

The small port towns of the Polish coast are picturesque sites the landscape of which has been shaped as a result of natural conditions (coastal location), and long historical marine heritage based on the transshipment and fishery. Over the past 20 years the port and fishing functions have gradually disappeared losing their economic foundations (among others due to introducing a modern logistic distribution systems and using lorries on the last mile distance instead of water transport, as well as due to restructuring fisheries and introducing catch limits).

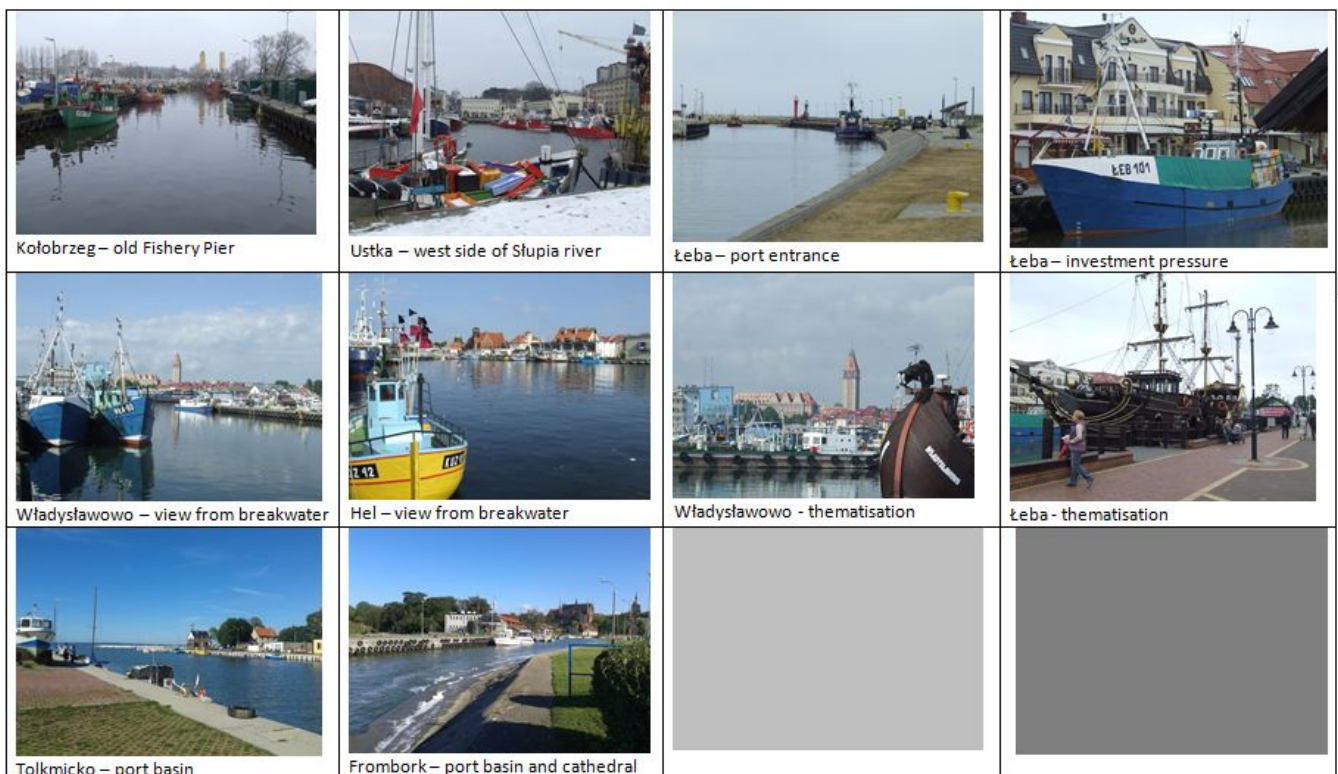
The area surrounding small ports is mainly agricultural. For several years these areas have also been used as an agritourism base, the attractiveness of which is mainly due to the coastal location and proximity of the port towns and attractions offered by them. The role of service and industrial centres for the port towns regions is performed by several major cities located within a dozen kilometers from the coast (Koszalin, Sławno, Słupsk, Lębork, Wejherowo, Gdynia, Elbląg).

