita	Hermit beetle	**
Maculinea nausithous	Dusky large blue	*
Maculinea teleius	Scarce large blue	*
Unio crassus	Thick shelled river mussel	*
Acrocephalus arundinaceus r	Great reed warbler	*
Acrocephalus paludicola r	Aquatic warbler	*
Actitis hypoleucos r	Common sandpiper	**
Alcedo atthis r	Common kingfisher	**
Anas acuta c	Northern pintail	**
Anas platyrhynchos c	Mallard	**

Anas platyrhynchos w	Mallard	**
Anas querquedula c	Garganey	**
Anas querquedula r	Garganey	**
Anas strepera c	Gadwall	**
Anas strepera r	Gadwall	**
Anser albifrons c	Greater white-fronted goose	**
Anser albifrons w	Greater white-fronted goose	**
Anser anser c	Greylag goose	**
Anser anser r	Greylag goose	*
Anser anser w	Greylag goose	**
Anser fabalis c	Taiga bean goose	**
Anser fabalis w	Taiga bean goose	**
Ardea cinerea r	Grey heron	*
Aythya ferina c	Common pochard	
Aythya ferina w	Common pochard	
Aythya fuligula c	Tufted duck	
Aythya fuligula w	Tufted duck	
Aythya marila c	Greater scaup	
Aythya marila w	Greater scaup	
Botaurus stellaris r	Eurasian bittern	*
Charadrius dubius r	Little ringed plover	****
Charadrius hiaticula r	Common ringed plover	***
Chlidonias hybridus r	Whiskered tern	***
Chlidonias niger r	Black tern	*
Ciconia nigra r	Black stork	*
Crex crex r	Corn crane	*
Cygnus olor c	Mute swan	**
Cygnus olor w	Mute swan	**
Cygnus cygnus c	Whooper swan	***
Cygnus cygnus w	Whooper swan	***
Dendrocopos medius p	Middle spotted woodpecker	*
Ficedula albicollis r	Collared flycatcher	*
Grus grus c	Common crane	***
Haematopus ostralegus r	Eurasian oystercatcher	***
Haliaeetus albicilla c	White-tailed eagle	*
Haliaeetus albicilla r	White-tailed eagle	*
Haliaeetus albicilla w	White-tailed eagle	*
Ixobrychus minutus r	Little bittern	*
Larus argentatus r	European herring gull	**
Larus canus r	Common gull	***
Larus melanocephalus r	Mediterranean gull	****
Luscinia svecica r	Bluethroat	**
Mergus merganser r	Goosander	*
Numenius arquata r	Eurasian curlew	**
Pluvialis apricaria c	European golden plover	*
Porzana porzana r	Spotted crane	***
Recurvirostra avosetta r	Pied avocet	***
Remiz pendulinus r	Eurasian penduline tit	*
Riparia riparia r	Sand martin	**
Sterna albifrons r	Little tern	***

Sterna caspia c	Caspian tern	***
Sterna hirundo r	Common tern	****
Sterna sandvicensis r	Sandwich tern	****
Tadorna tadorna r	Common shelduck	**
Tringa glareola c	Wood sandpiper	*
Tringa totanus c	Common redshank	*
Tringa totanus r	Common redshank	*
Upupa epops r	Hoopoe	*
Vanellus vanellus r	Northern lapwing	**

- \* - risk of significant negative local influence (area scale), usually possible to avoid;
- \*\* - significant influence in area scale, difficult to avoid
- \*\*\* - significant influence in country scale;
- \*\*\*\* - critical influence on most or all of Polish resources