

Document of  
The World Bank

Report No: 29900

IMPLEMENTATION COMPLETION REPORT  
(SCL-45200 SCL-45201 TF-23381)

ON A

LOAN AND A GEF GRANT

IN THE AMOUNT OF US\$ 2.5 MILLION AND US\$ 3 MILLION

TO THE

POLISH NATIONAL FUND FOR ENVIRONMENTAL PROTECTION AND WATER  
MANAGEMENT

FOR A

RURAL ENVIRONMENTAL PROTECTION PROJECT

May 31, 2004

## CURRENCY EQUIVALENTS

(Exchange Rate Effective May 2004)

Currency Unit = PLN  
PLN 3.94 = US\$ 1  
US\$ 0.25 = PLN

## FISCAL YEAR

January 1 – December 31

## ABBREVIATIONS AND ACRONYMS

ARMA	Agency of Restructuring and Modernization of Agriculture
CAS	Country Assistance Strategy
EC	European Commission
EU	European Union
FMP	Farm Management Plan
GEF	Global Environmental Facility
HELCOM	Helsinki Commission – Baltic Marine Environment Protection Commission
LACI	Loan Administration Change Initiative
LIL	Learning and Innovation Loan
LIT	Local Implementation Team
MAFE	Ministry of Agriculture and Food Economy; currently Ministry of Agriculture and Rural Development
MEP	Ministry of the Environment Protection, Natural Resources and Forestry; currently Ministry of the Environment
MIS	Management Information System
MOF	Ministry of Finance
NEFCO	Nordic Environment Finance Corporation
NFEP	National Fund of Environmental Protection and Water Management
Nitrate Directive	Council Directive on the Protection of Waters Against Pollution caused by Nitrates from Agriculture (91/676/EEC)
NMP	Nutrient Management Plan
ODR	Ministry of Agriculture and Food Economy's Extension Organization (Osrodki Doradztwa Rolniczego)
PIU	Project Implementation Unit
PSR	Project Status Report
PMR	Project Management Report
REPP	Rural Environmental Protection Project
SAPARD	Special Accession Programme for Agriculture and Rural Development
SC	Steering Committee
SOE	Statement of Expenditures
SOP	Sectoral Operational Program
WIOS	Voivodship Inspectorate of Environmental Protection (Wojewódzki Inspektorat Ochrony Srodowiska)

Vice President:	Shigeo Katsu
Country Director	Roger w. Grawe

Sector Director	Laura Tuck
Task Team Leader/Task Manager:	Barbara Letachowicz

**POLAND**  
**POLAND RURAL ENVIRONMENT PROTECTION**

**CONTENTS**

	<b>Page No.</b>
1. Project Data	1
2. Principal Performance Ratings	2
3. Assessment of Development Objective and Design, and of Quality at Entry	2
4. Achievement of Objective and Outputs	6
5. Major Factors Affecting Implementation and Outcome	12
6. Sustainability	12
7. Bank and Borrower Performance	17
8. Lessons Learned	19
9. Partner Comments	20
10. Additional Information	20
Annex 1. Key Performance Indicators/Log Frame Matrix	21
Annex 2. Project Costs and Financing	26
Annex 3. Economic Costs and Benefits	28
Annex 4. Bank Inputs	33
Annex 5. Ratings for Achievement of Objectives/Outputs of Components	35
Annex 6. Ratings of Bank and Borrower Performance	36
Annex 7. List of Supporting Documents	37
Annex 8. Beneficiary Survey Results	39
Annex 9. Stakeholder Workshop Results	40
Annex 10. Borrower Contribution to the ICR	41

<i>Project ID:</i> P050660	<i>Project Name:</i> POLAND RURAL ENVIRONMENT PROTECTION
<i>Global Supplemental ID:</i> P059613 ( <i>Partially Blended</i> )	<i>Supp. Name:</i> POLAND RURAL ENVIRONMENT PROTECTION PROJECT
<i>Team Leader:</i> Barbara Letachowicz	<i>TL Unit:</i> ECSSD
<i>ICR Type:</i> <i>Intensive Learning Model (ILM) of ICR</i>	<i>Report Date:</i> <i>September 30, 2004</i>

## 1. Project Data

*Name:* POLAND RURAL ENVIRONMENT PROTECTION *L/C/TF Number:* SCL-45200; SCL-45201

*Country/Department:* POLAND *Region:* Europe and Central Asia Region

*Sector/subsector:* Central government administration (41%); Micro- and SME finance (40%); Agricultural extension and research (19%)

*Theme:* Pollution management and environmental health (P); Environmental policies and institutions (P); Water resource management (P)

### KEY DATES

	<i>Original</i>	<i>Revised/Actual</i>
<i>PCD:</i> 03/01/1998	<i>Effective:</i> 03/09/2000	03/09/2000
<i>Appraisal:</i> 08/28/1998	<i>MTR:</i> 04/27/2001	04/27/2001
<i>Approval:</i> 11/30/1999	<i>Closing:</i> 04/30/2003	04/30/2004

*Supplemental Name:* POLAND RURAL ENVIRONMENT PROTECTION PROJECT *L/C/TF Number:* TF-23381

*Sector/subsector:* Central government administration (41%); Micro- and SME finance (40%); Agricultural extension and research (19%)

*Theme:* Pollution management and environmental health (P); Environmental policies and institutions (P); Water resource management (P)

### KEY DATES

	<i>Original</i>	<i>Revised/Actual</i>
<i>GEF Council:</i> 03/01/1998	<i>Effective:</i> 03/09/2000	03/09/2000
<i>Appraisal:</i> 08/28/1998	<i>MTR:</i> 04/27/2001	04/27/2001
<i>Approval:</i> 11/30/1999	<i>Closing:</i> 04/30/2003	04/30/2004

*Borrower/Implementing Agency:* NATIONAL FUND FOR ENVIRONMENTAL PROTECTION/NATIONAL FUND FOR ENVIRONMENTAL PROTECTION AND WATER MANAGEMENT

*Other Partners:* EU Phare Large Scale Infrastructure Facility, Nordic Environment Finance Corporation

### STAFF

	<i>Current</i>	<i>At Appraisal</i>
<i>Vice President:</i>	Shigeo Katsu	Johannes F. Linn
<i>Country Director:</i>	Roger W. Grawe	Basil Kavalsky
<i>Sector Director:</i>	Laura Tuck	Kevin M. Cleaver
<i>Team Leader at ICR:</i>	Barbara Letachowicz	Julia Bucknall
<i>ICR Primary Author:</i>	Justyna Giezyńska	

## 2. Principal Performance Ratings

(HS=Highly Satisfactory, S=Satisfactory, U=Unsatisfactory, HL=Highly Likely, L=Likely, UN=Unlikely, HUN=Highly Unlikely, HU=Highly Unsatisfactory, H=High, SU=Substantial, M=Modest, N=Negligible)

	<u>Rating</u>	<u>Rating (Supplemental GEF)</u>
<i>Outcome:</i>	S	S
<i>Sustainability:</i>	L	L
<i>Institutional Development Impact:</i>	M	M
<i>Bank Performance:</i>	S	S
<i>Borrower Performance:</i>	S	S
	QAG (if available)	ICR
<i>Quality at Entry:</i>	S	S
<i>Project at Risk at Any Time:</i>	No	

### 3. Assessment of Development Objective and Design, and of Quality at Entry

#### 3.1 Original Objective:

Global environmental issues have significantly grown in importance in the last two decades. In Europe, individual countries developed various measures to ensure environmental protection, also in agriculture, while the European Union proposed a number of directives reflecting the common goals for the continent. In Poland, the prospective European Union (EU) membership, which now is a fact, demanded compliance with these directives. The willingness of Poland's government, the development of environmental protection and the functioning of such institutions as the National Fund of Environmental Protection and Water Management (NFEP), which co-funds environmental projects, provided good grounds for expanded action in environmental protection in agriculture. The Government was interested in activities leading to an improved environment, not only as an element of preparation for the integration with the European Union, but also as a support to its own policies adopted in the National Environmental Policy Strategy of 1990 (this Strategy Policy plans to reduce the pollution of the Baltic Sea by 80 percent by 2020). The concept behind the Rural Environmental Protection Project (REPP) reflected these conditions, as did several other projects carried out prior to REPP.

