

THE PRESENT VALUE OF THE INTERESTS OF FUTURE GENERATIONS

Presented on 28 November by Boldizsár Nagy
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at the International Conference of the Eötvös Loránd University, Budapest on the occasion
of the 60th anniversary of the Universal Declaration of Human Rights, entitled:

Rights of Future Generations

28-29 November 2008

The kind contribuion of Gábor Bartus to the slides dealing with the economic aspects is greatly appreciated and hereby recognised

“And if there is one word that should be on everyone’s lips ... one concept that embodies everything we hope to achieve here ..., it is responsibility. Responsibility for each other, but especially the poor, the vulnerable, and the oppressed , as fellow members of a single human family. Responsibility for our planet, whose bounty is the very basis for human well-being and progress and most of all, responsibility for the future , for our children, and their children.”

Kofi Annan

Opening statement at the World Summit on Sustainable Development , Johannesburg, 2002

The scheme of the talk

- Legal bases for the protection of the interests of future generations (soft and hard law)
- Schemes for the distribution of renewable and non-renewable resources between present and future generations
- The Gabčíkovo-Nagymaros Project as an example for caring for the future
 - The wealth threatened
 - Discounting the future – economic debates
 - The competing readings of the parties' positions

Sources of obligation

Soft law – governmental declarations

Stockholm Declaration, UN Conference on Environment, 1972

Principle 1

Man has the fundamental right to freedom, equality and adequate conditions of life, in an environment of a quality that permits a life of dignity and well-being, and *he bears a solemn responsibility to protect and improve the environment for present and future generations*

Sources of obligation

Soft law – governmental declarations

World Charter for Nature

(GA Res 37/ 7 of 28 October 1982)

- Reaffirming that man must acquire the knowledge to maintain and enhance his ability to use natural resources in a manner which *ensures the preservation of the species and ecosystems for the benefit of present and future generations*

Sources of obligation

Soft law – governmental declarations

Rio Declaration, UNCED, 1992

Principle 3

- The right to development must be fulfilled so as to *equitably meet developmental and environmental needs of present and future generations.*

Sources of obligation

Soft law – governmental declarations

*United Nations Millennium Declaration
A/RES/55/2 18 September 2000*

“We recognise that, in addition to our separate responsibilities to our individual societies, *we have a collective responsibility to uphold the principles of human dignity, equality and equity at the global level.* As leaders we *have a duty* therefore to all the world’s people, *especially the most vulnerable and, in particular, the children of the world, to whom the future belongs.*”

Sources of obligation

Soft law – governmental declarations

Johannesburg Declaration on Sustainable Development

4 September 2002 A/CONF.199/20,

26. We recognise that *sustainable development requires a long-term perspective* and broad-based participation in policy formulation, decision-making and implementation at all levels....

37. From the African continent, the cradle of humankind, we solemnly pledge to the peoples of the world and *the generations that will surely inherit this Earth* that we are determined to ensure that our collective hope for sustainable development is realised

Sources of obligation

Hard Law

- Early references to future generations
 - United Nations Charter 1945
 - Int'l Conv. for the Regulation of Whaling

- More recent conventions dealing with
 - Species and biodiversity
 - Air and climate protection
 - Marine environment
 - International watercourses
 - General environmental issues
 - Cultural and architectural heritage

Sources of obligation

Hard Law

An example:

1992 UN Convention on Biological Diversity

- *Preamble:*
Determined to conserve and sustainably use biological diversity for the benefit of present and future generations...
- *Art 2. : „Sustainable use" means the use of components of biological diversity in a way and at a rate that does not lead to the long-term decline of biological diversity, thereby maintaining its potential to meet the needs and aspirations of present and future generations.*

Sources of obligation

Jurisprudence

International Court of Justice Judgment 25
September 1997 *Gabčíkovo-Nagymaros
Project Case, para 140.*

- see later

Sources of obligation Jurisprudence

Minors Oposa v. The Secretary of the Department of Environment and Natural Resources

The Philippines Supreme Court, 30 July 1993

- *Children and succeeding generations had standing claiming that the forestry practice was hurting their and the future generations' rights*

Doctrinal Consequences

Principles of intergenerational equity (E. B. Weiss)

– Conservation of options

- „Conservation of options requires that *on balance* the diversity of the resource base is maintained”

– Conservation of quality

- „...requires that we leave the quality of the natural and cultural environment in no worse condition than we received it.”

