



# INLAND SHIPPING OR RAILWAY?

SUSTAINABLE DEVELOPMENT  
PERSPECTIVES FOR TRANSPORT  
IN POLAND UNTIL 2050

SUMMARY OF THE REPORT BY WWF POLAND

# INLAND SHIPPING OR RAILWAY?

On **15th December 2016**, the Sejm (the lower house of the Polish parliament) adopted an Act on ratifying the European agreement on main inland waterways of international significance (the AGN Convention). On **24th January 2017**, the Polish president signed this act, which became effective on 17th February, along with the AGN Convention provisions, which apply in Poland to the navigation routes established within its borders. In Poland, this applies to three navigation routes:



## Waterway E30

in Poland following mainly the Oder from Szczecin to Chałupki, with a branch to Gliwice and the perspective of constructing an Oder-Danube link.

## Waterway E70

in Poland from Kostrzyń nad Odrą following the Oder, the Warta, and the Noteć to Bydgoszcz, and then following the Vistula and the Nogat to Elbląg.

## Waterway E40

in Poland starting in Gdańsk, following the Vistula upriver to the vicinity of Dęblin, then via the Vistula-Bug canal to Brest (in Belarus, the route is not specified in the Convention), towards the Black Sea via Ukrainian rivers.

## IN THE EUROPEAN UNION railway transports

 **18%** OF GOODS

inland shipping transports

 **6%** OF GOODS

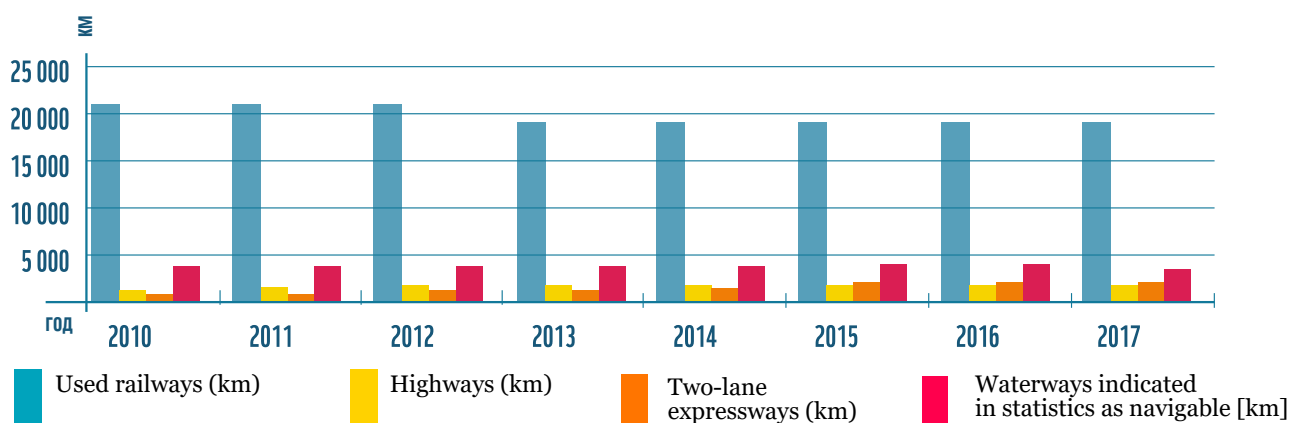
## IN POLAND RAILWAY TRANSPORTS

 **15%** OF GOODS

inland shipping transports

 **<1%** OF GOODS

### LENGTH OF TRANSPORT NETWORKS BY VARIOUS MEANS OF TRANSPORT IN POLAND



source: W. Szymalski, J. Wiśniewski, *WWF Poland Report: Żegluga czy kolej? Perspektywy rozwoju zrównoważonego transportu w Polsce do 2050 roku (Inland Shipping or Railway? Sustainable for Transport in Poland Until 2050)*, Warsaw 2020, p. 31.

The long-term investment in waterways is to consume PLN billions, however, until now it has not been verified if there are stakeholders who would like to use them. In the current economic model requiring “door-to-door” deliveries within a day or two, transporting goods by barges is completely inconsistent with the needs of the market and of the consumers – it takes several days (7 times slower than railway), and only in several months of the year. The goods transported by barges would still require reloading and transporting with other means of transport to significant distances. Railway, due to its speed, lower costs of maintenance, additional functions important for the whole society, and the lack of intrusions on the environment that would be comparably drastic, is the better solution.

