

ENFORCEMENT IMPROVEMENT ON TRANSBOUNDARY WATER MANAGEMENT USING SEEA-W AND TRADEABLE PERMIT SYSTEMS: PRELIMINARY FINDING OF THE CASE STUDY ON THE RHINE BETWEEN THE NETHERLANDS AND GERMANY

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SUMMARY

This paper aims at presenting preliminary finding based on the research project of 'enforcement improvement on transboundary water management using water accounting and tradeable permit systems'. The European Union Water Framework Directive (WFD), aiming at enhancing international harmony in Europe, advises that both economic analysis of water use and economic instruments should be taken into account for sustainable management of river basins. We would like to demonstrate how the combination of water accounting (System of Integrated Environmental Economic Accounting for Water Resources; SEEA-W) and tradeable permit systems would serve this purpose in order to help international enforcement of transboundary water management. In principle, SEEA-W offers transparency while permit trading provides flexibility for international enforcement. Both background of the theories and preliminary finding of the case study in the Rhine between the Netherlands and Germany are presented.

1 INTRODUCTION

Water does not recognise national borders. Water follows its own law. Transboundary management is just like any other environmental issues that its solution might require the parties involved to make sacrifices for the good of the water body. Flood, water quality and ecology are the major concerns of the Rhine. Here we focus on the section of the Rhine in the Netherlands and its upstream Germany. Several institutional attempts at the international level have been made for this part of the Rhine but have ended up in vein (Huisman 2004). In fact, moral persuasion often has little influence. Is there any economic incentive to offer?

The idea of this project is to make the use of fiscal and economic tools to improve enforcement or avoid the problems of enforcement in order to reach the same desired target. The European Union Water Framework Directive (WFD) advises that both economic analysis of water use (including economic and environmental effects and costs) and economic instruments should be taken into account for sustainable management of river basins.

Firstly, the economic analysis of water use shall contain enough information in sufficient detail (taking account of the costs associated with collection of relevant data). Therefore, it can be applied to estimate the volume, prices and costs associated with

water services, and those of relevant investment including forecasts of such investments taking account of long term forecasts of supply and demand for water in the river basin district. The development in water status is advised to be monitored by Member States on a systematic and comparable basis. Secondly, the economic analysis of water use (defined in WFD) helps make judgments about the most cost-effective combination of measures concerning water use based on estimates of the potential costs of such measures. Members States are advised to apply economic instruments, in accordance with polluter-pays principle and dis-aggregation of contribution of different water users, to recover the costs of water use.

To serve these two purposes, the adoption of fiscal and economic instruments appears apparent. This research project reviews the application of a water accounting system based on SEEA-W and explores the possibility of permit trading, with respect to water quantity, quality, land use and habitats, aiming at improving enforcement of the transboundary water management concerning the Rhine between Germany and the Netherlands.

2 THE FUNCTION OF WATER ACCOUNTING (SEEA-W) ON ENFORCEMENT

System of Integrated Environmental Economic Accounting for Water Resources (SEEA-W) is a water accounting system with international standards developed by the United Nations Statistics Office and published in 2006 (UNSD, 2006). It aims at providing a framework for organising the hydrological and economic information in a coherent and consistent manner. Currently available data concerning water balance from various sources can be incorporated under this single framework. Transboundary water management, in particular, may benefit from the convenience of international comparison this system can provide.

SEEA-W, an international account system consisting of data related to water use and its environmental function, brings an economic perspective to water management. It may contribute to transboundary water management by presenting water use, productivity and flow contribution by industries and countries. Efficiency improvement in water allocation, pricing and infrastructure appears possible using indicators produced by water accounting.

SEEA-W provides catchment managers with an international standard to improve accountability and transparency for monitoring, reporting and verification. It is designed as a consistent data system for economic and environmental data. The implementation of SEEA-W also provides comparability in international water data. A well-functioned SEEA-W should be able to provide water data in terms of both monetary and physical terms in order to facilitate water related transaction and policy enforcement.

3 THE FUNCTION OF TRADEABLE PERMIT SYSTEMS ON ENFORCEMENT

A well-functioned trading regime on environmental topics may avoid problems in enforcement of regulations. Emission trading is apparently the direct topic for discussion. However, taking both quality and quantity into consideration for water management, the related policy instruments that are worth exploring include systems of tradeable development rights, habitat trading, water trading, conservation bank, and tradeable flood permits.

Many studies have shown that on-site mitigation generally failed to produce compensatory wetland resource values (Ruhl, Glen and Hartman 2005). This research

explores the feasibility of upper catchment management using market mechanism to improve water quantity and quality in the lower catchment where the Netherlands is situated without worsening the health of the whole water body.

However, there are also concerns about the enforcement in trading regimes. The progress of the project on this topic is at the stage of literature review. We have found that adoption of zone-to-zone transactions (instead of point-to-point transactions), exogenous trading ratios (instead of endogenous trading ratios) and setting upper/lower bound targets (instead of fixed targets) may ease the costs of enforcement.

4 CONCLUSION AND DISCUSSION

The idea of this research is to address an integrated trading regime with transparent water data supply using water accounting system SEEA-W in order to improve enforcement in the Rhine between Germany and the Netherlands. The price and quantity information related to each potential transaction in trading systems, in terms of both spatial and temporal aspects, will be linked to the data produced by the water accounts. The reporting system should address both the speed of reporting and the reliability of data.

Straightforwardly, water emission trading, habitat trading and tradeable flood permits should be considered with respect to water quality, ecosystem and flood mitigation accordingly. However, any of the markets applied can help cover all or two of these aspects within an integrated catchment management framework. For instance, it is possible that one of the less populated areas upstream in Germany store more water while downstream the Netherlands provides compensation accordingly. This measure may act as ecological conservation upstream and flood mitigation downstream.

The cultural and institutional factors are addressed at both international and national levels (Verweij, 2000; Huisman, 2004). Officially, International Commission for the Protection of the Rhine (ICPR) is at the leading position at the international level. In Germany, competence for water resource protection and management is located at the State (Länder) level. The federal government only has legislative framework competence (Hansen et al., 2002). In the Netherlands, Rijksinstituut voor Integraal Zoetwaterbeheer en Afvalwaterbehandeling and Statistics Netherlands, have been working towards either the application of water accounting or economic instruments.

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