

The journal has had 7 points in Ministry of Science and Higher Education parametric evaluation. Part B item 1223 (26.01.2017).  
1223 Journal of Education, Health and Sport eISSN 2391-8306 7

© The Authors 2018;

This article is published with open access at Licensee Open Journal Systems of Kazimierz Wielki University in Bydgoszcz, Poland

Open Access. This article is distributed under the terms of the Creative Commons Attribution Noncommercial License which permits any noncommercial use, distribution, and reproduction in any medium, provided the original author(s) and source are credited. This is an open access article licensed under the terms of the Creative Commons Attribution Non Commercial License (<http://creativecommons.org/licenses/by-nc/4.0/>) which permits unrestricted, non commercial use, distribution and reproduction in any medium, provided the work is properly cited. This is an open access article licensed under the terms of the Creative Commons Attribution Non Commercial License (<http://creativecommons.org/licenses/by-nc/4.0/>) which permits unrestricted, non commercial use, distribution and reproduction in any medium, provided the work is properly cited. The authors declare that there is no conflict of interests regarding the publication of this paper. Received: 24.01.2019. Revised: 25.01.2019. Accepted: 30.01.2019.

## Financial aspects of the use of locks and waterways in tourism. Example of a lock in Pakosc

Wiktoria Karczewska<sup>1</sup>, Rafał Gotowski<sup>2</sup>

<sup>1</sup> State University of Applied Sciences in Konin

<sup>2</sup> Kazimierz Wielki University in Bydgoszcz

**Keywords:** Notec River, waterway, canal lock, inland navigation, tourism

### Abstract

The lock in Pakość was built in 1882. Together with the lock in Łabiszyn they create a waterway called the Upper Noteć. In the builders assumption, the lock was part of a large hydrotechnical system that on the one hand, supplied the Bydgoszcz Canal with water, on the other hand it enabled inland navigation between Kruszwica, Inowrocław, Bydgoszcz and Nakło. Prime inland navigation in Pakość took place at the turn of the 19th and 20th centuries, the inter-war and postwar periods. Since the mid-seventies of the twentieth century, along with the development of motor transport, the increase in the size of inland ship, the lack of modernization works on locks leading to an increase in their dimensions and neglect on the shipping lane (no dredging works), freight shipping on the Upper Noteć River began to disappear and was replaced by tourist and recreation sailing.

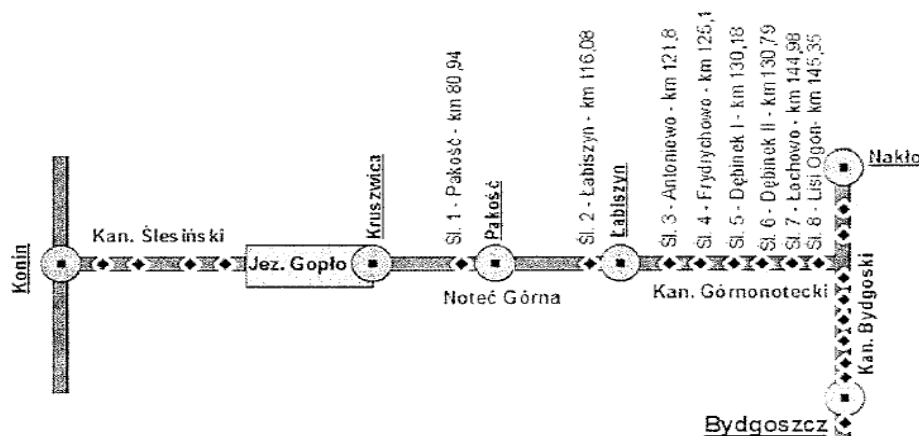
### INTRODUCTION

Hydrotechnical devices in Pakość area i.e.: a lock and a weir in Pakość, a weir in Leszczyce, an unnatural canal between Leszczyce, Dziarnowo, Kościelec and Pakość. The canal is about 8 km long and it was built in 1870-1882. Together with the lock in Łabiszyn they formed a waterway called the Upper Noteć River.



**Photography. 1.** Inland barge on the Upper Noteć River  
(the early 20th century)

Works in this area were conducted in parallel with building of the Górnotecki Canal. They were caused by the necessity of providing water to the Bydgoszcz Canal, which was created in 1772-1774 to connect the Odra and Vistula basins. Hard hydrotechnical conditions prevailing in the Bydgoszcz Canal area, primarily the lack of efficient watercourses feeding directly the canal between Bydgoszcz and the Noteć River bed near Nakło, caused that for its good functioning the construction of an additional water supply system proved necessary. In this sense, channeling part of water from the Noteć to the Bydgoszcz Canal was indispensable condition not only for its functioning, but also for its further development (Gotowski, 2009) of this waterway.



