

Baltic Coastal Zone No. 2	
(67-74) 1998	Institute of Biology and Environmental Protection University of Education of Słupsk

## LANDSCAPE AS AN ECOLOGICAL FACTOR IN THE DEVELOPMENT OF THE ODRA ESTUARY

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### Abstract

This article considers the possibility of ecodevelopment of an unique landscape, the land of Odra Estuary. The values of landscape point to the development of this area for recreation and sustained development.

**Key words:** natural environment, ecodevelopment, cultivated landscape, Odra Estuary, recreation

Landscape can be defined as a natural environment which exists on a certain area with a characteristic structure and mutual connections to the elements existing therein. Landscape as viewed in the categories of scientific consideration is discussed along many scientific lines and in every one of them it has a slightly different scientific definition (Richling, Solon 1993).

It has been explored best along the line of geographical and biological knowledge. The landscape of a determined area and its functioning is defined by the natural environment as well as by its land and building development, technical equipment and other elements, which are the result, of the activity of man transforming the landscape. The problem of the mutual connections between the natural and technical elements appears when the natural landscapes become inseparable parts of the cultivated landscape (Bogdanowski 1992) and the technical elements together with the natural elements form an ecological landscape system (Andrzejewski 1992). The analysis of the natural dependencies and the influence of tech-

nology on the elements of nature require a wide geographical and biological knowledge.

The spatial dimension, the features of the landscape structure and the technical equipment of the given space can be read in the development plans for the area under discussion. In the architectonic analysis of landscape the determination of the form of landscape renders possible the defining of landscape on an equal footing with natural formulations. Among the values of space such as the informative, utilizable, functional ones, are also the aesthetical, non-parametrical values which are impossible to illustrate in the quantitative indices. The visual and aesthetical values of landscape, apart from its most important natural values, define the beauty of landscape. The landscape in space can be defined in three dimensions. For needs of town-planning and town and country planning, the fourth dimension - time is also very crucial. The planned economic processes, which will come into being in the future, will transform landscape and the visual values of landscape.

One can foresee the effects of the transformation of landscape and even plan them to some extent. In general, economic activity causes the degradation of landscape and the interference of technology in the original natural landscape has in view the utilization of landscape, which takes place at the cost of the destruction of the surroundings.

The creation of the form of a given area, the forming of incommensurable, aesthetic values of space, the elements of order, harmony and beauty of space is, among other things, the aim of planning and architectonic activity. It follows from the decisions taken at the stage of town and country planning, what elements will shape the landscape of the area. One takes the decisions as to whether the areas of remarkable landscape values will be the group, private or public property, whether the landscape will be dominated by the architectonic elements of the building development or whether the natural environment will dominate, whether the open landscapes or the closed interiors or spatial chaos will be visible. The landscape of a space is the image of the application of an investment policy, resulting from the aims and programmes of social and economic policy at a defined time.

The landscape, its beauty and incommensurable values can be shaped independently of the wealth and amount of material means in every economic situation. A very big influence on the attainment of these values is the planning and local policy, which is shaped on the strength of the „Statute on the site planning” of the 7th July 1994 (Journal of Law No. 89, item 415). In the statute, ecodevelopment is taken as the basis of the formation of the policy of the site planning of the country. The study of site planning takes into account conditions resulting from the state and functioning of the natural environment. The study of natural conditions must contain the natural stock-taking (Dubel 1996), which in its content comprises the analysis of a number of natural factors and a nature-landscape study. The analysis of the ecological structure of a commune must take into account the ecological structure of the landscape, which has a basic meaning for the functioning of nature (Kozłowski 1995).

The historic, cultural and landscape conditions have in view, among other things, the maintenance of the harmonizing landscape systems and the demarcation of a zone of conservation.

Natural conditions should be of great importance (Kozłowski 1995) in the determination of the directions of the site planning of commune, i.e. in the definition of ecodevelopment of the local area.

The above considerations can be applied to the area of the Odra Estuary situated in the north-west part of Poland. It comprises the sea-river estuary of the Odra, the Szczecin Bay together with the littorals of size of more than 635 square kilometers (Fig. 1). A large landscape variation characterises the estuary. It is one of the most valuable areas in Central Europe.