– Conservation of access

- „...gives the present generation a reasonable, non-discriminatory right of access to the natural and cultural resources of our planet”

Doctrinal Consequences

Non-renewable (finite) resources (B Nagy)

Divide them by half between the foreseeable and the non-foreseeable generations.

Foreseeable time horizon – 7 generations – 140 years

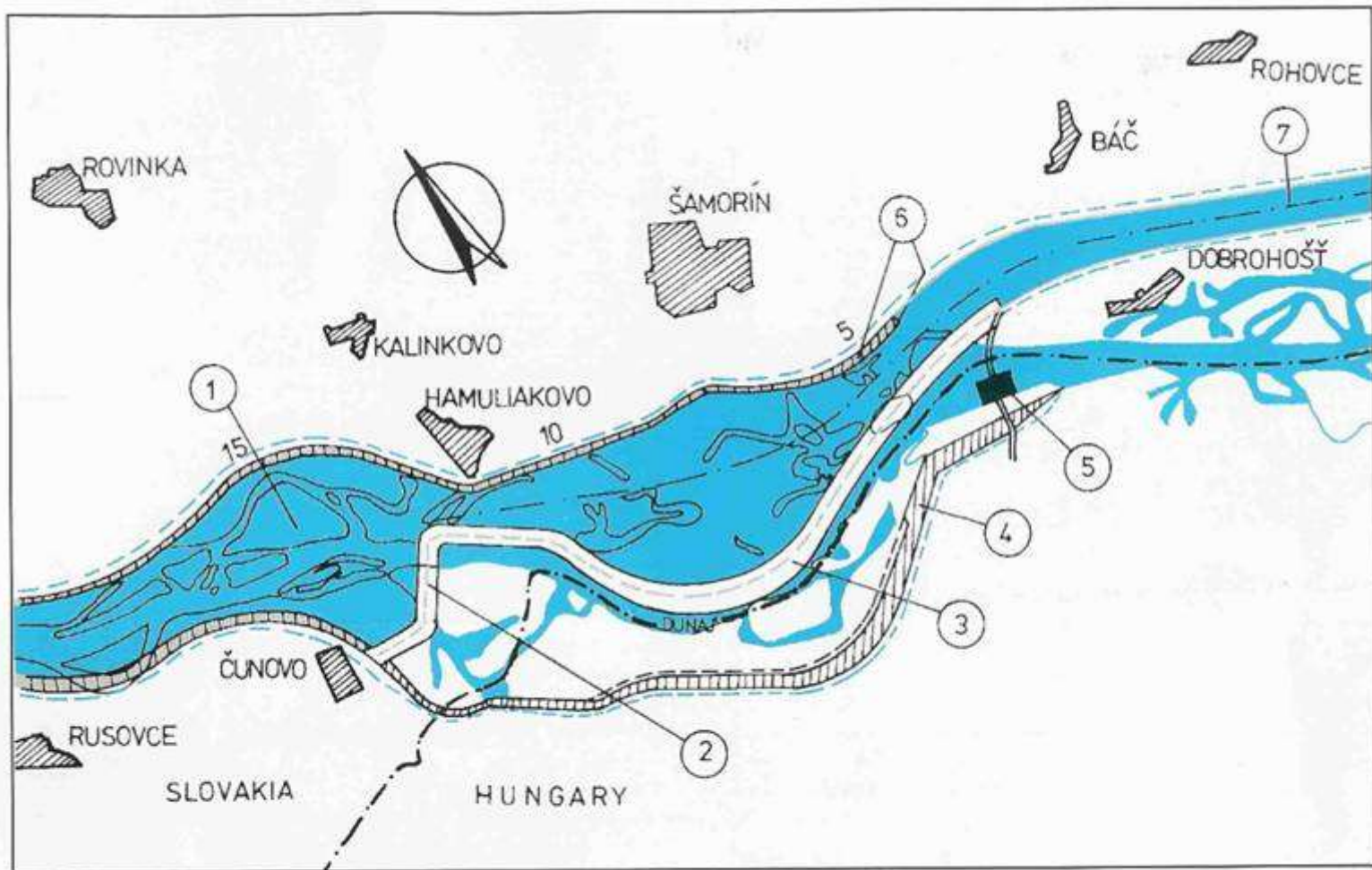
Every foreseeable generation should get „equal” share -1/7th of the half (7,14 %)

