DEVELOPMENT OF WATERWAYS IS INCONSISTENT WITH THE CONSTITUTIONAL PRINCIPLE OF SUSTAINABLE DEVELOPMENT

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Position paper concerning the plans to transform Poland's rivers into navigable canals, as laid down in Resolution No. 79 of the Council of Ministers from 14th June 2016 on adopting "The Polish inland waterway plans for 2016-2020 with perspective to 2030."

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The government's plans for the development of large-scale water transport are extremely costly as an investment and will permanently burden the state budget with maintenance costs. So far, no analyses confirming that the plans would be economically effective have been presented. However, there is plenty of evidence of significant harmful impact on the environment, the people's safety and quality of life, and the economy as a whole.

Koalicja Ratujmy Rzeki (Save the Rivers Coalition) concludes that the planned transformation of Poland's free-flowing rivers into artificial, engineered waterways is inconsistent with the principle of sustainable development enshrined in Art. 5 of the Constitution of the Republic of Poland. Sustainable development means that natural resources should be used in a way which does not undermine the future generations' ability to use them, and does not threaten the stability of natural systems.

River and valley ecosystems provide many ecosystem services which will be disrupted or destroyed by the construction of waterways, including climate regulation, regulation of natural water circulation and protection against floods and droughts, purification of waters, supporting inland and marine fishing, provision of wildlife corridors and bird migration trails, as well as recreational and cultural functions. Taking many of these river functions away from the contemporary and future generation of Poles, and ordering the destruction of natural ecosystems in the name of a short-sighted vision focused on the development of only one function of the rivers, namely transport, is glaringly inconsistent with the principle of sustainable development, which is enshrined in the Polish and EU environmental legislation.

I. Nature of the problem

The governmental plans published in Monitor Polski on 22nd July 2016 (item 711) concern the Polish sections of three international waterways:

- E-30 – the Oder from Świnoujście to the border with Czech Republic,

- E-40 – the Vistula from Gdańsk and Elbląg to Warsaw, the Bug from the Zegrze Reservoir to the border with Belarus in Brześć,
- E-70 connection of the Vistula with the Oder, via the Warta, the Noteć and the Bydgoszcz Canal.

Moreover, the programme envisages the construction of the Silesian Canal connecting the Gliwice Canal with the Upper Vistula Cascade, reconstruction of the Gliwice Canal and construction of Polish section of the Danube-Oder-Elbe canal.

Implementation of the Programme will result in the destruction of over 1000 km of free-flowing rivers with different flows, diverse width, depth and river bed structures, diverse shorelines, meanders (the upper Oder, the Bug), dynamic systems of islands (the Vistula, the Bug), and connections between the river beds and adjacent floodplains. In order to attain the projected parameters of class V (the Oder) and at least class IV (the other rivers) waterways, the rivers which are several dozen centimetres deep in summer and several metres deep during big freshets, will be transformed into canals with a constant depth of at least 2.8 m. In several hundred locations, the river beds will be dug anew in order to ensure adequately mild bends (meander radius required for classes IV and Va is 650 m, for class Vb it is 800 m).

Due to the too low and irregular flows, attaining transit depth on the middle Oder, the middle and lower Vistula and the Bug will require constructing several dozen dams and changing those rivers into cascades of heavily eutrophicated reservoirs. In practice, the cascading will mean complete disruption of the continuity of the river ecosystems.

It will also be necessary to construct levees and river-training structures to ensure adequate width of the navigable route (40 m for class IV and 50 m for class V), as a result of which river valleys will be cut off from river beds and the retention capacity of river valleys will be destroyed.

II. Significance for the economy

- The government intends to implement the Programme within the next 13 years (the first stage to 2020, i.e. within the next 3 years!). Its costs have been estimated (based on an undisclosed methodology) at PLN 90 billion. Both the **timeframe and the expected costs are completely unrealistic**, as confirmed by global experiences[1] and the history of recent large hydrotechnical investments in Poland. The Malczyce dam on the Oder has been under construction for over 10 years and has cost three times as much as originally projected. The construction of the Świnna Poręba reservoir on the Skawa has been going on for 30 years and has cost PLN 2.5 billion, and nobody even remembers what the originally projected costs was. The Coalition estimates that - based on the costs of investments carried out to date and the scope of the planned works - the cost of **implementing the Programme may exceed PLN 200 billion,** and most of the money is supposed to come from public funds.

