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HUNGARY IN THE CENTRE OF THE CARPATHIAN BASIN – SOME REGIONAL INTERRELATIONS OF SUSTAINABILITY [1]

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INTRODUCTION

Hungary's basin location is from many aspects - climate, agriculture, transport, etc. – a determining starting feature, but perhaps its basin location is of more decisive importance in the area of water management than in any other sector. Almost every study on water management in Hungary mentions among its first statements that 95% of Hungary's surface waters come from beyond the country's borders. This opening in every case is intended to lend solid support to the country's hydrographical dependence (which we have no reason to contest), on occasions casting a glance at the fact that this percentage is (very) different for the historic territory of Hungary, two thirds of which went to neighbouring countries following the Treaty of Versailles. We would not challenge this last ulterior statement either. Nevertheless, it seems that the constant repetition of this figure conceals and hinders the discussion of the actual interrelationships and problems of the water budget for the basin area in a comprehensible manner and within suitable limits for broad public opinion.

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We also contend the veracity of this much quoted figure, or more precisely believe it is misleading to refer to the importance of 100%. Besides, the manner in which it is stated assumes we should try, or at least that it would be good, to reduce the 95%. We propose, however, that this seemingly good direction is in direct opposition to our true interests.

WATER BALANCE IN THE CENTRE OF THE CARPATHIAN BASIN

"95% of Hungary's surface waters come from beyond the country's borders."

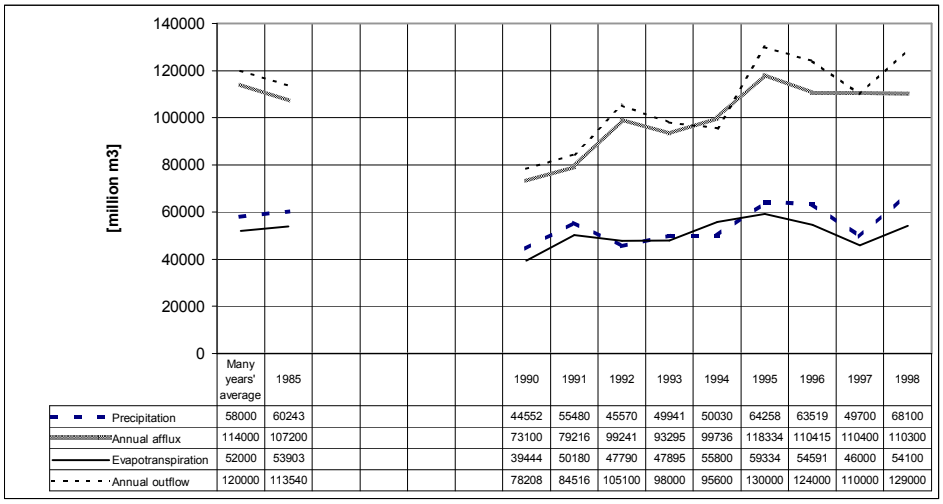
A little more accurately, this assertion actually refers to the fact that if the quantity of water transported by the *surface water flows leaving Hungary* is taken as 100%, inflowing surface waters account for 95%. This is true: that is an annual average of 114 cubic kilometres of water are brought in by incoming river waters, and 120 cubic kilometres flow out of the country – principally in the beds of the Danube, the Tisza and the Drava (Magyarország vízgazdálkodása [Water management in Hungary] 1996). These proportions in themselves, however, reflect rather imperfectly a country's water budget. A similar figure of 95% could equally be characteristic of a country poor in precipitation where there are almost no other water supplies than the waters flowing across it. At the same time, this may also occur in countries with high rainfall but high evaporation too, which makes the importance of waters running through the country secondary. An important factor in a country's economy is the ratio of imports compared to exports, but more important than this is the trend in the country's own production: the economic performance of a country is mainly typified by its GDP and it is only for special purposes that the import/export ratio should be applied.

Precipitation in Hungary is about 50% compared to the quantity of water flowing into the country, that is in addition to the inflowing 114 cubic kilometres an annual average of 58 cubic kilometres of precipitation falls on the territory of Hungary. In fact, this total of 172 cubic kilometres of incoming water should be taken as the basis on which calculations are made. On the "expenditure" side the principal items are an annual average of 52 cubic kilometres of water evaporating in Hungary, and the remaining, already mentioned 120 cubic kilometres which flows out of the country.