The banks of Szczecin Bay are mostly low, the whole of the area is flat without high points of land. The coastal belt of the Bay is covered with water flora appearing in the biggest concentration in the north. Almost the whole western bank of the Bay is flat terrain with a large number of meadows, only small sections are covered with trees and sandy or grassy beaches. In the far background landscape of the Wkrzańska Forest afforestations are visible. On the south the Odra River broadens and the natural landscapes form numerous aits. The eastern coast is flat and formed by meadows overgrown on certain sections by deciduous trees. On the north of the estuary area the coasts of Wolin island form a landscape of hills covered with woods of heights exceeding 100 meters, with a bold cliff shore.

The landscape of the Estuary basically forms the geographical and natural environment and the natural elements, mainly the water area of the Bay and the littorals of the water regions. The characteristic forms of the littoral are formed by two or three landscape layers. The lowest layer is formed by the floating flora and bulrushes. The higher layer is formed by broad-leaved trees appearing singly or in groups. The third layer are the dense forest stands overgrowing the terrain deep in the land. The architectonic shapes inscribe in the natural landscape and form the cultural landscape of harbours, havens and settlements at the Bay or appear in the water area in the form of floating beacons, navigation towers (Fig. 2). The relations between the water space and the littoral are most essential for the estuary landscape. The open landscapes formed by a large water surface and the forms of littoral appear here for the most part. The architectonic objects appear singly, introduced in the composition of the landscape, scattered or as compact settlement of a homogenous function. The single objects appear in the natural landscape of the Bay or littoral. The objects or groups of objects appear in the landscape space or in the landscape background. One can distinguish the landscapes with objects situated ashore, afloat or in contact with water. The architecture of the estuary landscape is determined also by the architectonic and town-planning complexes. The harbour buildings, the settlements at the Bay form compositional whole lots in the landscape, which are perceived as panoramas (Fig. 2). The buildings and objects gently inscribe in the natural landscape, forming a homogenous composition with scarce dominants, e.g. of church towers. A deviation from this principle are a few frag-

## "ESTUARIUM" SCHEME

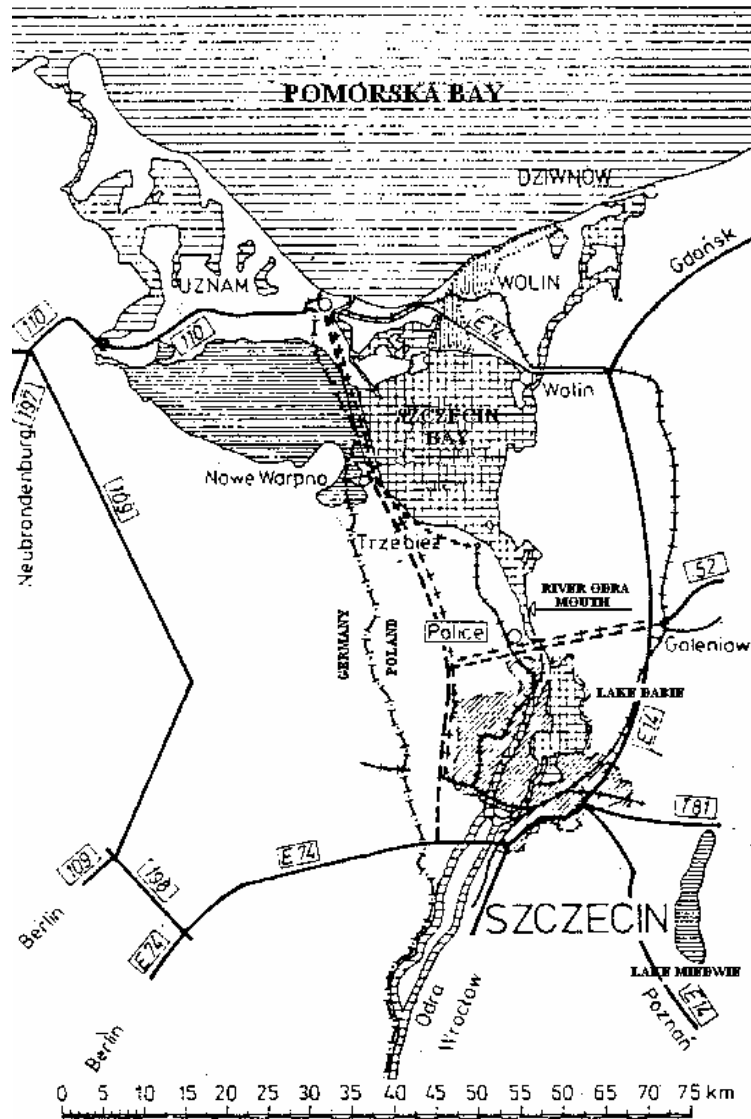


Fig. 1. Location of the Odra river estuary

Scheme of the solution of the existing and potential collisions with the environment in the Szczecin (Odra) Bay zone, in cooperation between Poland-UNO-Germany