  Adapting the rivers to requirements of water transport, which could have been considered

[1] World Commission on Dams. 2000. Dams and Development. A New Framework for Decision Making. Earthscan. London

reasonable in the 19th and 20th centuries in relation to the Rhine, the Danube or the Mississippi, is completely unjustified economically in the 21st century in relation to rivers of completely different character and size.

- **So far, no economic analyses of the Programme have been conducted or presented, therefore, the PLN 300 billion in profits that President Duda talked about during the ratification of the AGN agreement[2] is a tall story.** Figures concerning the costs of inland water transport in the EU and the USA indicate that, **apart from the investment costs, waterways require constant and high operational and maintenance costs** related to dredging, ice-breaking, operation of locks, etc. Based on available data,[3] the **KRR estimates these costs for Poland at several million PLN annually**.
- In view of the goals of the Programme (class V waterway on the Oder, at least class IV – on the remaining rivers and canals), the projects implemented so far on the Oder and aimed at bringing the river to class III parameters, financed from a USD 1.3 billion World Bank loan and grants from the Infrastructure and Environment Operational Programme, were economically pointless and constituted a waste of money.
- The forecasts predicting growth of the share of water transport in total inland transport in Poland are based on questionable assumptions and encumbered with a high degree of uncertainty. In the analyses for the Oder,[4] figures for the largest European ports were used, i.a. Antwerp and Rotterdam, which trans-ship hundreds of millions of tonnes of goods annually, 40% of which is serviced by inland navigation. The volume of trans-shipments at the Szczecin-Świnoujście port complex is ten-odd to twenty million tonnes annually, and only 4% of that figure is serviced by inland navigation. Because the infrastructure of suppliers and carriers would have to be adjusted to the new means of transport, and because many of them are located away from the waterway, the assumption that inland navigation could take over a significant proportion of transport from other carriers is not justified. When assessing the potential of water transport growth in Poland, one has to take into consideration the current trends in developed economies. The proportion of water transport in the EU countries has been stable for years at approximately 6%.[5][6] Inland navigation has been losing (similarly to railroad) in competition with road transport, which provides fast door-to-door deliveries.[7] In the USA, in years 2006-2013, the proportion of navigation in

[2] European agreement on main inland waterways with international significance

[3] International Navigation Association. 2005. Economic aspects of inland waterways. Report of Working Group 21 of the Inland Navigation Commission.

[4] Pluciński M. (ed.). 2016. Możliwości wykorzystania transportu wodnego śródlądowego w obsludze zespołu portowego Szczecin – Świnoujście. Polskie Towarzystwo Ekonomiczne Oddział w Szczecinie / Zarząd Morskich Portów Szczecin i Świnoujście SA. Szczecin.

[5] EUROSTAT. 2015.Energy, Transport and environment indicators. 2015 edition.

[6] European Court of Auditors. 2015. Inland Waterway Transport in Europe: No significant improvements in modal share and navigability conditions since 2001. Publications Office of the European Union. Luxembourg

[7] door-to-door – transport term meaning full logistic service from reception of goods from a vendor to its delivery to the recipient

the transport of goods decreased from 5% to 4%, which, in absolute numbers, means a 15% decrease in the mass of goods transported by barges.[8]

- **Inland navigation will compete with and pose a threat to domestic railroad transport**. This is confirmed by the official objectives of expanding the Oder Waterway, where it is clearly stated that loads would be transferred from railroad transport to barges.[iii] Comparing these two modes of transport, however, definitely shows that railroad should be the preferred mode. **Railroad transport is faster, minimally dependent on external factors, while navigation is risky due to continuity issues related to ice, low water levels and freshets causing interruptions in navigation.** Those risks increase with climate change and greater frequency of extreme weather phenomena. Moreover, railroad transport offers much better accessibility because it already has an existing well-developed network. Waterways, which have to be constructed first, will have a very limited range and may generate additional demand for road transport (to and from ports). On the domestic market there are no barges with draught and cargo load adjusted to class IV waterways,[iii] therefore Polish carriers will be losing ground to foreign competition from the start. This means that the claim about supporting domestic transport companies is false.
- **The Programme poses a real threat to the thriving coastline tourism**[9] because it will inevitably involve a deterioration of the quality of waters. Water flowing through the regulated, canal-like artificial river beds will have almost zero capability for self-purification, which will lead to significant eutrophication of coastal sea waters.[10] Blooms of cyanobacteria, often toxic, have been already causing beaches to close, and this will happen more often, specifically in the vicinity of river estuaries carrying large loads of biogenic content.
- Another significant negative economic effect concerns lower attractiveness of regulated rivers from the perspective of tourism and recreation – including environmental tourism and recreation, angling, kayaking or activities related to sportive and traditional sailing. Polish rivers have special landscape values, thanks to which various forms of water tourism are very well developed in our country, including the recent revival of traditional boat sailing. This sector of economy has a very significant potential, as demonstrated by the example of the Loire, where traditional navigation has developed in recent decades to become the key regional "product", benefiting from simultaneous protection of the natural environment and the landscape of the whole river valley.[11] Traditional navigation, water environmental