It should be noted that the figures quoted above are the annual averages for many years based on the hydrological conditions in the period between 1931-1970. Water affairs sources liked to refer to these statistics even in the nineties. Incidentally, until 1991 annual estimates took into account actual precipitation and outflow values but postulated the annual balance. Since 1992 separate estimates have been made for afflux and evaporation, and according to calculations resources have fallen by an

annual average of three and a half cubic kilometres from 1992 to 1998. (*See* Figure 1 and KöViM 2000).

In the following we do not wish to deal with the balances for each year but the values for the average over many years.



	Many years' average	1985	1990	1991	1992	1993	1994	1995	1996	1997	1998
Precipitation	58000	60243	44552	55480	45570	49941	50030	64258	63519	49700	68100
Annual afflux	114000	107200	73100	79216	99241	93295	99736	118334	110415	110400	110300
Evapotranspiration	52000	53903	39444	50180	47790	47895	55800	59334	54591	46000	54100
Annual outflow	120000	113540	78208	84516	105100	98000	95600	130000	124000	110000	129000

Source: Közlekedési és Vízügyi Minisztérium [Ministry of Transport and Water Management], 2000.
* The average over many years between 1931–1970.

Figure 1. The annual balance of domestic renewable water reserves

Water use and evaporation – what is a loss?

The prominence and constant repetition of the figure of 95% suggests that water use in Hungary is mainly based on inflowing river waters, the role of domestic precipitation is insignificant, and almost all the precipitation evaporates anyway which does not mean utilisation but loss. (For example, Magyarország vízgazdálkodása [Water Management in Hungary] p.10.). In contrast with this, we contend that the proper use of water and domestic profitable exploitation has a very close interrelation with the amount of water evaporating: a substantial part of the water evaporating is by no means "loss", as the evaporating water first produces domestic vegetation, including forests, grain, and other commercial crops. Even the "only" evaporating water is part of the formation of the local microclimate, and it is not only that the potential evaporation depends on the trend of precipitation but vice versa: more evaporating water also contributes to more precipitation.

The mentality that highlights the statistics of *affluent waters* from the whole water budget for the Carpathian Basin is in its own way in unison with earlier efforts that regarded relieving the Carpathian Basin of its waters as the primary task. Here and now our task is not to review and assess the two hundred-year process of water

use and river control, and their technical, demographic, economic, urbanisational, social and administrative interrelations, except to refer to the fact that as a result both getting the waters into the recipients and the movement of the rivers have accelerated; the waters arriving here leave the country quicker. Trends indicating this could be put into figures in water balances that show not only the amount of annual *flow* – that is the above cubic kilometre/annum figures – but also the amount of *stock*, that is the total amount of water present in the country at any one time. We believe that by accelerating the afflux, the average amount of water present in the country at any given time has been reduced, that is the average time waters coming into Hungary remain in the country has become shorter. In addition to this, it can be stated with certainty that the areas in the country covered by water have fallen considerably as a consequence of river control (L. Somlyódy 2000).

If we imagine a situation when a much greater area were covered with much more water than at present, the amount of water evaporating would certainly increase due to the change. Although increased evaporation would also increase precipitation, obviously not all the extra evaporation would come back to the territory of the basin in the form of precipitation. To test this train of thought, let us suppose that in balance about 20% more water evaporated in the country annually, that is 62 cubic kilometres instead of 52. Assuming inflowing waters remain unchanged, so only 110 cubic kilometres instead of 120 would leave the country each year, as the rest would evaporate. In this case the amount of surface waters coming from abroad would be 104% and not 95% of the amount of surface waters flowing out of the country. While the constant exaggerated stress laid on 95% creates an impression that this is the degree of our dependence, as we are masters of only 5%, the value of 104% lays bare this statistic as the impression of the 100% representing a kind of barrier is dispelled. In a situation more favourable than today's, when, more water is used – let us suppose, usefully and not wastefully – within Hungary than today, our dependence in fact does not grow but rather lessens. In other words, we "exploit" countries downstream by allowing less water to get through to them. Thus the problem with the slogan "95% of Hungary's surface waters come from beyond the country's borders" is not just that it classifies a *sub-process* in the water budget (although in a rather slipshod way). It is also a problem that by finding the figure of 95% too high, it wishes to establish as ideal a state when incoming surface waters represent a smaller part of the outflowing surface waters, that is when a greater amount of the water originating in Hungary could be steered into recipients before it leaves the country. In our view this would neither mean a higher level of rationality in domestic water use nor reduce our dependence.