Harbor towns are currently dominated by the tourist function, which, because of a relatively short season (of two to four months), makes them work *de facto* as seasonal towns. They are experiencing an intense boom in the summer months (June - September), and they are almost abandoned in the autumn and winter months (October - April). Outside the tourist season, the population of small port Polish towns (fig. a) is about several thousand inhabitants (eg Tolkmicko, Krynica Morska, Frombork, Hel, Łeba) to over ten thousand inhabitants (Puck, Władysławowo, Ustka, Darłowo, Kołobrzeg). In the season, the number of people living in them increases several times [1].



Location of described small port towns along the Polish coast. (fig. a)

The rapid and uncontrolled development of the tourism function has led to a significant spatial transformation of these towns (urban sprawl of recreational character), and in many cases also to the thematization [2] [3] of their most valuable aquatic spaces. In many places, marinas and reloading zones of ports turned into chaotic and unaesthetic areas of trade and gastronomy, created for the needs of tourists' imaginations about port's operations. In the area of the aquatic zones investment pressure is also most strongly visible (pensions, hotels and apartments are being built in this zone). These processes lead to the disappearance of the original character of small towns and the gradual loss of their genuine maritime heritage, which for years consisted of port operations, hydrotechnical facilities, harbor and storage buildings, port and industrial objects related to navigation. For this reason architectural objects and urban layouts (including those built in 1945-1985 as port and industrial complexes related to fishing) that are the legacy of port activities should be treated with a special care (fig. b).



Landscapes of small ports of Polish coast. Source: Photos - own. (fig. b)

Port as an element crystallizing the spatial structure of port towns

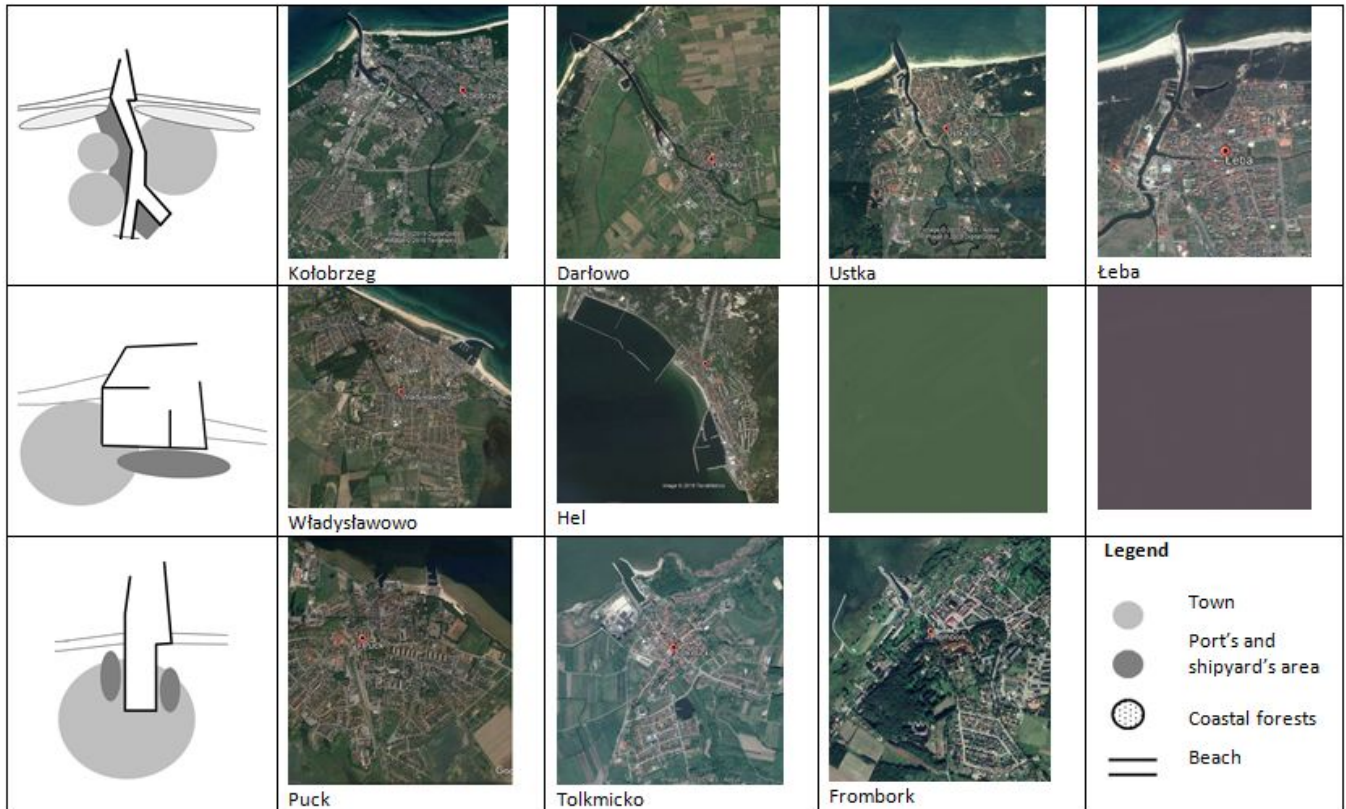
Limited by many natural, historical and economic conditions, the port's activity shaped the landscape and spatial layout of small port cities.

