



Polders, Deltas and Basins: Their Significance as Economic Areas for Regional Planning

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Abstract

The article explains the possibilities for incorporating hydrological areas in regional planning. The explanation is based on theory and history. Purpose of the study is to explain that hydrological regions have potential to integrate different aspects of human activity while used in the planning process. Therefore, the paper gives a description of the theory of an economic region as a real socio-economic territorial system and it describes some of the consequences of this concept for regional planning. It also describes how hydrological regions like Tiger and Euphrate Delta, Tennessee Valley, Gelderland Valley were used for the purpose of planning in different times of history, when different types of human activity were dominating the economy. The paper attempts to explain the evolution of comprehensive planning together with the changing paradigms of economic development. It concludes that regions based on natural, especially hydrological, boundaries are becoming more significant as a basis for regional planning under the prevailing principles of sustainable development. The characteristics of hydrological regions that make them a good tool for regional integrated planning are also summarised.

1 Introduction

However, integrated coastal zone management seems to be a quite new idea it is a type of planning belonging to the superior kind named integrated or territorial planning. Integration means a mutual and equal consideration of development aspects: economical, social and ecological of a given territory. This type of planning began in the 30s of 20th century. Interesting is the fact that integrated planning was done for the first time in a river basin – Tennessee Valley. It was the first hydrological region used purposely as an economic region. It seems that river basin as a region for planning supports integration of different aspects of development during formulation of a strategy. If we analyse history of integrated planning and the history of a mankind we will find many examples of hydrological regions: sea catchments, river basins and deltas which served as a region for planning. Those examples can be found at different times of history despite of the type of dominant human activity. They show that river basins can be a region for planning despite of the political regime, too. But are those examples more of a proof for intellectual attractiveness or hydrological regional division really imposes better understanding and management of development processes in variety of their aspects? How relevant is the assumption that sea catchments, river basins or deltas are sufficient for integration of human activity and natural processes? This article tries to resolve this question by means of historical analysis. In this historical analysis we are going to look less on the procedures of planning and more on the facts which show, that in spite of the procedures men managed hydrological regions as an economic geographical entities, which is a basic feature of integrated planning.

2 Region in planning

What is an economic region? The theory of regional science tells us that there were as many answers to this question as researchers. One of them was Kazimierz Dziewoński (Rykiel 2003) who somehow managed to simplify the dilemma of the definition. He said that we should rather seek for the answer to the question how we use the term „region“ in a given research. Starting from this point he

described three meanings of a region in geographical studies: as a tool for research, as a tool for action and as an object of knowledge (Dziwowski 1967). Concluding this we may say that it is easier and more wise to answer the question what is a region in integrated planning instead? In general region is a tool for action in planning. In an integrated planning this tool is used along with the realistic concept. Philosophy behind this concept says that region is an existing object and a system where human interacts with environment (Chojnacki 1990). So it is a system where natural processes and economic activities should go hand in hand. Nowadays, we can find many examples of integrated planning programs where region is defined in these terms. Not every planning process uses river basin as a region. Among integrated planning processes are for example Agenda 21 and integrated coastal zone management.

If we say that region is a system where human interacts with its environment then we can propose two types of regional division based on different criteria. First would be a solution to use ecosystem as a region where human activities are treated as inherently natural processes. Second would be a solution to use economic region as a system where natural processes have economic value (necessity) not only when they are controlled by men. With such an alternative we may ask further question how parallel and overlapping are the borders of ecosystems and economic regions? Indirectly, answer to that question would also bring about the solution to the problem of how far a mankind is outside the ecosystem, if it is at all?