This train of thought shows exactly the opposite. If it is true that by reducing the length of time water is in the country and the open water surface as a result of river control – thereby reducing evaporation – we have increased the quantity of outflowing water, thus decreasing the ratio of inflowing waters expressed in its percentage,

today's "95%" situation (for the present territory of Hungary) has been arrived at not from below by increasing the percentage, but precisely the opposite, by reducing it. Increasing the length of time water is in the country and not shortening it leads to approaching an earlier more favourable state, which increases rather than reduces the ratio of "95%".

In itself the fact that through river control in the Carpathian Basin we have managed to change the water budget relations, significantly proves exactly that this basin is not necessarily in a dependent and passive situation, but rather that it has a means of balancing how long inflowing waters should be stored or how quickly they should be discharged. Regions that are truly in a dependent situation are those where no water whatsoever comes in or where there is no means at all of directing the waters that do arrive. In Hungary this is not the case.

It is, however, unquestionable that over these two hundred years strictly interpreted social and economic features and objectives have changed radically, and so have social and economic considerations on the environment and nature. If conclusions are drawn from this too late, the strategy for water will really be forced to follow a way of thinking in which the issues arising today are insoluble. Nevertheless, it would be a mistake to confuse this forced way of thinking with some kind of natural dependence inherent in a basin location.

In our opinion, of the requirements stemming from the nature of the basin, the concepts of water management only tend to promote one disadvantageous feature, the dependence of the bottom of the basin. They tend to overlook that dependence on incoming waters is matched by actually very extensive opportunities of controlling the speed of the flow and the outflow in the basin.

MANAGING THE BASIN LOCATION IN OTHER SECTORS

The basic topological feature of a basin is that it slopes inward and is surrounded by a high edge with only a few gateways, entries and exits. Apart from the hydrological consequences, other sectors mainly feel various *consequences* of these basic features and less the topology itself.

Among the most important consequences of the basin location is a certain protection. This has an effect on the climate and weather as well as the range of flora and fauna. A basin is relatively difficult to enter, but once a population gets in, the protection it affords ensures it remains for a long time, becomes indigenous and an integral part of the flora and fauna of the basin. Obviously, a similar melting pot function has typified the Carpathian Basin over the course of history as regards the assets and culture of peoples, and in many cases population, too. Analysing the social aspects aris-

ing from this will be left to others. Instead, we shall return to presenting the basin location's direct effect on development concepts in a couple of sectors.

Tourism

The positive features of Hungarian tourism are often characterised by the indicator for supply that shows that 2-3% of the world's (international) tourists come to Hungary. From another perspective, however, it is also true that in terms of income from international tourism, Hungary is on a lower scale, receiving just 2-3 thousandths of the revenue from world tourism. (Figures vary according to estimate, but trends are unmistakable. See e.g. Lengyel M. 1997.) This discrepancy well typifies the duality, which exists between the abundant quantity *flowing through* and the receptivity within the country, that is its *absorptivity* in tourism. For tourism experts it is obvious in this case that not a growth in advertising to attract even more people is needed here but measures to increase the absorptive capacity within the country so that the system will be able to offer better services to the tourists already coming to Hungary.