**Fig. 1.** The location canal locks on the Upper Noteć River, the Gornotecki Cannal and the Bydgoszcz Canal  
(R. Gotowski, 2009)

The closure of works in this area of Kujawy ended with putting into service the Ślesięński Canal, called Warta-Gopło Canal, which resulted in creating possibility of navigation in the Warta, Noteć and Vistula basins, after the World War II.

### **Lock in Pakość**

The lock in Pakość is one of two locks on the Upper Noteć waterway – Pakość lock (80+900km), Łabiszyn lock (116+08km). In compliance with the Regulation of the Council of Ministers of May 7, 2002 on the classification of inland waterways (Journal of Laws of 2002, No. 77, item 695), the Upper Noteć from Lake Gopło to the Górnonotecki Canal (from 59,5 km to 121,6 km) is classified as the Ia class waterway. In compliance with classification, Ia, Ib, II i III class waterways are inland waterways of regional importance, whereas inland waterways of class IV, Va i Vb are waterways of international importance. Exploitation conditions for inland waterways of individual classes are determined by the minimum dimensions of navigable waterway and locks and clear heights under bridges, pipelines and other devices crossing the waterway, hereinafter referred to as "exploitation parameters".



**Photography. 2.** The canal lock Pakosc on the Upper Noteć River  
(*R. Gotowski, 2018*)



For this class of the waterway, the length of ships and barges with drive cannot exceed 24m, the width - 3,5m, submerging – 1 m, which completely eliminate the object in Pakość from use by modern inland freight and passenger vessels. The width of barges floating on the Rhine, Elbe and the Kiel Canal reaches 86 m in length, 10m in width, with a submerging coming to the depth of 2,80m, and even bigger.

The lock in Pakość is 4,2m long and 4,93m wide. It belongs to class IV of hydrotechnical constructions. In terms of construction it is a single loculus of mixed construction with brick-built walls, concrete bottom, where the side walls and head are placed on a concrete slab. The lock is closed with steel upper and lower double-leaf gates. The lock loculus is filled through the open ports in the upper and lower gates, which are opened and closed manually with gears turned on by a crank by the lock operator.

Time of lockage, depending on the skills of sailors and kinds of vessels, is about 30 minutes. At the same time up to 5 yachts or 15 kayaks can use the lock.



**Photography. 3.** Canoes in the canal lock Pakosc  
(R. Gotowski, 2018)

## Receivables for lockage and navigation

The issue of fees for waterway navigation and lockage in Poland, is regulated by law, set before the opening of the navigations season.

The basis of charging the fees for lockage and navigation is the Regulation of the Minister of Maritime Economy and Inland Navigation of 30 March 2018 on receivables for the use of inland waterways and their sections, locks and slipway (Journal of Laws, March 22, 2018, item 654).

The regulation determines in given year:

1. inland waterways and their sections, located on inland surface waters, for the use of which receivables are incurred, and assign these waterways and their sections to appropriate regional managements of water economy of the State Water Farm Polish Water;
2. unitary rates of receivables for:
  - 1) sailing empty cargo ships,
  - 2) sailing passenger and cruise ships,
  - 3) transport of goods by cargo ships, towing and floating of wood,
  - 4) use of locks and slipways:
    - for one getting through a lock or slipway from 7.00 am to 7.00 pm,
    - for one getting through a lock or slipway from 7.00 pm to 7.00 am;

In relation to navigable waterway located in the Kuyavian-Pomeranian Voivodeship, in the area administered by the State Water Farm Polish Water Regional Managements of Water Economy in Bydgoszcz, fees were collected for navigation on the following sections of waterways:

- the Ślesiński Canal from 26,46 km to 32,0 km
- the Bydgoszcz Canal from 14,8 km to 38,9 km,
- the Noteć River – the lower section (from the Bydgoszcz Canal) from 38,9 km to 176,2 km,
- the Noteć River – the upper section (to the Górnonotecki Canal) from 59,5 km to 121,6 km,
- the Górnonotecki Canal from 121,6 km to 146,6 km.