3 Historical regional division based on river basins or deltas

The history of civilizations was bound so far with access to water, that literature on the topic tells us about the hydraulic civilizations of which we have three different types. First of them are “potamic civilizations”, which existed and functioned in river basins or deltas. Two more types of civilizations were the “talasoic” (sea) and “oceanic” ones – which extended from the river basins to the sea and oceanic catchment areas. Area of impact for those civilizations on the land was specified by river basins, as the rivers were the main communication routes and their banks were the only signposts during journeys. The biggest potamic civilizations came into being and existed in the river basins of Tiger and Euphrate, Indus, Amu-Daria and Syr-Daria, as well as in the Nile delta and Huang-Ho (Yellow River) and Jangcy delta system. (Piskozub 2001).

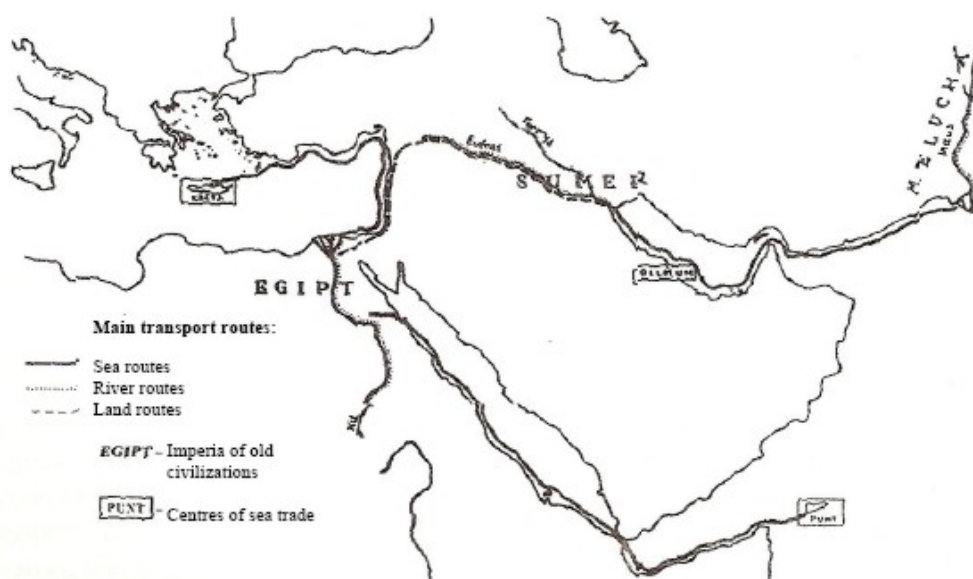


Figure 1: Potamic civilizations in deltas of Indus, Nile and river basin of Tiger (Piskozub 2001)

The term “civilization” considers all the assets – material and cultural - resulting from the human activity and constituting a coherent entity on a given territory at a certain time. The territory of potamic civilization was a river basin. Civilization was pursuing there an economic activity, so this area was at the same time an economic region. This means that economic region of potamic civilizations had hydrological boundaries. We may even say that area of economic activity of such civilization was conditioned by the hydrological phenomena in river basin or delta. So, historically the economic activity of a human was almost inevitably tied, integrated with hydrological systems. Planning or administration of this predominantly rural economy was made within a hydrological region and at least by that criterion could be perceived as an integrated planning. It is worth to mention here as a clue, that Lewis Mumford – one of the advocates of territorial planning at its roots – described the integrated planning effort in the terms of civilization activity in his article *The history of Cities* (Friedmann & Weaver 1979).

Human economic activity was strongly delimited within the hydrological boundaries until the 19th century. By then main economic activity was agriculture and the fastest as well as probably the safest means of transport was sailing. Rivers were the most reliable roads and maps during the continental journeys. Geographical horizon was enlarging and after potamic civilization we had talasoic ones within the sea catchment areas, like Greek and Roman ones, and then oceanic civilizations within one ocean, like Portuguese and Spanish.