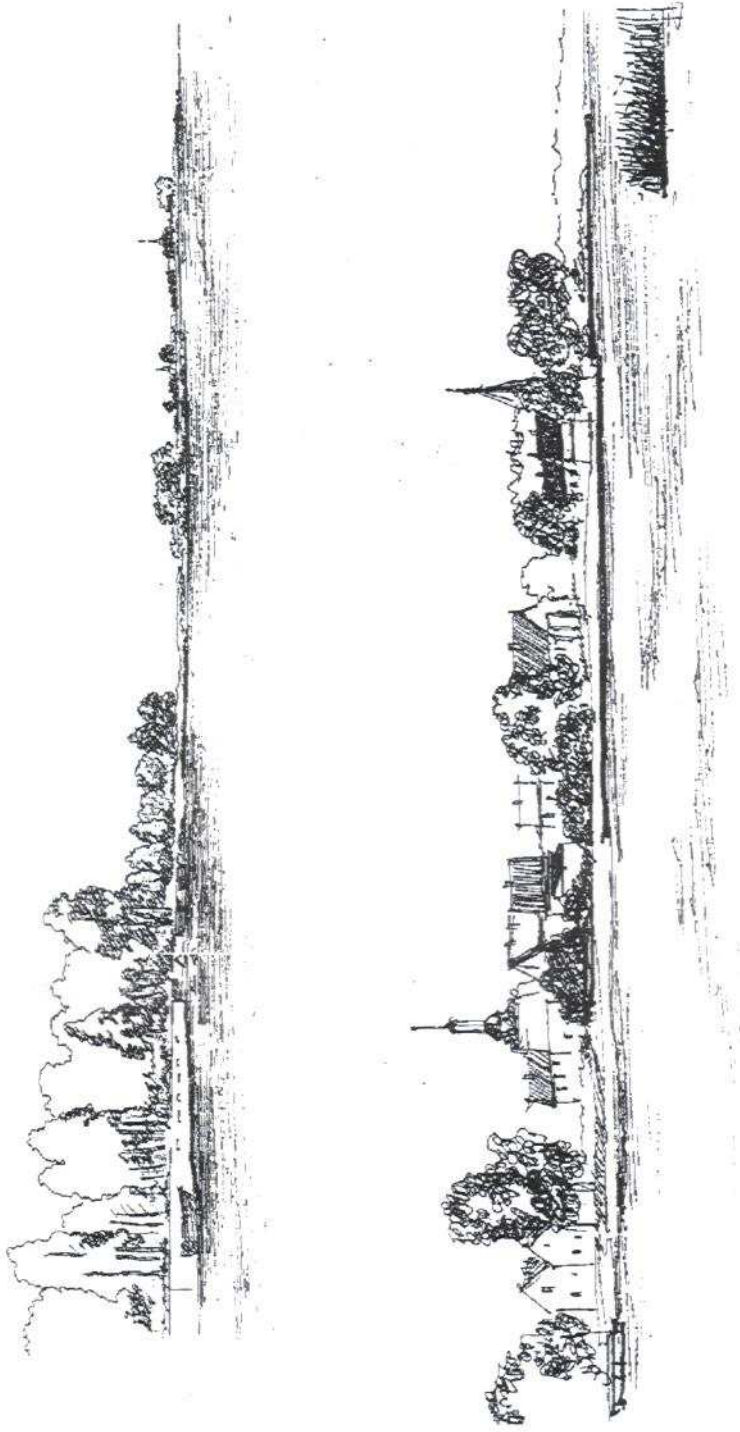


Fig. 2. The panoramas of the Nowe Warpno

ments where there occurs an interference of the industrial function. An industrial landscape with dumps of phosphogypsums and port industrial buildings emerges in the vicinity of the Chemical Works in Police (Fig. 3).