With the national and international priorities in the background, since the early 1990s the Polish government has implemented several pilot and test environmental interventions similar to those proposed by REPP (funded by foreign governments and international institutions) as well as various investments to improve the rural infrastructure. On the basis on these experiences, Government decided on a national-scale intervention yet such program has not been feasible due to lack of appropriate administrative mechanism, indeterminate economic and financial impacts of such intervention and changes in local government structures (at the time of project design, Poland was undergoing an administrative reform changing the number of provinces from 49 to 16 and restructuring the provincial and local administrative structures, finally adopted as of January 1, 1999). Other solutions, such as microloans to farmers and targeting farms with well over 10 large animal units, were also rejected. REPP was designed as a first step of a national-scale plan to reduce pollution of the Baltic Sea from agriculture through considerably increasing the frequency of environmentally responsible practices among farmers.

The REPP Development Objective directly addressed the goals of the 1997 Country Assistance Strategy (CAS) for Poland. One of the goals in the CAS was to improve environmental quality through increased focus on non-point source pollution. The project was to facilitate progress towards meeting Poland's obligations under the Helsinki Convention to reduce pollution to the Baltic Sea, especially the non-point pollution from agriculture and rural settlements. The Baltic Sea Joint Comprehensive

Environmental Action Program, to which the project activities are directly linked, reflects these policies. At the same time, project activities aimed to assist in the process of integration with the European Union through increased compliance with its directives, especially the Nitrate Directive (non-compliance carries financial penalties or refusal of funds). The Project Development Objective was “to significantly increase the prevalence of environmentally responsible practices among eligible farms in target project areas”. The ultimate goal is to reduce discharge of organic matter, which is a major cause of environmental problems in the Baltic Sea. The project will help farmers develop environmentally responsible farm management plans and will fund the related environmental benefits from the practices and investments as well as farm equipment in some cases. While the farmers will receive some benefits from the practices and investments, most of the benefits will come from improved environmental quality of Polish surfaces and groundwater and the Baltic Sea (Project Appraisal Document, Report No.19868, November 4, 1990, p.2).

The project objective was a challenge because of institutional conditions in Poland at that time. Several institutions were involved: the Ministry of the Environment Protection, Natural Resources and Forestry (MEP) with NFEP, the Ministry of Agriculture and Food Economy (MAFE) and the Ministry of Finance (MOF); the representatives of the European Commission Delegation in Warsaw and the Office of European Integration added yet another dimension to project structure and the potential for achievement of the objective. There were seven cofinanciers, including EU Phare Large Scale Infrastructure Facility, Global Environment Facility (GEF), World Bank, Nordic Environment Finance Corporation (NEFCO), National Fund for Environmental Protection and Water Management (NFEP), the Government and the beneficiaries. Additionally, the project required a comprehensive action by MAFE and MEP which proved difficult due to differing perspectives on environment protection in agriculture. MAFE and MEP had to learn cooperation on the grounds of a new project and try to adjust their policies and practice accordingly to achieve the objective. It has to be noted that the Mid-Term Strategy for Agriculture assigned the responsibility for environmental protection in rural areas to MEP in 1998. As the loan guarantor, MOF preferred to see NFEP, a MEP agency, responsible for implementation of the State National Environmental Policy, as the Borrower. Thus the project design placed the responsibility of project implementation with NFEP which presented itself as an administrative challenge because of NFEP's structure.

Despite the limitations explained above, it is fair to say that the objective was clear and realistic. The two project components were designed appropriately to support the objective. Geographically, both components pertained to the same area. There was low risk that the farmers upon the completion of project investments would neglect the environmentally friendly practices because these practices were designed to be cost-effective for the farms and integrated with its functioning. Additionally, the objective aimed to coordinate other government programs and requirements with the intervention proposed by the project.

### *3.2 Revised Objective:*

The project objectives were not revised.

### *3.3 Original Components:*

The project included two components, *Farm Environmental Improvements* and *Outreach and Management*, which were directly related to achieving the objective. At the time of design they seemed adequate to the management and financial capacities of the implementing agency, however, at the time of implementation they required more effort than anticipated. Nonetheless, they were all completed with the results discussed below. The components included relevant lessons learned from other projects of that type in Poland and in the Baltic Sea region.

**Component:** Farm Environmental Improvements

**Cost:** estimated US\$13.8 million or 87.5% of total cost (this sum includes a planned farmers input

US\$4.6), actual US\$15.2 million (US\$6.2 million of farmers contribution).

**Short Description:** This component involved farm environmental improvements, environmental advice to eligible farmers and financial support for the recommended farm investments. This component comprised of three activities. Through the first subcomponent, *Operational Support and Training for Farmers* (estimated US\$0.9 million or 6.0% of total costs, actual US\$0.2 million), the Local Implementation Team (LIT) advisors provided agro-environmental advice in the aspects of Farm Management Plan (FMP) and Nutrient Management Plan (NMP), crop rotation, etc. through a series of training and individual advising. This activity reflected a lesson learned in previous projects that direct cooperation with farmers is essential in order for them to feel responsible for the environment in which their farms operate. Also, the benefits of farmers' experience were disseminated through local government and by word of mouth. The work of the advisors was coordinated with other local extension services, which further exposed the project outside the sphere of direct project activity. The second subcomponent, *Farm Environmental Investments* (US\$12.0 million or 75.7% of total costs, actual US\$13.8 million), enabled the financing and carrying out of facility investments proposed by the NMP in 952 farms in a very high quality way. The third activity, *Incremental Operating Costs* (US\$0.9 or 5.7% of total costs, actual US\$1.2 million), made the work of LITs possible.

**Component:** Outreach and Management

**Cost:** estimated US\$2.0 million or 12.5% of total cost, actual US\$2.8 million.

**Short Description:** The activities of this component, serving public outreach and project management, were the following. *Public Awareness* (US\$0.4 million or 2.6% of total cost, actual US\$ 0.3 million) was designed to raise awareness about agriculture and environment issues in Poland beyond the project areas and beyond the farm families. This activity attempted to educate society about the environmentally positive project results, as suggested by lessons learned from previous projects, by dissemination of project ideas by various means. *Monitoring* (US\$0.5 million or 3.2% of total cost, actual US\$0.14 million) of the project performance was to ensure that the project meets client needs in rural Poland and to suggest appropriate modifications. After the closing of the project, this activity is also designed to ensure that the environmental results of the project will be monitored in the long-term by competent state authority. The *Replication Strategy* activity (US\$0.1 million or 0.7% of total cost, actual US\$0.2 million) was designed to prepare a model for a national program of environment protection in rural areas based on project achievements. Within this subcomponent the NFEP, the Government and the Bank would decide at mid-term review whether to prepare the next phase of the program and, based on the decision, how to implement it. *Project Management* (US\$0.5 million or 2.9% of total cost, actual US\$0.72 million) subcomponent supported the PIU management of the project, while *Recurrent Costs* financed the operating costs of the PIU.

