Case Study on Agricultural Biological Diversity

in the area of:

The Ecosystem Approach and Integrated Landscape and Natural Resources Management Approaches

prepared on the basis of:

the **Report of activities during phase I of the project:**

FEASIBILITY STUDY FOR THE IMPLEMENTATION
OF AGRO-ENVIRONMENTAL PROGRAMME IN CENTRAL EUROPE

A case project in the Green Lungs area of Poland 1997-1999

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I. General description of the case

Many of the agricultural lands in Poland have high natural values, despite the fact that unsustainable agricultural practices of collective and state farms in the past decades have destroyed some of these values. The Northeast Poland is one of rare regions in Europe with unspoiled environment and unique natural heritage, which is protected by the law through the programme „Green Lungs of Poland" launched in 1988. Agreement on GLP was signed by representatives of several voivodships belonging to the region, by Ministry of Environmental Protection, Natural Resources and Forestry as well as by National Fund for Environmental Protection and Water Resources and by EcoFund. The GLP was acknowledged by Polish Parliament as region where economic development has to be integrated with environmental protection according to the eco-development policy. At present, the GLP region covers an area of 60.759 km^2 (19.4% of Poland territory) and has got 3.6 million inhabitants (9.6% of total population). The GLP climate is continental and very severe, it is the coldest lowland area in the country with the average temperature only +6°C and annual rainfall between 500-700 mm.

Introduction of market economy in 1989 resulted in rapid changes of Polish agriculture. Breakdown of public sector, followed by ownership/organisational changes of former state and co-operative farms led to fallowing of many agricultural lands. In private sector, decreasing profitability and ageing of farm owners resulted in similar process. Abandonment of wetlands and spontaneous afforestation but also changing grasslands into arable land are some typical changes in agricultural situation in Northeast Poland which influence very much environmental conditions.

There is an urgent need to maintain sustainable agricultural practices already existing in the region or to change towards more sustainable ones in order to protect their most valuable and environmentaly sensitive areas taking also into account the preparation process of the future accession to the EU. It is important to develop incentives which will mitigate such practices which have caused negative impacts on biological diversity. In the current transformation it is important to give first priority to programmes that will protect the existing biotops with high biodiversity.

In the European Union (EU) every Member State has developed an agro-environmental programme, based on Council Regulation 2078/92, which supports environmentally friendly undertakings of farmers. These programmes can be used to arrest deterioration of environment and nature or to improve environmental conditions and enhance biodiversity. The financial aid to local farmers is provided for undertaking specific activities or observing given rules like:

- reducing use of fertilisers and/or plant protection products,
- introducing organic farming methods,
- changing to more extensive forms of crops,
- to convert arable land into extensive grassland;
- using other farming practices compatible with the requirements of protection of the environment and natural resources, as well as maintenance of the countryside and the landscape, including the upkeep of abandoned farmland and woodlands.

The project aims to analyse possibilities of providing farmers implementing sustainable farming practices which fulfil requirements of environment and natural resources protection and biological diversity conservation using Council Regulation 2078/92 as a legal framework. The project should provide methodology to implement such programmes, including valorisation of biological diversity which should be maintained through appropriate agricultural practices, identification such practices themselves and their economical assessment as well as logistics of programmes implementation.

II. Description of agricultural-ecosystem, ago-ecological system and production system, the genetic resources concerned and diversity status and trends

Morphology of the GLP region was formed mainly by the continental glacier. The rich and diverse surface of the land is composed of glacial plateaux, frontal moraines, ribbon and marginal lakes and valleys formed by fluvioglacial waters. The region also contains diverse hydrographical territories, Mazury Lake District and Augustów-Suwałki Lake district.

