

# Transboundary river restoration and research programs between Russia and Finland



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**FROM CLEAN WATERS TO HEALTHY ECOSYSTEMS: CHALLENGES AND BENEFITS IN RESTORING RIVERS**

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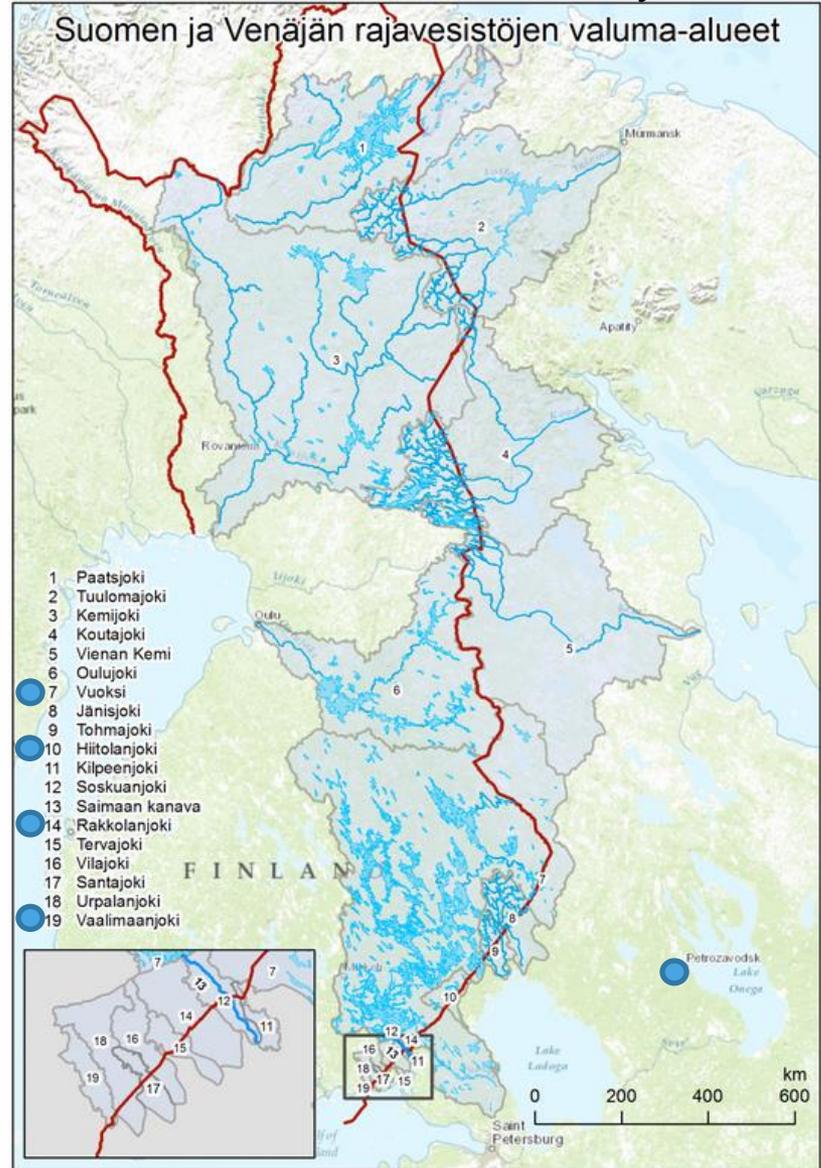
# 19 transboundary rivers

- Vuoksi River from the Saimaa lake system to Lake Ladoga
- Cooperation in Petrozavodsk and Lake Onega



