Status and Future Perspectives of the Drava River Basin

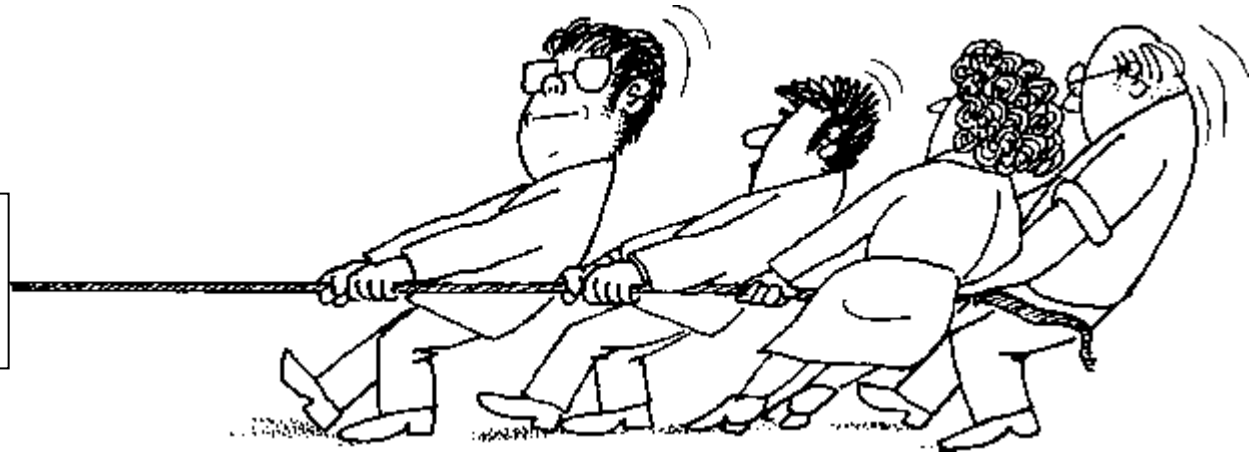
DRAVA RIVER VISION-Symposium, Sept. 23-25, 2008 ■ DI Arno Mohl, WWF Austria

Photo Credit: Miklos Toldi


until 1989 …
Photo Credit: Mario Romulic

Five Countries, One River, One Challenge

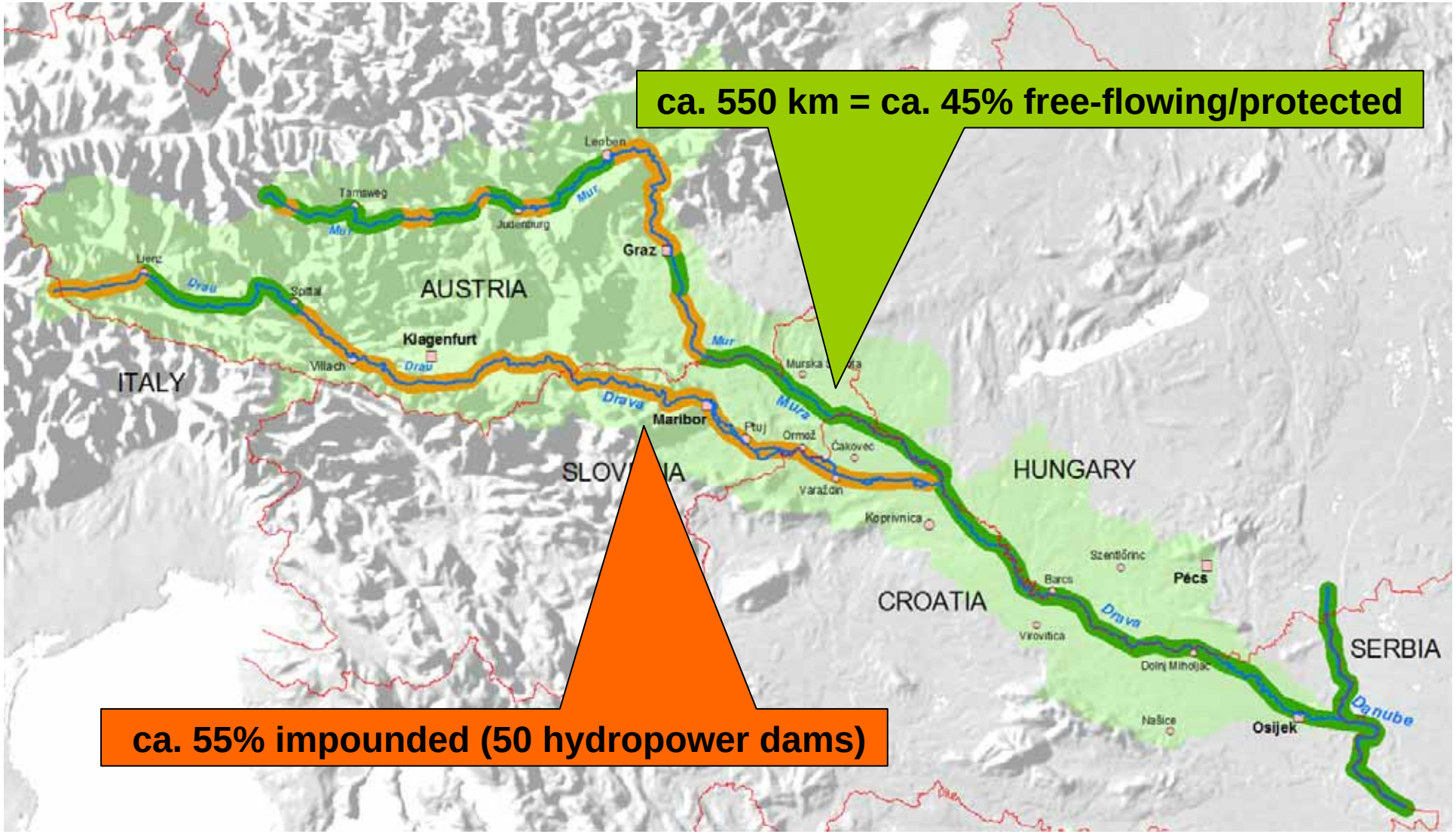
WFD
Natura 2000



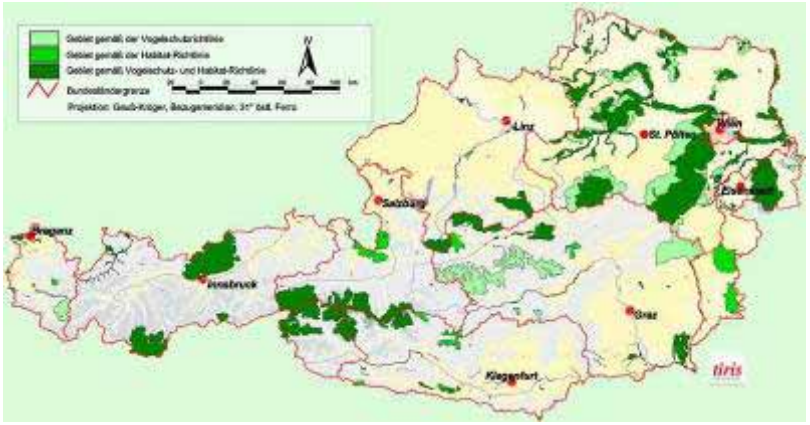
Austria, Croatia, Hungary, Italy, Slovenia

➔ Conservation and sustainable management of the natural values and ressources of the Drava and Mura Rivers

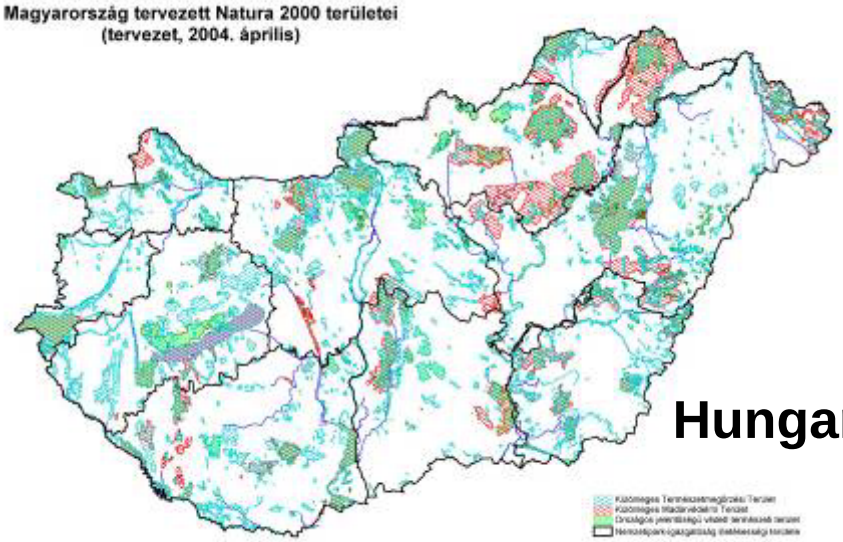
River stretches of the Drava and Mura



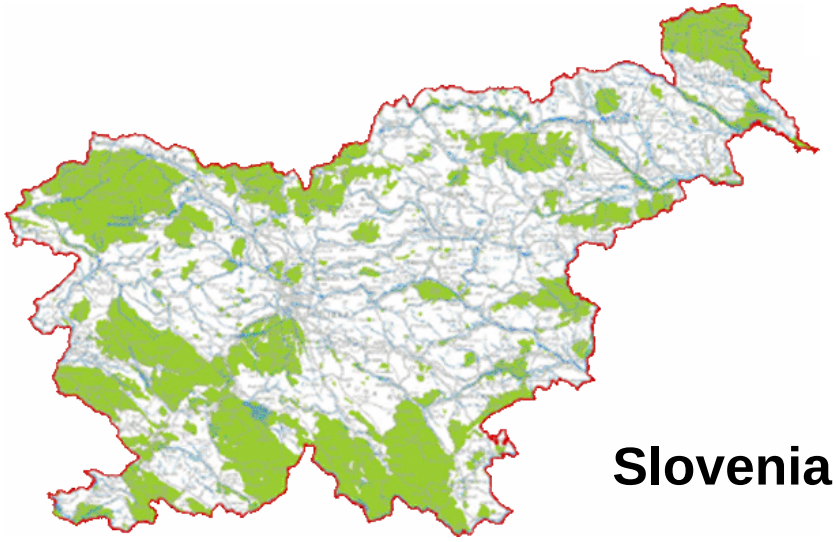
Natura 2000: Protected Area System of the EU