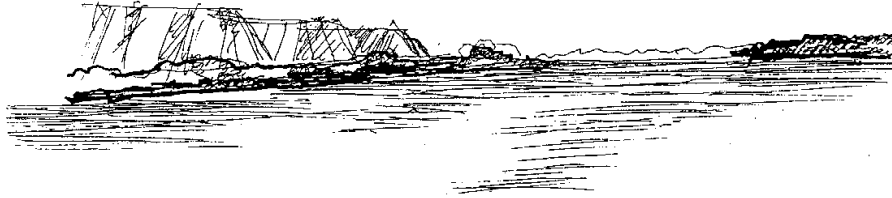


Fig. 3. The western bank of the Odra in the vicinity of Police with industrial dumps

The conspicuous feature of the landscapes of the estuary area is their variability resulting from the observation of the landscape forms in the changing panorama system. The directions of the observation are marked out here by the routes of water communication, which are to be recognised as basic ones, and by land communication routes along the banks. The unique element of the Odra Estuary landscape is composed by the watercraft and especially the sea-going ships navigating on the fairway.

The features and the structure of the estuary landscape determine its way of functioning as well as the human needs and their realization. The detailed local and chamber examinations, the analysis of the natural and anthropogenic conditions of the landscape would allow the determination of the role which the Odra Estuary can fulfil in the region. The existing functional and spatial structure and the landscape predestine it for the fulfillment of a function consisting mainly in recreation and rest, which would take into consideration the protection of the comparatively undegraded environment. This would be the least controversial solution in this area (Pie-sik 1993).

The analysis of the hitherto existing development, investment possibilities and intentions, the qualitative development of the area of the littoral, traces out the direction of the ecodevelopment. The present situation, the new reality of the period of transformation, including the processes of co-operation between the border-areas, require new efficient instruments influencing the investment processes. At the present moment one cannot depend on big complex design and site planning of large areas. Many and various investors are building single objects or small groups of objects in a manner which is not conformable to the law. The landscape effects of such activities will not ensure a harmonious landscape. The creation of the social value of the landscape space is in the scope of local self-governments. On the level of the communes there should be zones designated for future investments, which will not be harmful for the environment and the preferences as to the scale of the future investments.

Economic activity run in accordance with the principles of ecodevelopment and in the close co-operation with the local authorities can protect the natural environment.

Such a manner of managing the natural resources in the estuary area can have a basic influence on the resolving of the problem of unemployment, which has severely arisen in this region. The spatial structure of the littorals should be developed in the future mainly for the needs of water tourism and the trails needed for hiking and cycling tourism round the Bay. In future, tourists ventures can have an international range due to the border-character of the area. One of them may be the bike route round the Big Bay lying in Poland, which would join a similar route on the German side round the Small Bay lying in Germany. Piesik (1993) has pointed to the need of the formation of routes of land communication on the littorals along the Bay together with a system of tourists and hostel bases and the undertaking of architectonic and planning activity comprising both the eastern (Polish) as well as western (German) part of the estuary.

The Odra Estuary has been recognized as the fourth „Landscape of the year” in 1994 (by the NFI international organization) as a region of a unique ecological importance.

The values of landscape of the Odra Estuary and their hitherto existing land development point to the development of this area for the function of tourism and recreation. The introduction of the recreation centers and tourist’s installations in the natural landscape cannot bring about the devastation of the environment. The protection of the natural environment and its utilization for the creation of suitable conditions for rest is a most complicated and difficult problem to solve (Bogdanowski 1992). The instruments of the local policy render possible the shaping of landscape, the formation of the social, value of the landscape space and the hierarchy of aims for the attainment of harmony and beauty of the landscape.

The aim of the ecodevelopment in the Odra Estuary may be the attainment of the harmony of landscape. It is an area where the meeting of the economic needs may be equalized with the utilization of the resources of the environment (Wojciechowski 1995). Assuming a manner of land development of the estuary area for the needs of rest and repose, one can endeavour after the determination of the state of the natural and anthropogenic system for this function of rest and repose, basing oneself on the necessary scientific, project and other studies.

The harmonious connecting of the landscape with the function of recreation will ensure the ecodevelopment of this unique (in the Europe scale) area.

## **SUMMARY**

Landscape is defined as a natural environment and building development and technical equipment. The problem of mutual connections between the natural landscapes become inseparable parts of the cultivated landscape. One can foresee the

effects of landscape under transformation and even plan them to some extent. The Odra Estuary has been recognized as "Landscape of the year" in 1994 as a region of unique ecological importance. The values of landscape point to the development of this area for recreation.

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