## Catchments of transboundary rivers

Suomen ja Venäjän rajavesistöjen valuma-alueet



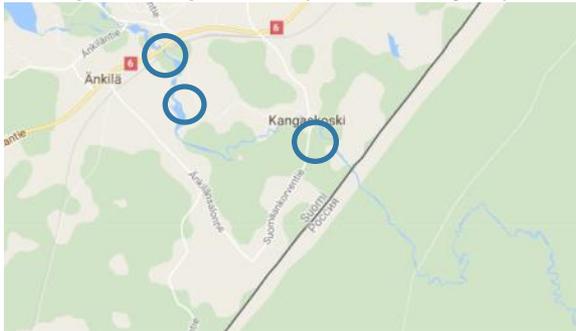
## History of cooperation

- Scientific and technical cooperation from 1955
- Fishery in the Gulf of Finland
  - Salmon stocks of big rivers in Finland were vanishing because of hydro power construction
  - Need for hatcheries
  - Salmon of Neva River was used for stockings in Finland
- Treaty of transbordering rivers in 1964
  - Regulation of Vuoksi River
  - Water levels of two power plants
  - Safeguarding water quality and fish migration in rivers
- Finland attended European Union in 1995
  - Projects through EU -programs
  - Interreg, Tacis, ENPI, ENI, Euregio Karelia
  - State of Finland, Nordic Investment Bank, John Nurminen foundation
  - Financing for sewage treatment plants of St. Petersburg

# Practical problems of the border

## River Hiitolanjoki (Reka Kokkolanyoki)

- The state border was closed for the migration of Ladoga lake salmon
- Border structures were opened for fish in 2001
- WWF removed a wood jam at an old power station
- Salmon reproduction now possible 1 km from the border upstream
- Fish passes are required by permit authorities in Finland for 3 small power plants (not built yet)



Markku Kaukoranta

- Open 1 km section  
In Finland



# Dam removals

## River Vaalimaanjoki Project HEALFISH

Reinikkalankoski dam was removed, new rapid

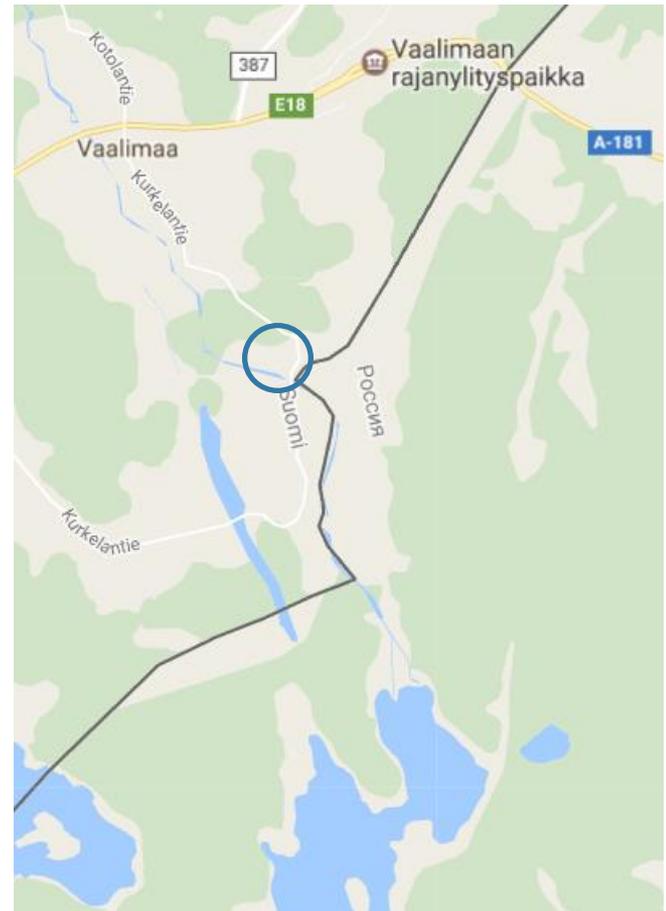


Before, 2011



After, 2012

Mattilankoski dam  
was reconstructed  
for fish migration  
2015



# Plans for dam removal in Russia

## River Rakkolanjoki (Река Селезнёвка )

### Project RIFCI

Plans were done for removing a dam at village Kravtsovo (Кравцово)



- The idea was to replace the dam with a nature-like weir, example from Finland (река Кяюряйоки в Финляндии)

