Inventory of River Restoration Measures: Effects, Costs, and Benefits

Publication

<u>Report</u>

Citation

Ayres, Andrew; Holger Gerdes; Brandon Goeller et al. 2014: Inventory of river restoration measures: effects, costs, and benefits. Berlin: Ecologic Institute.

The deliverable 'Inventory of River Restoration Measures: Effects, Costs, and Benefits' was published in January 2014 as part of the FP7 REFORM project. Scientists at Ecologic Institute led the work in collaboration with several European partners, including economists and ecologists. The information in the deliverable will help river basin managers by providing examples of how representative data on the costs and benefits of river restoration can be gathered and analysed to support the drafting of programmes of measures for the implementation of the EU Water Framework Directive. The deliverable is available for download.

The deliverable reviewed the literature on the effects, costs, and benefits of river restoration and collected these in a database to empirically investigate the costs and benefits of river restoration measures throughout Europe. Also, to inform future cost-benefit analysis, descriptions of the specific hydromorphological measures found in the database and their potential impact on aquatic plants, macroinvertebrates, and fish were provided.

The cost database assembled for the deliverable contained cost data for 766 restoration projects from Germany (n=454), Spain (n=228), the United Kingdom (n=54), and the Netherlands (n=30). The cost data for most measures varied considerably, which restricted the conclusions that could be drawn from the database. This suggests that investing efforts in gathering and incorporating cost information into decision making is a prerequisite to increase the efficiency of river restoration activities.

Ecosystem services resulting from hydromorphological river restoration were evaluated as the environmental benefits provided by restored river ecosystems and riparian zones. As a rule, a restoration project was treated as a bundle of ecosystem services, which made it very difficult to determine values for these services individually or as a whole. The majority of the economic benefits studies reviewed assumed that local households were the main beneficiaries of river restoration.

The deliverable is also available to download free of charge on the <u>REFORM project website</u>. These results will be used to guide cost-benefit analysis in a forthcoming REFORM deliverable.

Language

English

Authorship

Andrew Ayres <u>Holger Gerdes</u> Brandon Goeller <u>Dr. Manuel Lago</u> Marta Catalinas (CEDEX) Ángel García Cantón (CEDEX) Roy Brouwer (IVM) Oleg Sheremet (IVM) Jan Vermaat (IVM) Natalie Angelopoulos (UHULL) Ian Cowx (UHULL)

Funding

European Commission, <u>Directorate-General Research & Innovation</u> (DG Research & Innovation), International

Published by

Ecologic Institute, Germany

Year

2014

Dimension

95 pp.

Project

Restoring River for Effective Catchment Management (REFORM)

Project ID

<u>2710</u>

Table of contents

- 1. INTRODUCTION
- 1.1 BACKGROUND
- **1.2 DRIVERS OF RIVER DEGRADATION**
- **1.3 SOCIO-ECONOMIC IMPACTS OF ANTHROPOGENIC ALTERATIONS**
- 1.4 RATIONALE FOR AN ECONOMIC ANALYSIS OF RIVER RESTORATION
- 1.5 STATEMENT OF PURPOSE AND CONTENTS OF THE REPORT
- 2. DATABASE
- 3. MEASURES
- 3.1 SELECTING MEASURES TO RESTORE ECOLOGICAL STATUS IN EUROPEAN RIVERS

3.2 RIVER TYPOLOGY

3.3 DETAILED DESCRIPTION OF MEASURES

3.4 CONCLUSIONS ON SELECTING MEASURES TO RESTORE ECOLOGICAL STATUS IN EUROPEAN RIVERS

- 4. EFFECTS
- 5. COSTS
- 5.1 BACKGROUND
- 5.2 COST TYPOLOGY
- **5.3 DATA SOURCES**
- 5.4 DATA QUALITY
- 5.4.1 GERMANY
- 5.4.2 SPAIN
- 5.4.3 UNITED KINGDOM
- 5.4.4 THE NETHERLANDS
- 5.4.5 SUMMARY
- 5.5 COST UNIT SELECTION
- 5.6 COST REPORTING: A PRELIMINARY ILLUSTRATION
- 5.6.1 BOX-PLOT REPORTING OF UNIT COSTS
- 5.6.2 REPORTING OF COST CURVES
- 5.6.3 RECOMMENDATIONS FOR FURTHER COST ANALYSIS
- 5.7 SUMMARY
- 6. BENEFITS
- 6.1 BACKGROUND
- 6.1 BENEFITS TYPOLOGY
- 6.2 DATA SOURCES
- 6.3 DATA QUALITY/UNCERTAINTY
- 6.4 BENEFIT UNIT SELECTION
- 6.5 BENEFIT REPORTING
- 6.6 SUMMARY OF THE RESULTS

7. CONCLUSIONS

8. REFERENCES

8.1 LITERATURE CITED

8.2 SOURCES OF COST DATA

ANNEX 1-FORECASTER MEASURE TYPOLOGY

ANNEX 2-DETAILED DESCRIPTIONS OF FORECASTER MEASURE CLASSES

ANNEX 3-ECOLOGICAL EFFECTS OF RESTORATION MEASURES

ANNEX 4-AVAILABLE EVIDENCE ON THE COSTS OF RIVER RESTORATION

Keywords

Biodiversity Digitalization EU Water EU Water Framework Directive, WFD, River Restoration, Measures, Costs and Benefits, Ecosystem Services Germany, Spain, the Netherlands, United Kingdom Database

Source URL: https://www.ecologic.eu/10408