Austria



Hungary



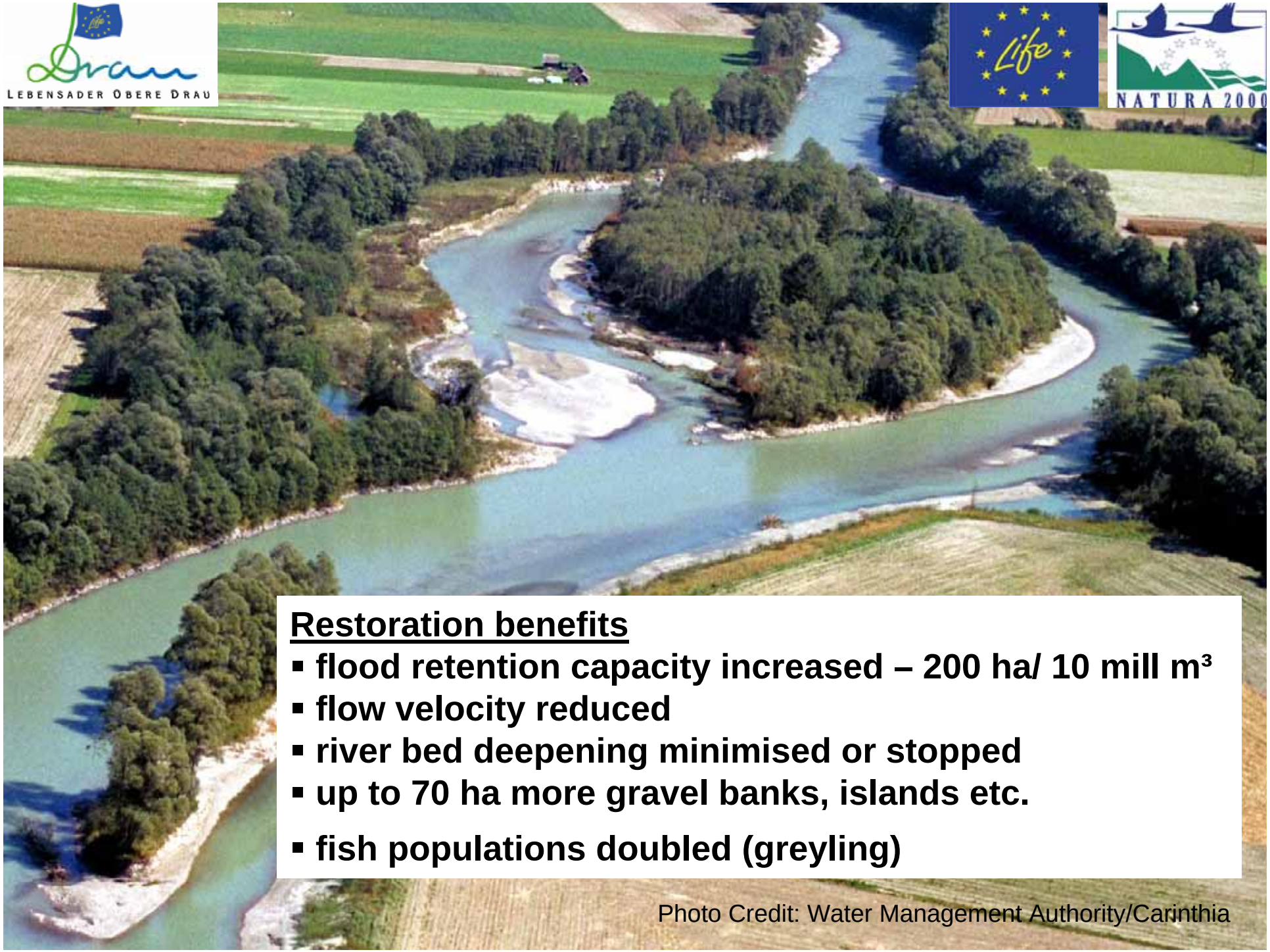
Slovenia

Croatia

Upper Drava River

before and after restoration

Photo Credit: Water Management Authority/Carinthia



Restoration benefits

- **flood retention capacity increased – 200 ha/ 10 mill m³**
- **flow velocity reduced**
- **river bed deepening minimised or stopped**
- **up to 70 ha more gravel banks, islands etc.**
- **fish populations doubled (greyling)**

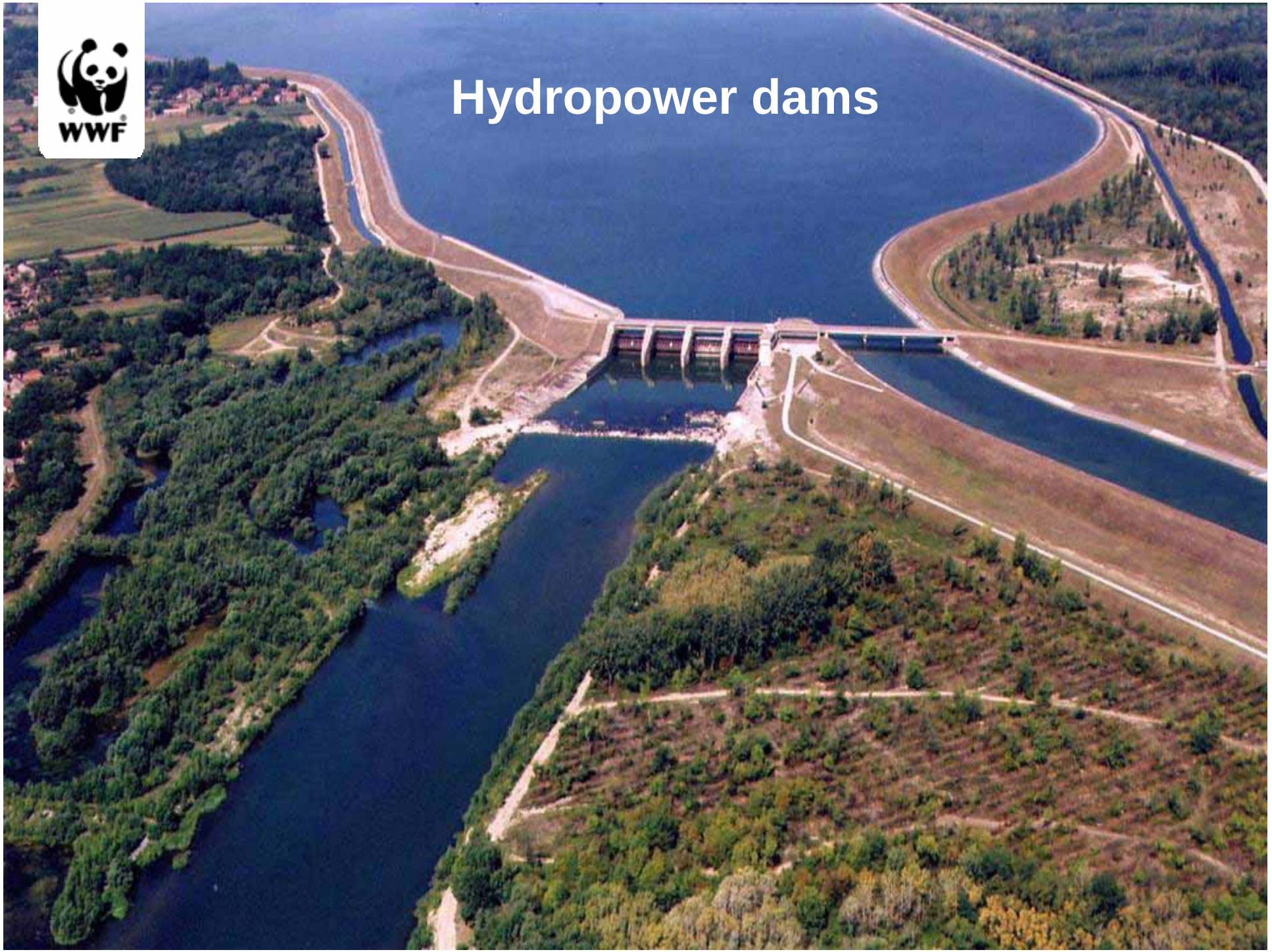
Photo Credit: Water Management Authority/Carinthia

EU funded restoration of degraded river stretches

Along the Drava and Mura in Austria and Slovenia (since 1998)

Life Mura, Slovenia	€ 1.975.519
Life Mura, Austria	€ 2.125.000
Interreg Mura I, Austria/Slovenia	€ 2.600.000
Interreg Mura II, Austria/Slovenia	€ 3.200.000
Life Drava I, Austria	€ 6.300.000
Life Drava II, Austria	€ 3.768.262
	€ 19.968.781