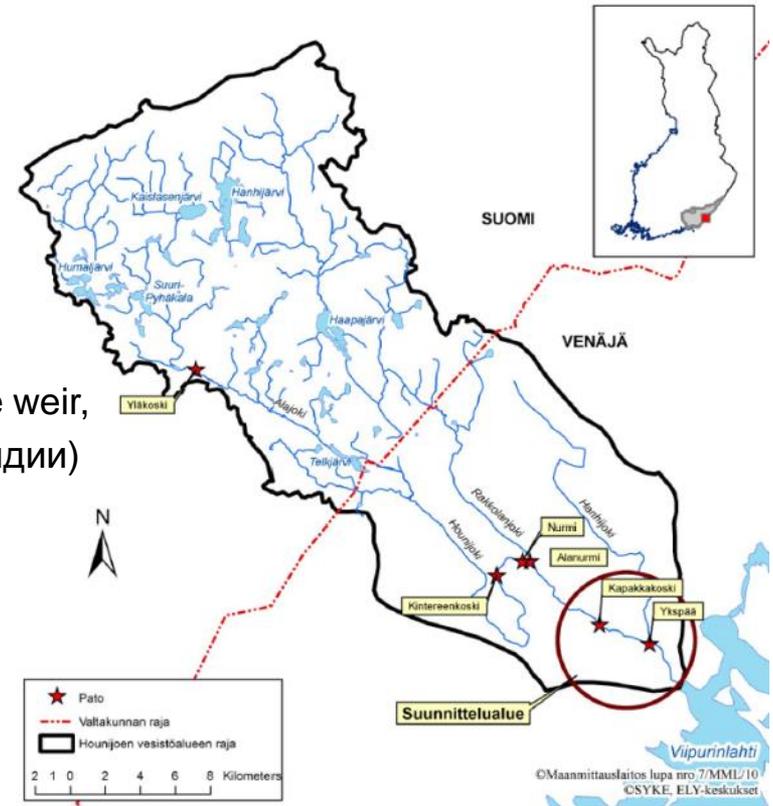


Рис 1. Бассейн рек Бусловки и Селезнёвки.

Unfortunately, the permit was rejected by authorities

## To be continued...

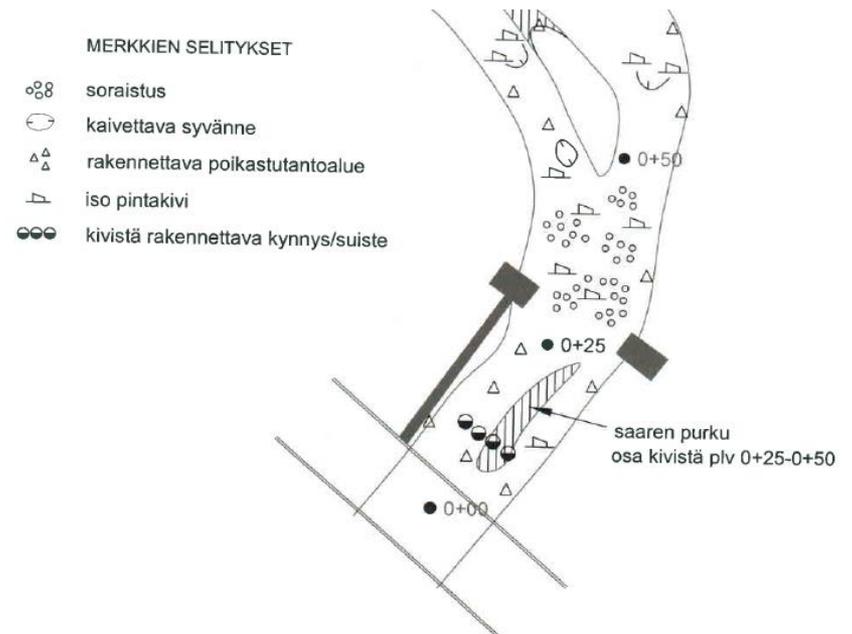
- Luckily, a flood broke the wooden structures of the dam during the project
- The route for fish migration became free
- Also restoration works near the dam in Selesnevo (Селезнево) village were rejected
- Cleaning of the river was fulfilled during a Russian ecocamp by students
- River bottom became available for spawning of salmon and trout



- **ПРОЕКТ ВОССТАНОВЛЕНИЯ НЕРЕСТИЛИЩ НА РЕКЕ СЕЛЕЗНЁВКА**
- **Обеспечение миграций лососёвых рыб в створах старых плотин 2012**
- The money reserved for restoration in Russian side was used for river restorations in Finland

## Restoration plan 2014 River Vammeljoki (R. Chernaya) Project RIFCI

- The aim of the plan is to enhance the river for salmon, sea trout and pearl mussel (*Margaritifera margaritifera*)
- Background: dredging for floating timber
- Measures: gravel beds, excavation of pools, rearing habitats for juveniles, sill/ deflector of stone
- The plan was rejected by permit authorities



