9 Summary

„Models (*Leitbilder*) of nature conservation and their realisation in terms of agriculture - Aims, instruments and costs of sustainable agriculture in the valley of the River Elbe in Lower Saxony“

Introduction

The Elbe is a river of outstanding importance in the middle of Europe. With a length of 1,091 km, it is one of the longest rivers in Europe and the largest natural valley in Germany. For 50 years the Elbe was the political border between East and West, and so very little buildings took place on its banks. Because of this, the Elbe Valley provides excellent conditions for biodiversity. Its variability with regard to both natural and cultural aspects and biotopes, and the wide variety of plant and animal species to be found there, have given this river international importance.

The lower Middle Elbe (from the Saxon border up to Lauenburg, just south of Hamburg) is entirely within the Biosphere Reserve “Elbe Riverlands”. The valley is an important European cultural landscape which has evolved out of the interaction between Man and Nature over centuries. Sustainable agricultural land use plays a vital role in the conservation of this unique treasure.

From 1997 to 2001, an interdisciplinary project involving scientific working groups in ecology, landscape management, planning, agro-economy and marketing was carried out within the lower saxon part of the Elbe valley. The Alfred Toepfer Academy for nature conservation set up a special project-office in the town of Bleckede within the Elbe valley to co-ordinate the project. From here people and institutions in the region are contacted.

Targets

This project aims to develop concepts and perspectives for sustainable land management in the Elbe valley in a close collaboration between science and practice, agriculture and nature conservation.

One main aim of the project was to specify and define environmental goals and criteria for the sustainable development of the downstream part of the Middle Elbe by measuring and listing its natural resources soil, water and living organisms. This will give a basis to make aims of nature conservation and spatial-environmental planning more transparent.

In this project agricultural development and nature conservation go hand in hand to provide a basis for integrated development in the region through constructive dialogue. Farmers and scientist should work together very closely in this respect. Concepts and models for selected areas on both banks of the river are to be developed, integrating ecological and economical requirements.

Possibilities for a regional marketing concept are be worked out.

Project workers will advise and give further information to farmers regarding measures which support sustainable land use, for example, protection of species, quality of water and soil or bioenergy.
In this way it is the dialogue intended between agriculture and nature conservation becomes more intensive and objective, so that both sides find a mutual basis of acceptance.

Research Area

In this scientific project an area of around 57,000 hectares is being examined, which covers the area within the borders of the Biosphere Reserve “Elbe Riverlands” in Lower Saxony.
This includes land on the left bank of the Elbe in former West Germany with comparatively small family operated farms, and land on the right bank in former East Germany (now part of Lower Saxony since 1993), with its own particular agricultural structures comprised of very large farms, mostly run by companies. Thus, areas with very varied agricultural structures on account of their historical development are being examined.
In addition to several nature reserves an area of 11,000 hectares was intended to become the National Park “Elbtalaue”. This controversial project was not accepted by the farmers in the Elbe Valley, who sued and won the case. Now, some remaining 15,000 hectares are protected by nature reserves.
In these areas there are stipulations in the way the land is used by the farmers who are eligible for special subsidies in connection with extensive farming. They also have the possibility to come to further agreements with the Department of Nature Conservation if they wish to expand their conservation related use of the land. However, the relationship between agriculture and nature conservation is still fairly tense.

On-going Proceedings

On the one hand, this project has an underlying theoretical, scientific purpose, and on the other, it aims to realise practical aspects during the course of the project.
There are always two levels of examination: the whole region to the scale of 1:50,000 and the actual farming areas of those farmers who are co-operating with the project to the scale of 1:5,000.
One of the main aims is to establish criteria for nature conservation for the region with very definite targets for both scales. As a basis, a number of data have been drawn up and worked into a Geographical Information System (GIS) where information has been catalogued, cross-referenced and edited.