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[8] U.S. Department of Transportation. Bureau of Transportation Statistics. Freight Facts and Figures 2015. https://www.rita.dot.gov/bts/sites/rita.dot.gov.bts/files/data_and_statistics/by_subject/freight/freight_facts_2015

[9] ICES. 2013. Report of the Working Group on Harmful Algae Bloom Dynamics (WGHABD), 9-12 April 2013, Belfast, UK. ICES CM 2013/SSGHIE:09. 67 pp.https://www.ices.dk/sites/pub/Publication%20Reports/Expert%20Group%20Report/SSGHIE/2013/WGHABD13.pdf

http://www.helcom.fi/baltic-sea-trends/environment-fact-sheets/eutrophication/cyanobacterial-blooms-in-the-baltic-seaaccessed on 28/05/2017

https://earth.esa.int/web/earth-watching/environmental-hazards/content/-/article/algal-bloom-in-the-baltic-seaaccessed on 28/05/2017

[10] http://balticgreenbelt.org.pl/uploads/BSE-03.pdfaccessed on: 28/05/2017

[11] Lukić T., Pivac T., Košić K., Stamenkovic I. 2012. Tourism in the Valleys of European Rivers, Comparing the Loire Valley and the Danube Valley in Serbia. Sociology Study, 2 (3):179-188. https://www.researchgate.net/profile/Tamara_Lukic5/publication/261642419_Tourism_in_the_Valleys_of_European_Rivers_

tourism or kayaking are difficult to reconcile with the goals of river regulation for the needs of intensive water transport. The chance for development that will be lost - most importantly for areas with high unemployment rates and threatened with exclusion. Meanwhile, the examples of the Biebrza valley and the region of the Warta river mouth show that this is a perfect way of development for local communities.

III. Social effects

- **The greatest threat to people posed by the development of waterways concerns the increased risk of flooding.** Cutting off river beds from their floodplains, shortening rivers by straightening their meanders, and maintaining the high level of water required for navigation will all directly increase the frequency and range of destructive floods. Evidence supporting this can be found in numerous publications e.g. concerning the Rhine. In the upper Rhine, due to the straightening of the river bed and the loss of 85% of floodplains, there were five floods with the probability of 1% (so-called hundred-years floods) within the last century.[12] In the aftermath of the 1995 flood, the Rhine countries had to spend over EUR 10 billion[13] on flood protection. These costs were borne by European taxpayers, and not the beneficiaries of the waterway.
  Construction of only one dam on the Vistula in Niepołomice means a loss of river bed retention of 2.414 million m^3.[14] On the other hand, the leveeless sections of the Biebrza, the Narew, and the Bug valleys testify to the effectiveness of non-technical methods of flood protection. Freshet waters every year flood the broad valleys of these rivers posing no threat to people who keep an adequate distance from the river.
- **iver ecosystems transformed into navigable canals and cascades of reservoirs will lose much of their self-purification capacity, which means limited access to drinking water for the inhabitants of localities on the Oder, the Vistula, the Note and the Bug, and a significant increase of costs of treating water.**
  More pollution carried by the regulated river beds into the sea will increase its eutrophication and the range of dead anaerobic zones and blooms of cyanobacteria, posing risks for the attractiveness of the Polish Baltic Sea coastline areas. It can also have a **negative impact on the condition of Polish fishing industry**.
- **Destruction of rivers and the emergence of heavy water transport will put an end to the recreational use of rivers by anglers, water sport and environmental tourism enthusiasts**, which - apart from the economic effects mentioned before - will directly worsen the quality of life of Poles as they get deprived of this important way of having

Comparing_the_Loire_Valley_and_the_Danube_Valley_in_Serbia/links/0c960534eacf2ecaf8000000/Tourism-in-the-Valleys-of-European-Rivers-Comparing-the-Loire-Valley-and-the-Danube-Valley-in-Serbia.pdf

[12] E.g. http://www.fwie.eco.pl/publikacja/www/J.Zelazinski.htmaccessed on: 27/05/2017

[13] http://www.iksr.org/index.php?id=190&tx_ttnews[tt_news]=776&L=3&cHash=8dcca80929fc81a5502f307f13c19212 accesed on 25/05/2017

[14] Wyżga, B. Radecki-Pawlik, A. Hajdukiewicz, H. Przebięda, M. 2014; "O celowości budowy stopnia Niepołomice na Wiśle". Gospodarka Wodna, 7.

contact with nature. Rivers are a significant component of local cultural identities, and their degradation will break this connection forever.