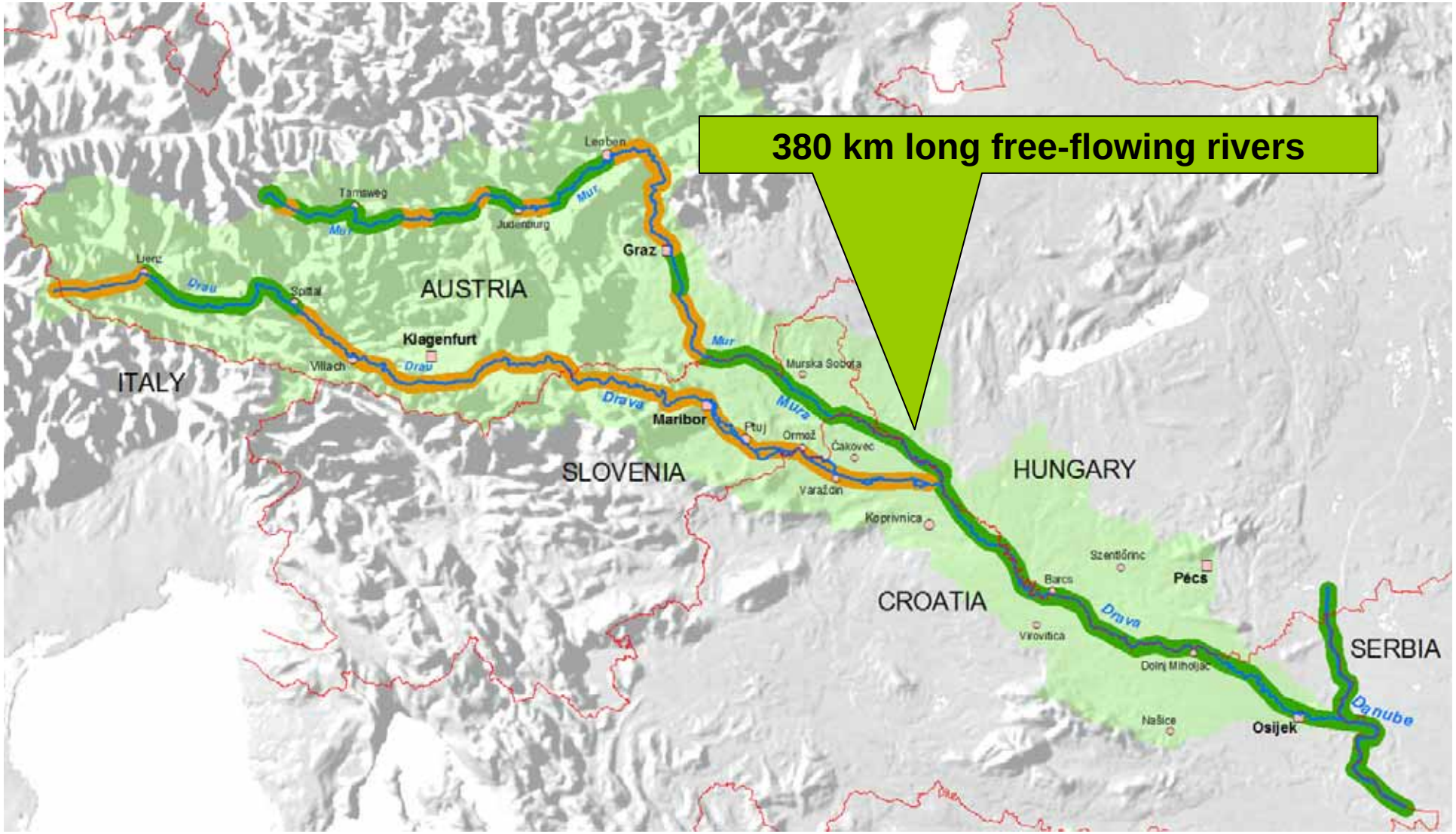
Hydropower dams



Sediment extraction

River canalisation

Lower Drava and Mura

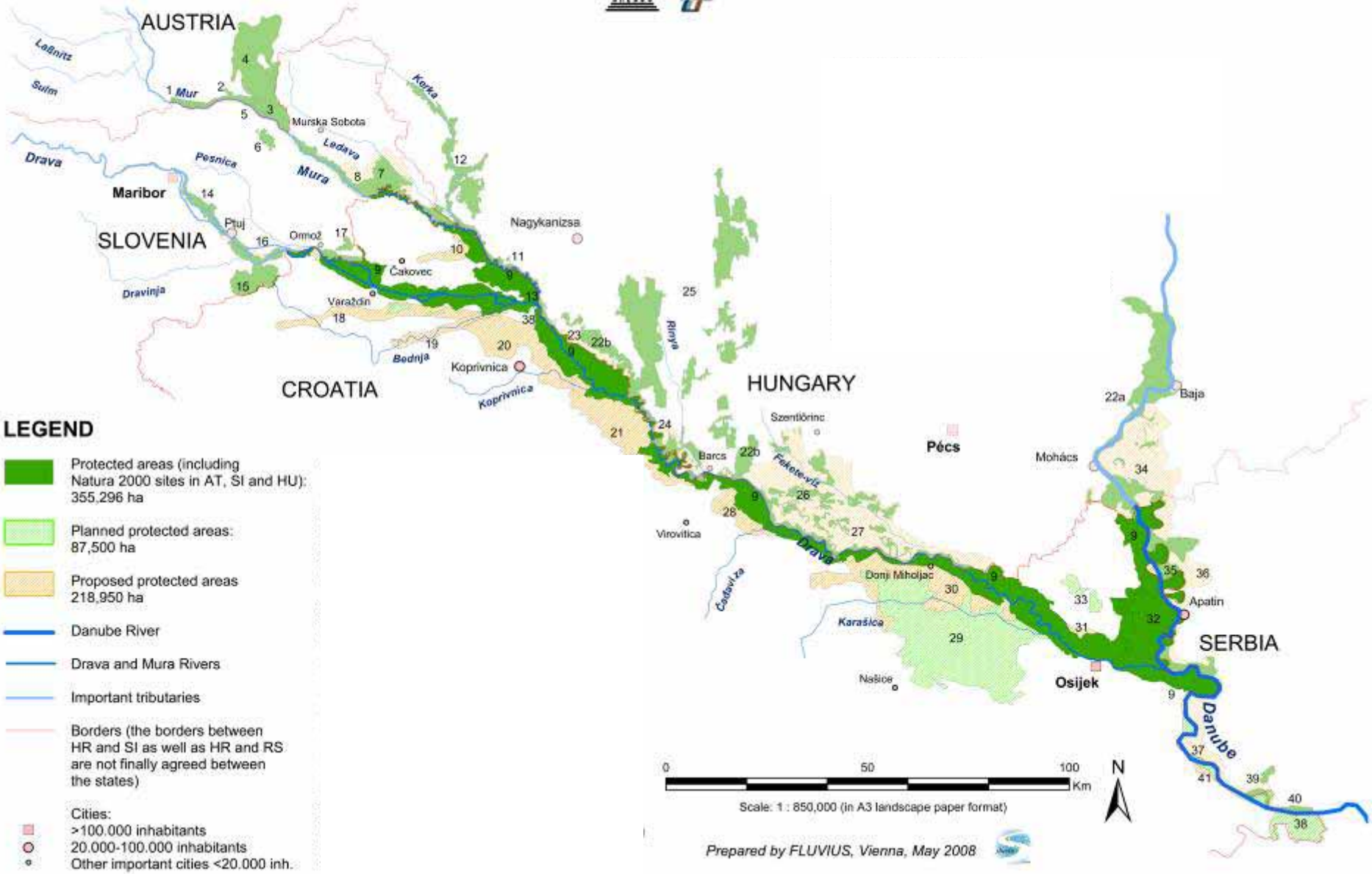


The “Amazon of Europe”

Protected Areas along the European Lifeline Danube-Drava-Mura

Proposal for a Trans-Boundary Biosphere Reserve "Danube-Drava-Mura" within the framework of UNESCO's Programme on Man and the Biosphere (MAB)

Product of WWF and EURONATUR



LEGEND

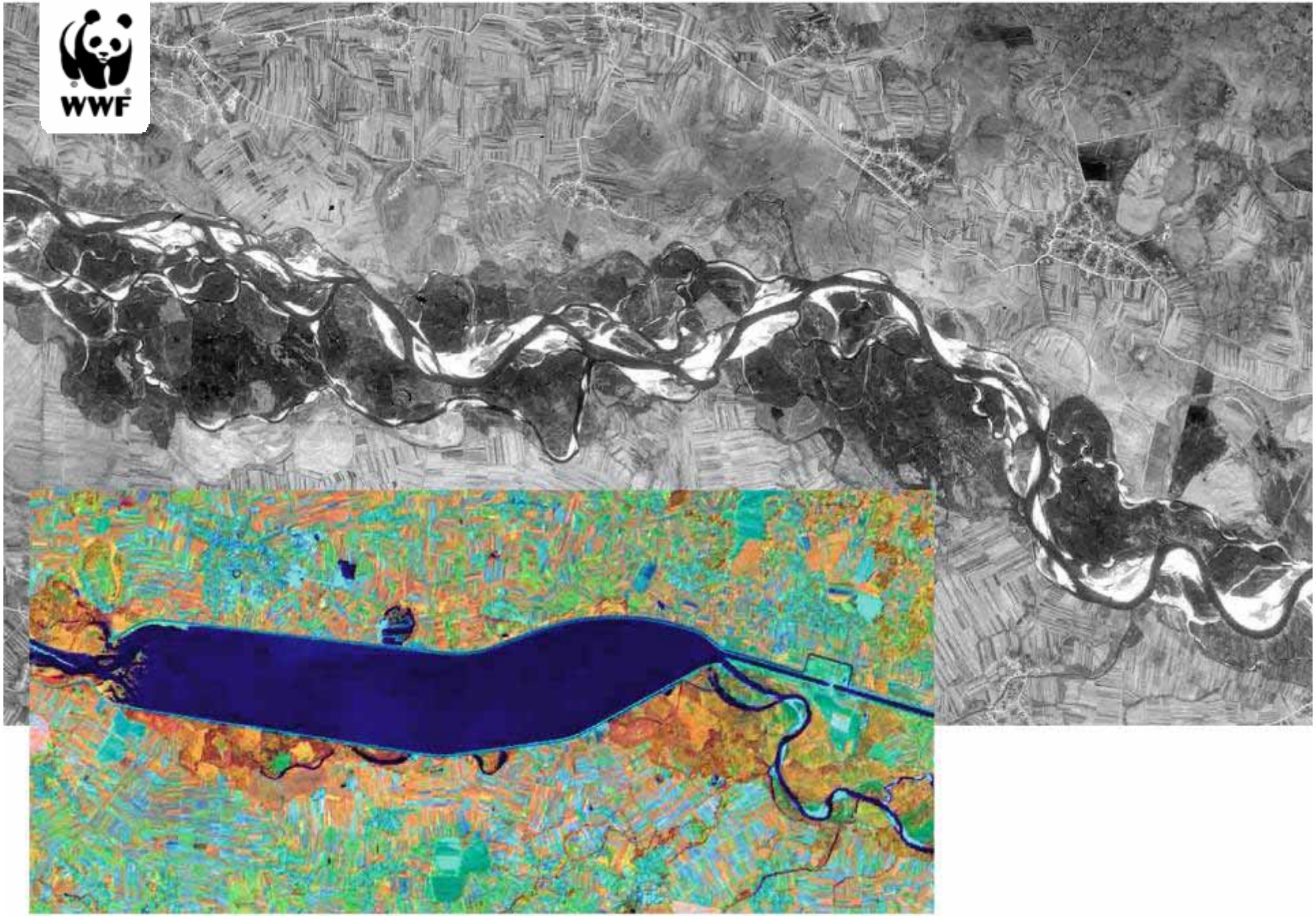
- Protected areas (including Natura 2000 sites in AT, SI and HU): 355,296 ha
- Planned protected areas: 87,500 ha
- Proposed protected areas 218,950 ha
- Danube River
- Drava and Mura Rivers
- Important tributaries
- Borders (the borders between HR and SI as well as HR and RS are not finally agreed between the states)

Cities:
- >100.000 inhabitants
- 20.000-100.000 inhabitants
- Other important cities <20.000 inh.

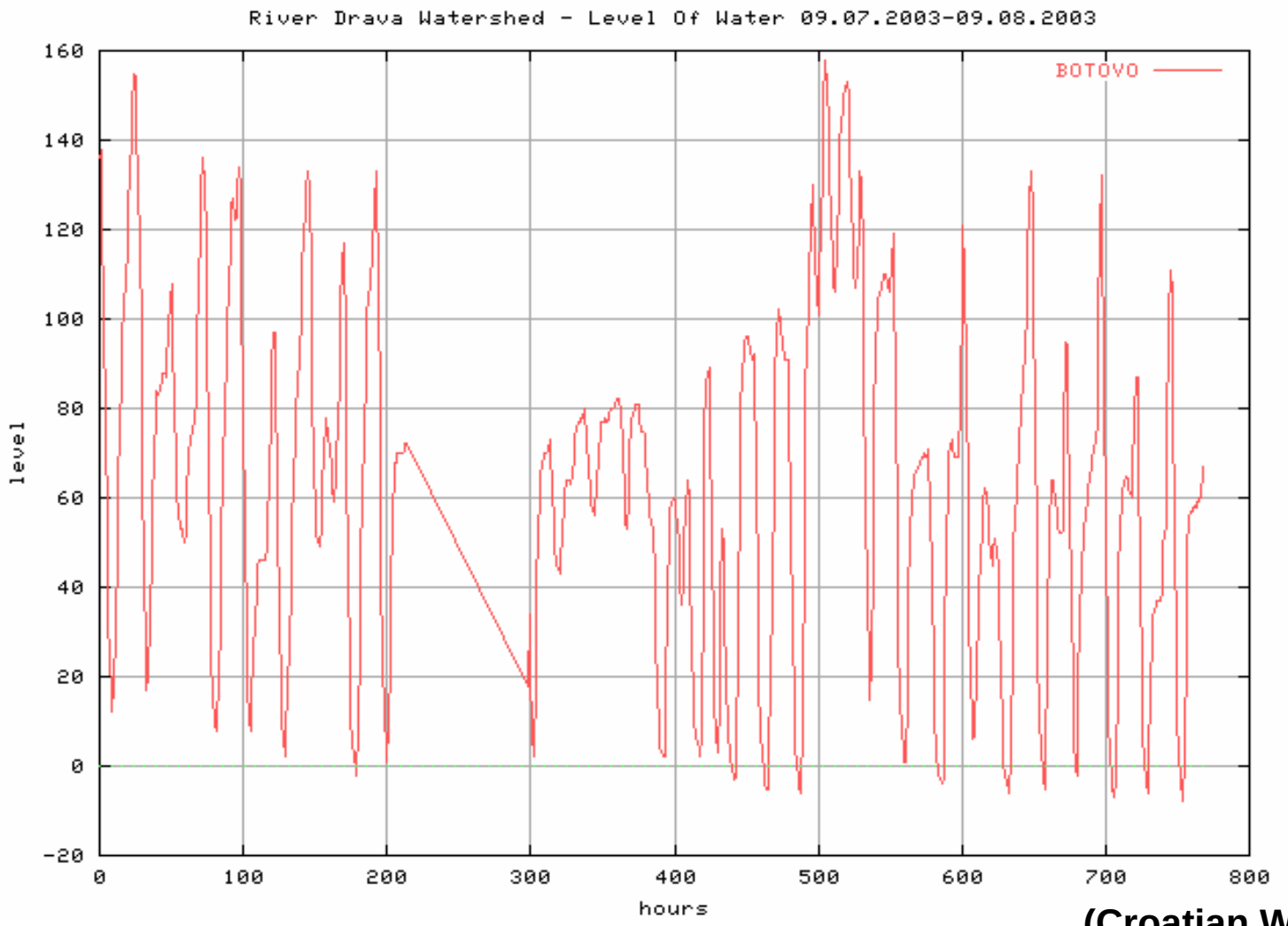
Plan:
Trans-Boundary UNESCO Biosphere Reserve
„Danube-Drava-Mura“
(more than 400,000 ha)