Re-count the share with each generation

The overview of Variant C



An even closer look at the Variant C structures



LAYOUT OF THE RESERVOIR GABČÍKOVO DIMINISHED BY VARIANT „C“ STRUCTURES

1 - remaining reservoir, 2 - structures of the Čunovo complex /see separate figure and description in the text/, 3 - dividing dam 11 km long, 4 - original right-side dams of reservoir, 5 - Dunakiliti weir

Nagymaros under construction 1992



Description

- Reservoirs:
 - Cunovo: 40 km² reservoir, dam, 3 sets of weirs, auxiliary shiplock, small power plant, (58 MW) 11 km long connecting dyke
 - Nagymaros: 100 km long producing 7 m fall! **Not built**
- By-pass canal:
 - 25 km long on/in fertile land (headrace canal: water: 15 meters above ground level - power station - tailrace canal dug into the land)
- Power station(s):
 - Gabčíkovo at 1821 rkm = 8 turbines 720 MW capacity, 2700 GWh output/year, 16-23 m fall of water, planned peak mode, actually continuous
 - Nagymaros at 1696 rkm 6 turbines, 158 MW capacity, 1600 GWh output/year, continuous mode **Not built**
- Purposes according to the 1977 Treaty:
 - energy production (3.700 GWh/year to be shared equally)
 - improvement of navigation
 - flood protection
 - infrastructural development

Major Concerns

Surface and subsurface waters.

- The decrease of the water flow to 1/20 of the average flow threatened with the **drying up of the last inland delta in Europe**, comprising several hundred square kilometers in the form of two large islands (Szigetkoz and Zitny Ostrov) with an unusually dense branch system in the flood plain area supporting **unique wetlands**. Substantive **deterioration of water quality including the danger of eutrophication** also belonged to expected surface water changes.
- The other vital feature of the hydrological system under threat of profound changes is the **aquifer** below these two large islands. The aquifer under the Hungarian side is 21.8 km³ large and contains approximately 5.4 km³ ground water of potable quality. It is estimated that the sustainable capacity of this resource is **750 million litres per day**. The **Slovak side's similar resources are even larger**. The fear is that the deteriorating quality of the infiltrating water would in a very slow process but in a practically irreversible manner pollute this aquifer rendering the water not potable or necessitate complicated and financially prohibitively expensive treatment.
- Even more threatening was the prospect that the river morphological changes accompanying the Nagymaros Barrage would significantly reduce the quantity and impair the quality of the water produced by the **bank filtered wells located between the Nagymaros Barrage and Budapest and supplying 2/3 of the drinking water needs of the 2 million inhabitants living in the Hungarian capital**.