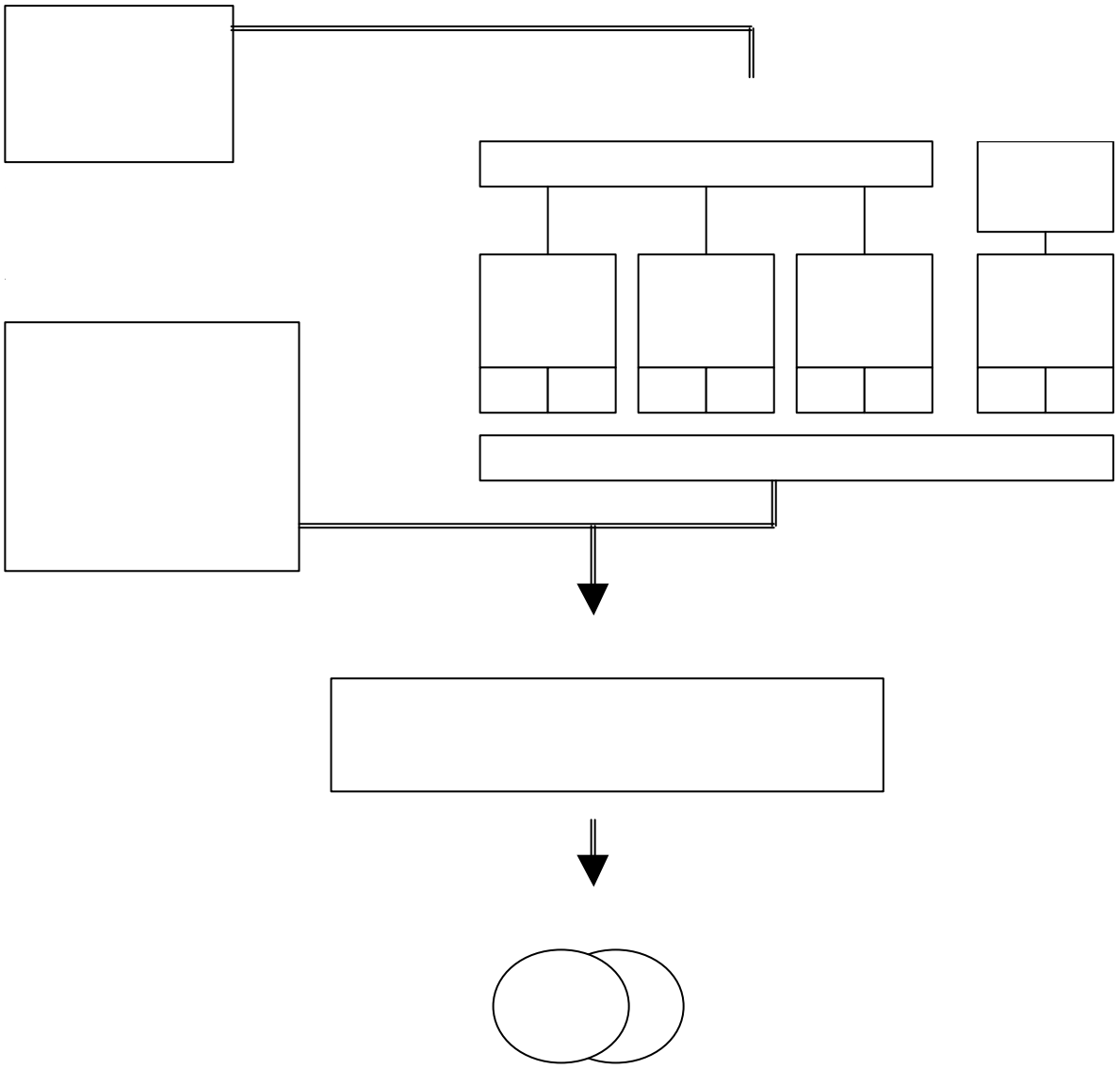

Figure 1: Working methods of the NNA Elbe-Project

The established information has been evaluated with regard to existing laws, red data books, environmental goal standards, etc. and entered on GIS-maps.