Transport

This same interrelation is seemingly even less accepted by the concept makers in the transport sector: there the idea still exists that increasing the flow across the country is the most important. Behind this thought there is an illusion that by making the through-traffic as large as possible "some profit will be reaped" later for the country. Diametrically opposed to this, just as in tourism, in freight transport domestic income does not grow based on statistical proportionality, but the ability to make a profit depends on the *absorptivity* of domestic industry, infrastructure and the transport network. Here it should be finally understood that for the growth of internal absorptivity and adaptivity exactly the wealth and enrichment of the internal system of connections is necessary. As regards content, this requires an increased density of points of contact in co-operation between producing, processing and service points, while as a prerequisite of form the density and proper condition of transport links supplying internal connections has great importance. A suitable and dense local system of connections cannot be replaced by the building of the backbones of a country. In fact, if the correct ratio between the two is upset, the country in question will wait in vain in spite of building the backbone network for the benefits of surplus traffic to percolate through into the economy. It is precisely this danger that appears to threaten in the official interpretation and endeavours in respect of the currently effective *transport concept*.

While in our view too great a stress on the disadvantageous features is typical of the strategic management of basin characteristics in *water management*, it can be

stated about the official domestic transport strategy (Közlekedéspolitika [Transport Policy] 1996) that it essentially *ignores the basin nature of the region,* and primarily concentrates on the ease of crossing, the traversability of the country. It is indisputable that due to the location of our region great emphasis is laid on traversing Hungary when viewed from the outside. Indeed a Hungarian transport policy that fails to take into account that there must always be the possibility of crossing the country by water, rail and road, besides the air corridors, is unimaginable.

However, a transport policy that seeks to pin the future of Hungarian transport almost exclusively on corridors to be built across the country is fundamentally flawed and fails to comprehend the roles within the country of the functions of different levels of transport.

A region – whether considering the Carpathian Basin as a whole or simply Hungary within it – should be served by transport with three types of function. *Accessibility* to the region from the outside (that is "import and export" transport routes) is unquestionably important, as is *traversability* discussed above (the transit traffic routes). But of at least equal importance as these is providing good access between the various points within the region, that is *the region's internal provision* should be properly provided for.

A transport policy that provides exclusivity for building external accessibility and traversability referring to foreign needs, hoped for subsidies or any other consideration deludes itself that it will be able to develop internal provision based on the results of these, while creating the complete dependence of the region on external aspects. *It is worthwhile noting the similar thought processes from the aspect of the basin of building large transport corridors as priorities and the river control measures discussed above.* In both cases the branches are abandoned (secondary networks, capillaries), that is the elements serving the *region*, and the flows are forced into a few narrow channels with the catchphrase that forwarding flows in quantity is thus more rational, safer, quicker and less disturbing. This argument does not lack logic, and we are not saying that those flows that merely cross the country do not need precisely such channels. In our view the problem is when this logic receives too great a priority, and *serving the region becomes totally subordinate to the above aspects*.

Staying in the area of transport, if a country's transport system appears in total as disjointed branch systems forking off traversing backbone networks, its internal network loses all semblance of independent organisability and its own rationality. The *internal connections* in this logic appear from the transport aspect as no less than *uneconomical and illogical* (i.e. too short) transit routes where forced access to the backbone networks and reaching destinations from there is disproportionately long compared to making the short journey on the backbone road.

The directions of the land backbone links crossing the country show a close correlation with the basin nature of the region, as in essence these transit routes link together the *main gateways located on the edge of the basin*. In contrast with this, the internal links of the basin could *in theory* even be independent of the location of these gateways, as internal links are created between internal junctions. In reality the flows are not so sharply separable, as the development of the most important internal junctions and cities have been strongly influenced by the basin's external connections, and thus a significant number are situated on transit routes. However, it needs to be understood that if we now wish to thread the whole Hungarian transport network onto a new layer of transit routes, of motorway corridors (as valid transport decisions attempt to do), and moreover we wish to lead these corridors across the country along the route of earlier developed main roads and through the conurbation of the capital (as described in current plans), and funds are made available for this at the expense of the maintenance and development of the internal local transport network (as is happening at present), exactly that vulnerable and interlocking hierarchy will be extended and strengthened even further, from which both the spatial structure of the whole country and the structure of the transport network at present suffer.

The intention of this work is, by thorough consideration of Hungary's basin nature, to draw attention to the need to fully think through slogans and partial truths that in certain sectors have become entrenched and are today regarded as sound starting points, and to the danger that through repetition ad infinitum we will come to accept these interrelations as undisputed truths. We do not regard it to be our task here to outline a concept for the solution of problems in the sectors discussed.

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