HESSEN

# Ecosystem services for dam removals in the River Lahn (Germany)

**von Mikus, Brigitta**

**Governmental Authority of Gießen (Hesse, Germany)**

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# We have no problems, but we do have challenges

HESSEN

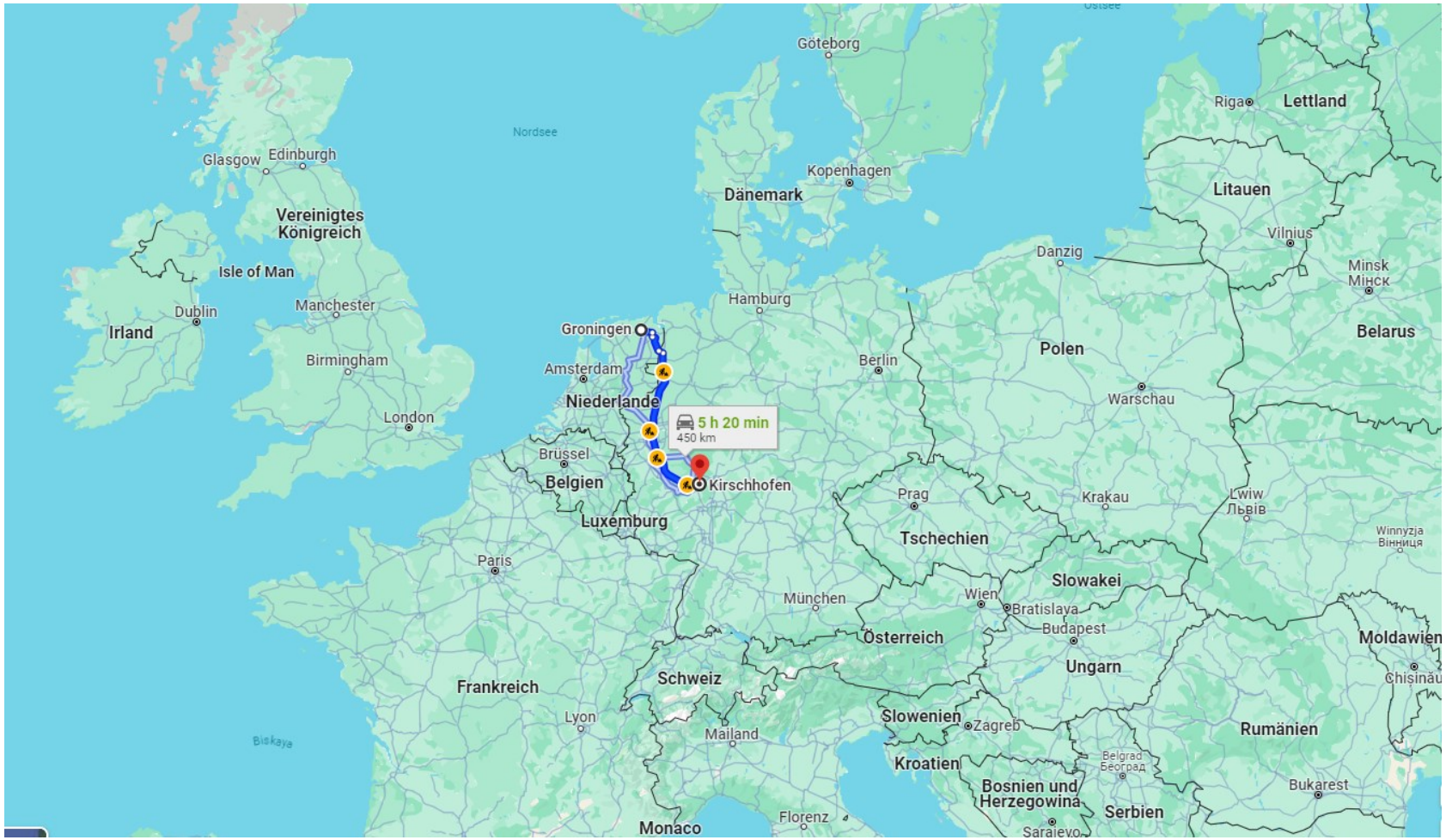
HELP ME GO THROUGH

HELP ME MOVE

Altenberg, river Lahn; Fish: https://creazilla.com/de/nodes/56220-fisch-clipart

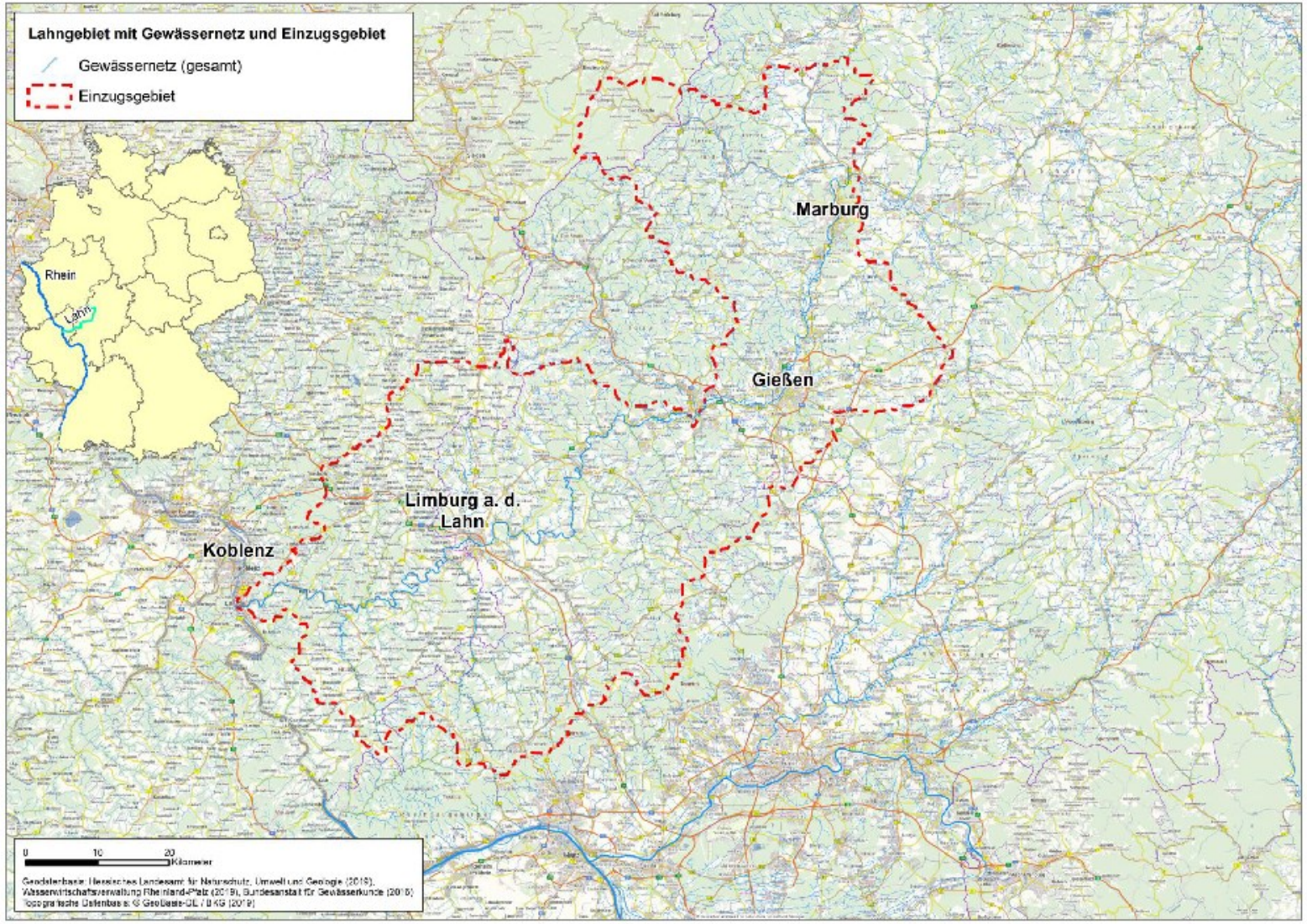
# The River Lahn in Germany

# The River Lahn




Googlemaps
https://www.google.com/maps/dir/Groningen,+Niederlande/Kirschhofen,+Weilburg/@51.7376655,4.4456841,7z/data=!3m1!4b1!4m13!4m12!1m5!1m1!1s0x47c83286b462cca7:0xcb4b5086f9a6c8dc!2m2!1d6.5665017!2d53.2193835!1m5!1m1!1s0x47bc36006582a2a9:0xa224352a7b32d40!2m2!1d8.2436818!2d50.4725505!5m1!1e4?entry=ttu

# The River Lahn




Catchment area of the river Lahn in Germany

# Let´s go on a journey

# The river Lahn

## Kirschhofen

# Pictures

## Kirschhofen

# Pictures

## Kirschhofen

# ESS – Ecosystem services

“Direct and indirect services (positive benefit) of nature and landscapes to the human well being.”

# The study

**Goals:**

**decision tool, acceptance of the stakeholders and residents**

**In frame of the** EU LIFE–IP

„Living Lahn - one River, many interests“

- **The current state is compared with two scenarios for three selected dams with different conditions**
- **Scenario 1 = implementing fishways while lock and hydro power stay**
- **Scenario 2 = removing the dam and implement renaturation projects**

# The study

## Main ESS used

## The method took different use-related conditions into account:

- supplying ESS (food, recources)
- regulatory ESS (extreme flow, global climate)
- cultural ESS (Recreation, knowledge and learning)
- plus hydropower and (recreational) navigation.