A specific aspect of GLP agriculture is a high share of permanent meadows and pastures, over 12% and 8% respectively in comparison with the average for the whole country (8.8% and 4.4%). Also the soil quality is generally poor what limits crops diversity. The average farm size is well beyond national 7 ha; from 9.6 ha in Białystok viovodship to 15.1 ha in Suwałki, the farm are private. In the last several years, progressing extensification was observed in the region. The potato planted and industrial crops area decreased significantly, while an increase was observed in the share of produced cereals and their mixtures, which today cover over 80% of all arable land. Such single crop production, introduced because of lower profitability of crops demanding better soil types, like sugar beet or rape, as well as necessity to move towards low input (financial/labour) production systems may lead to abandoning traditional farming practices. Animal production is also less intensein the region, specially in pig sector where stocking rate, for instance in Białystok and Suwałki viovodships amounts to 1/3 of national average only. Also dairy and beef production is lower than average, stocking rate for cattle varying from 42.4 for Łomża to 23.6 for Suwałki.

The GLP includes 4 National Parks and several Landscape Parks, created to protect unique ecosystems, biotops and landscapes. The project itself is limited to the area covering 3 National Parks (Biebrzański, Wigierski, Narwiański) and Brodnica Landscape Park. Important examples of high nature values found there are connected with natural and semi-

natural grasslands (providing habitat for many, mostly endangered animal and plant communities), with different areas suitable for breeding or for migrating and wintering birds, hedges and woodlands.

Specific goals relating to different levels of biodiversity in agricultural may be outlined as follows:

at the genetic level:

- to preserve traditional plant species and livestock breeds,
- to keep wild species from becoming depleted below the admissible minimum (*minimum viable population*) and further isolation of their natural biotopes,
- to reduce genetic mutations or unintentional selection of species as a result of agrochemical application.

at the species level:

- to protect endangered and critical species by providing appropriate agrotechnology (extensification) or setting aside a part of farmland,
- to prevent degradation of sites harbouring wild species due to one-sided land improvement schemes, agrochemical application, erosion, etc.,
- to preserve refuges of endangered species

at the ecosystem level:

- to counteract shift in the management of relatively natural agricultural ecosystems to arable fields,
- to block simplification of ecosystem structure as regards species composition or setting crop monoculture without application of crop rotation as well as implementing intensive chemisation,
  to conserve characteristic features of sites and counteract their excessive eutrophication especially, in water reservoirs, to counteract elimination of weed communities accompanying specific crop species (e.g., declining flax plantations),

at the level of landscape

- to prevent the destruction of natural landscape structure resulting from bringing together or breaking up land, change in the form of management, urbanisation,
- to counteract changes in water conditions and features of microclimate,
- to preserve small-scale features of landscape (small natural water reservoirs, woodland patches, treestands among the fields and along watercourses, field boundaries, etc.) functioning as biogeochemical barriers to rapid runoff of nutrients and as ecological corridors for migrating wildlife.

III. Description of approaches or best practices and/or legal, policy, institutional and/or technical incentive measures/mechanisms

The feasibility study will be implemented in two phases. The first phase included selection of nature protected areas and bufor zoones, where implementation of sustainable agricultural practices are of a great importance. This phase required a broad analysis of nature values and agricultural production in the GLP region, and their valorisation, then development of environment friendly management packages providing guidelines for the farmers as regards

sustainable agricultural practices. The results of this part of project are available and presented in first report. The next step covers assessment of cost/value of implementation of single management packages and then their testing in selected farms. At present 53 farms are included in testing stage (phase 2) of the project.

The detailed description of the dimension and content of management packages and their possible implementation according to the landscape/biodiversity and environmental aspects on the farm level is included in Annex 1.

The project has to develop a proposal for the practical implementation of agro-environmental programmes, based on tested packages, including organisations involved modes of operation, rules for participation and ways for providing financial support.

IV. Key actors/stakeholders involved including any benefit sharing arrangements

The main actors of the project are local farmers whose understanding and willingness to co-operate is crucial for the project implementation. The survey conducted at farms within this project shows considerable interest to participate in such programmes. It is mainly connected with expectations for financial support which, in this relatively poor area, is very important. There is 53 farms included in the project, which started implementation of management packages.

There are other stakeholders involved in project implementation like advisory agricultural services, employees of National/Landscape Parks, local authorities and local community.
The direct beneficiaries from the project will be farmers and their families, indirectly local communities and finally the whole society, having areas of unique nature value well managed and maintained.