Major Concerns

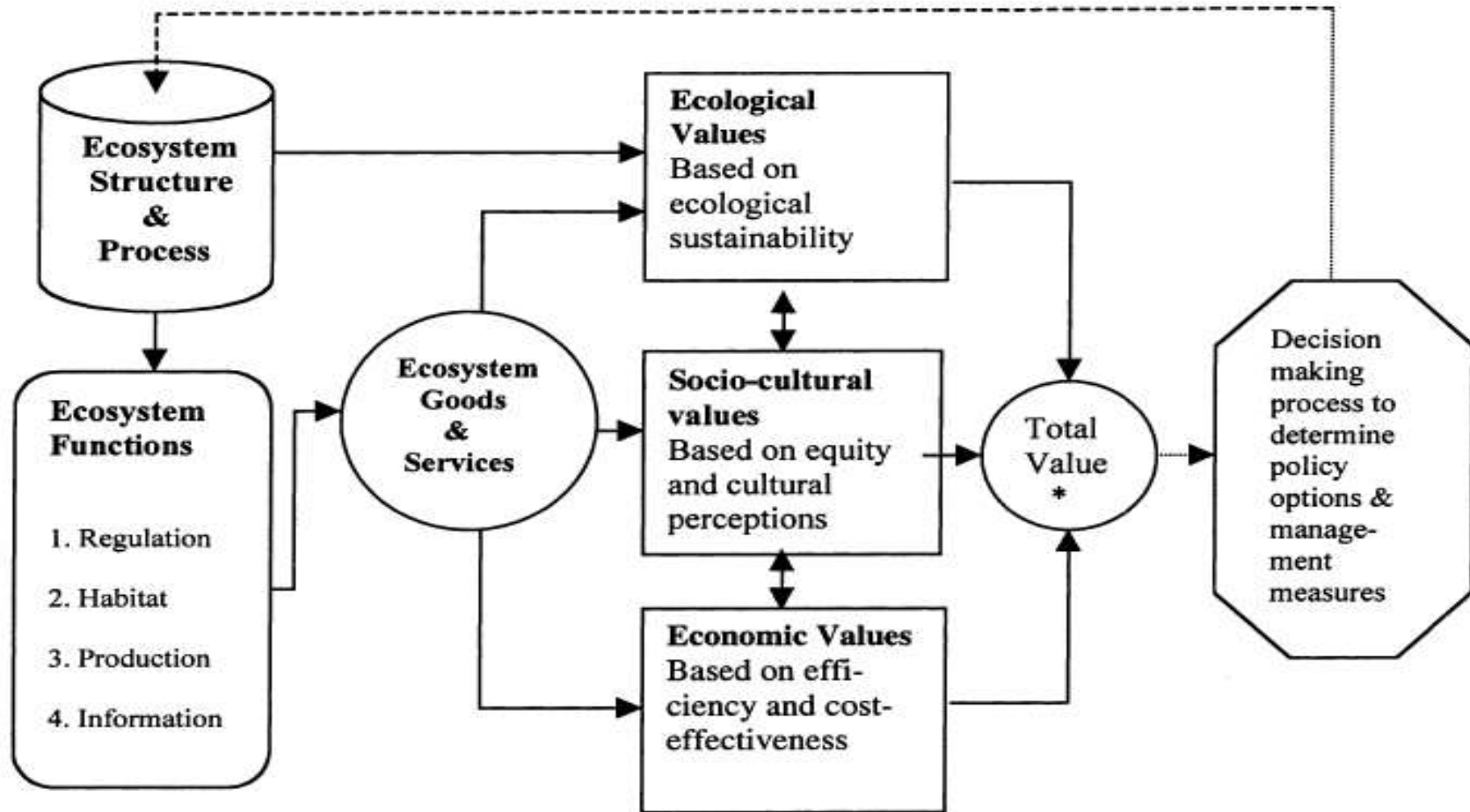
Flora and Fauna

- The unique *flora and fauna* of the wetlands and other areas affected by the Project including the aquatic life, especially in Szigetkoz and Zitny Ostrov deserve attention. Predictions vary as to the extent of the **destruction of the rare, at large territories natural or semi natural conditions**, but scholars agree that the loss of connection between the side arms and the Danube channel, the decreased water discharge and ground water levels and the lack of floods ensuing the implementation of the Original Project **would have had devastating impact on the flood plain ecosystems** of the affected area, including disappearance of species and **reduced biodiversity**.
- Other risks include the decrease of **agricultural and forestry production** on several hundred km² surface area, the disappearance of aquatic habitats significantly **impairing fisheries, the loss of recreational values** including the transformation of the Danube Bend into an industrial area.

Flood security, engineering risks, lack of appropriate impact assessment,

- Further to mention is the **lack of adequate environment impact assessment and the inappropriate seismic research and calculations** serving as the basis of design.
- The extremely fast construction and abrupt commencement of operation of Variant C has further contributed to the list of damages and risks. **Flood security is fragile, international navigation on the Danube has become blocked repeatedly for weeks**, a severe degradation of the main river channel accompanied the drastic and unpredictable reduction of water flow after the unilateral diversion by Czech and Slovak Republic.

Ecosystem goods, functions and services



*) The problem of aggregation and weighing of different values in the decision making process is an important issue, but is not the subject of this paper (see other papers in this issue for further discussion)

Fig. 1. Framework for integrated assessment and valuation of ecosystem functions, goods and services.

A few of the 23 functions, the processes and of the goods and services

3 Disturbance prevention

- Influence of ecosystem structure on dampening env. disturbances
 - 3.1 Storm protection ... 3.2 Flood prevention (e.g. by wetlands and forests)

4 Water regulation

- Role of land cover in regulating runoff & river discharge
 - 4.1 Drainage and natural irrigation.
 - 4.2 Medium for transport

5 Water supply

- Filtering, retention and storage of fresh water (e.g. in aquifers) Provision of water for consumptive use (e.g. drinking, irrigation and industrial use)

12 Refugium function

- Suitable living space for wild plants and animals Maintenance of commercially harvested species

13 Nursery function

- Suitable reproduction habitat 13.1 Hunting, gathering of fish, game, fruits.