## Restorations of the Project RIFCI in Finland River Rakkolanjoki (Река Селезнёвка )

- The area for spawning and rearing of salmon and trout juveniles was increased
- Stones were replaced back to the river
- Gravel was added



- Leinonkoski rapid 2013 :

Before After



Photos: Anna Lindgren

## River Mustajoki Project RIFCI

- Restoration of Vanhanmyllynkoski rapid

Before

After



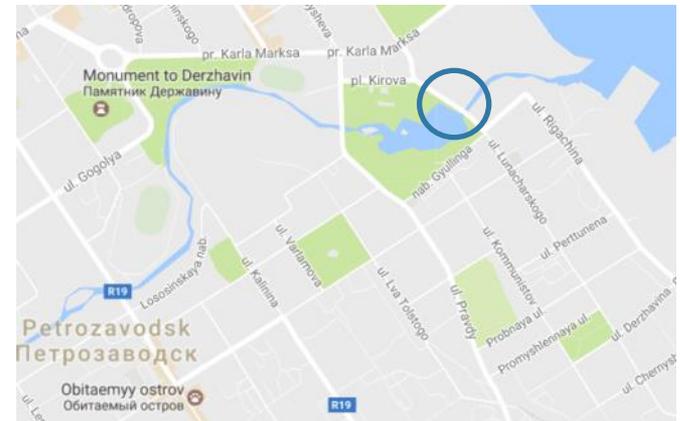
# Restoration of reproduction sites for Onega Lake Salmon

## River Lososinka, Petrozavodsk Project LIETOLOHI

- Lososinka (salmon) river in the city centre of Petrozavodsk is important for the Onega lake salmon
- 300 m section is restored by the Northern Fisheries Research Institute (SevNIIRH) – they have experience
- Juvenile production



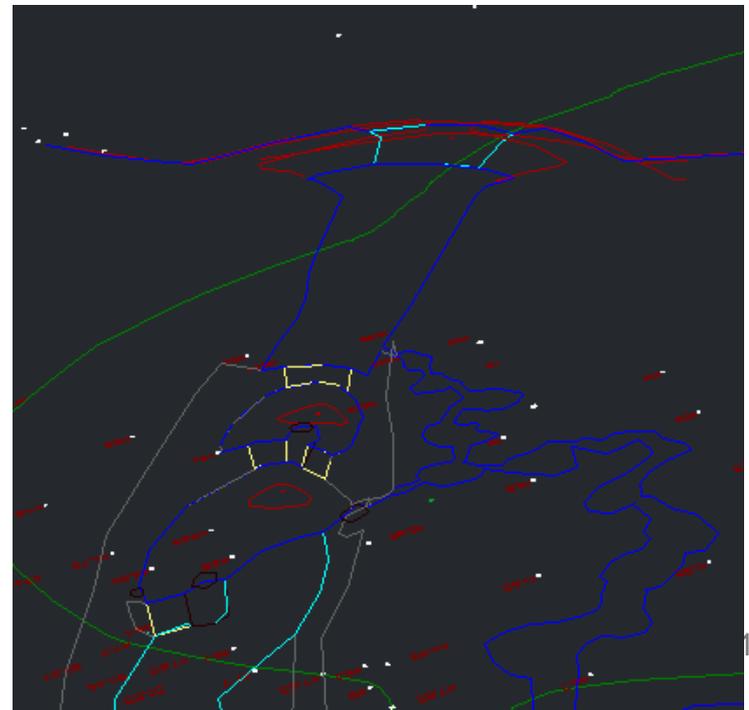
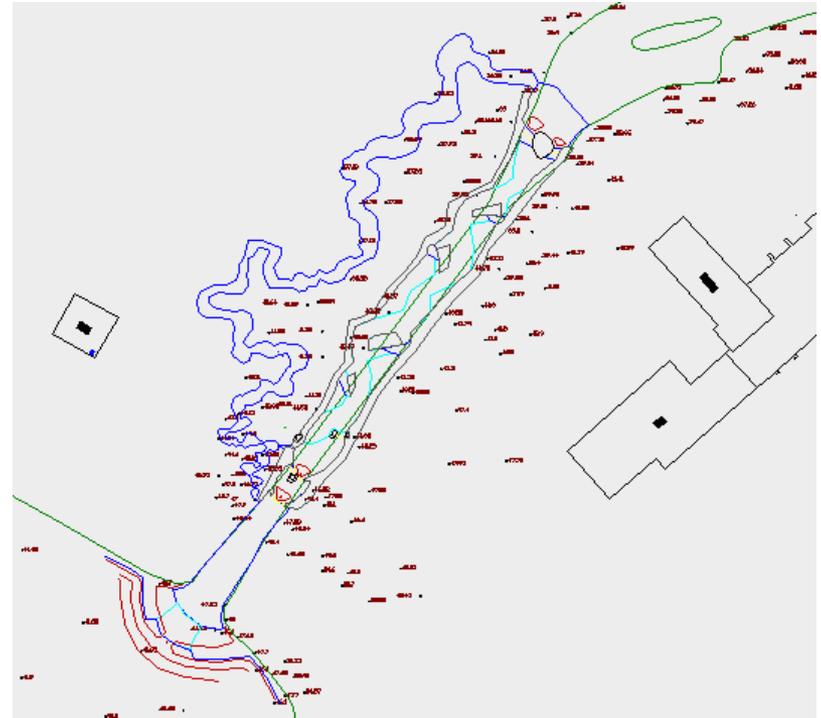
- Migration of salmon is stopped by a dam and ramp at the site of the factory of Peter the Great