### 3.4 Revised Components:

The components were not revised.

### 3.5 Quality at Entry:

Quality at Entry was rated satisfactory. The project objective was consistent with the CAS goals and supported Government's priorities. At the same time, the objective was coherent with the World Bank safeguard policies.

The project design was thorough and it addressed the existing sector issues of reducing pollution in agriculture, cost-effective compliance with international requirements, strengthening of water management at the local level and cooperation with Regional Water Management Boards on project effects monitoring and developing farm management practices among eligible farmers. The key performance indicators were designed together with the project design and they were closely monitored throughout the project life, based on the Project Status Reports (PSRs) evidence. The indicators of outcome and output allowed continuous project progress supervision. The project also took into consideration the specific perspective of the social



group farmers represent by underlining the special relationship between the farmer and the advisor.

However, the project design assumed that the farmers to which it was addressed would have been exposed to similar projects, directly or indirectly. The the actual timeframe for project implementation was shortened by the learning time of a farmer who was never exposed to a similar activity. In the case of this project, the farmers were interested in the project before they were invited to participate and expressed their demand by taking a swift decision to partake in the undertaking. Although there were cases where farmers hesitated (mainly because they had to sign a bill of exchange), only a few farmers declined to participate and today they regret this decision. Such demand-driven flexible approach employed by the project not only facilitated the process of acquiring farmers to participate in the project, but also allowed further changes in project design: the project expanded its geographical coverage thus proving that the overall Learning and Innovation Loan (LIL) character of the project was appropriate in this mission.

Project design fostered ownership at the community level by involving farmers in the project preparation. The farmers participated in financing of the tanks on their property, either through contributions in kind, cash, or both. The local level authorities were also encouraged to provide support to LITs and they did so through access to office infrastructure and other practices, such as making the documents which were required to take administrative decisions available. Such actions greatly accelerated the project implementation.

The project assumed financing of the manure storing facility at the ratio level of 30/70 with an upper limit of US\$10,000. This means that the farmer financed up to 30% of the manure storing facility and the project financed up to 70%. The experience showed that the financing level could be at 55-60% which is the subsidy level proposed by the EU for similar activities, and the Economic Analysis, developed by the project, justified that public financial support may vary from 10% to 90%. The project also assumed that the equipment should be used commonly by groups of farmers. As the project showed, this preferred option was not easy to accept by the farmers but it was the only financially viable one in the current situation of the farmers and agriculture in Poland.

Initial problems included delays in receiving a loan guarantee. The delay was due to slow harmonization of the Polish law with EU legislation and lack of Polish regulation translating Law on Public Financing into operational practice. Also, there was a lack of consensus between MAFE and MEP on the choice of agency to lead the activities. The Bank saw MAFE as a leader in this undertaking due to the nature of the project, however MOF objected to Agency of Restructuring and Modernization of Agriculture (ARMA) as an implementation agency of MAFE. Such objection could have resulted from the fact that MAFE was not deeply interested in the project due to a lack of strategic thinking, especially in respect of the future role of extension services in agriculture. The level of project ownership appears to have been low in this Government agency. Thus the Borrower had to be changed and NFEP was invited to work with the Bank. NFEP demonstrated the good will to implement the project. However, it was not predisposed for such activity because it had never implemented a similar agriculture oriented project before. Additionally, its statute requires complicated decision-making procedures which sometimes caused approval bottlenecks and slowed down project implementation. The NFEP structures proved to be a limitation to smooth and speedy functioning of the Project Implementation Unit (PIU). Yet, although NFEP was not experienced in projects with multiple tender procedures, the established team was able to proceed with project elements due to earlier experiences of team members in project management, financial management and international bidding procedures. The responsibilities of PIU members were distributed properly, along provisions and procedures set by the Operational Handbook. Despite the success of this PIU, perhaps it would have been appropriate to have considered placing the PIU, once the decision that the project needs it had been taken, outside the jurisdiction of both the MAFE and MEP. For the future, it is worth considering whether the PIU

could be designed as an independent consulting unit outside of ministerial administration. Perhaps such a solution would have eliminated such delays.

The Steering Committee (SC) which supported the project with its expertise was a properly designed and a well balanced body. The MAFE, MEP as well as the MOF experts well matched the expertise of the representatives of the Committee of European Integration Office and the European Commission (EC) Delegation. The representation of the EU was especially interested in the practical aspects of project implementation in terms of the Nitrate Directive. The LITs, consisting of agro-environmental advisors trained by the project, were integral with PIU and played the role of observer to SC.

The strength of the project objective shows in the fact that it touched upon an important problem: lack of responsible and environmentally sound practices in agriculture adversely combined with lack of resources for such activities. To help the situation the project built upon the basic dependence in the modern countryside life, the symbiosis of a farmer and his advisor, and based its progress on their cooperation. This dependence, together with a previously obtained knowledge that a farmer would co-finance manure storing facility on his property, led to a solid and realistic project design. The assumptions about such cooperation and the possibilities of farmer co-financing were based on former interventions on the subject and suggest that previous experiences and findings were seriously taken into consideration. These experiences also suggested that facilities for storing liquid animal waste needed to be constructed by specialized contractors if they were to be effective. Yet previous projects did not elaborate a mechanism which would move the project from a demonstration stage to national scale implementation stage. The GEF grant specifically aimed at developing a tactic which could be replicated in Poland, the Baltic Sea region and Central and Eastern Europe. Earlier projects helped to break barriers and REPP was a fourth environmental pilot project of such nature in Poland. In other regions, where projects were not implemented before, the time allotted for project preparation needs to be extended to cover the period of psychological preparations and learning of project beneficiaries/participants, while larger funds have to follow. The assumption of the project that the region in which it is implemented is not “virgin” changes the project design requirements. To implement all elements of such project in previously unexposed areas, a substantial amount of additional work has to be included in the schedule.

#### **4. Achievement of Objective and Outputs**

##### *4.1 Outcome/achievement of objective:*

The project achieved its objective because it *significantly increased the prevalence of environmentally responsible practices among eligible farms in target project areas*, and it did so to a high degree. The project outcome can be rated as satisfactory.

Poland is now a member of the EU, yet the country is still working on improvements on its environmental standards. Currently, the farmers in the animal husbandry sector are obliged by Polish law (harmonized with the EU law) to possess manure storing facilities by 2008. Additional to the legal requirement of the EU, Poland has its own objectives, compatible with the current CAS. The objective is relevant also from the perspective of the Bank’s current environmental goals.