But their reigning on the continents discovered by sea or ocean was constituted by the possibilities to penetrate the river basins through different river systems. As the Piskozub (2001) writes the biggest continents were discovered through penetration of rivers, like Mississippi, La Plata, Saint Lawrence River from the river estuary to the source, and in the opposite direction: Amazon River, Mackenzie. The situation in the 60s of 18th century was of special interest, when North American continent was discovered by different European expeditions and quickly divided along the borders of river basins of the biggest rivers. “[...] River basins of Saint Lawrence River and Mississippi were the New France over the ocean and the English colonies were located in the subatlantic belt of minor river basins in-between Appalachia Mountains and Atlantic Coast [...] and the catchment of Hudson Bay” (Piskozub 2001). Moreover, Spain added more North American land to their colonies in the form of Colorado and Rio Grande river basins. The Americans penetrated and incorporated to the United States the river basin of Colombia at the beginning of 19th century (Piskozub 2001). At the beginning of their colonization there was a possibility of planning them as one economic region inevitably consistent with the hydrological region. Unfortunately those opportunities were not exploited and later the political situation and conflicts changed those natural borders into artificial ones inconsistent with river basins. Different states of the USA, especially in the west, were not made in the river basins, but inside the web of meridians and parallels. The most extreme examples are: Wyoming, Arizona, Utah, New Mexico, Kansas or Colorado – the last named after the biggest river running through it. In spite of that the river catchment came back as an economic region together with Tennessee Valley Authority concept.

The dominant type of human activity in hydraulic civilizations was agriculture and the most common means of transport was sailing. Therefore, we cannot conclude much about the present possibilities from the single fact that such civilization existed. Today, agriculture is far less important human activity than industry or services. Similarly sailing and shipping is no longer the dominant means of transport, but these are the road and rail transport. Moreover, people build canals through the water boundaries. The hydrological regional division has a meaning for certain economic activities like agriculture or river transport. But if we consider only farming and shipping in the planning it would not be an integrated approach. This encourages us to look for examples of planning in river basins from times when industry or services were the more important than agriculture and shipping was not a dominant means of transport.

4 Planning in river basins in the industrial society

Well known example of the integrated planning based on the river basin region is Tennessee Valley. It is an example known for many reasons. One of which is the fame that it was the most successful integrated planning programme ever (Mitchell 1990), because it raised the economic indicators of the region and its position among other regions (Friedmann 1955). This success let the Americans promote it in other parts of the world, like India, Chile, Venezuela or Thailand (Friedmann & Weaver 1979). It is interesting for the purpose of this article as regional division based on hydrological criteria was a basis for integrated planning approach to an industrial development of the region. It is also well to notice, that in the 30s of 20th century when TVA was created railway and car were already more important than shipment as a land transport. Tennessee Valley was an integrated approach. Diagnosis which led to creation of TVA concluded not only the negative economic position of the Tennessee Valley, but also its ecological problems, like soil erosion, and social drawbacks, and social problems like unemployment. Creation of a special region managed by a dedicated planning Authority which were to adapt the plan along with local communities needs had to solve all of those problems in a comprehensive manner (Friedmann & Weaver 1979).

Unity of the economic and hydrological region in the Tennessee Valley was necessary to renew its economic backwardness by the application of planned solutions. The main proposal was electric power generation from river water resources. It was to be achieved by construction of a system of dams and reservoirs which reshaped the whole region into new quality for the environment, economy and society. Together with cheap energy provision other industries appeared in the region, cities started to grow, agriculture was upgraded and overall life quality was enhanced (Cumberland 1971, Friedmann & Weaver 1979).

Original boundaries of this economic region were equal to watersheds, but did not last long however, Tennessee Valley Authority exists even today. Jurisdiction of TVA was enlarged for all the area of electric power delivery – much bigger than the river basin. At the same time planning and many more competencies including agriculture services of the Authority were cancelled (Friedmann & Weaver 1979). Friedmann (1955) showed necessity to withdraw river basin regional division for the one based on city regions. Centre of a region would be in a city. Border of the region would be determined by the time of commuter journey to the city with land transport, especially car transport.