Depending on the locally occurring terrain configuration, the ground substrate and the dynamics of the coastal processes, the shoreline of the Polish coast takes on three basic morphological forms: the dune coastline, cliff or coastal lowland. These natural forms of the seashore have not only determined the functions that can be carried out in their hinterland, but also gave the surrounding of port towns a characteristic landscape. In terms of landscape characteristics (which is largely related to the geographical location and historical conditions), small ports of the Polish coast can be classified into three basic groups (fig. a, fig. c):

- port cities of the central coast, situated in the estuaries of small rivers, in the back of the dune-cliffs with access to the open sea (Kołobrzeg, Darłowo, Ustka, Łeba);
- port cities located directly over the open sea on the dune banks (Władysławowo, Hel);
- port cities situated on the lowland banks of bays, i.e. the Gulf of Gdansk (Puck), the Vistula Lagoon (Tolkmicko, Frombork) and the Szczecin Lagoon.

The Port of Elbląg, despite its maritime status, is treated in this context as a river port.

This division is important because it has differently shaped the configuration of the port aquatories (fig. c), which always have been a shelter area enabling ships to enter the port safely [4]. In turn, the spatial arrangement of these ports and hydrotechnical constructions that build them, being for years the central place of life and work of inhabitants of small port cities, defined the morphology of these cities and constitute their cultural heritage.



Polish small port towns spatial configuration. Source: Aerial photos - Google Earth, drawings - own. (fig. c)

Ports located in the estuaries of small rivers to the sea (among others, Kołobrzeg, Darłowo, Ustka, Łeba) enclose the banks of these rivers. From bilaterally exploited river channel there is/are rectangular or trapezoidal basin/s located on one or both sides of the river. These basins come mainly from the turn of the 19th and 20th centuries, and they were originally dedicated to transshipments and fishing. Currently, they most often play the role of marinas. Only in the case of Łeba the basin located on the west bank was built much later (late 90s twentieth century), from the beginning planned as a marina. The quays along the rivers are extended in the direction of the sea by a two almost parallel breakwaters, whose task is to lead out river sediments and provide ships with safe entry to the port. The port towns of the central coast have an urban layout strongly associated with port quays, but independent of the configuration of the sea coast. In the case of towns such as Kołobrzeg Darłowo, Ustka, and Łeba, this is primarily due to the fact that their ports have been

developing since the Middle Ages as river ports. Therefore, their urban tissue is oriented towards the current of the river and not the line of the seashore. In towns located on rivers, there is also a disproportion in the intent of managing the right and left bank of the river. Centers of towns (Kołobrzeg, Darłowo, Ustka, Łeba) are located on the east bank of the river, while their ports, due to gradual displacement of the port's function by the residential, on the western shore.