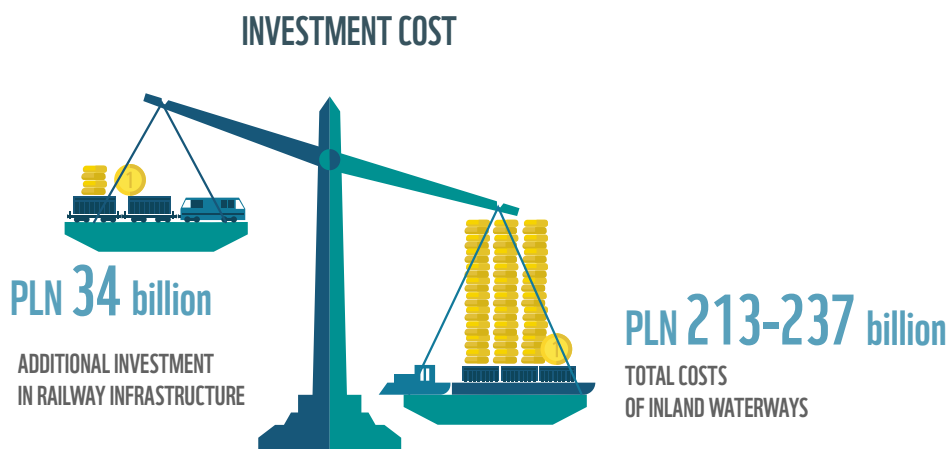
### COMPARISON OF THE MAXIMUM SPEED BY MEANS OF TRANSPORT IN TRANSPORTING CONTAINERS ATTAINABLE IN THE TEN-T NETWORK (HIGHWAYS, RAILWAY MAIN LINES, WATERWAYS)



source: W. Szymalski, J. Wiśniewski, *WWF Poland Report: Żegluga czy kolej? Perspektywy rozwoju zrównoważonego transportu w Polsce do 2050 roku (Inland Shipping or Railway? Sustainable for Transport in Poland Until 2050)*, Warsaw 2020, p. 31.

# WATERWAYS - UNPROFITABLE INVESTMENT!

Constructing waterways on rivers would be several times more expensive than modernisation and expansion of the railway network, which serves the whole society for travelling around the country. The government quotes the cost of **PLN 76 billion**, but this is the amount to be spent only on regulating the rivers to adjust them to functioning as inland shipping waterways. The authors of the WWF Poland report calculated all the costs required for the functioning of waterways, such as raising bridges and preparing the infrastructure. **The total investment costs will be several times higher and reach PLN 213-237 billion, while the maintenance of the whole infrastructure every year will have to be subsidised.** It should be emphasised that in this situation these costs will be borne by us – the citizens and the profit will be made only by private transport companies. However, the costs of the investment programme necessary for **ensuring the competitiveness of cargo railway in Poland adjusting it to the current requirements of the recipients are estimated at less than PLN 34 billion.**



## CAN POLISH RIVERS BECOME INTERNATIONAL WATERWAYS

### AND WHAT WOULD BE THE IMPACT?

The international waterways, according to the requirements of the AGN Convention, have to be of at least navigability class IV, i.e. with the appropriate depth of the waterway (at least 2.8 m), and the constant minimum width of 40 m, so that two ships could pass each other easily when going from the opposite directions.

**Currently, the Polish waterways listed in the Convention practically do not meet the parameters of navigability class IV, being consistent with them only in short sections.**

 Total length of waterways (of various classes) in Poland - **3660 km**

 Total length of IV-V class waterways of international significance in Poland - **208 km**

 Total length of the railway network in Poland - **18 000 km**

## ACTIONS AND INVESTMENTS REQUIRED TO ATTAIN THE PROPER PARAMETERS OF AN INTERNATIONAL INLAND WATERWAY:

300-500 km  
in 2-3 days



300-500 km  
4-5  
or more days



- Construction of dams (and sluices) blocking the river and damming up water every ten-odd or several dozen kilometres.
- Widen the river bed and guarantee appropriate radii of its meanders. In a lot of the sections, a new canal course will have to be dug, which is connected to straightening river sections, reinforcing the banks, and destroying many riverside habitats in the process.
- Wider, canalised and deeper river requires more water, the resources of which need to be balanced and the potential deficits obtained. In many cases, water will have to be transferred from rivers richer in water or additional reservoirs will have to be constructed to stop the water in excess periods and supply waterway during low water levels. All this is connected to constructing dams, embankments, canals, weirs, pump stations, etc.
- Rebuilding bridges to ensure appropriate clearance under the bridges. This procedure is not neutral to the surrounding area, it will require reconstruction of many kilometres of roads, demolishing colliding buildings, constructing embankments, which may cut off lower areas from road networks, etc.
- Constructing dams interferes with the transport of rubble dragged by the river (including gravel and sand), it will deposit near the dams, and downriver the erosive force of water will be washing it out of the river bottom, making it deeper to the point of threatening the stability of the dam. This is also connected to the potential interference with the levels of groundwater both upriver and downriver from the dam. At every dam, it will be necessary to dredge a river bottom and supplementing the rubble between the dams in order to stabilise the river bottom and dampen the erosive energy of water. These actions will have to be constantly repeated, which involves subsequent financial and environmental costs.