The manure storing facilities have been installed and are used continuously, which ensures sustainability of project effects in this aspect. Those farmers who have not yet had the chance to apply the slurry on their fields are, according to NMP, eagerly awaiting the anticipated savings on mineral fertilizers. Those who already saw the benefits are convinced about the effectiveness of their investments (such declaration was made by about 73% of farmers participating in the project), and in case of farm expansion,

they have been adding more tanks using EU pre-accession Special Accession Programme for Agriculture and Rural Development (SAPARD) funds. Thus physical, tangible outputs played an important role in understanding the processes which secure the intangible outcomes. Without manure tanks and pads available for demonstration, the idea of environment protection would not be as visible as it has become. Farmers are able to see now how much manure they do NOT let into the nearest creek, protecting their environment and the environment as a whole. They also realize that they can save on mineral fertilizers. This experience clearly shows that the physical aspect is intricately connected to the knowledge-gaining aspect of the project. Also the farmers' perception on project beneficiaries changed in the course of the project; now the farmers seem to understand that they are the environmental managers of their own surroundings. It is thus likely that the farmers will continue the environmentally friendly practices because of the proven cost-effectiveness and other benefits to the farm. It must be underlined that it was the advisor who helped the farmer to realize and understand all the benefits of the project. The trust relationship between the farmer and his advisor was used in the project to break the barrier of a "typical Polish farmers' mentality" which could be described as conservative, not progressive and distrustful. The chief reason for such thinking is the low level of farmers' education (farmers usually complete only a vocational school; a very small percentage of farmers graduate from agricultural universities) combined with a tradition to manage the farm "like the fathers did". This trust relationship, strengthened in the course of project implementation, allowed to demonstrate to the farmer that farm management does not have to go against tradition and that he does not need to learn only from his own mistakes, losing time and money – the advisor/extension agent, is there to help.

The project also had to break another barrier: according to the requirements of the project, farm equipment co-financed by the project could be operated by farmers associated into equipment using groups or producers groups, which proved to be a problematic practice because there continues to be a historically determined lack of desire to cooperate, especially in commune-type arrangements, and a lasting expectation that services of all kinds will be free. The groups were reluctant to pay one farmer to be the group's manager; similarly there were some problems with the maintenance and use fees. In most cases, however, problems were solved and in some cases the cooperation was exemplary and worth outside support.

The standards for implementation of similar project have not changed significantly since the time of this project's design. The output targets were met and exceeded. Additional savings allowed project geographical expansion and testing new approaches to local implementation arrangements. The SC, which provided an opinion on all project matters, extensively discussed the possibility of expanding the project to the Bug river catchment region. The options were to either put more resources into the existing regions of project operation or try to implement the project with changes in a fourth area. The second option, preferred by the WB, prevailed because of the advantage of testing a new administrative solution. From the perspective of time it seems to have been a good choice. At the same time, the discussion touched upon the issue of whether to expand construction and thus build more cheaply or to build less but more thoroughly. Since the farm technical standards had to be adjusted to the EU standards during the course of the project, the additional gain to the beneficiary has been the appropriate concentration of efforts and resources and a creation of a base which can be utilized in future undertakings. The project was extended once by a year due to the prolonged construction period caused by unexpectedly severe weather. The output targets were met, and they were met within the time envisaged, and even exceeded (see Annex I for details).

#### *4.2 Outputs by components:*

**Farm Environmental Improvements:** highly satisfactory. The project design appropriately fit the issues tackled by this component and its activities surpassed the expected outcome. This shows in the interest the activities generated among the beneficiaries in terms on knowledge-acquisition and the model implementation of physical outputs.

a. *Operational Support and Training for Farmers.* The project professionally prepared the advisors for work. Besides training, they received an Advisors Guide which contains merit information, most pertinent legal acts and standard contracts with the farmer. This Guide could be updated, yet the question remains as to who should update it. The advisors also had the Nutrient Management Plans (NMPs) and Farm Management Plans (FMPs) software which gave them the tools to facilitate a comprehensive look at a farm. Additionally, they were equipped with a laptop, cell phone and were reimbursed for expenses related to farm visits. It is worth mentioning that the usual budget of Osrodki Doradztwa Rolniczego - Extension Organization Ministry of Agriculture and Food Economy's (ODRs) for such activity placed under this category allowed an advisor the purchase of about 7 liters of gasoline per month so the possibilities of advisors participating in the project were incomparably greater. The cost of advisory services in the project was about US\$1,750 per month per advisor. The services were at a required, "normal" and at the same ideal level in the Polish reality. Nonetheless, these conditions enchanted the advisors as they were able to work as they should. The experience shows that the private advisory firm employed by the project had at their disposal not only qualified advisors but ones with project and often Western experience. A private firm was very operative, less weighted by administrative constraints of their home institutions. Overall, human capital (possibly strengthening Poland's institutional development) has been created and should be included in future operations; project management team has been educated and should be used for replication of the project in other regions. So far the expertise of the LIT advisors has been already used by the World Bank funded Distance Learning Course activity of Agriculture Pollution Control Forum.

The activities within this subcomponent included: working with farmers (informing about the project, advising and training to reduce non-point source pollution from their agricultural activity, preparing FMP and NMP incorporating environmental consideration, such as necessary investments, planning of buffer strips, and so on); coordination with MAFE (coordinating technical advice with the Ministry, involving ODR, local farmers' chambers and other farming organizations); involvement of the community. In general LIT advisors made almost 29,000 visits to participating farms (30 visits per farm on average) and provided with more than 28,000 hours of training. See Annex 10, Table D1 for detailed information on outputs of this component.

b. *Farm Environmental Investments.* The project was to invest in medium size farms, so called "family farms", with development perspectives, rather than in large or small farms. Large farms can usually afford financing of environmental activities related to agriculture, while small farms cannot. Yet small farms are not perceived as a future of today's European agriculture. At the same time, small farms (2-3 cows) do not produce enough manure to threaten the environment – the scale of nutrient concentration is low. Small farms are usually located in the South East mountainous region of Poland and are concentrated in compact villages; a separate tactic should be designed to manage non-point pollution of this kind. The activities of this component, supporting the physical objectives of the project, included construction of tanks and pads. The technology used in the project was professional and state of the art. It is not advisable that the farmer himself builds a tank if strict technical standards are to be met; he may provide work input into the project only through the construction of manure pad, still guided during construction and supervised by local certified civil works supervisor. The farmers who participated in the project constitute a group aware of their development possibilities and most of them are eager to use the external funds. The activities also included supervision of cooperation between farmer and contractor and support of investment activities by LITs. In the general project this component outputs are: construction of 952 manure tanks and 655 manure pads (which were developed as farmers contribution to the project), NMPs developed for 893 farms covering a total area of 23,295 ha which are implemented by 730 farmers on area of 17,819 ha. 749 farms obtained FMP, and more than 600 farmers organized into 34 farmers' groups were equipped with environment friendly equipment for agriculture production. To protect water bodies and streams located in

the project areas, buffer strips were developed on land of 41 communities where 500 thousand seedlings of trees and shrubs were planted according to plans prepared by these municipalities and consulted by the project. It is estimated that total nitrogen emissions from participating farms will be reduced by 800 tones *per annum* as a final result of the project. See Annex 10, Table D1 for detail information on outputs of this component.

c. *Incremental Operating Costs.* This subcomponent did not produce any specific outputs. See Annex 2 for discussion on costs.