The main structure of the ports situated on the open sea (Władysławowo, Hel) was built as breakwaters leading into direction of sea, and surrounding quadra-shaped aquaria. The port's basins are divided into pools with piers sheltering the inner parts of the port from waving. The urban network of towns such as Hel and Władysławowo refers much more loosely to the spatial structure of the port. Poor connection of the city structure to the port results in this case from the original location of the port at some distance from the structure of the town and the chaotic course of spatial development of the town during the last 25 years.

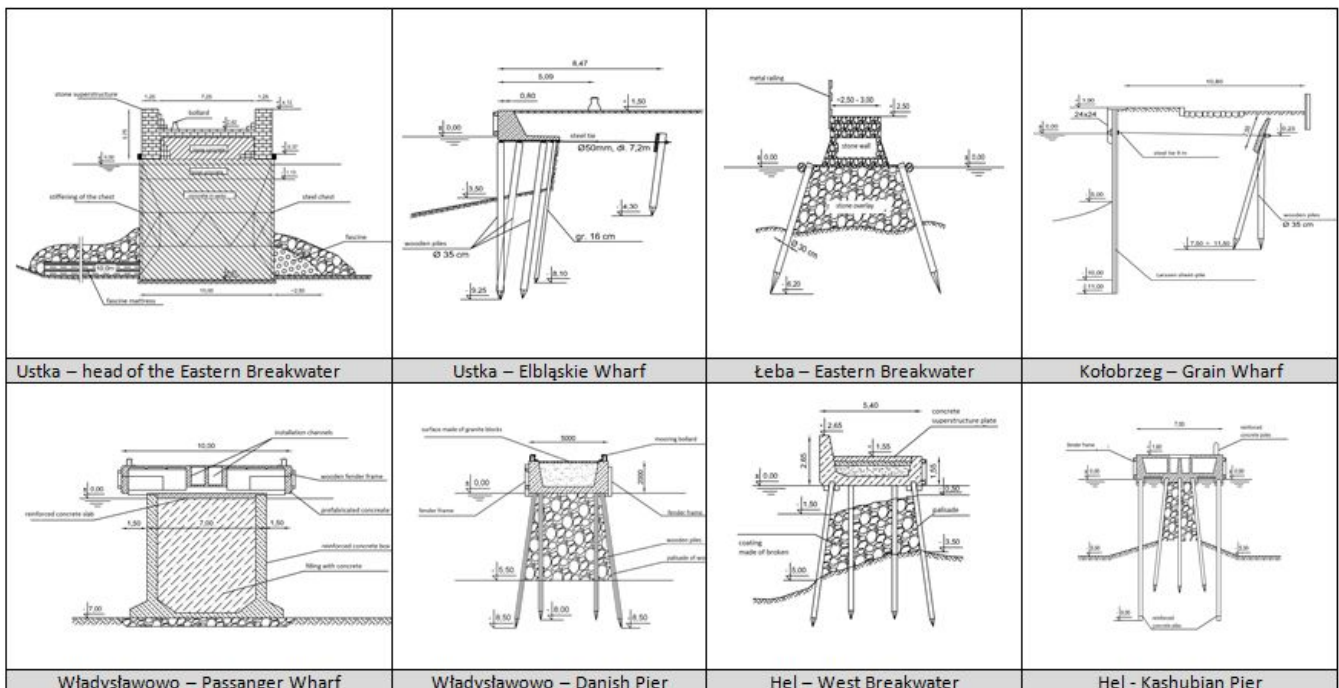
Port cities of bays and lagoons (Puck, Tolkmicko, Frombork) have almost rectangular pools, to which a long entrance leads. Such a spatial arrangement results from a relatively small wave on the waters over which they are located. The pools of these towns are at the same time the central place of the structure directly facing the waters of the bay or the lagoon. They are also usually the main public space of a small town having a recreational function, being in a sense a competition for urban markets (case of Tolkmicko and Puck).