# The study

**Costs are determined from market analyses and going back on price and cost based approaches.**

**Frame facts:**

**- Considering the change of costs during a time horizon of 20 years (NOT one time costs)**

**- No property issues**

**- No legal consideration**

# The study

## Current state Kirschhofen

# The study

## Scenario 2 Kirschhofen, total dam removal and renaturation

# Results

**Difference to the current state of the weir Kirschhofen**

**Scenario 1: overall benefits from ESS: €2 million (implementing fishways )**

**Scenario 2: overall benefits from ESS: €89 million (removing the dam )**

# Results

**The effect of actions are more valuable when implemented over a greater area in the flood plain.**

**The main difference between the selected dams is the impact of the area that could be involved in the scenarios.**

# Results

Decreasing ESS are

Mainly in the group of supplying

Loss of fields and agriculture areas

Loss of hydropower and (recreational) navigation

Loss of low water reservoir/ storage and

decreasing the groundwater height

Increasing ESS are

Biodiversity (wasn´t counted)

Flood protection

Retention of phosphorus und nitrogen

Retention of greenhouse gases

# Results

## Interpretation

- the removal is more valuable
- we can also see the losses very clear
- a lot of important impacts couldn´t be rated in the study

→ benefits are much higher

- The climate change isn´t taken in to account

→ increasing the benefits

# Conclusions

The approach allows a comprehensive view of the impacts, both positive and negative.

→ Dam removal is not just ecologically a better option, it also makes sense from the economical point of view.

**How can we move on?**

**Why can´t stakeholders be convinced?**

**Why is it so hard to change things?**

## Conclusions

# Rivers need space, no dams!

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