Restoration of the lower Mura in Austria and Slovenia

Impacts on key elements of the Drava



Hydropeaking along the lower Drava (~230 km) (up to 1,8 m; two times per day)

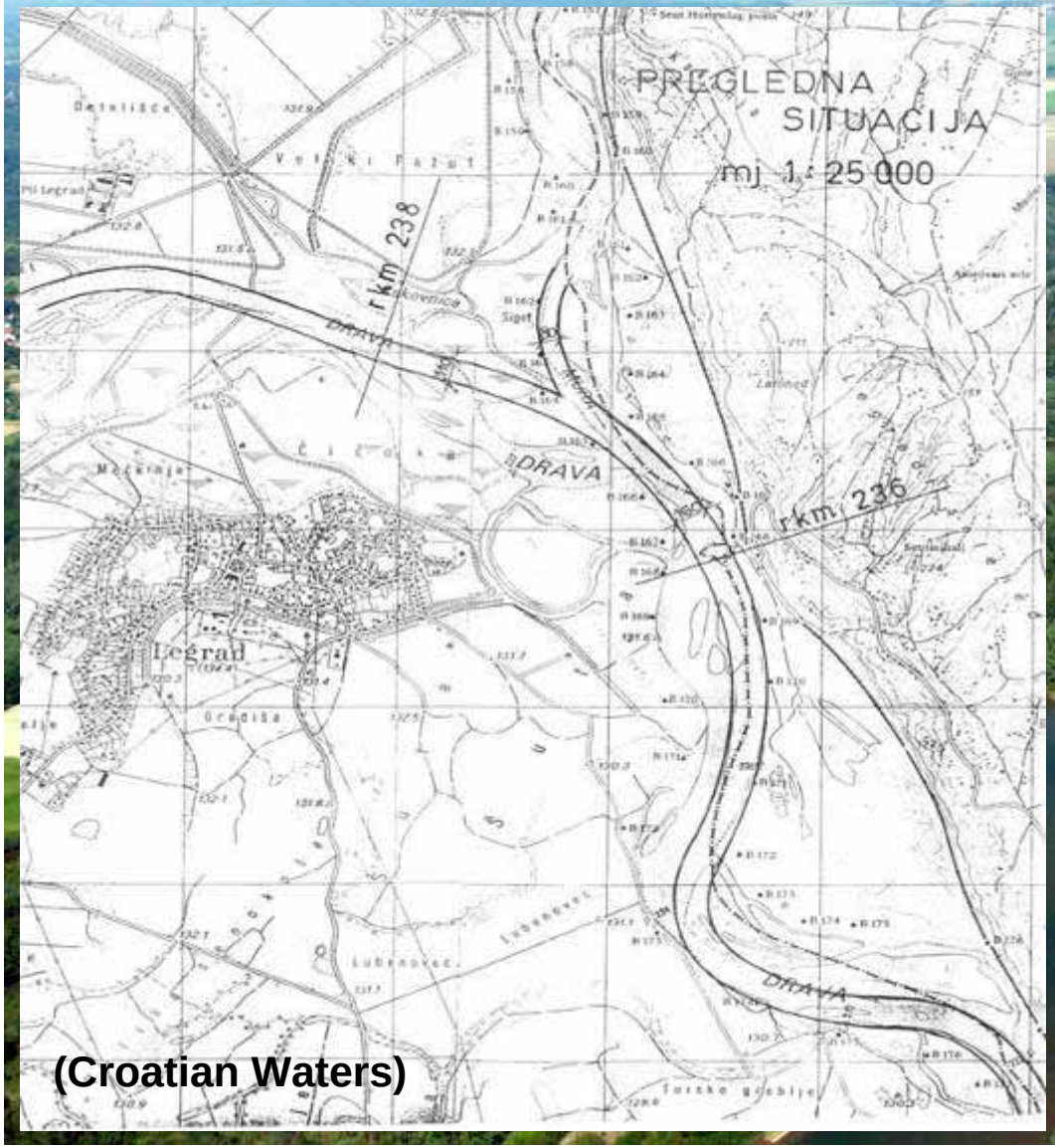


(Croatian Waters)

Living River or Canal?

Photo Credit: Dubravko Lesar

Living River or Canal?



(Croatian Waters)

<u>Water Management Goal:</u>
Creation and maintenance of a uniform canalised river corridor free of side arms, gravel/sand banks and islands

<u>According to the regulation system the river should be:</u>

Zákány-Barcs:	**160 m**
Barcs-Drávaszabolcs:	170 m
Drávaszabolcs-Osijek:	180 m
Osijek-Danube confl.:	220 m

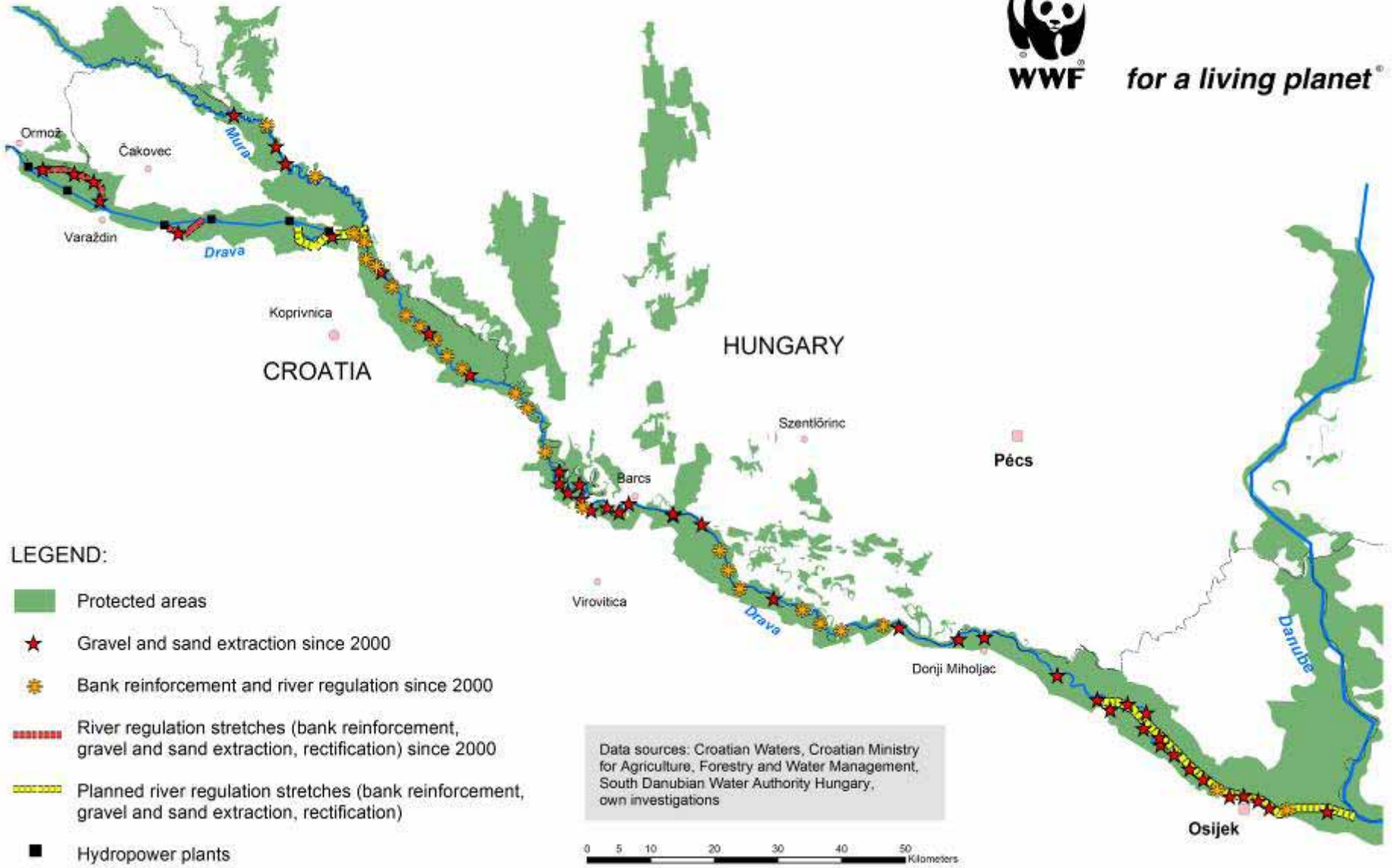
(South-Danubian Water Auth. Hungary, 2006)

Photo Credit: Dubravko Lesar

Water management impacts along the lower Drava and Mura Rivers in Croatia and Hungary