Unitary rates of receivables for the travelers waterway concerns:

1. sailing empty cargo ships - 0.12 zł per tonne-kilometer of measured carrying capacity;
2. sailing passenger and cruise ships - 1,78 zł for the product of one seat on the ship and each kilometer of the waterway traveled;
3. transport of goods by cargo ships, towing and floating of wood on the Vistula-Odra waterway from the mouth of the Brda River to the city of Krzyż - 0.68 zł for one tonne-kilometer.

In relation to the use of locks or slipways for one getting through a lock or a slipway, the rates are respectively for:

1. a ship, a pushed set or a towed set, a barge, a raft, a tug and a pusher (not included in the set), a passenger or a cruise ship, a floating device intended or used for carrying out technical works, keeping navigable waterways or exploitation of aggregate deposits and a floating object over 20 m, for each water draft:
  - from 7.00 am to 7.00 pm - 15,50 zł,
  - from 7.00 pm to 7.00 am - 16,26 zł;
2. a ship intended for sports or recreation and other small ships (ships up to 15 tonnes in carrying capacity or used to transport no more than 12 passengers), for each ship:
  - from 7.00 am to 7.00 pm - 7,20 zł,
  - from 7.00 pm to 7.00 am - 14,40 zł;
3. a kayak or a rowing boat, for each kayak or rowing boat:
  - from 7.00 am to 7.00 pm - 4,10 zł,
  - from 7.00 pm to 7.00 am - 8,20 zł.

## **SUMMARY**

Rivers and well-managed levees can be tourist attractions themselves (Gus-Puszczewicz, 2018). However, for waterways in Poland to be such an attraction, it is necessary to engage significant financial resources in the modernization and maintenance of not only rivers and levees, but primarily all hydrotechnical infrastructure.

With regard to the modernization of hydrotechnical infrastructure, the needs relate mainly to major renovation of facilities and changes in the technical parameters of buildings in terms of their adjustment to the requirements of floating rolling stock. The problem is the non-adjustment locks to the length, width and immersion of modern vessels. They are larger than

those floating on rivers in the 19th and 20th centuries. You can give an example of berlinka-type boats, commonly used in river transport in the post-war years, and from 19 to 40 meters long and from 2.5 to 4.5 meters wide. The lock in Pakość, which until the end of the 1960s was an important point on the map of inland navigation in Poland, today completely lost its importance in shipping. The reason is prosaic - no modern cargo and passenger ship will not enter the lock locus. As for rivers, the most significant obstacles in this area include too small depths of waterways, wrong parameters of bridge structures (road and rail), locks and weirs failures (Information on results...,2014), and at the same time the lack of funds sufficient for maintaining the waterway in good condition (e.g. preserving transit depth). Restoring waterways and infrastructure to good condition will cost a lot of money. Certainly they will not be covered by funds getting from the current exploitation of locks (lock fees). These funds will need to be separated from the state budget or obtained from external sources (EU).

These funds will amount to billions of euros, but it should be remembered that infrastructure investments on waterways are characterized by high productivity of outlays. This means that the funds invested in the waterway serve not only shipping, but also other important economic functions, including anti-flood function (flood prevention and buffering of flood effects), industrial and communal function (water intakes), agricultural and forestry function ( maintaining raight water-soil proportion and irrigation of land), energy function (using the energy of flowing water to produce electricity), sport and recreation function (rest on the water) or social function (functioning of various objects connected with the waterway) (Woś, 2017 ).

## **BIBLIOGRAPHY**

- Gotowski R., 2009, Wykorzystanie i uwarunkowania ruchu turystycznego na Kanale Górnonoteckim i Noteci Górnej, [w:] Z. Babiński (red.), Rewitalizacja drogi wodnej Wisła-Odra szansą dla gospodarki regionu, t. III, BDW MARGRAFSEN s.c., Bydgoszcz, s. 96-105.
- Gus-Puszczewicz A., 2018, Potencjał turystyczny śródlądowych dróg wodnych województwa pomorskiego, [w:] Studia i Prace Kolegium Zarządzania i Finansów, Zeszyt Naukowy 170, Oficyna Wydawnicza SGH, s. 100.
- Informacja o wynikach kontroli: Funkcjonowanie Żeglugi Śródlądowej, KIN-4101-04/2013. Najwyższa Izba Kontroli (2014).
- Rozporządzenie Rady Ministrów z 7.05.2002 r. w sprawie klasyfikacji śródlądowych dróg wodnych. Dz.U. z 2002 r., nr 77, poz. 695.
- Woś K., 2017, Plany rozwoju polskich śródlądowych dróg wodnych, PTiL 1/2017 (37), s. 307-308.