**Outreach and Management:** Rating is satisfactory. This component was a complex mix of services to be carried out to the benefit of the project. Although some subcomponents did not perform as well as expected, the overall outcome is satisfactory. The weakness of this component stems from the time of subcomponent application rather than project design.

a. *Public Awareness.* It is difficult to assess the public awareness campaign efforts as fully satisfactorily. The outreach was to promote the issue of combating agricultural pollution outside the project areas, not the project itself. The public relations consultants realized during project implementation that perhaps they would need more time; this confusion resulted from the fact that the scope of their activities was not specifically determined. It may even be the result of the activity being implemented later in the project than it could have been. The PR consultants prepared a brochure for local leaders and prepared and distributed more than 2000 leaflets on manure pad construction, developed and published a calendar promoting Code of Good Agriculture Practices, opened a discussion list (the list comprised 30 persons, which is not a large number), organized meetings for local representatives and involved the Catholic Church. They provided an internet page, provided logistic support to organization of an international conference giving a forum for cross-country exchange of project experience, wrote a few press articles, delivered several TV and radio interviews but it does not seem that the message reached all potentially interested in the project ideas. This activity attempted to propagate sector policies. Yet, propagation of the idea is truly possible only when there is an intensive exchange of farmers between gminas, organizing training and seminars, production and dissemination of professional level materials, and most of all, when an example can be presented as a proof of project success.

b. *Monitoring.* This subcomponent includes project performance monitoring, social assessment (this element was to be used throughout the entire project operation as a baseline for other activities) and environmental monitoring. To ensure monitoring of the environmental results of the project, the following agreement has been elaborated. It has been decided that Voivodship Inspectorates of Environmental Protection - Wojewódzki Inspektorat Ochrony Środowiska (WIOS) will provide monitoring of the project environmental results for 3 years after the project completion in the 3 original project regions in exchange for lab equipment; the 4th, the Bug river region, is not included in environmental monitoring activities). After 3 years the equipment becomes a property of the WIOS if the agreement conditions are fulfilled.

As designed, the monitoring system consists of surface and groundwater measuring points (25 sampling and monitoring points located in the three original project areas, one small representative watershed in each) and flow meters on streams, from which samples are taken to perform standardized analysis of samples of surface and ground including, among others, compounds of nitrogen and phosphorus. The location of sampling points was decided on the basis of farms' concentration, hydrological conditions and the willingness of farmers to have the sampling points located on their farmyards or fields. Sampling and analyses are conducted by the three WIOSs on the basis of agreements signed with the NFEP. The environmental results of the project, in terms of measurable reduction of nitrogen compounds in ground water, will not be visible until a few years from now, 5 to 10 years. Monitoring of project results will be useful if the results are included in a broader database of environmental indicators (such data bases are

publicly available through WIOSs and WIOSs' publications) be further used in environment quality analysis and in new projects.

c. *Replication Strategy*. Economic assessment and replication strategy – these two evaluations were to be carried out separately but, surprisingly, there were no qualified candidates to perform the economic part; the call for tenders had to be repeated on a different basis. The economic assessment was first and foremost to provide information if the funds were placed properly, would the project be viable in the future, and at what level of subsidies to the farmer. The analysis of costs was not performed at the negotiations stage. See section *Net Present Value/Economic Rate of Return* for a more detailed discussion. The Replication Strategy is discussed later in this report.

d. *Project Management* component allocated coordination and monitoring activities to national level and implementation to local level. The SC to the project with representation of state administration was established at project preparation stage, made strategic decisions in regards with selection of project target areas, eligibility criteria for farms, provided advice and addressed issues reported by PIU as critical for project implementation or replication. PIU coordinated project implementation: established effective project management at local level including provision of relevant training for LITs, approved applications from farmers to be included in the project scheme in a timely manner, procured in a timely manner and thoroughly supervised civil works. Consulting firms responsible for development of public awareness, environmental monitoring design, social assessment and economic assessment studies and replication strategy were successfully contracted and guided through their activities. Comprehensive monitoring of project activities was possible thanks to the development and maintenance of MIS implemented by PIU. SC, PIU and LIT activities were supported by efficient communication.

e. *Recurrent Costs* subcomponent were not designed to produce outputs. See Annex 2 for cost discussion.

#### *4.3 Net Present Value/Economic rate of return:*

The costs incurred under the project were to facilitate providing gains for individual farms and a new experience for NFEP, as well as environmental protection in rural areas and the possibility to replicate good results. The economic impact of the project on a farm allowed determining the subsidy level for future projects reducing non-point pollution from agriculture. On a national level the project was designed to show the volume of reduction of a nitrate run-off from farms, improve the quality of water and help reduce the pollution of the Baltic Sea while supporting Poland's efforts in achieving its commitments under various international agreements.

Neither the NPV nor ERR were calculated for the project thus this report analyses the cost-effectiveness of the actions undertaken. Although REPP, being a pilot project, did not foresee cost-effectiveness as its main criterion, it proved cost effective within the estimated budget thanks to several procedural solutions. The successful tender procedures greatly decreased costs because the prospective contractors (in this case they were companies just entering the Polish market) fought for contracts and lowered their prices in some cases to only cover costs. Savings accrued thanks to this tender procedure allowed the project to expand into the fourth region. Similarly, a successful tender for buffer strip trees and shrubs permitted the purchase of a larger amount of seedlings than originally envisaged (according to the market research, seedlings were 5 to 10 times more expensive than later estimated by bidders who were interested in selling a larger amount of seedlings at a lower price rather than a smaller amount at a higher price). The project maintenance was cost effective, although it was higher than envisaged. The maintenance turned out to be 8.2% of investment cost as opposed to 1.6% calculated at appraisal (this is 5 times higher than at appraisal). However, higher costs were necessary to achieve the desired effects. It needs to be noted that these costs were incurred over a period of time longer than the actual investment period.

To determine whether the resources were used as effectively as possible to support the benefits, a *Cost Effectiveness Analysis of Nutrient Reduction through Improved Manure Management* has been performed. It examines the cost effectiveness of two project interventions related to nitrogen leakage reductions into the environment: (1) introduction of nature storing facilities (manure tanks and pads as well as slurry tanks), and (2) improvements in the timing of slurry application on cultivated fields. Cost effectiveness ratios were computed for each of the four project regions, Lomza/Ostroleka, Torun, Elblag and the Bug River Catchment Area, and for all regions together. The cost of averting the leakage of one kilogram of nitrogen is compared with the results in similar projects elsewhere and it proves that the cost effectiveness ratios achieved in REPP are well within the range. The cost of reducing nutrient leakages is calculated as the total cost incurred by the society to reduce the leakages from the project area over a period of 12 years, i.e. up to 2011. This period has been chosen to be consistent with a period used with reference ratios in the Chesapeake Basin. The estimated CE ratios vary between about USD 20.70/kg N and USD 24.77/kg N among the regions reflecting mainly differences in costs incurred, distribution of farm types that benefited from the project and soil characteristics. It should be noted, that these ratios somewhat underestimate the actual cost effectiveness of the project as they take into account only N reductions achieved through better storage of manure and improved application as fertilizer, but ignore the positive impact of other practices, such as buffer strip development, the cost of which is also included in the denominator of the CEs. Comparing these ratios with ratios achieved in the Chesapeake Basin of the USA, where there is a long term, coordinated effort to reduce nutrient pollution of the Chesapeake Bay, one can conclude that the Poland Rural Environmental Protection Project may be considered to be cost effective. The full analysis of the project cost-effectiveness is attached in Annex 3.