Preliminary investigation WWF, October 2008

WWF for a living planet®

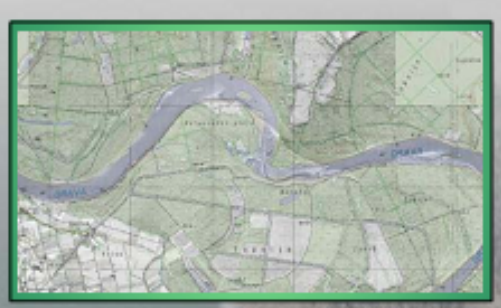



WWF
Photo Credit: Darko Grlica

Naručitelj: AGENCIJA ZA PLOVNE PUTOVE UNUTARNJIH VODA
Broj projekta: I-837/06

STUDIJA O UTJECAJU NA OKOLIŠ REGULACIJSKIH RADOVA NA R. DRAVI OD 0+000 DO 56+000 R. KM

Sažetak studije za javni uvid



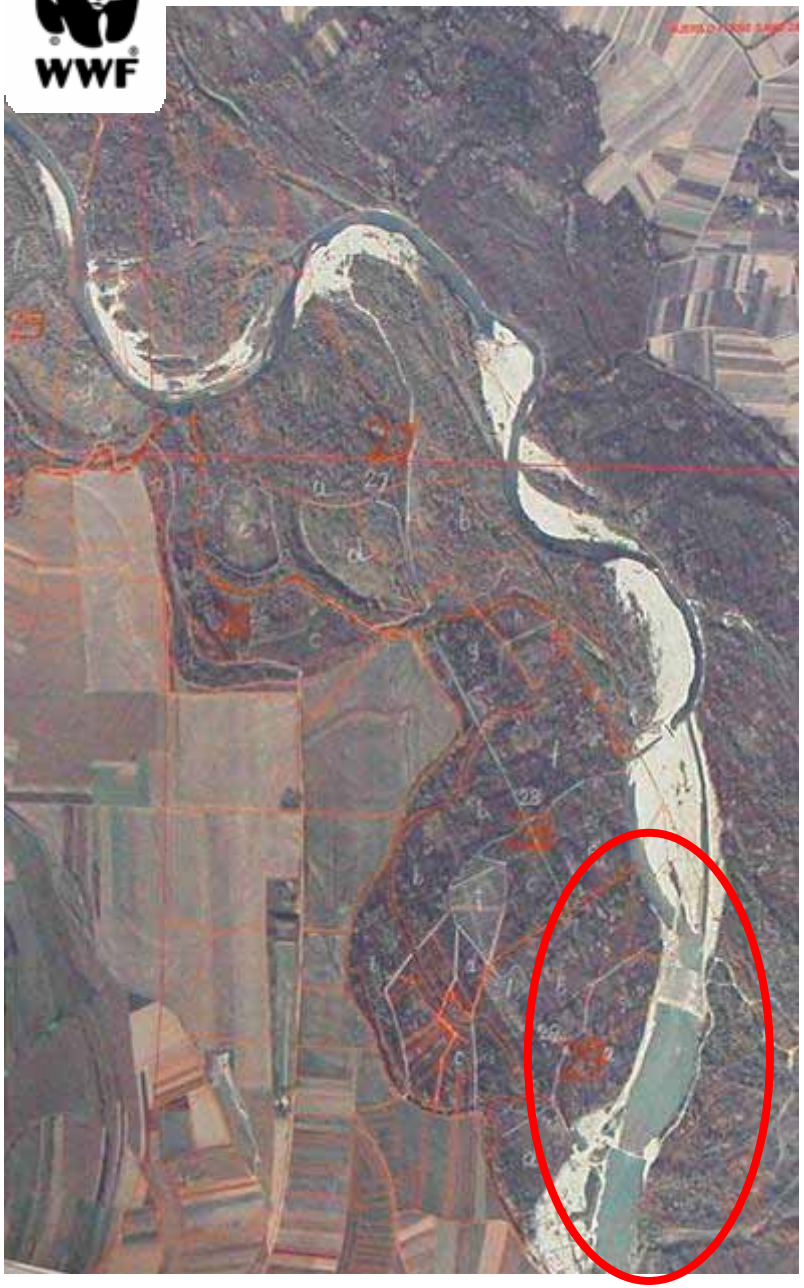
U Osijeku, siječanj 2008. god.

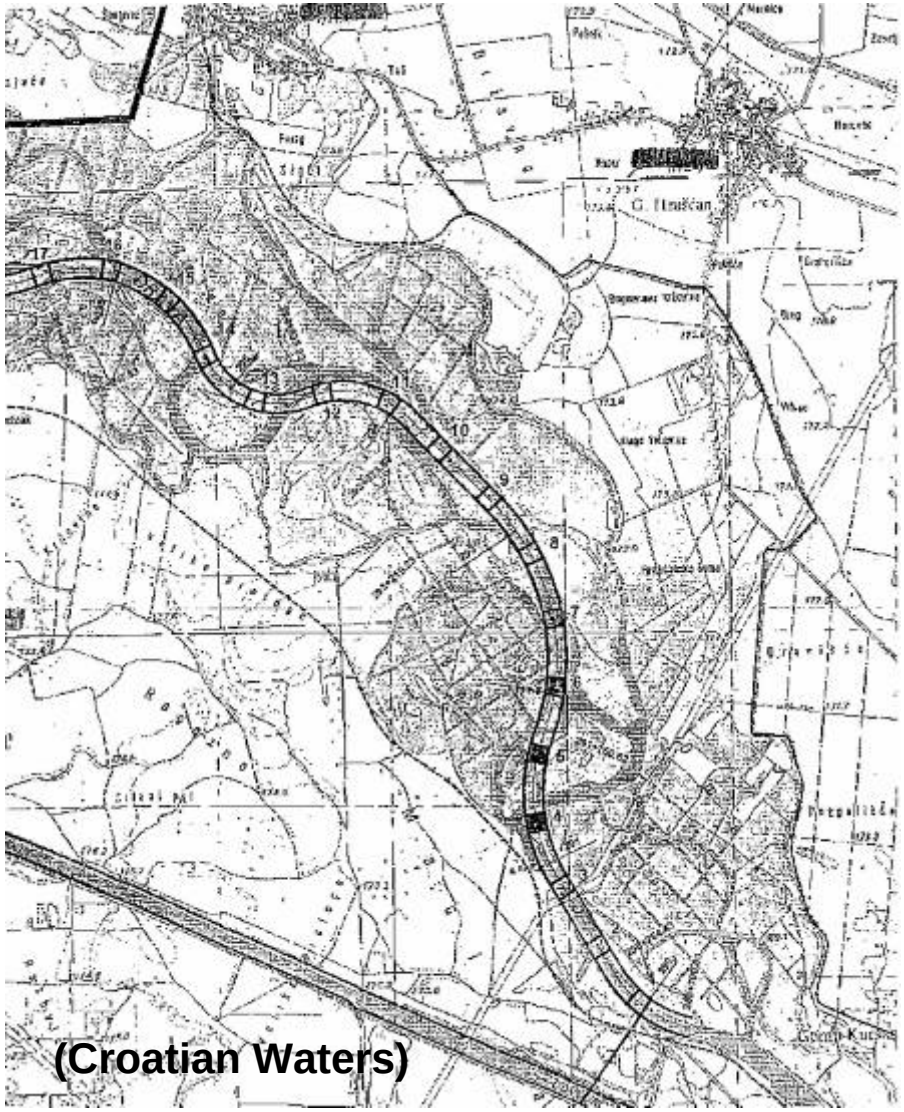
hidroing d.o.o. ZA PROJEKTIRANJE I INŽENJERING OSIJEK

Photo Credit: Darko Grlica

Regulation of the „Stara Drava“ at Varazdin/ Croatia, 2007

Regulation of the Drava at Varazdin/Croatia, 2007





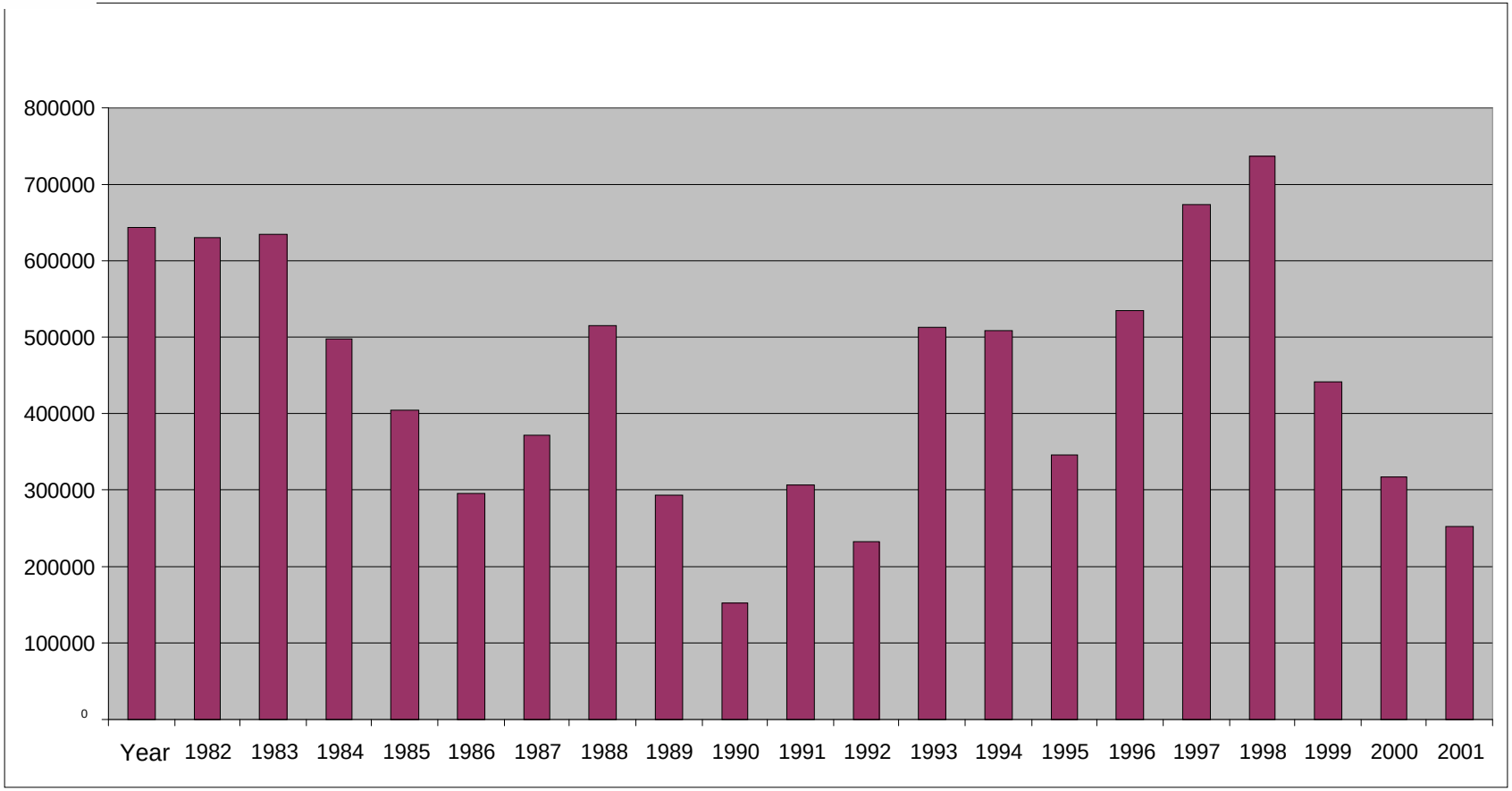
(Croatian Waters)


WWF
2007, Drava in Croatia, rkm 220


WWF
2007, Drava in Croatia, rkm 220


WWF

Extracted gravel and sand along the HR-HU Drava (rkm 90- 236)



1981-2001: about 7 million tons, equal to 350,000 t/yr (after Burian, 2006)

Average bedload sediment transport 100,000 t/yr, 1986-2003 (after Rakoczi, Szekeres 2004)