So for a certain industry purposes we can consider river basin as a basis for economic development. It is especially for the electric power generation, which seem to be the most important human industrial activity. One of the rare films about human living before the civilizations has a title “A fight for fire”, which means a fight for the energy. As we can find in Deelstra (1987) Holland became a fast growing and the most advanced economy in the middle ages because of the access to cheap energy given by the peat from sediments of Rhine delta. Before electric power generation, almost all of the human activity had to be produced and used within the single river basin, as water mill wheel served for the primitive engines (wind mills were used, too). That is why first Polish industrial zones were located along rivers. For example, Old Polish industrial zone was located along Kamienna river (now in Świętokrzyskie province), where system of dams and mills were build in 18th century. Also Sudety industrial zone had similar situation as its energetic reservoir were the rivers coming from Sudety to the Lower Silesia Valley of Odra river. Even when the steam engine was created water was a medium that kept it going. Nowadays we have still the most important electric power generation installations at the river banks, like Polish Upper and Lower Odra, Koziernice, Świerze. Even the most praised atomic power generation has to locate by the rivers. In the second phase of its development Tennessee Valley became full of atomic power stations localised by the reservoirs. So the energy delivery service encroach the river basin boundaries. If it did not, we could be less reluctant to integrate river basins with economic region for integrated planning. However, river basin seems to be of little importance during the industrial society.

5 Planning in river basins in post-modernism

After the industry, now services have taken the dominant role among the human economic activities. Services seem to be the activity which is the least determined by natural environment. It is the agriculture which has to use the land, soil and water inside river basins to grow food. Some industrial branches exist due to water or water-borne resources saved inside the river basins. So integration of their economic activity inside the hydrological region is possible and can have a significant role for planning integrated development strategies. In contrary services are the activities which are done mostly by human resources, which may not be guided by the river banks any longer. People can even stay at home to provide some kind of a service in an economic sense. None the less even with dominant services we can find reasons to use river basin as a region for planning.

For agriculture and industry there were the most important location factors which bind these activities with easy access to certain natural resources. In many cases such a resource was water, for example for coal and atomic power generation, nutrients production etc. In the nineties it was witnessed that location factors for economic activity of a human has changed. Now the most important factors were those related to the quality of resources. Among those facts were perceived attractiveness of the region and clean environment. For some services it came out that quality of water, the most important resource for a human to survive, is the key to enhance the quality of life. That is why new planning initiatives are undertaken to integrate economic activity with other aspects of development in the river basin or delta. One of such initiatives was Gelderland Valley integrated planning.

Gelderland Valley is the area situated in central Holland and designated as one of 11 regions for realization of "Environment and Planning" (ROM) programme. The main goal of the programme was enhancement of the quality of life in regions where national law was ineffective in addressing environmental solutions due to exceptional characteristics of those regions. For preparation of the plan a planning commission was created. The commission consisted of different stakeholders from ministries to delegates of NGOs. Details of the plan were widely consulted among all citizens of the Gelderland Valley. One of main solutions in Gelderland Valley was revitalization of the main river. The other solutions affected water resources management prone to nitrate and phosphate pollution from high-nutritive agriculture (VROM 1999). Effects of agricultural activity were in conflict with the human activities which based on new location factors. In this case it were tourist services. Tourism in the Valley was popular among high educated staff of firms located in nearby cities of Amsterdam, Utrecht and Amersfoort. For tourist purposes some of the agricultural farms were relocated and the natural landscape was restored.

We can also recall Swiss example. However it comes from the 70s of 20th century, but at that time Swiss economy was already service oriented – bank and insurance services are the trade marks of this country. In the 1974 authorities of Switzerland decided to create a programme of investment assistance to mountain regions (LIM). Assistance was awarded on the basis of comprehensive programme for the region. Regions were not the administrative ones, but they were newly created on the basis of topographic criteria. So in most of mountain regions watershed was the most important border and the regions were the river basins at the same time (Freeman 1990).