#### *4.4 Financial rate of return:*

The Financial Rate of Return was not calculated for this project. However, it was estimated that an average farmer would save US\$150-200 per year on the purchase of fertilizers. Since not all farmers had a chance to use the benefits of the project because their manure storing facilities were completed only this year, the savings remain a probable estimate.

#### *4.5 Institutional development impact:*

Overall institutional development impact of the project has been assessed as modest. This rating unifies separate specific ratings of institutions participating in the project; which are presented below.

The institutional development in terms of NFEP financial resource management is substantial. The project was cost-effective, although being a pilot program it was not necessarily designed to be so. Yet the Borrower was able to manage the resources made available by several different financiers to the fullest, making savings at some point and thus creating further possibilities for project expansion and impact. NFEP developed and effectively managed project specific Management Information System (MIS), a management tool to produce comprehensive reports providing information on physical outputs, procurement status and financial aspects including actual disbursements and disbursement prognosis for all project financing sources in a way satisfying all of project financiers as well Polish auditors. Equally importantly, Poland has developed its absorption capacity of EU funds, specially those for agro-environmental programs for which only farms with proper manure management are eligible. The project increased the ability of NFEP to use its human resources. Specialists employed in the project greatly expanded their professional knowledge about project management in general, project financial management, or international procurement methods which showed in a satisfactory project implementation progress, successful tenders and timely disbursements. The team was well able to adjust to stringent international requirements. These specialists have become even better fit to participate in similar high level undertakings. However, the agricultural knowledge-base of NFEP, strengthened by the project, might not

find much use in projects with similar substance because after EU accession all agriculture related projects will have to be financed through ARMA and NFEP will not play the role of implementing agency. The institutional development in terms of NFEP's ability to make use of its human and financial resources is substantial and in terms of future, post-EU accession agro-environmental projects is low.

Project experience, however, has transferred to ARMA with the sectoral operational program to utilize post-accession funds oriented on farms modernization. The operational program was drafted by MAFE, with a significant contribution of its representative being a member of SC. The document discusses program objective and sets expenditures qualified for structural funds along with results of accession negotiations between Poland and EU. Then presents eligibility, selection and technical criteria, application process, reporting procedures and monitoring indicators which were developed based on rural environmental project experience. During the lifetime of the project, MOE and MAFE worked on development of a Code of Good Agriculture Practice and developed legal framework and outlined requirements for nutrient management in agriculture. Admitting the importance of agriculture pollution control, MOE and MAFE drafted a Law on Fertilizers translating project experience into sections of both documents. Institutional development impact of MOE and MAFE has been modest.

The project was a very special experience for the LITs and especially for the advisors. Their services in the project were acquired based on the professional experience of institutions in which they were employed (through a tender procedure). Working with farmers on project-provided basis enabled the advisors to increase their professional qualifications by learning new approach and sophisticated techniques, strengthen the trust relationship with the local community of farmers (without which their work would be impossible) by frequent visits and personal involvement in their farm management, and participate in a local and national network of experts (such network was created during common training and work). As a result of the project, the advisors were able to perform their jobs as they should be carried out. They were supported throughout the project life with proper equipment, allowances and wages. Yet, with the end of their contract, some advisors returned to their previous jobs and they no longer have funds for farm visits and cannot give proper care to the farms. Farmers visited during the Implementation Completion report preparation were surprised and sad that the advisor, almost a family member, had stopped visiting so suddenly. These signals clearly indicate that the advisory services are needed and that the advising for this project finished too early. Other advisors found positions in agriculture-related employment but no longer advise the farms. The network of project advisors disintegrated due to lack of a clear strategy on how to use the wealth of their knowledge. Lack of appropriate funds is only a result of a non-existent system, not a cause of it. Although the LIT members strengthen the institutions in which they currently work with their skills, the overall institutional development in terms of agro-environmental advising is low. One should remember that the three LITs gathered about 20 people, 12 individuals represented state extension services of the total number of 4,500 state extension agents, and 2 leading ODRs out of 23 ODRs in the country.

## **5. Major Factors Affecting Implementation and Outcome**

### *5.1 Factors outside the control of government or implementing agency:*

The Bank was flexible in its approach to the initial stages of implementation especially that it was very pleased to see highly satisfactory progress. There was a slight delay in receiving funds from one of the co-financiers, EC's Phare Program but the situation was soon resolved, and resources contracted. GEF grant re-denomination procedures took a few months more than anticipated, but finally NFEP was able to disburse the extra resources received thanks to re-denomination of SDRs into USD before the Closing Date. Also, the tender procedures for the Economic Analysis had to be repeated due to lack of interest of technically responsive consultants, slightly delaying the implementation of these tasks. There was also a



delay because of the severe weather (early winter did not allow the commencement of construction), eventually causing a one year extension.

#### *5.2 Factors generally subject to government control:*

There were some difficulties at the initial stages of the project in designating the PIU due to a project ownership problem, which was low at MAFE, and MOF objections to ARMA involvement. Once these problems were sorted out, implementation proceeded smoothly, and the project enjoyed the support of MOF, MOE, MAFE, Committee of EU Integration Office through the SC, and the outcome was satisfactory.

#### *5.3 Factors generally subject to implementing agency control:*

The implementing agency was committed from the very beginning of the project and the PIU made sure that the project was well exposed. Project management was seriously applied; all project participants including LITs, the SC, farmers and others were informed about the project progress and their tasks on a professional level and timely basis. The NFEP's fiscal management allowed proper project implementation and use of project funds for eligible expenditure in accordance with project description with due attention to economy and efficiency. Although there were some problems with the reliable operation of MIS they were eventually solved thanks to the cooperative attitude of the PIU. The overall impact of its operations was positive, while staffing was appropriate. The staff occasionally used additional training, for example the procurement officer was trained in World Bank procurement procedures (5-week course at ILO, Turin, Italy). The beneficiaries (farmers) participated willingly and their input should be rated as highly satisfactory. NFEP made use of the opportunity to apply for grant re-denomination, and utilized the extra resources equivalent to about 2% of the initial grant amount for project purposes. These combined factors allowed the project to successfully reach its objective.

#### *5.4 Costs and financing:*

The loan and GEF grant were fully disbursed before the Closing Date, although disbursements experienced some delays in the initial phase of project implementation due to NFEP primary focus on contracting EU Phare resources. There were no significant changes in project costs. However, the project was plagued by shifts in the exchange rates, which were frequent and drastic. At the beginning of the project, these shifts influenced the project financing (EURO falling in relation to USD and PLN, then USD to PLN exchange rate falling dramatically) and since bulk of the disbursements took place during the time of largest changes, the situation was unstable. Once the exchange rate stabilized, the situation eased although NFEP had to spend more to accommodate for the difference between the amount contracted in USD and that paid in PLN (NFEP was able to pay thanks to its status of a large financing institution). Of course, the problems would have been eliminated if the funds had been in the currency of the country, which additionally allows the cost comparison. During the life of the project, the differences were not great. The savings, which the project generated, were not due to favorable exchange rates which did occur at some point, but primarily due to successful tenders.