WWF

Jutarnji list, 17. March 2005
2,000,000 m3 between 2005-2009

Jutarnji list, 23. Sept. 2007
800,000 m3 between 2008-2011

ASI — Jutarnji LIST

REPUBLIKA HRVATSKA
MINISTARSTVO POLJOPRIVREDE, ŠUMARSTVA
I VODNOGA GOSPODARSTVA

Na temelju članka 144. stavka 1. Zakona o vodama ("Narodne novine" broj 107/95) … na vodama i javnom vodnom dobru (Narodne novine" broj 99/96 i 11/98) a u svezi sa člank… 199/03), Ministarstvo poljoprivrede, šumarstva i vodnoga gospodarstva, Uprava vodnoga go…

JAVNI NATJE…
za dodjelu koncesija za vađenje pijeska i šlju…
sličnim napravama iz obnovljivih ležišta u…

I Javnom natječaju mogu pristupiti zainteresirane domaće fizičke i pravne osobe koje su re…

II Koncesije za vađenje pijeska i šljunka dodjeljuju se:

1. za ležišta obnovljivih količina nanosnog materijala (pijeska i šljunka) iz korita rijeke Drave … u m3) i vrsti materijala:

a. "Zeleno Polje I"	km	15+500	do km 16+220
b. "Zeleno polje II"	km	16+220	do km 16+500
c. "Pampas I"	km	23+550	do km 23+980
d. "Pampas II"	km	24+600	do km 25+330
e. "Bokroš"	km	31+465	do km 31+835
f. "Jelengrad"	km	35+300	do km 36+500
g. "Nehaj I"	km	38+750	do km 39+200
h. "Nehaj II"	km	39+200	do km 39+600
i. "Nehaj III"	km	39+600	dokm 40+300
j. "Nehaj IV"	km	40+300	do km 41+000
k. "Valpovačke plaže I"	km	49+230	do km 50+000
l. "Valpovačke plaže II"	km	50+000	do km 51+080
m. "Jamina"	km	157+300	do km 157+700
n. "Okrugljača"	km	161+200	do km 161+700
o. "Križnica I"	km	166+500	do km 168+000
p. "Križnica II"	km	168+800	do km 169+040
r. "Đuretina"	km	175+700	do km 176+950
s. "Kingovo"	km	193+250	do km 196+300
t. "Repaš-most"	rkm	204+400	do rkm 209+00
u. "Botovo-most - nizvodno"	rkm		225

Na svim ležištima određuje se vađenje pijeska i/ili šljunka **isključivo plovnom mehanizacijom** … nižim vodostajima) vađenje šljunka i suhozemnom mehanizacijom uz prethodno razrađene postupke u elaboratu za **vađenje šljunka i prema vodopravnoj dozvoli.**

Na svim ležištima postoji mogućnost zaostalih minsko eksplozivnih sredstava te se preporučuje prije korištenja koncesija isto provjeriti u Centru za mine i MUP-u.

MINISTARSTVO POLJOPRIVREDE, ŠUMARSTVA
I VODNOGA GOSPODARSTVA
Uprava gospodarenja vodama

Na temelju članka 144. stavka 1. Zakona o vodama ("Narodne novine" broj 107/95 i 150/05) i članka 24. Uredbe o uvjetima i postupku za dodjelu koncesija na vodama i javnom vodnom dobru ("Narodne novine" broj 99/96 i 11/98), Ministarstvo poljoprivrede, šumarstva i vodnoga gospodarstva, raspisuje

JAVNI NATJEČAJ
za dodjelu koncesija za vađenje pijeska iz obnovljivih ležišta u koritu rijeke Drave

I. Javnom natječaju mogu pristupiti zainteresirane domaće fizičke i pravne osobe koje su registrirane za obavljanje djelatnosti vađenja pijeska.

II. Koncesije za vađenje pijeska dodjeljuju se:

1. za ležišta obnovljivih količina nanosnog materijala, pijeska, iz korita rijeke Drave na dionicama prema procijenjenim količinama u m3 :

a. "Nemetin" plovni put i sidrišta	km 8+000 do km 12+000	**150.000 m3 pijesak;** × 3
b. "bazen Luke Osijek Polje I".	km 12+525 do km 13+640...	**260.000 m3 pijesak;** × 4
c. "bazen Luke Osijek Polje II"	km 13+640 do km 14+000....	**60.000 m3 pijesak;** × 2
d. "Osijek"	km 15+000 do km 16+000 ...	**40.000 m3 pijesak;** × 2
e "Nehaj I".............................	km 38+750 do km 39+200...	**200.000 m3 pijesak;** × 4
f. "Valpovačke plaže "........	km 49+230 do km 50+000.....	**90.000 m3 pijesak;** × 3

Na svim ležištima određuje se vađenje pijeska **isključivo plovnom mehanizacijom.**

Na svim ležištima postoji mogućnost zaostalih minsko eksplozivnih sredstava te se preporučuje prije korištenja koncesija isto provjeriti u Centru za mine i MUP-u.

2. **na rok od četiri (4) godine za ležišta pod b. i e., na rok od tri (3) godine za ležište pod a i f., i na rok od dvije (2) godine za ležište pod c i d. . .**

3. **uz godišnju naknadu za koncesiju koja iznosi 2,00 kn/m3 za izvađeni pijesak, te uz jednokratnu**


WWF
2006, Drava in Croatia, rkm 230


Sediment extraction along the Drava in 2008
2008, Drava in Croatia, rkm 31
Photo Credit: Darko Grlica

Sediment extraction along the Drava in 2008

Croatia, rkm 55

Croatia, rkm 176

Hungary, rkm 153

Hungary, rkm 185

Hungary, rkm 156

Photo Credit: Darko Ghica

D. Biondić

Subject review

Lower Drava riverbed erosion

The phenomenon of the lower Drava riverbed erosion, which is directly related to ground water lowering in the drainage basin of this river, is described. The analysis of historic data shows that this erosion results from various types of anthropogenic activity: riverbed regulation, excessive gravel and sand extraction from riverbed, construction of dams and storage reservoirs on the river and within its drainage basin, and dyke construction. The most favorable solution to this problem is construction of the planned multipurpose system of hydroelectric power plants.

D. Biondic, Gradevinar 51 (1999) 5, 321-329

Photo Credit: B. Stumberger

Riverbed deepening along the Croatian-Hungarian Drava

Botovo (1970-1995): **2m**
(3-3,5 cm/a)

Terezino Polje (1876-1996): **3,7m**
(2,5 cm/a)