## DOES ELECTRIC ENERGY PRODUCTION BY DAMS INCREASE

## THE COMPETITIVENESS OF WATER TRANSPORT?

Using the constructed dams for the production of the so-called clean energy is an often raised argument apparently showing the superiority of inland shipping over rail transport. However, it is much more difficult to call hydropower profitable and ecological, if one connects it with all the problems related to constructing a dam: enormous construction and maintenance costs, considering the amount of water managed by the hydropower plant, significant amounts of methane emitted by the dammed reservoir, and the considerable intrusion on the environment.

The often raised argument for the necessity of constructing dams is that they will be hydropower plants, which would improve the country's energy balance. The potential of energy production by hydropower plants is approximately 6.38% in the scale of the whole country, but the intrusion on the environment would be irreversible. Fortunately, there are alternatives much less harmful to the environment, comparable or better economically, with a much greater potential of fulfilling the energy needs of the country. These are single or hybrid installations including renewable energy source technologies, such as photovoltaics, wind power and biogas plants.<sup>1</sup>

<sup>1</sup> J. Popczyk, K. Bodzek, *Raport Fundacji WWF Polska: Alternatywa dla planowanej elektrowni wodnej w Siarzewie w kontekście bezpieczeństwa energetycznego* (WWF Poland Report: Alternative for the Planned Hydropower Plant in Siarzewo in the Context of Energy Security), Warsaw 2020.

# POLISH WATERWAYS – ENORMOUS INVESTMENT

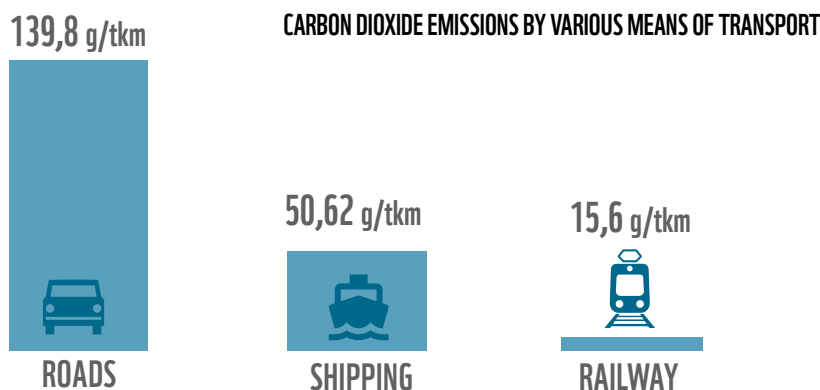
## FOR SEVERAL MONTHS PER YEAR

In the case of the Oder and the Vistula – the two biggest Polish rivers – however, relatively small in comparison to e.g. the Rhine or the Danube, it is assumed that in order to ensure the appropriate amount of water required for cargo transport, it is necessary to transform the riverbeds of these rivers into a series of dammed reservoirs – with 7-8 dams to be constructed on the Vistula, and 26 to 30 dams on the Oder. Even with such drastic regulations the Vistula or the Oder as waterways would never be navigable all year round due to the lack of sufficient waterway resources in Poland as of today.

This means that for many months per year none of the waterways, for which PLN 213-237 billion would have been spent, would be navigable.