IV. Environmental threats

- **Destruction of over 1000 km of river valleys poses a real threat to two national parks** (Warta River Mouth National Park and Kampinos National Park)**, 14 landscape parks** (Lower Odra Valley Landscape Park, Cedynia Landscape Park, Warta River Mouth Landscape Park, Krzesin Landscape Park, Jezierzyca Valley Landscape Park, Stobrawa Landscape Park, Rudy Landscape Park, Sieraków Landscape Park, Vistula Landscape Park, Chełmno Landscape Park, Vistula Spit Landscape Park, Elbląg Upland Landscape Park, Gostynin-Włocławek Landscape Park, Brudzeń Landscape Park, Bug Landscape Park, Podlasie Bug Gorge Landscape Park), several dozen of Special Areas of Conservation and Natura 2000 Special Bird Protection Areas (the specific number depends on the technical solutions that will be selected) , as well as several dozen nature reserves.[15] Contrary to some opinions, **damage to water ecosystems of these areas cannot be mitigated or compensated. It will be irreversible.**[16]
- The measures to stabilise water levels and eliminate low water levels in river beds, limit the range and depth of flooding, as well as resulting permanent disturbance of ground water level in adjacent areas will undermine the environmental objectives defined in the Water Framework Directive. They will have a significant negative impact on all river bed and valley types of natural habitats protected by Polish and EU law, specifically: flooded muddy river banks 3270, oxbow lakes 3150, cnidium meadows 6440, molinia meadows 6410 and extensively exploited lowland meadows 6510, riparian herbaceous plants 6430, wet-ground forests 9170, as well as willow, poplar, alder and ash flood-meadows 91E0, elm-ash flood-meadows 91F0, which are priority habitats under the EU rules. Many of those habitats are dependent on the existence of floodplains (especially flood-meadow forests) and are among the most biodiverse ecosystems of the temperate climate zone, of key importance for the survival of many species of plants, fungi and animals.
- The hydromorphological transformation of river beds and valleys, as well as the changed physical and chemical parameters of water, will pose a threat to numerous animal species. In particular, this concerns the many fish species protected under Polish and EU law, including white-finned gudgeon, Amur bitterling, spined loach, European weatherfish, asp. **Numerous bird species associated with natural river beds and floodplains**, such as garganey, northern shoveller, little tern, common gull, common ringed plover and little ringed plover, Eurasian curlew, black-tailed godwit, common redshank, common sandpiper, common kingfisher, sand martin, are also threatened with a significant reduction of their populations.

[15] http://geoserwis.gdos.gov.pl/mapy/accessed on 15/05/2017

[16] Pawlaczyk, P. ed. 2016. Wstępna ocena ryzyka oddziaływania Rządowej "Strategii Rozwoju Śródlądowych Dróg Wodnych w Polsce na lata 2016-2020 z perspektywą do 2030 r." na przyrodnicze obszary chronione. Klub Przyrodników.http://www.kp.org.pl/pdf/stanowiska/wodne/2016-09_ryzyko_oddz_progr_rozw_zeglugi_na_przyrode.pdf