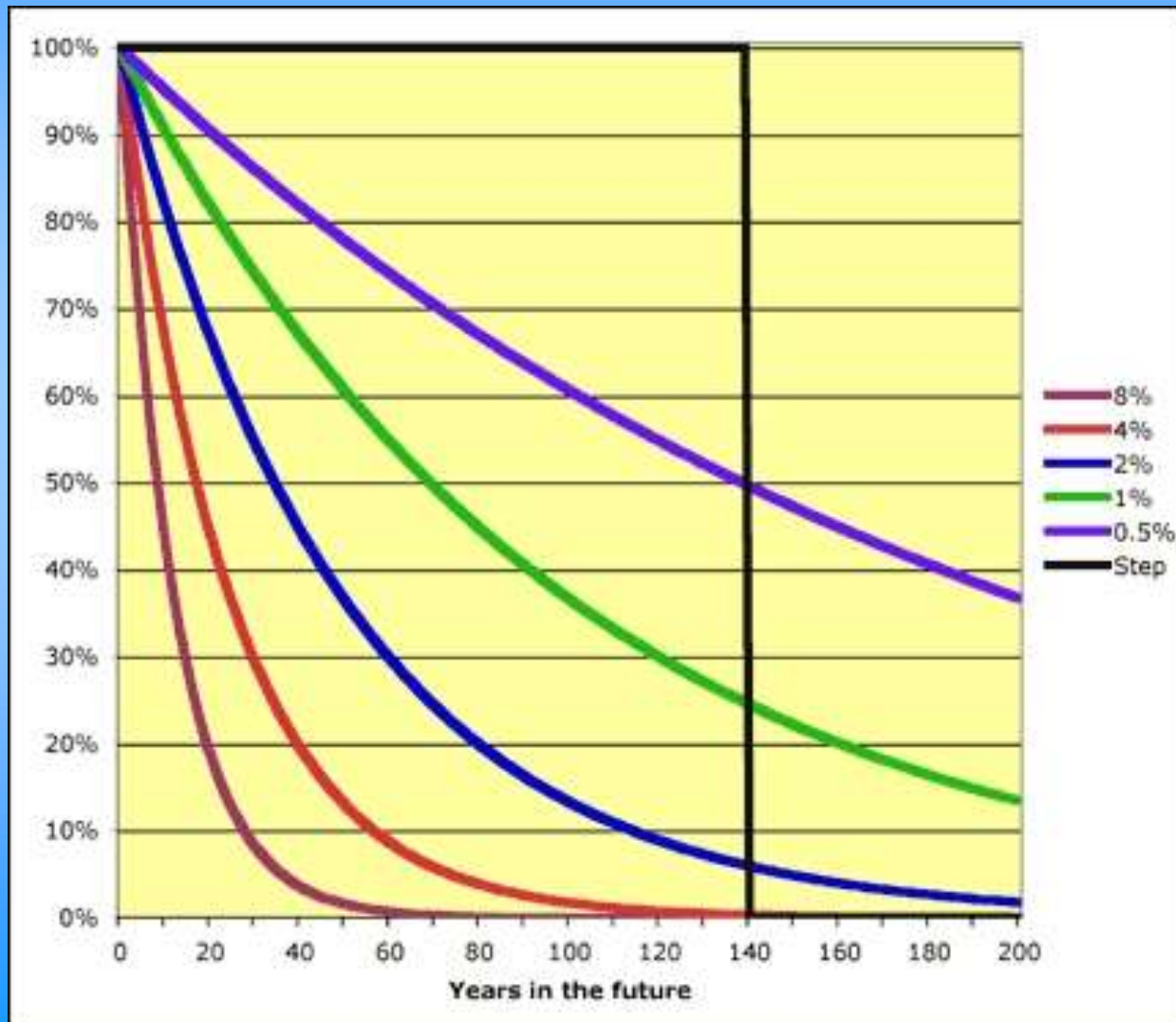
A few of the 23 functions, the processes and of the goods and services

- 19 Aesthetic information
 - Attractive landscape features
Enjoyment of scenery (scenic roads, housing, etc.)
- 20 Recreation
 - Variety in landscapes with (potential) recreational uses
Travel to natural ecosystems for eco-tourism, outdoor sports, etc.
- 21 Cultural and artistic information etc.
 - Variety in natural features with cultural and artistic value
Use of nature as motive in books, film, painting, folklore, national symbols, architect., advertising,
- 22 Spiritual and historic information
 - Variety in natural features with spiritual and historic value
Use of nature for religious or historic purposes (i.e. heritage value of natural ecosystems and features) .