V. Process of implementation and its time frame

Implementation of the project has started in March 1997 and it will finish by the end of 1999. The project partners are:

- Foundation IUCN Poland (PL) which also provides the country co-ordinator of the project
- National Foundation for Environmental Protection, Office of Green Lungs of Poland (PL)
- Veen Ecology (NL) which provides expertise on biodiversity conservation aspects
- Avalon (NL) which co-ordinates the project and provides expertise on sustainable agriculture development.

The project is financed by the Dutch Ministry of Agriculture, Nature Management and Fisheries in the framework of the Programme International Nature Management (PIN).

The research work is being carried out by an expert project team consisting of 19 experts of various discipline. A project advisory group consisting of representatives of the Polish Ministry of Environmental Protection, Natural Resources and Forestry, as well as Ministry of Agriculture and Food Economy, research institutions and several NGOs, is advising the project team.

In the first phase of the project (1997) the following activities took place:
- areas with high biodiversity in farmland have been selected;
- management packages have been defined;
- a first economic analysis based on the packages has been carried out.

A package consists of a number of practices which conserve or enhance biodiversity on the farm. The practices are currently being used by farmers in the region.

In the second phase of the project, test results of the management packages in terms of production yields, biodiversity conservation and the related economic costs will be analysed. This information will be used to design an agro-environmental programme which will be presented to governmental organisations and donor agencies interested in their financing.

VI. Main outcome, opportunities and lessons learnt

The programmes worked out within this feasibility study should be very practical and easy to implement as in future they should be used at national level and, possibly, in other CEECs. The project will provide instruments/procedures and capacity building (implementing, running and evaluating such agro-environmental programmes.

To provide assistance in further implementation of such programmes a set of documents will be elaborated, namely:
- a leaflet, presenting general concept of the programme
- guidelines, describing particular management packages and providing information on compensation payment and incentives provided for their utilisation and participation in the programme
- guidelines for valorisation of biological diversity on agro-ecosystem level (including list of indicative key species) and proposal for biological diversity monitoring

The final assessment of the project impact on maintaining and enhancing biological diversity will be possible only after several years of monitoring results of its implementation.

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Annex 1

FEASIBILITY STUDY FOR THE IMPLEMENTATION OF AN AGRO-ENVIRONMENTAL PROGRAMME IN CENTRAL EUROPE' A CASE STUDY IN THE GREEN LUNGS AREA OF POLAND, 1996-1999

Description of management packages

Introduction

The framework of management packages has the structure of a menu (see cross table). It means that the farmers are able to choose one or more packages, according with the landscape type(s) involved and according with the possibilities for implementing packages in the farm concerned. Base lines in the all packages for environmental basic protection are the regulations for fertiliser and pesticide use and stock density (see 8, 9 and 13 in the cross table). The other packages can be divide in two issues:

- packages dealing with biodiversity aspects like management for reasons of botanical values (1 and 5), avifaunistic values (2 and 6), and more specific items like marshlands (3), bushes and hedgerows 94), ad ponds/small water bodies (7);

- packages dealing with environmental aspects like crop rotation (10), covering arable lands by winter crop (11) and protection of surface water quality (12).

In fact, a combined strategy of horizontal measures in the packages dealing with environmental aspects and of zonal programme in the specific packages for the moraine landscape of NE Poland is proposed. combination of both strategies looks interesting also for the other countries in Central and Eastern Europe.

The classification of the 9 landscape types in the cross table is based on the results of investigations of botanical and avifaunistic values. So, this classification is a habitat-typology with taking into account that total farms should be involved in the zonal programme.

The experts in the meeting of Białystok also agreed a description of management packages.

The menu structure gives flexibility in applying the packages in NE Poland. Also, the landscape classification, based on functional habitats, ensures that selection of key-species for monitoring should be possible. This selection process is planned to be started up in the beginning of phase 2 during preparation of the training courses in May 1998.