The expression *Leitbild* (model or vision) can be used in different ways. In this project a *Leitbild* defines environmental quality goals for certain sites in the region under investigation.

Three different theoretical models and one “discussed model” (discussed and with farmers and other users in the region), are shown. The theoretical models differ from each other but are all important aims of nature conservation:

1. without human impact – that means no further land use;
2. (bio-)diversity – protection of the diversity of biotopes, representative species, types of soil, etc.;
3. protection of resources – especially in the case of soil and water protection.
4. The “discussed model” is being worked out together with seven co-operating farmers to the scale of 1:5,000.

All models show site specific goals for the region (1:50,000) and for the farmland (1:5,000). For all goals specific measures for land use are defined. After that their natural and economic consequences are described in scenarios and calculated with the help of a Geographical Information System (GIS). In this way, various possibilities for further developments using varying conservation goals or L*eitbilder* are worked out and the economical potential for co-operation between nature conservation and agriculture becomes more obvious.
In various talks between farmers and project workers these models and goals have all been discussed and further ideas and suggestions regarding nature conservation are worked out. Each solution, or compromise, is described in economical and ecological terms. At the same time, the possibility of financial subsidies (given by the State of Lower Saxony or the European Union) for conservation programmes or programmes for sustainable development are consigered.

Main Results

1. Concerning the analysis of the status quo:
    - Soil and water: 64% of the soil in the region has not a distinct sensitively reaction to nitrogen loss into groundwater; in the case of 6 % of the arable land this problem is considered to be severe. In some areas, a high concentration of nitrogen was measured.
    - In particular the soil in the flood plains is sensitive to compression by agricultural land use (39 %). For 25% of the total area there is a very high potential for this phenomenon. These areas are very fertile so they are used intensively.
    - The floodplain meadows of the Elbe valley are very important in terms of nature conservation. Round about 640 ha (3,5 % of the meadows) have been preserved. They need a durance of overflow between 42 and 100 days per year. Certain measures for use have been worked out.
    - The forage from floodplain meadows contains rather the same amount of energy (or protein) as “normal” intensively farmed meadows. But due to the late cutting of grass and less frequency of use as required by nature conservation the energy in the forage is reduced.
    - The vast areas with only a few (linear) structures like hedgerows in the Amt Neuhaus (east bank of the Elbe) are ideal for northern migratory birds like geese and swans. The Elbe Valley is the most important area for these birds to rest and hibernate in Lower Saxony.
    - Only a few meadow birds are spotted in the whole region. In most cases there is no conflicting problem between the date of the optimal first cut of floodplain meadows and meadow birds *(ca. 15.06)*.
2. The method used to work out models (*Leitbilder*) and environmental quality goals is described in standardised matrixes. It can be applied to other comparable regions. A catalogue of protective measures for various floodplain biotopes has been worked out.

3. Intensive discussions with farmers co-operating with the project have taken place to co-ordinate measures for nature conservation to work out practical and less expensive alternatives.
4. Workshops with farmers and organisations from the Elbe Valley region have been taken place to work out aims for the development of the landscape in the Elbe Valley.
5. Several scenarios show the ecological and economical consequences of varying models and environmental quality goals.
6. Recommendations for the realisation of programmes are evaluated according to their success with regard to environmental concerns and their flexibility for farmers.
7. Recommendations for co-operative collaboration between agriculture and administration of nature conservation and other organisations in the biosphere reserve have been drawn up.
8. A concept for a marketing of regional agricultural (especially meat) products has been worked out.
9. After negotiations with a well-known Zoo in Hamburg, two lorries of hay (25 t) of an excellent quality from nature reserves heave been sold for a good price. Further deliveries are planned.
10. A marketing concept for regional products supported by modern communication technology has been elaborated upon and its realisation has been initiated.