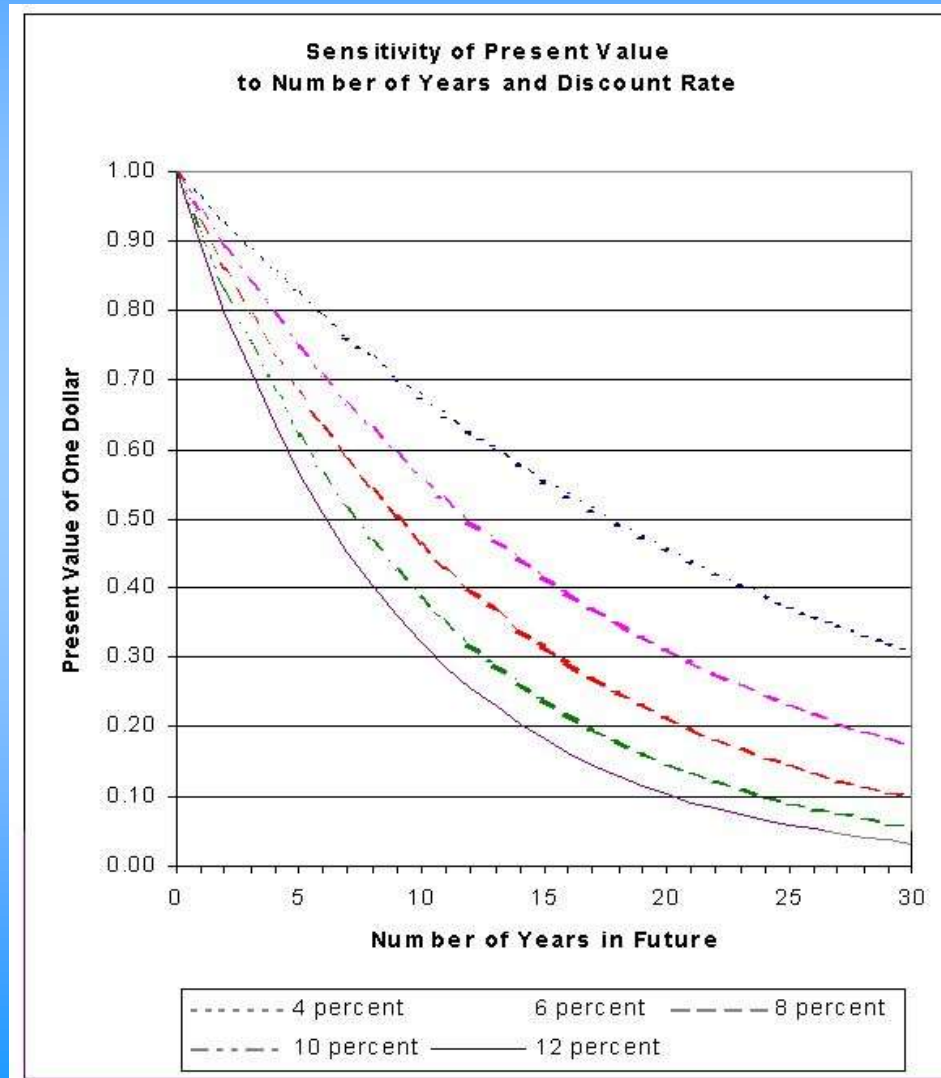
The interests of future generations at stake and the appropriate discount rate

- The present debates in economics on discount rates
- The difference between the market discount rate and the social discount rate (illustrations in graphs)

The impact of the different discount rates



The impact of the different discount rates



The optimal discount rate – the problems

- If too high:
All environmental resources are sacrificed for any economic reason
- If too low:
All early actions are justified, e.g. a war because of a threat in a distant future

Leading voices, Sterner and Pearsson

„The discount rate debate cuts to the core of many fundamental questions regarding global environmental change: how much weight should we put on the welfare of future versus current generations? Will growth continue so that future generations are all richer than we are today? ... There is little consensus in the economic literature about which value to choose for the discount rate.”