- **Transforming rivers into cascades of reservoirs will create barriers for domestic populations of diadromous fish including salmon, sea trout, acipenser oxyrinchus, vimba bream and eel, and the local river populations of far-migrating fish such as common barbel, threatening them with extinction. Moreover, the domestic populations of migrating European river lamprey and sea lamprey will go extinct.** Contrary to established opinions, barriers are created not only by transverse structures such as dams and impoundments, but also by backflow of water at impoundments . The speed of water flow in such cases is significantly reduced, water is strongly eutrophicated and heats up faster, which creates a physiological barrier for the fish.
  The **construction of waterways will thwart the efforts already made for the restitution of salmon, trout, vimba bream and eel, for which the government has spent several million PLN annually in recent years.** It will also prevent achieving and maintaining the environmental objectives of various local and regional projects for renaturalisation and restoration of ecological continuity of rivers, which have already been implemented or are being implemented currently for the cost of several million EUR, i.a. as part of Life+ and Infrastructure and Environment programmes.
  Cascades of reservoirs constructed in the place of free-flowing rivers will also create barriers for the migration of land mammals and threaten the populations of species like wolf, lynx and elk.
- Transformation of the main rivers into cascades of reservoirs will also disrupt the evaporation-retention ratio, due to increased evaporation of the open surfaces of stagnating reservoirs, and the process of water exchange between surface waters and ground waters.
- As far as the emissions of greenhouse gases are concerned, water transport is admittedly less carbon-intensive than road transport, but more carbon-intensive than contemporary railroad, the energy efficiency of which has increased significantly (twofold over the last 25 years in the USA).[17] The newest data from the European Environment Agency show that **transport of goods by rail emits three times less CO_2 than navigation (respectively, 15.6 and 50.6 gCO_2/tkm), and in the case of passenger transport, this difference is eightfold.**[18]
- When analysing the potential costs and environmental benefits of waterways, we should also take into consideration the emissions amounts during construction, as well as the scientifically documented significant emissions of greenhouse gases (mostly methane) from dam reservoirs with their accumulation and anaerobic decomposition of organic sediments.[19] The government programme does not present unequivocal evidence that its

[17] Association of American Railroads. 2017. The Environmental Benefits of Moving Freight by Rail.https://www.aar.org/todays-railroads/sustainability

[18] European Environment Agency, 2017. TERM027. Energy efficiency and specific CO_2 emissions.https://www.eea.europa.eu/data-and-maps/indicators/energy-efficiency-and-specific-co2-emissions/energy-efficiency-and-specific-co2-9

[19] E.g. Bridget R. Deemer, John A. Harrison, Siyue Li, Jake J. Beaulieu, Tonya DelSontro, Nathan Barros, José F. Bezerra-Neto, Stephen M. Powers, Marco A. dos Santos, J. Arie Vonk. 2016. Greenhouse Gas Emissions from Reservoir Water Surfaces: A New Global Synthesis. BioScience, 66 (11): 949-964. DOI: https://doi.org/10.1093/biosci/biw117

implementation will lead to any significant reduction of emissions , which undermines the case for destroying over a thousand kilometres of rivers and their valleys.

V. Postulates of Koalicja Ratujmy Rzeki (Save the Rivers Coalition)

The Coalition calls for the large-scale river regulation projects to be scrapped, as they bear the signs of a "gigantomania" dating back to the previous era of centrally controlled economy and are guided by the needs of only one sector of industry – the water transport. Instead of destroying the Polish rivers, we should implement an integrated approach to water management, focusing our efforts on improving flood security and the quality of waters, i.e. activities which harmoniously combine the needs of people with maintaining and improvement of the environment, which constitutes our national heritage.

Specifically, we call for:

- **Development of water transport, tourist and recreational navigation on the Oder, the Vistula and other big rivers in line with the principle of "adjusting boats to the river, and not the rivers to the boats";** such development should be based on local initiatives.
- Implementation of **environmentally friendly flood protection measures,** in accordance with the best current knowledge and taking climate change into consideration. Specifically, we call for **restoration of natural retention of drainage basins and rentauralisation of small rivers and swamps, for floodplains in valleys to be given back to rivers by moving away or eliminating levees where they do not protect housing estates or valuable infrastructure, constructing polders, and conducting regular educational activities in the communities in areas at risk.** Such actions should significantly reduce the risk and impact of floods and increase the availability of clean water resources, while also improving the ecosystem conditions of rivers and their valleys.
  One of the most urgent tasks is to change the scope of works to be carried out as part of the World Bank loan and stop the regulation of the Oder aimed at attaining the parameters of class II waterway for navigation purposes. The works funded by the World Bank should serve to improve the flood protection of local communities, instead of serving the interest of a narrow group, i.e. the inland cargo transport sector.
- **Guarantees that water management will serve the interest of the whole society**, without preference for individual interest groups, to be enshrined in the new framework water law, in a way that respects the principle of sustainable development and follows an integrated approach to water resources within river basins.
- **Consistent investment in the modernisation of railroad transport, which is necessary to shift a significant proportion of cargo from roads to rail and thus** reduce emissions from transport. The idea to move "trucks to tracks" is still valid and feasible, in contrast to the plans to shift goods from trucks to barges.