During the life of the project the funds were re-allocated among the expenditure categories. This was due to the fact that LIT costs proved to be higher than expected because the rate of inflation was not taken into account (during the project design the inflation was 10%, dropped to 5% and then to 3% so the wage contracts had to be adjusted). The additional funds came from the "unallocated" category. The project scope was changed during the course of the project. Savings were generated from properly and competitively executed tender procedures and the project was able to use them to expand its geographical coverage. Investments only, costs much simpler – and cheaper. In addition a new expenditure category was introduced into the GEF grant agreement to allow the financing to purchase seedlings to implement buffer strips. Again, resources from the unallocated category were utilized for this purpose.

The loan and the grant were disbursed using the traditional disbursement method based on Statement of Expenditures (SOEs). The Management Information System (MIS) implemented by NFEP and PIU especially for the project was an extremely useful tool although its implementation required significant recourses in terms of time, money and staff involvement. As it was required in the loan and grant agreements; signed in the period when the World Bank introduced Loan Administration Change Initiative (LACI); NFEP acquired and implemented MIS including financial, physical output and procurement/contract monitoring data and able to produce quarterly Project Management Reports (PMRs) ready for report based disbursement. Management of NFEP and PIU paid special attention and provided substantive efforts in order to fulfill these financial management requirements. However the designing and implementation of such complex MIS was not an easy tasks especially in the context of planned changes of the overall NFEP management information system. Since the World Bank policy does not envisage the provision of ready project software to the PIUs the entire system had to be designed from scratch based on the requirements which were challenging. In practice the MIS was designed, tested and improved even during the implementation since many aspects and recommendations came out from PIU financial specialist operating the MIS on daily basis. Some function were not included in the system e.g. automatic generation of SOEs, import of data from NFEP accounting system. As a result the project did not fully utilize the advantages of the MIS in practice the project still required manual entering and reconciliation of data in the reports and system. Additionally although the World Bank suggested to switch to report based disbursement NFEP and PIU decided to stay with the already tested and familiarized traditional disbursement method since the potential benefits were not so obvious.

The World Bank team recognized NFEP and PIU attitude and efforts towards building effective financial management of the project as highly satisfactory. In the course of the project implementation the World Bank performed a worldwide review of the client feedback on LACI. As a result the World Bank changed its approach replacing its fixed PMRs formats with an approach that allows for more flexible reporting formats derived if possible from existing IT/accounting systems.

## **6. Sustainability**

### *6.1 Rationale for sustainability rating:*

It is likely that the farmers will continue the use the environmentally responsible practices learned during the course of the project. This is so because manure storing tanks and pads were properly constructed and unless the farmer significantly increases the number of farm animals, the facilities will be sufficient for storage. Also, about 83% of farms (on more than 77% of arable land covered by NMP) use NMP and FMP, according to PIU. So, there is the likelihood that they will continue to do so, provided they have access to advising/extension services specially if any NMP upgrade or modification are needed due to restructuring of production or initiation of new production activities. Farmers participating in the project were subject of intensive individual and group training in addition to accessibility of advice of extension agents. Farmers participating in the project formally committed themselves to continue environmentally responsible farm management practices.

The sustainability of the project concept greatly depends on farmer's access to professional advice. Advisory services, being an essential, integral part of success in agriculture, provide a region-specific and farm-specific diagnosis of farm needs. In the course of the project, the advisory services have become essential to the functioning of the farm. As a result, the farmers not only saw the scope of the advisor's capabilities but also realized advisor's significance for the farm. Conscious advising on a larger scale would promote, as it did for the project participants, independent thinking in farm economics and there are many systems which could be used to elaborate a system fitting the Polish reality. It seems that a

paid advisory system would work in Poland because the awareness that advising opens doors to other levels of farm management has been awakened in regions of similar projects operation. The state counterargument that extension services should not be only private might of course be that such services are a form of control over a state agriculture policy. One has to inquire, however, whether such policy is firmly in place in Poland. The fact is that the state is not able to carry the financial burden of maintenance of such centers and they become administratively rigid, useless, and unappreciated formations while the job of the advisors becomes an office occupation. The creation of LIT proved that there is human potential in the local centers of agricultural advising which is worth the investment. The Polish farmer is not likely to seek and find advice outside of these local centers. For example, FMP and NMP are available only from the advisors who are also a source of information about much more basic farmer knowledge, such as the Code of Good Agricultural Practice. This document should be known to every farmer, but it is not and it remains insufficient due to inconsistencies of its merit content (there are no immediate plans to improve it). The Code should be obligatory in those areas which are sensitive for environmental protection. Unfortunately, the Code demonstrates a lack of real cooperation between theory and practice, i.e. scientists and farmers), only the advisor clarifies its content. One should not expect positive results in the development of the Polish agriculture if the extension service is not improved and properly financed. Additionally, despite the fact that much money was spent on extension services, there continues to be little interest at the ministerial level in using former experience in working on a proper system. In the past MAFE demonstrated little interest in the achievements of other successful interventions. The example of a Turosl project shows that a totally backward area can be converted into an excellently prospering farm area where production rose 10 times. This project did not seem to have raised enough interest at the Ministry of Agriculture to continue its achievements in terms of promotion of importance of extension services to farmers.

The project's largest long-term gain is the fact that investment has been carried out, as a result of which technical norms have been developed. The appropriate subsidy level has been determined to be at 55-60% (EA shows 10-90%) of investment cost. ARMA also has been developing several programs treating the issues touched upon by the project. However, lack of a coherent Government system of extension services might hamper success of future projects of this kind. Additionally, there is no official way to transfer knowledge of this kind project implementation to ARMA. Such a transfer may be visible in the programs attempting to utilize structural funds through the Sectoral Operational Programs drafted by MARD (Ministry of Agriculture and Rural Development, as it is called today) to utilize structural funds. According to the information provided by NFEP (NFEP note about the preparations to use the EU Structural Funds, March 30, 2004, p.1), ARMA has used materials related to REPP and perhaps will also utilize the NFEP document summing up its experience. For details see NFEP summary of the project and its achievements in Annex 10.

In terms of economic, technical, financial and environmental viability of the project, several issues have to be mentioned. Communal use of agricultural machinery is the best known way to lower costs of the farm; although such machinery use has been widely accepted in the end, distrust toward this method exists because of its resemblance to communist era arrangements. The project and the Replication Strategy have placed an emphasis on producers groups which are encouraged due to the economic advantages they present and the cooperation they promote. Technically, the facilities have been constructed using the best available technology and future projects have an excellent base to build upon, also because the project helped in the emergence of relevant professional firms. The issues of the environment will remain important for Poland because of its own laws and the obligation toward the EU. In terms of financial viability, the cost of investment in manure storing facilities in individual small and medium farms well exceeds their financial possibilities if no external support is considered. Only the few "agricultural magnates" could afford such facilities without outside support. Therefore, there is no possibility for the project ideas to be

developed beyond the project financial support without Government subsidies to physical investments and investments into the system of modern and professional extension services, while level of O&M costs is affordable to medium, family farms. The concept of public support follows solutions implemented in EU countries including structural funds option. Public support in this case reflect public compensation to farmers for adjusting intensity of production which secures benefits to society by reducing burden of nutrient pollution load discharged into environment.