## WATER TRANSPORT REDUCES EMISSIONS? THAT IS A MYTH!

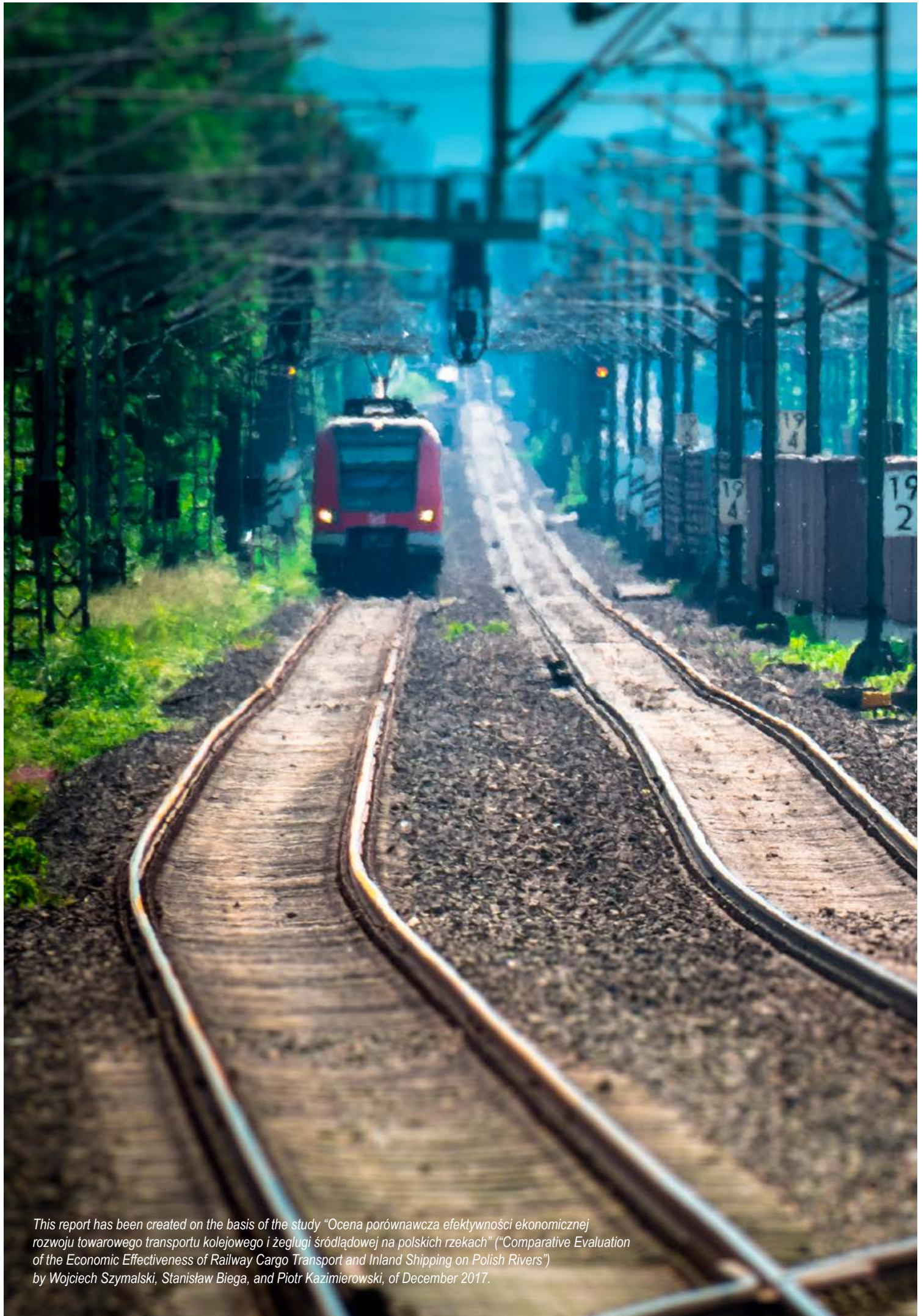
The often raised argument of water transport reducing the CO<sub>2</sub> emissions from road transport is also highly misguided. The multi-billion investments devastating Polish environment will contribute to decreasing the emissions only by 1-2%. Additionally, the methane emissions from sediments on the bottoms of dammed reservoirs constructed for navigation will also increase. The development of an ecological means of transport, such as rail, is supported by the results of studies. In all the investigated parameters, railway emits less harmful substances than inland shipping.



source: W. Szymalski, J. Wiśniewski, *WWF Poland Report: Żegluga czy kolej? Perspektywy rozwoju zrównoważonego transportu w Polsce do 2050 roku (Inland Shipping or Railway? Sustainable Development Perspectives for Transport in Poland Until 2050)*, Warsaw 2020, p. 66.

The expenses related to water infrastructure, due to its non-competitiveness (longer route, average transport speed 10 km/h, no passenger transport) and the enormous intrusion on the environment, in Poland's current situation, are the worst possible proposition of spending public funds – it would be an example of extreme wastefulness and unjustified favouring of interest groups related to transport by inland shipping. This would result in a pathological situation of the state investing the money of its citizens so that the profits would go to private investors. The programme of constructing waterways on rivers is a threat to the Polish economy, as it would lead to increasing the national debt due to the loans taken for following through completely unprofitable investments.

The costs (very estimative) presented in this report and ignored in the inland waterway development plan reveal that the investments of this cost scale will not bring any profits within the next 30-50 years, in relation to the investments, environmental costs, costs incurred by other sectors of the economy, and the costs borne by the citizens.



*This report has been created on the basis of the study "Ocena porównawcza efektywności ekonomicznej rozwoju towarowego transportu kolejowego i żeglugi śródlądowej na polskich rzekach" ("Comparative Evaluation of the Economic Effectiveness of Railway Cargo Transport and Inland Shipping on Polish Rivers") by Wojciech Szymalski, Stanisław Biega, and Piotr Kazimierowski, of December 2017.*