# Plan for a new rapid and fish pass 2013

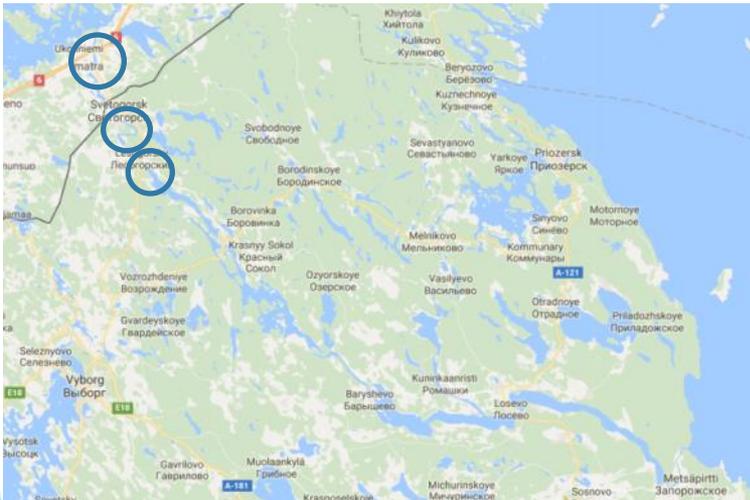
## Project LIETOLOHI

- A scetch for the plan was drawn by an autocad program in SYKE
- A consultant in St. Petersburg should finalize the plan according to local demands for permitting
- The consultant did not do the work during the time limit of the project
- The EU financing could not be used
- Petrozavodsk city is still trying to get other financing



## Measures and plans at Vuoksi river

- In Finland: Imatrankoski rapid, famous touristic attraction (now dry)
- Power plant with no fish pass
- Imatra urban brook was constructed 2015, new habitat for trout
- In Russia: Fish passes are needed to 2 power plants (Svetogorsk, Lesogorsk)
- Would enable migration of Lake Ladoga salmon to Imatra



Power plants at R. Vuoksi

Site of Imatra urban brook



# Imatra urban brook 2015

## Planning: MA-architects, SYKE

New channel 1 km, 300/ 150 litres/sec



Planned to be optimal habitat for trout  
 Attractive landscape for tourists  
 Model for nature-like fish passes at power plants  
 Compensates loss of natural reproduction habitats

# Results of Imatra urban brook

## October 2016

- "Fish willing to spawn is searching for a mate in the Urban brook"
- High density of trout juveniles

Photo Markus Tapaninen



Local newspaper 7.10.2016



# Examples of bypass channels in Russia

## River Don

- Interesting examples of fish passes for sturgeon
- Low gradient, could suit for spawning
- Monitoring results?
- International cooperation for rivers with sturgeon and other big fish: Danube, Yangtse, Mekong...