I. Description of management packages

1. Botanical aspects of grasslands

a. fertilising limited till 50 kg total N/ha (including atmospheric deposition)
b. no ploughing and no re-seeding (permanent grassland)
c. maintaining groundwater level
d. permanent control of bush development and encroachment for maintaining open grassland landscapes

2. Avifaunistic aspects of grasslands

a. mowing hay fields by the following alternative dates:

- dry soils: after 1 June
- wet soils: after 10 June
- inundated soils: after 15 July or later if needed for flooding reasons

b. grazing pastures by the following alternative dates (see also package 1d and 13):

- dry soils: after 20 May
- wet soils: after 5 June (in Biebrzański NP even after 30 June to be adjusted each season)

c. maintaining hedgerows (see also package 4)

3 Marshlands aspects

a. mowing in wintertime in cycling scheme - part by part (on average: once in three years)
b. alternatively mowing marsh (Sedges) vegetation in late summer period
c. no cultivation and amelioration activities
d. no use of fertilisers and pesticides
e. maintaining groundwater level

4. Aspects of bushes/hedgerows

a. cutting by cycling scheme (on average: once in 5-8 years)
b. no use fertilisers and pesticides
c. maintaining level of groundwater level
d. restoration of hedgerows by planting native (local) bush species, (according to the list)

5. Botanical aspects of arable lands

a. fertilising limits till 70 kg total N/ha (including atmospheric deposition)
b. no use of herbicides
c. use of traditional varieties/species of arable plants -protection of rare species and breeds – according to the list

6. Avifaunistic aspects of arable lands

a. maintaining crop patterns diversity within farms
b. limited use of pesticides/herbicides (see package 9 and 10)
c. maintaining hedgerows and areas with tall herbs vegetation (see package 4)
d. protection of birds species (e.g. harriers) in arable fields during harvesting arable crops

7. Aspects of ponds and other small waters

a. no fertilising of ponds/waters and the borders along the ponds/waters (minimum 4 m from the surrounding bushes and/or marshy vegetation)
b. maintaining water tables in water bodies
c. maintaining open surface waters by cleaning water bodies alternatively:
   - once in 4 years
   - once in 5 years

8. Aspects of fertiliser use (standard package)

a. limits to 150 kg NPK/ha
b. limits of nitrogen till 70 kg/ha total N (incl. organic manure)

9. Aspects of pesticides use (standard package)

a. use of pesticides only which are not published on the most recent „negative list" in Poland (I and II class of toxicity)

10. Aspects of organic farming

a. introduction and maintaining crop rotation in 4 years rotation cycle per unit of field
b. no use of artificial fertilisers
c. use of artificial pesticides restricted to those on positive list only, according to EU Directive 2092/91
d. apply of manure according to maximum stock density of 1,4 LU/ha

11. Aspects of winter crop cover (protection from erosion)

a. seeding of winter crop in autumn like Mustard, Phacelia, Oil seed, Radish

12. Aspects of water quality

a. limiting use of fertilisers for reasons of groundwater quality protection
b. planting and maintaining wooden/bushy strips along water bodies with a width of 2-4 m (1 or 2 sides)

13. Aspects of stock density (standard package)

a. limiting maximum stock density on 1,4 LU/ha

Management aspects incl. environmental conditions / Landscape types		Biodiversity aspects							Environmental aspects					
		Botanical aspects of grasslands	Avifaunistic aspetcs of grasslands	Marshlands aspects	Aspects of bushes and hedgerows	Botanical aspects of arable lands	Avifaunistic aspects of arable lands	Aspects of ponds and small waters	Aspects of fertilizer use	Aspects of pesticide use	Aspects of crop rotation	Aspects of winter crop cover	Aspects of water quality	Aspects of stock density
		1	2	3	4	5	6	7	8	9	10	11	12	13
Grasslands with bushes	A	X	X		X			X	X	X				X
Grasslands with marshlands	B	X	X	X				X	X	X				X
Open grasslands	C	X	X						X	X				X
Grasslands on slopes with ponds	D	X	X					X	X	X			X	X
Mixed grasslands/arable lands	E	X	X	X	X	X	X	X	X	X	X	X	X	X
Arable lands with hedgerows	F				X	X	X		X	X	X	X		
Open arable lands on plateaus	G					X	X		X	X	X	X		
Arable lands with ponds	H					X	X		X	X	X	X	X	
Arable lands on slopes	I					X	X		X	X	X	X		