Another example would be New Zealand, where new regional division of a country created provinces almost entirely consistent with the hydrological division of the country (Mitchell 1990). The New Zealand reform had to ease the problems of spatial planning to prevent floods. Initiatives such as Integrated Coastal Zone Management in the case of Lower Odra Zone, which region is almost similar with river delta. So even today we can say about high potential of integration between hydrological and economic regions for planning purposes.

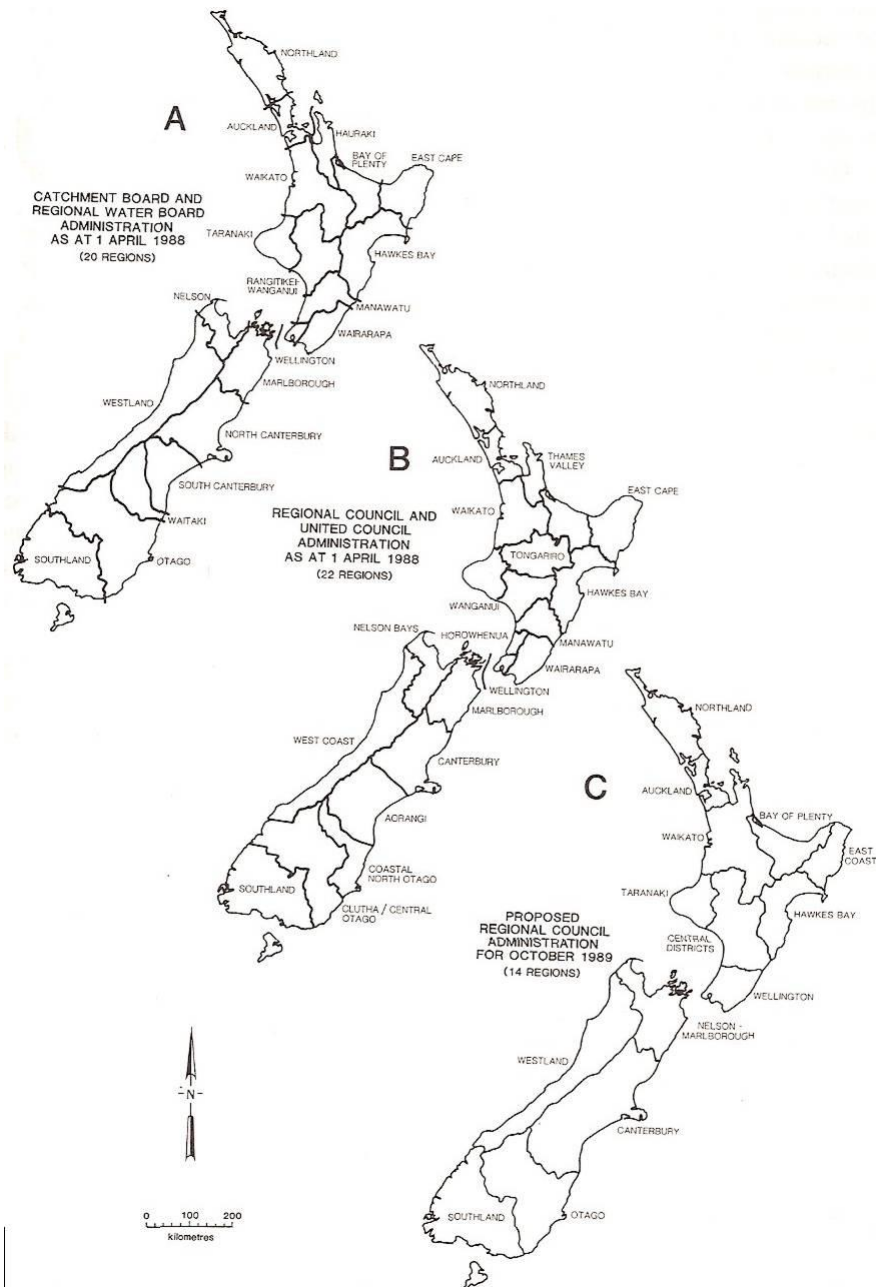


Figure 2: Plan for administration unit reform in New Zealand in 1989 (Mitchell 1990)