Sterner and Pearsson, p.2

As the growth of the environmental sector is slower than of the consumption and the elasticity of environmental services is limited in the longer term they should be „re-valued”

„The goods and services with low elasticities will dominate the calculation since these will be the ones with increasing utility. This goes for clean water, pollination services, and many other subtle aspects of the ecosystem that we take for granted as long as they are plentiful”

Leading voices, G. Heal

- „My own personal ethical judgment on the pure rate of time preference is that it should be zero, and in this I am in the same camp as many British economists – Frank Ramsey famously commented that ‘discounting future utilities is ethically indefensible and arises purely from a weakness of imagination’”

Discount rate in the section on energy of the Gabčíkovo cost-benefit analysis

- In 2000 in Hungary:
 - State bonds had a real return of 3-5%.
 - The state paid on average 7%-os real interest after credits taken up abroad.
 - Foreign direct investors expected a real return above 10 %
 - One of the investors in the nergy sector used a 12,5%-os discount rate to calculate present value of cash-flows..
- The modell used the 12,5 %-os discount rate and also investigated its sensitivity to 9 and 16 % respectively

Discount rates and results in a Cost-Benefit Analysis of Gabčíkovo project

SCENARIOS	<i>MORE WATER FLOW (50%) TO SZIGETKÖZ AND REHABILITATION OF SIDE-ARMS</i>	<i>BUILDING LOWER DAM AND PEAK OPERATION MODE AT GABCIKOVO</i>
Discount rate	Aggregated willingness-to-pay value (mrd HUF at 2000 prices)	
	<i>Benefits of the Scenario</i>	<i>Losses of the Scenario</i>
3%	1,130 – 1,804	1,895 – 2,516
5%	678 – 1,082	1,136 – 1,509
10%	341 – 544	571 – 759

1 EUR = 260 HUF in Year 2000

Results (2000 prices)

- **The original project according to the 1977 plans would have produced a loss of 368 billion HUF (with an inner return rate of 3,8 %)**
- Building a second dam now is entailing a loss with a minimum of 74,4 billion HUF even under the most beneficial investment scenario.
- The increase of the natural value in case of rehabilitation - even with a 10% discount rate would be in the range of 500 billion HUF.
- The loss in those values if a second dam is built and peak operation occurs is 477-634 billion HUF.
- The total loss of energy production accompanying rehabilitation -and a different distribution of the discharges – would only cause 23-48 billion HUF (calculated with a 50 years lifetime of the hydropower station).
- **Rehabilitation and the ensuing increase in natural capital is tenfold more than the loss of income due to the reduced energy output!**

Environmentally conservative?

Rights and duties of the parties after the judgement

§ 136

„ It could be said that **that part of the obligations** of performance which related to the construction of the System of Locks — in so far as they were not yet implemented before 1992 — **have been overtaken by events**. It would be an administration of the law altogether **out of touch with reality** if the Court were to order those obligations **to be fully reinstated** ... when the **objectives of the Treaty** can be adequately served by the **existing structures**.”

Environmentally conservative?

Rights and duties of the parties after the judgement

§ 140.

- It is clear that **the Project's impact upon**, and its implications for, **the environment are of necessity a key issue**. The numerous scientific reports which have been presented to the Court by the Parties — even if their conclusions are often contradictory — provide abundant evidence that **this impact and these implications are considerable**.
- In order to evaluate the environmental risks, **current standards** must be taken into consideration. ...
- The Court is mindful that, in the field of environmental protection, **vigilance and prevention are required** on account of the often irreversible character of damage to the environment and of the **limitations** inherent in the very mechanism **of reparation** of this type of damage.

Environmentally conservative?

Rights and duties of the parties after the judgement

- Throughout the ages, mankind has ... interfered with nature. In the past, this was often done without consideration of the effects upon the environment. **Owing** to new scientific insights and to **a growing awareness of the risks for mankind — for present and future generations** — of pursuit **of such interventions** at an unconsidered and unabated pace, new norms and standards have been developed, Such new norms have to be taken into consideration, and such new standards given proper weight... This need to reconcile economic development with protection of the environment is aptly expressed in the concept of sustainable development.
- For the purposes of the present case, this means that the **Parties together should look afresh at the effects** on the environment of the operation of the Gabčíkovo power plant. In particular they **must find a satisfactory solution for the volume of water to be released** into the old bed of the Danube and into the side-arms on both sides of the river.

Competing paradigms

Axis of evaluation	Hungary	Slovakia
Perspective	Long term	Short term
Value assessment	Discount rate low regarding natural resources: high present value of future drinking water, near natural conditions	Discount rate high: hardly any value in the present of assets, resources to be consumed in remote future. Does not want to invest <i>now</i> for a return in fifty years –
Care for posterity	Care for future generations, their life supporting systems and basic natural resources	Does not contemplate the situation of generations to come. "They should care for themselves, as we do for ourselves" - mentality.
Risk-management	Adoption of the precautionary principle regulating prudent behaviour in circumstances of uncertainty: according to this principle the lack of full and final scientific proof of future damage does not entitle to go ahead; projects should be stopped even if there is "only" a high probability but not a certainty of the damage.	Belief in the technical fix: man is master of the universe, whatever he destroys, he can correct nothing is irreversible. A mere likelihood of immense future loss is not a reason to endure a qualitatively smaller, but certain present loss.