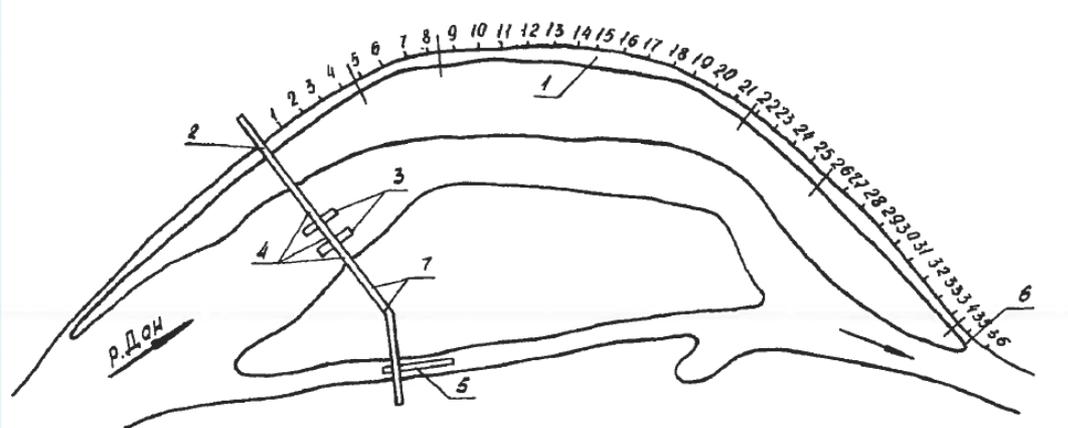


2.4. Рыбопропускной комплекс Николаевского гидроузла

В состав Николаевского гидроузла на р. Дон входят: судходный шлюз, разборчатая щитовая плотина с поворотными фермами, бетонная водосбросная плотина-регулятор, земляная плотина, два рыбопропускных шлюза и рыбоходно-нерестовый канал (рис. 2.18).

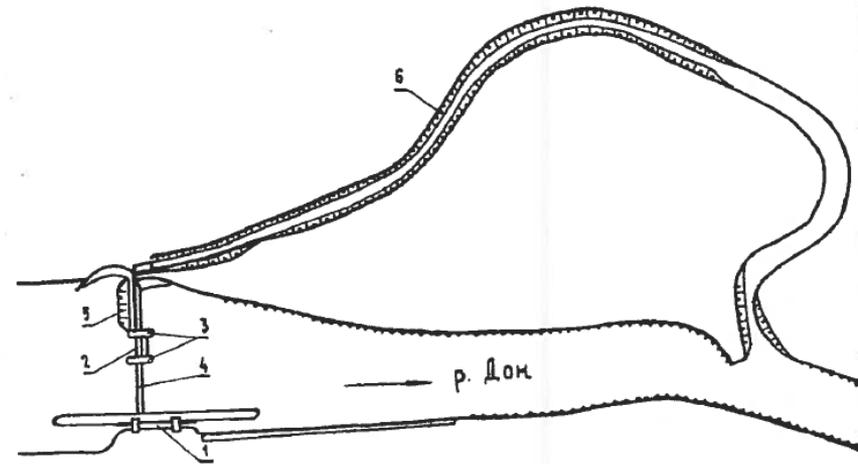
План Николаевского гидроузла на р. Дон

План Константиновского гидроузла на р. Дон



1 - рыбоходно-нерестовый канал; 2 - головное сооружение (регулятор); 3 - рыбопропускные шлюзы; 4 - водосбросные сооружения; 5 - судходные шлюзы; 6 - входной оголовок РНК; 7 - автотрасса (1-36 - номера пикетов)

Рисунок 2.22



1 - судходный шлюз; 2 - водосбросная плотина-регулятор; 3 - рыбопропускные шлюзы; 4 - плотина с поворотными фермами; 5 - земляная плотина; 6 - рыбоходно-нерестовый канал

Рисунок 2.18

## Conclusions and visions for future

- There is a need for restoring rivers for valuable fish stocks
  - Fishing is appreciated by people in both countries
- There have been problems in accomplishment of projects
  - Permitting of restoration works
  - Fulfilling tasks within project time
  - Waste of money which would be available
- How to go on with future projects?
- Need for commitment of tasks by all partners
- Taking permitting authorities into projects from the beginning
- Working with voluntary organizations with many eager hands
- Working with municipalities which understand the value of rivers
- International cooperation for big rivers with SYKE and others in the European Centre for River Restoration ECRR?
- Widening river restoration network in Russia towards voluntary people?
- Organizing excursions – welcome to Finland!