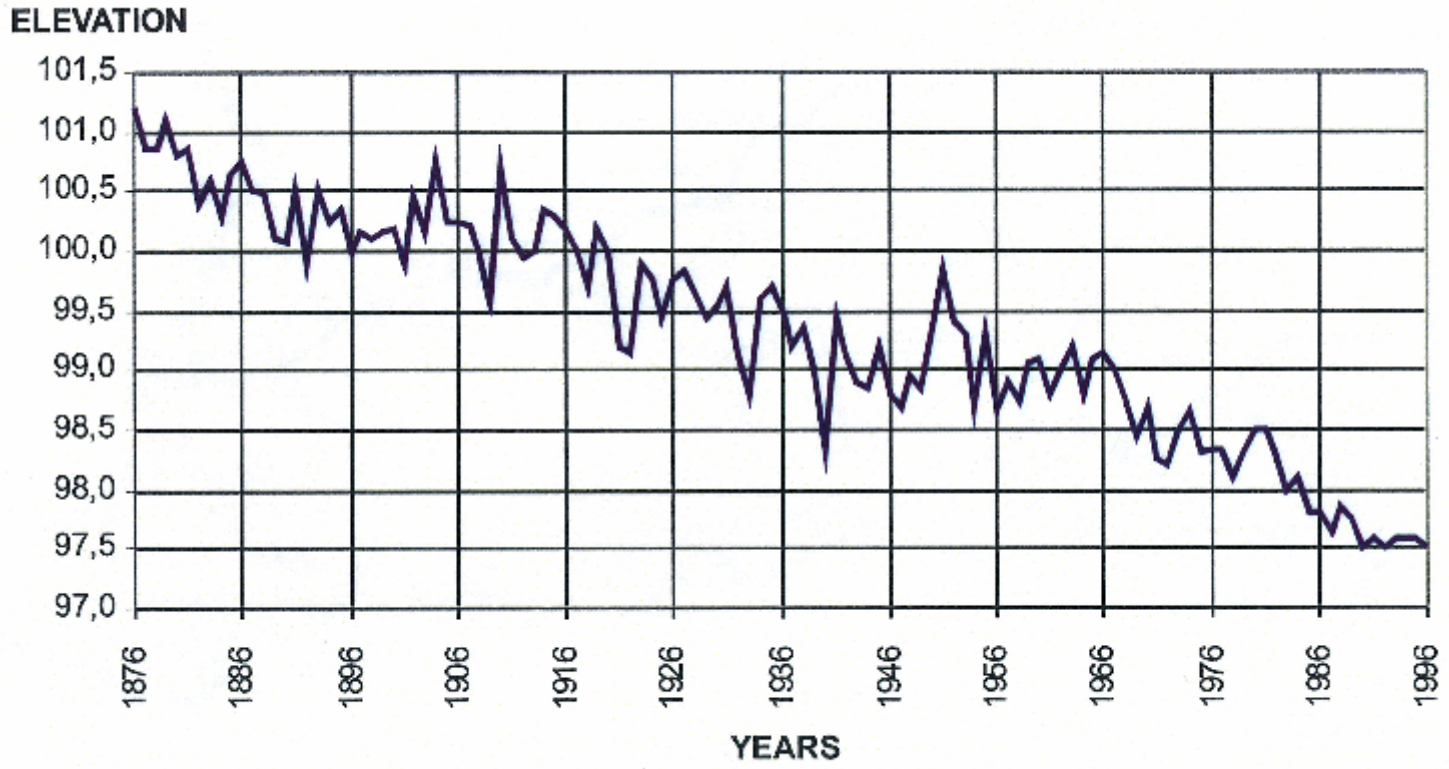


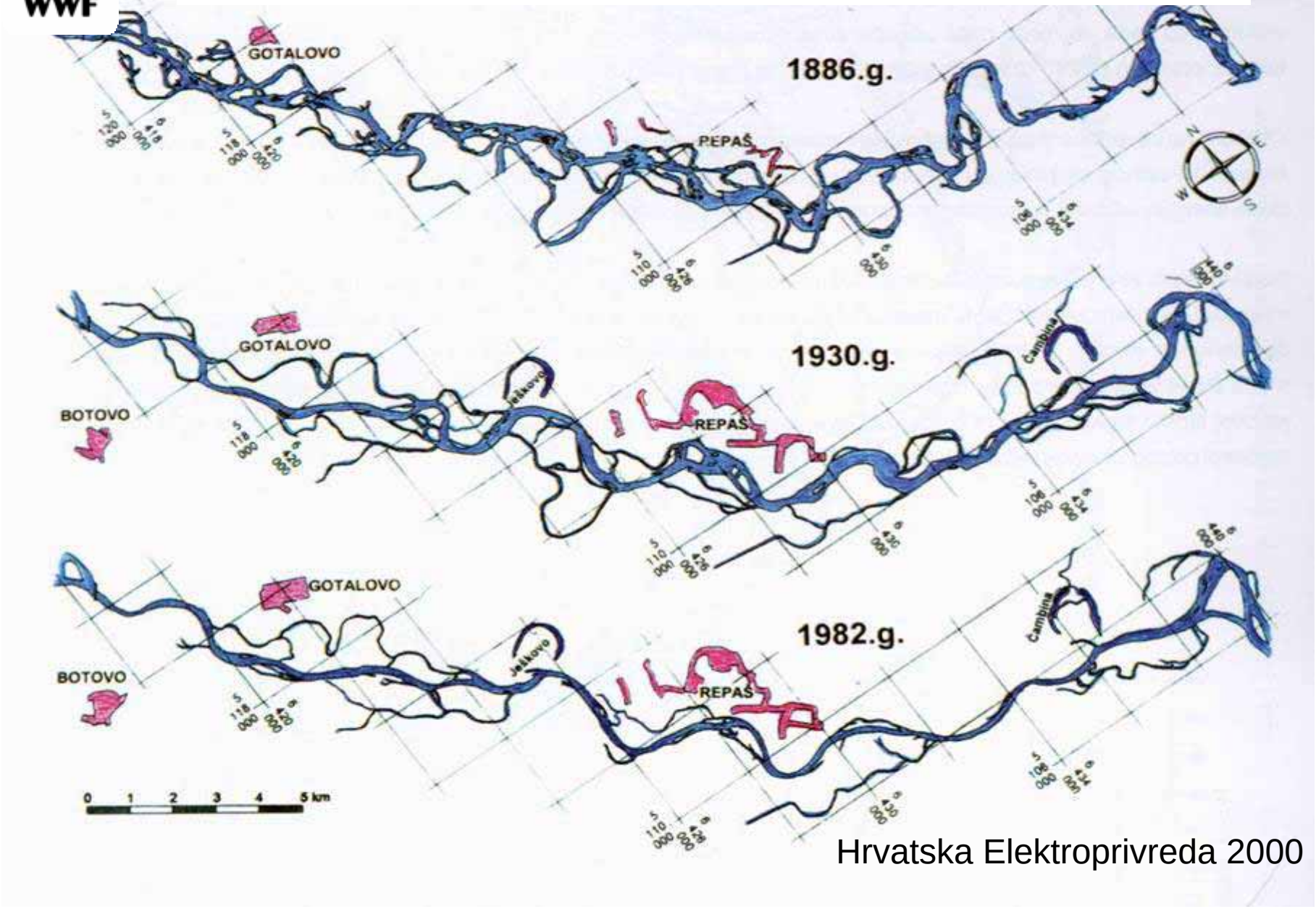
Figure 2. Annual low water levels on water station Terezino polje [1].

N. Kuspilic, D. Bekic, Proceedings RRC 2004, 165-171, Zagreb

D. Biondic, Gradevinar 51 (1999) 5, 321-329

Degradation of the Drava river course within 100 years

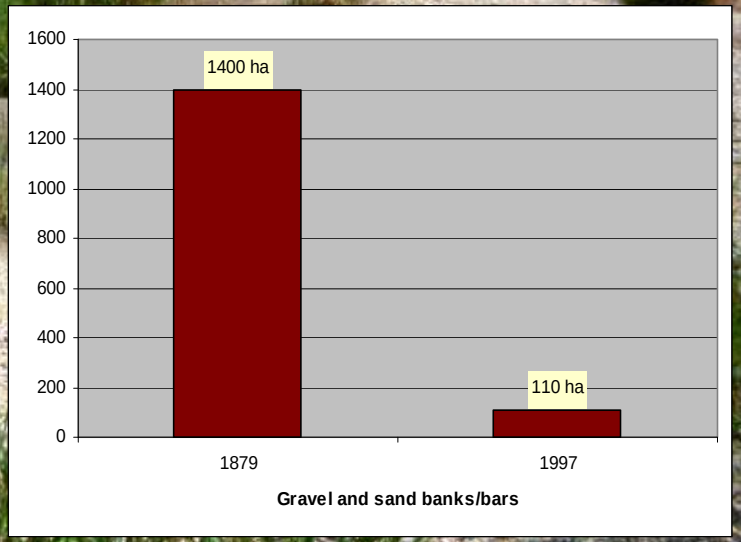
(Botovo-Ferdinandovac)



Hrvatska Elektroprivreda 2000

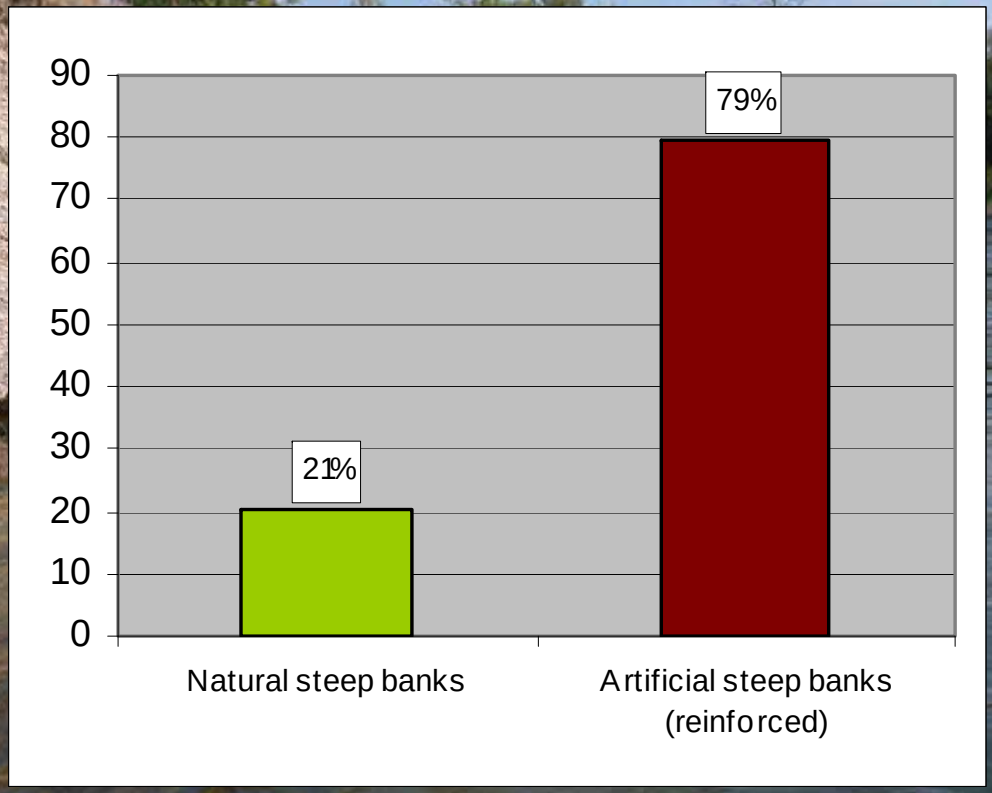
Reduction of sand banks/bars along the Drava

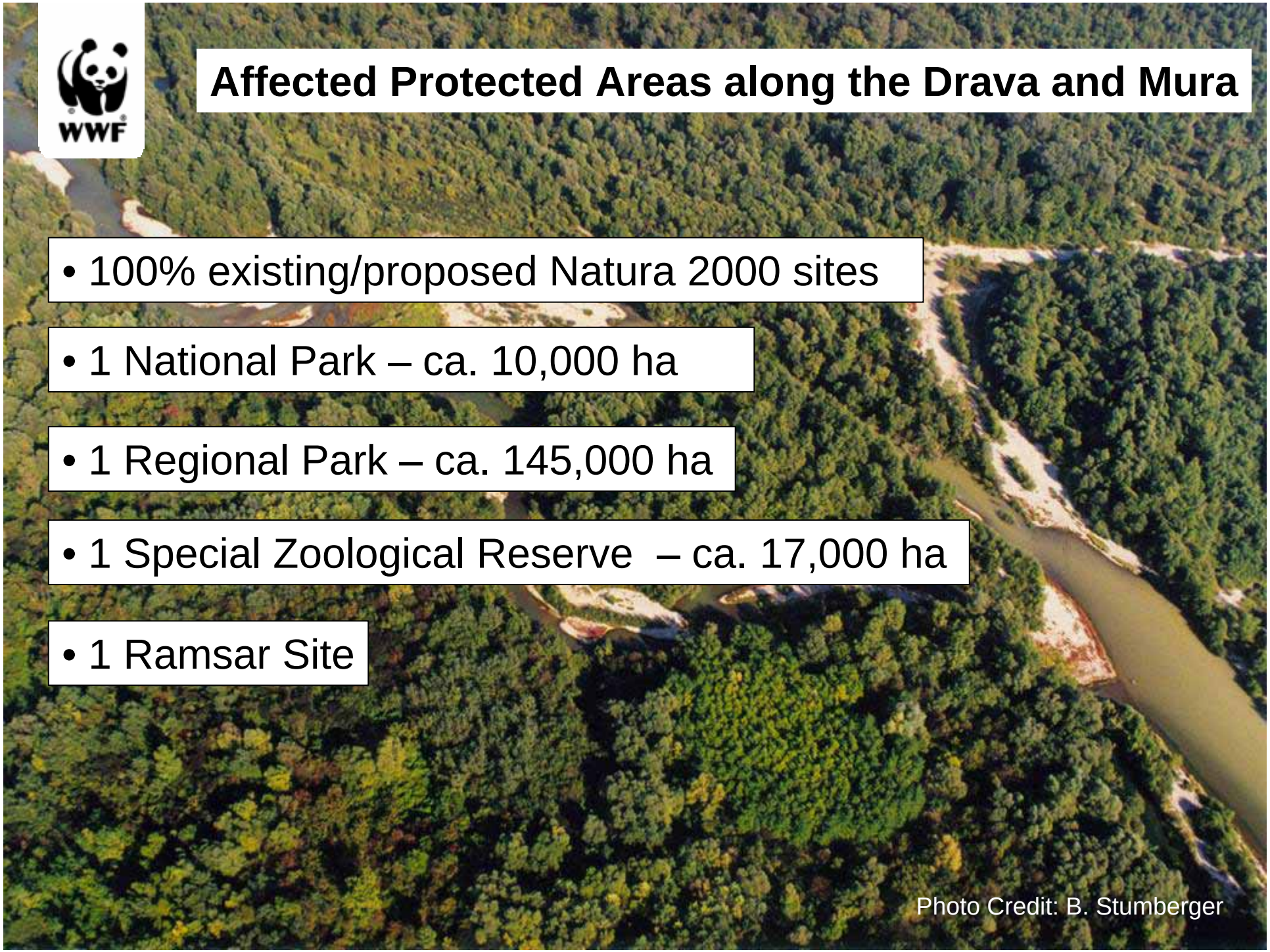
(Botovo-Ferdinandovac, last 100 years)



Reduction of natural steep banks along the Drava and Mura

(selected banks, Murska Sredisce-Osijek 2005)