Competing paradigms

Axis of evaluation	Hungary	Slovakia
Market economy or else	Goods with no market value (the beauty of a landscape, the presence of irreplaceable archeological sites, the richness of biodiversity) are nevertheless valuable , they deserve sacrifices including financial efforts. Modern economics offers valuation methods for natural resources.	Market economy dictates "reasonable market behaviour" tradeable goods like energy, navigational improvement have priority over symbolic
Survival vs. growth	The goal is: balance with nature sustainable existence (not necessarily development in terms of growth).	The goal is modernization in industrial terms, growth, expansion, domination over nature.

Selected literature relating to the interpretation of the ICJ judgment:

Symposium: The Case Concerning the Gabčíkovo -Nagymaros Project:

Charles B. Bourne: The Case Concerning the Gabčíkovo -Nagymaros Project An Important Milestone in International Water Law

A. E. Boyle: The Gabčíkovo -Nagymaros Case: New Law in Old Bottles

Paulo Canelas de Castro: The Judgement in the Case Concerning the Gabčíkovo -Nagymaros Project: Positive Signs for the Evolution of International Water Law

Jan Klabbers: The Substance of Form: The Case concerning the Gabčíkovo-Nagymaros Project, Environmental Law, and the Law of Treaties

Stephen Stec & Gabriel Eckstein: Of Solemn Oaths and Obligations: The Environmental Impact of the ICJ's Decision in the Case Concerning the Gabčíkovo-Nagymaros Project

mind in: *Yearbook of International Environmental Law*, Volume 8, 1997

Jutta Brunnée és Ellen Hey (szerk.) OUP, 1998

Reichert-Facilides, Daniel: Down the Danube : the Vienna Convention on the Law of Treaties and the Case concerning the Gabčíkovo-Nagymaros Project. *International and Comparative Law Quarterly*; vol. 47, (1998) 4, 837-854

Kovács Péter: Quelques considérations sur l'appréciation et l'interprétation de l'arrêt de la Cour Internationale de Justice, rendu dans l'affaire Gabčíkovo-Nagymaros in: *German Yearbook of International Law*, vol. 41 (1998) Duncker and Humblot, Berlin, 1999, 252 – 266. old.

Lammers, Johan G.: The Gabčíkovo -Nagymaros case seen in particular from the perspective of the law of International watercourses and the protection of the environment in: *Leiden Journal of International Law*; 11 (1998) 2 , 287-320.

Fitzmaurice, Malgosia: The Gabčíkovo -Nagymaros case: the law of treaties *ibid.*, 321-344

Klabbers, Jan: Cat on a hot tin roof : the World Court, state succession, and the Gabčíkovo-Nagymaros case *ibid.*, 345-355

Selected literature relating to the discount rate and the economic arguments

Robert Costanza, Ralph d'Arge, Rudolf de Groot, Stephen Farberk, Monica Grasso, Bruce Hannon, Karin Limburg, Shahid Naeem, Robert V. O'Neill, Jose Paruelo, Robert G. Raskin, Paul Sutton & Marjan van den Belt: The value of the world's ecosystem services and natural capital, *Nature* |Vol 387 | 15 May 1997, 253-260

**Geoffrey Heal: CLIMATE ECONOMICS: A meta-review and some suggestions
working paper 13927 National Bureau of Economic Research, April 2008
<http://www.nber.org/papers/w13927>**

Rudolf S. de Groot , Matthew A. Wilson, Roelof M.J. Boumans:A typology for the classification, description and valuation of ecosystem functions, goods and services, *Ecological Economics* 41 (2002) 393–408

Thomas Sterner and U. Martin Persson: An even Sterner Review Introducing Relative Prices into the Discounting Debate, *Resources for the Future*, Washington, July 2007, Discussion Paper RFF DP 07-37

Further useful – or informative - links

- www.bosnagymaros.hu
- www.gabcikovo.gov.sk
- www.szigetkoz.biz
- www.szigetkozi-monitoring.hu
- Nagy Boldizsár: Bős-breviárium – Áttekintés a jogvita állásáról, Beszélő, III. folyam, X. évf. 2005 október, 35-51.old

Thanks!

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