6 Political aspect

In the case of integration of hydrological regions with economic regions it is worth to focus also on the political aspect. It is concerned with the political regime which supports integrated planning in a certain region. Potamic civilizations were largely despotic regimes. Power was concentrated in the hands of Caesar, Pharaoh or King. Karl Wittfogel was explaining such organisation of the country with necessity to organise melioration and manage the whole canal system in an effective manner (Piskozub 2001). So it may seem that there is a price of personal freedom to pay for integration of ecology and economy in river basin. Isn't it then a counter democratic activity to propose integrated approaches for planning in river basins?

It is a false statement after the TVA experience. TVA showed that despotic regime is not the only one which can manage a river basin in a comprehensive manner. Planning in Tennessee Valley was a democratic process based on consultation and persuasion aimed at public involvement in realisation of the strategy. However, it is not a perfect example as there were some competences overexploited

by the TVA board of directors (Friedmann & Weaver 1979). But we can find better example which additionally shows that democracy can be also deeply rooted into integrated planning in river basins. It is the Dutch “Environment and planning” (ROM) programme. ROM is the most advanced instrument for spatial planning in the democratic society. The example of Gelderland Valley strategy has been already shown, but there is something more than a simple application of democratic processes to planning. The Dutch society is proud of its potamic origins named by one of British newspaper with the term “poldermodel”. Polder is a part of land surrounded by dikes – some kind of the smallest entity of the catchment area. This land would be under water if people who live inside would not constantly pump it out. It is deemed that life in polders influenced the people in a way that they are used to negotiate and bargain rules of living in their society by means of a democratic process. They are also used to keep to this rule, because one break would cost them a flood of polder. Consensus is the key word here and it is deemed as one of the crucial characteristics of Dutch democracy (NUFFIC 2002).

Therefore, it can not be said that integration of ecological and economical aspects in a river basin as a basic region leads to less democracy, when we can show that it can strengthen it.

7 Final remarks

At the end we should shortly summarise some characteristics of river basins which make them a good tool for regional integrated planning:

- a) borders of river basins are sharp just like state borders – such borders are preferred by human for the management purposes;
- b) river basin has been an economic region many times in the history – river basins and deltas served as a cradle for civilizations;
- c) river basin is a natural area, an ecosystem where people live and many of their activities are included inside it such as agriculture or electric power generation.

This article showed on few examples from different historical periods, that hydrological region – catchment area, river basin or delta are significant for the integration of planning practices taken into consideration different types and aspects of human activity. There is also some evidence that river basins were the least important for planning when industry was the dominant human activity. Now, river basins seem to come back as industry and modernization tendencies based on quantity diminished. This let the quality to go ahead as the most important aspect for knowledge-based economy based on services sector. Quality is strongly linked with environmental matters and it leads to reintegration of ecology and economy historically bound in river basins. This integration is pursued mostly in the field of planning. If planning is of a regional scale then it is useful to seek for region, which would satisfactory include ecosystems as well as economic regions. If we look from historical perspective we see that civilizations have come out of river basins only recently. Maybe it is time to say, that economic region, just like men, is 95 % build of water and river basins are the best to plan sustainable development.

Baltic catchment as a region integrates countries around the concept of sustainable development. It is very fortunate and at the same it is a result of historical process that countries like Sweden, Poland and Finland have their borders going almost all along the boundary of Baltic Sea catchment. At the same time those countries manage almost entire river basins flowing to Baltic from the source to the estuary, and do not manage any other sea catchments. Therefore in the Baltic Region integrated planning, especially Integrated Coastal Zone Management can go without mayor political obstacles. Countries can much easier integrate their economic policies with policies aiming at preservation of Baltic Sea.

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