A characteristic feature of small port towns is the coexistence of many diverse port and urban functions in a relatively small area. The penetration of these functions (including port, shipbuilding, tourist, commercial and housing), their dynamics and ship traffic on water cause that the port towns are an extremely colorful and lively landscape.

It is worth noting that the port townscape is strongly influenced by the units moving on the water (ships, barges, fishing boats, yachts). The shapes of their hulls, proportions and colors determine the visual attractiveness of the port and its character. Therefore, changing the appearance of fishing cutters into touristic units being culturally foreign in this place and time (most often the cutters are stylized on the 16th century galleons or pinasy) breaks with the cultural heritage of the place and is a manifestation of thematisation.

Hydrotechnical heritage

The constructions of quays and breakwaters in small ports of the Polish coast have been thoroughly modernized and rebuilt over the last 15 years, but their current basic outline comes in most cases from the late nineteenth century (Prussian period). During this period, small havens turned into thriving fishing centers and reloading and distribution centers, serving (often thanks to the supply of railway lines) agricultural and industrial facilities of the region. During this period breakwaters were mainly built of wooden palisades filled with stone breakstone (imported mostly from Sweden by the sea) and a concrete superstructure seized over the water. Strings of breakwaters were supplemented with stone blocks and caissons (e.g. breakwaters heads). Such a construction had, for example, a breakwater in Hel and a breakwater in Łeba (in this case, the superstructure was built, however, of stone blocks). A similar construction was also used in the construction of a much later port in Władysławowo, which was built in the 1930s directly on the shore of the open sea at the base of the Hel Peninsula. Constructions of this type are not properly used today and constitute an important stage in the history of hydrotechnics (fig. d).



Polish small ports' hydrotechnical heritage - sections of constructions of breakwaters and

wharfs. Source: Wawrzyńska A., Infrastruktura małych portów polskiego wybrzeża [in:] Grzelakowski A., Krośnicka K. (ed.), Małe porty polskiego wybrzeża. Uwarunkowania i perspektywy ich rozwoju, Gdynia: Wydawnictwo Akademii Morskiej w Gdyni 2007, p. 167-177. ISBN 978-83-7421-029-4. (fig. d)

Changes in shipping technology that occurred after the introduction of motor engines caused an increase in the size of ships calling at the port and greater depth needs in ports. At the same time, new materials (including prefabricated steel, reinforced concrete) and construction techniques have made it possible to use modern solutions in small ports (anchored steel sheet walls, concrete boxes). Such constructions (e.g. Kołobrzeg) are in a sense also the prototypes of modern solutions, are now an important element of the hydrotechnical heritage.

All hydrotechnical facilities in each subsequent period of their development were equipped with navigation devices (e.g. lighthouses), mooring and fender devices (e.g. bollards) and were accompanied by objects ensuring navigation safety, including bosmanates, harbor masters, or SAR (Search And Rescue) buildings. Some of these facilities exist and function to this day.

Buildings and port heritage objects

Small ports of the Polish coast were mostly built in the Middle Ages as transshipment places for bigger towns located on their close hinterland, creating in many cases characteristic double-town systems: a city's regional center - a port resort located at the mouth of the river. In the Middle Ages, Łeba, Ustka, Darłowo and Kołobrzeg, using respectively the Łeba, Słupia, Wieprza and Parsęta rivers, served as ports for Lębork, Słupsk Sławno and Białogard respectively. In a similar double system, but based on sea connections, the port of Hel worked together with Gdańsk (in terms of fishing).

Later, apart from individual episodes, small ports served mainly as ports and fishing harbors. In the mid-nineteenth century, coastal tourism developed in the towns basing on curative values of the sites. This trend, although in a slightly different form, is currently the

main source of maintenance for the small port towns of the Polish coast.