Affected Protected Areas along the Drava and Mura

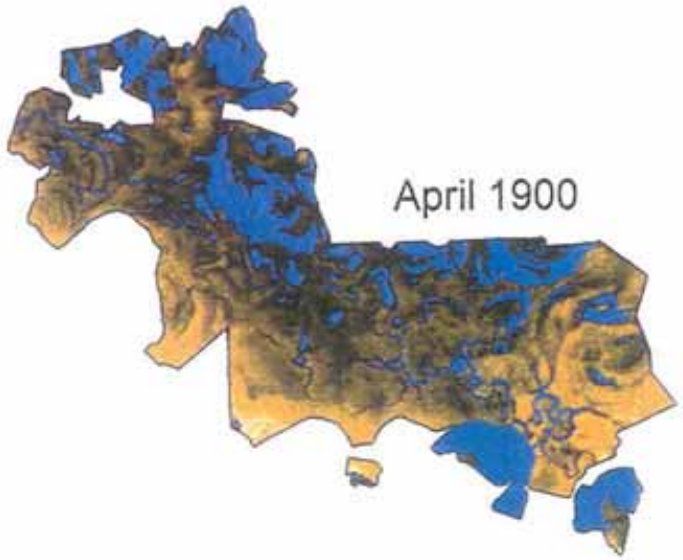
- 100% existing/proposed Natura 2000 sites
- 1 National Park – ca. 10,000 ha
- 1 Regional Park – ca. 145,000 ha
- 1 Special Zoological Reserve – ca. 17,000 ha
- 1 Ramsar Site

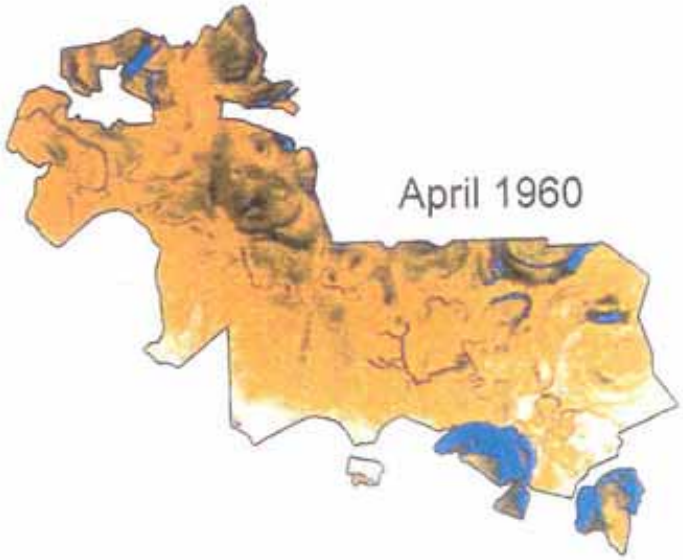
Photo Credit: B. Stumberger

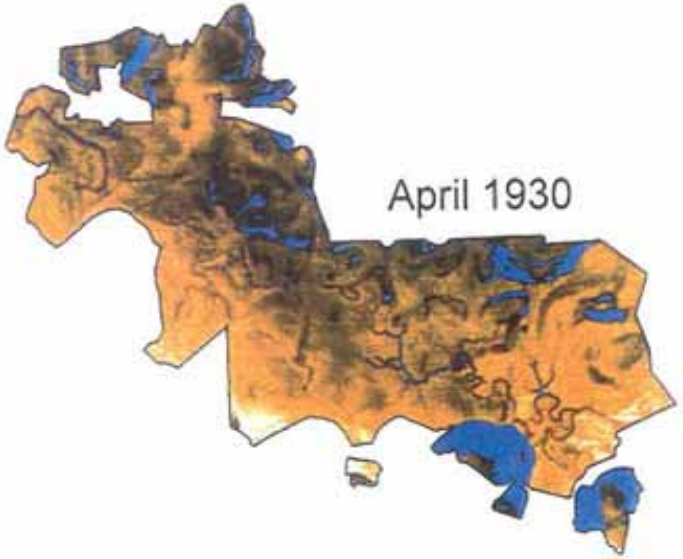
Low groundwater tables impacts forests

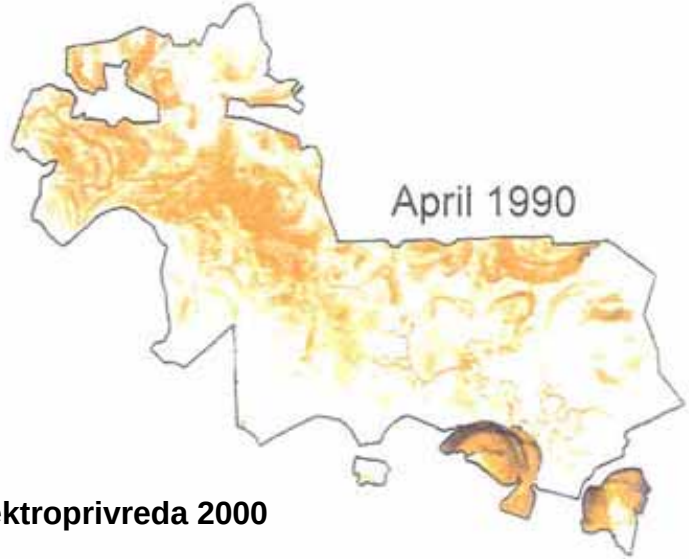
Photo Credit: Mario Romulic

Low groundwater tables impacts forests







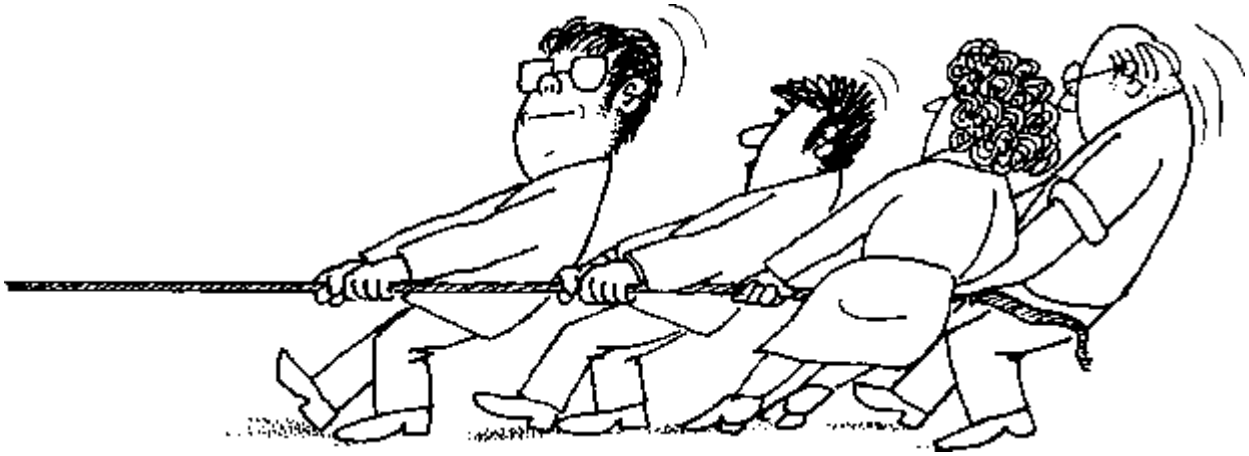


Hrvatska Elektroprivreda 2000

Photo Credit: Mario Romulic

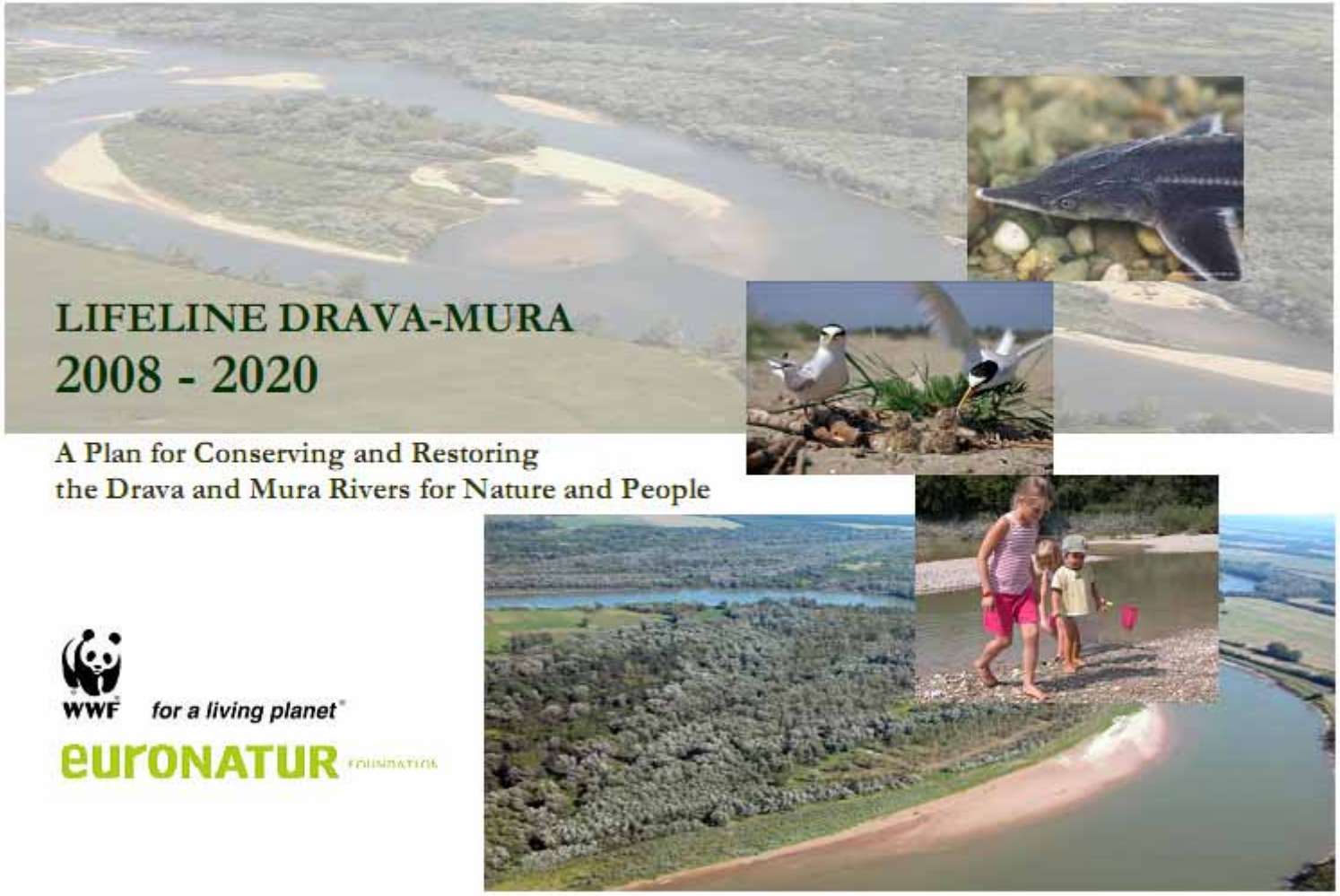
What needs to be done?

More impacts or joint management?



- **Stop further deterioration of the lower stretches**
- **International River Restoration Programme**
- **Hydropower: Masterplan (incl. „No Go Areas“)**
- **TBR DDM (Natura 2000 management)**

Lifeline Drava-Mura 2008-2020



In a nutshell

Photo Credit: Water Management Authority/Carinthia

Thank you for your attention!

All photo credits not indicated: A. Mohl/WWF Austria

Photo Credit: S. Steiger