The largest prosperity of small port towns as reloading and industrial centers (outside the medieval period) was the turn of the 19th and 20th centuries. At that time Prussian agriculture and industry developed in the region. Export of crops delivered to port towns by rail, and import of machine parts caused a need for warehouse and storage infrastructure (at that time cereal elevators were built for example in Kołobrzeg, Darłowo and Ustka). Industrial facilities have also developed in the area of the Vistula Lagoon, a whole series of havens serving brickworks located nearby.

At the end of the 1950s, the ports lost their transshipment significance. Intensive development of the fishing infrastructure took place then. For the needs of specialized fishing industry, a number of warehouses and production halls were built and fishing enterprises were organized (among others in Władysławowo, Ustka, Hel, Kołobrzeg and Darłów). From this period comes a number of architecturally interesting objects representing stylish post-war modernism (fig. e).



Polish small port towns maritime heritage buildings. Source: Photos - own. (fig. e)

Currently, the ports are mainly of a tourist nature with only marginal functions of fishing service. The turbulent development of objects that perform a tourist function in post-port and port areas does not take place in parallel with the reconstruction of port industry. In ports, a decrease in transshipments is observed, the number of fishing boats decreases and industrial activity based on the maritime sector disappears (e.g. shipbuilding). However, there is the development of sea tourism, including yachting and cabotage. In each of the ports yacht marinas are built. There are private marine services, such as sea fishing, floating restaurants, excursions on tourists boats. The intensity of development of the tourism function leads to investment pressure on the port areas and, in a sense, poses a threat to the maritime heritage buildings, because they are not always successfully adapted and converted for the service or residential purposes (apartment buildings).

Summary

The authorities of small port towns of the Polish coast have been carrying out intensive work for the development and improvement of the quality of the public space system in post-port areas for several years. Around these spaces, new housing and service facilities are built, mainly dedicated to tourism. The side-effect of this process, however, results sometimes in the loss of the original maritime heritage, including port-warehouse and port-industrial buildings. Investments created in the years 1945-1985 are particularly underestimated and threatened by investment pressure. In a systemic way, the policy of coastal landscape protection of small port towns should be considered, in which not only buildings of warehouses, elevators, and lighthouses should be included, but also elements of heritage such as hydrotechnical constructions and vessels. Such a policy should be supported by “soft” projects, enabling the gathering of knowledge and archives on the historical methods of port and shipbuilding (e.g. fishing, transshipment, storage), local customs and vanishing professions related to maritime affairs in the region.

Notes

[1] Staszewska S., Rozwój osadnictwa na Półwyspie Helskim. [in:] Rocznik Helski nr 3, Wyd. Towarzystwo Przyjaciele Helu, Hel 2005.

[2] Lorens P., Tematyzacja przestrzeni publicznej miasta, Wydawnictwo Politechniki Gdańskiej, Gdańsk 2006.

[3] Rzeńca P., Tematyzacja przestrzeni jako metoda zarządzania rozwojem lokalnym, [in:] Nowakowska A. (ed.), Nowoczesne metody i narzędzia zarządzania rozwojem lokalnym i regionalnym, Wydawnictwo Uniwersytetu Łódzkiego, Łódź 2015, p. 115-141, doi: 10.18778/7969-530-0.05.

[4] Krośnicka K., *Analiza elementów przestrzennych w funkcjonowaniu małych portów polskiego wybrzeża*, [in:] Grzelakowski A., Krośnicka K. (ed.), *Małe porty polskiego wybrzeża. Stan obecny i perspektywy ich rozwoju*, Wydawnictwo Akademii Morskiej w Gdyni, Gdynia 2002.

[5] Wawrzyńska A., *Infrastruktura małych portów polskiego wybrzeża* [in:] Grzelakowski A., Krośnicka K. (ed.), *Małe porty polskiego wybrzeża. Uwarunkowania i perspektywy ich rozwoju*, Gdynia: Wydawnictwo

Akademii Morskiej w Gdyni 2007, p. 167-177. ISBN 978-83-7421-029-4.

Head Image: Ustka. The west bank of Slupia river. (Photo: Karolina Krośnicka)