The Social Assessment and other knowledge about the farmer lifestyle demonstrate that information reaches the farmer best through a trusted venue, such as the *soltys* or the advisor. The information is further confirmed by an example which can be demonstrated to farmers. Thus explaining new solutions, including environmental ones, becomes a responsibility of the local authority. Such responsibility grows to be paramount in a situation when in the farmer's perspective the importance of environmental protection diminishes together with his deteriorating living conditions. In times of diminished investment local authorities should take care of keeping up the environmental awareness. In REPP, *gminas* were extremely interested in the undertaking and were usually helpful. The local officials helped in faster acquiring of construction permits and other necessary documentation, such as maps, etc. The fact that the advisors, although local, were associated with a project "coming from the capital" might have facilitated passage through the administrative maze. *Gminas*, and *powiats* in the Bug region, also demonstrated good will to give own resources (rooms, phone access, geotechnical works, construction inspectors). This commitment is based on the high local ownership of the project; in most cases, the representatives of local government such as the *wójt* were proud members of the community and extended their full support to the cause. They also believed that grant- based funding, once offered, will be available again.

The incentive for participants to sustain the project results is an economic gain. A more cost-effective operation of a farm thanks to savings on fertilizer is the best example of an economic incentive. Another incentive has been the EU requirement that each milk-producing and each pork-producing farm has to have an appropriate certificate of food safety. For milk producing farms, the possession of the certificate constitutes not only a permit for operation but also results an increased sales opportunity: better prices for better quality milk (similarly, for pork farms). Through continuing incentives the project proved to be a good investment into the future development of a farm.

#### 6.2 *Transition arrangement to regular operations:*

A well balanced Replication Strategy, as proposed by a consultant, is a comprehensive approach to a farm. It should incorporate advisory services before, during, and after the pro-ecological investments, financial aid for manure storing facilities, financial aid for pro-ecological equipment for common use have been completed (emphasis on NMP and the Code of Good Agricultural Practice, at least for a year and a half after the project completion). To be replicable outside of areas where the project was carried out, these valid assumptions must be placed in an administrative framework of the country, and correspond with the widely understood capacity of the implementing agency. The Strategy must fulfill legal requirements on the local and government levels and accept the limitations stemming from such legal provisions.

The Replication Strategy produced within the project presents a perfect strategy to replicate the project activities as implemented by NFEP onto the regions selected through the strategy. Yet it does not offer a concept for the reproduction of project ideas. The Replication Strategy, as proposed at the moment, provides a step-by-step guide on how to implement in conditions prevalent before the EU accession without giving solutions for the period after accession. The above-mentioned flaw in understanding what the Replication Strategy is (it should replicate the idea, not the process), poses difficulty in deeming it a successful output of the project. The approach of replicating a project resulted in several improper conclusions about the organizational arrangements in future projects. The most important is that the

Strategy assumes that NFEP will implement future projects. However, NFEP cannot manage any future projects related to agriculture because as of the EU accession, all funds directed to action in agriculture have to be implemented by ARMA. When this first condition is fulfilled, various administrative steps proposed by the Strategy are no longer valid. Perhaps, if the Strategy had been written later, it would not have reflected the pre-accession confusion Poland experienced. The Strategy contains important comments about tank construction and raised a concept crucial to the success of such projects, namely agro-environmental advising. It would be beneficial to rework the Strategy so it reflects the project ideas and the role of an implementing agency without naming the agent. Additionally, the Strategy should be re-packaged in a manner absorbable by higher level administration agencies so its results may be disseminated.

The Replication Strategy *in its current form* is considered by NFEP a transition arrangement for regular operation. The presented strategy had *raison d'être* until May 1, 2004. The allocation of PLN 18 million into additional regions in Poland until the accession into the EU was planned and discussed already in February 2003. Finally total allocation of PLN 6.2 million was made by NFEP which mobilized about PLN 9.8 million of resources from Regional Environmental Funds in six additional regions during 2003 and 2004. "The proposed project expansion should be completed by May 1, 2004" (please see Aide Memoire from the February 2003 supervisory mission), because already then it was known that ARMA would provide support for farm investments after accession by channeling EU structural funds. In terms of project continuation, contract signing in three other regions has been accepted by the NFEP Management Board. These contracts are compatible with the rules of SOP (Sectoral Operation Programs) and will result in less than a hundred tanks. However, it is important that, similarly to the project, they are to inform about ways to protect the environment from the negative effects of agricultural activity and to demonstrate the advantages of tank possession. As mentioned earlier, the Replication Strategy indicated the regions so this project is to be implemented according to the Strategy. The currently implemented project based on REPP will use public funds from NFEP and the three Voivodship Funds for Environmental Protection. On the one hand, the use of local public funds while the EU funds will have to be used anyway seems a waste of public money. On the other hand, the NFEP has in this way the possibility to implement the project very similarly to how it was implemented in REPP. The long-term results of project continuation through the cooperation with the Voivodship Funds remain questionable while ARMA shall be the only implementing agency in agriculture; how will its development benefit from the current NFEP undertaking? One has to note that the project as proposed by NFEP would have had to be at least contracted if not completed by Poland's accession to the European Union on May 1, 2004. Perhaps the reason for such decision is that this is the last moment for NFEP to continue a successful project, while the implementation capacity of ARMA in projects such as REPP is not known. One has to remember, however, that the team which worked on REPP no longer exists and its members have been shifted to other departments after the closure of project operations. One should consider whether NFEP is using the human resources it produced for the project.

## **7. Bank and Borrower Performance**

### **Bank**

#### *7.1 Lending:*

The Bank lending performance is satisfactory. This Bank loan was a response to the need of the Borrower in the field of environment protection in agriculture and was built upon previous experiences of the Borrower with similar undertakings. The Bank suggested a demand-driven flexible approach which proved an excellent choice. The project, consistent with Government priorities and Country Assistance Strategy, was thoroughly prepared and its components adequately addressed the priority sector issues identified at the inception phase. The project was prepared with the professional assistance from the Bank differentiated group of experts and the Bank's assistance can be described as very helpful during the

preparation and appraisal. However, the objective, as expressed through the project's components, was only just adequate for the Borrower's implementation capacity, so the Borrower (the implementation agency) had to intensify efforts to achieve the objective, which it did successfully. The project's closing date was extended, which did not require neither project restructuring nor changing objectives. The project was appropriately supported by the Bank's office in Poland as well as headquarters, which positively affected its implementation. The Bank provided appropriate support to the forming PIU, although some expressed a wish that the replies to inquiries could have been a bit swifter at the beginning of Bank and Borrower cooperation.

#### *7.2 Supervision:*

The supervision performance by the Bank was satisfactory. The Borrower sees the cooperation with the Bank as constructive and fruitful because it was professional, cooperative, fast, direct and to the point. During implementation, the Bank addressed the very few problems with implementation and development impact in a timely fashion. Especially worth noting is the Bank's proper behavior in relation to financial aspects of project management. The Bank paid particular attention to fiduciary aspects of the Project to ensure appropriate financial management. Audits were performed regularly and the evaluation of the financial management by the PIU continuously added to the quality of project implementation. As a result, the financial progress has been well documented. The Bank has been flexible in expanding the geographical coverage of the project and extensively offered its advice and opinion backed by experience in similar cases.

In terms of expertise, the turnover of the Bank staff responsible for the project was not very high thus the possibility to develop a stronger working relationship with the Borrower was utilized. The expert level of the Bank consultants supervising the project was generally high which is especially visible in the quality of project design. Bank supervision resources were regular over the life of the project. Supervision took place every 6 months on average. Supervision reporting of the project has been even and of high quality; formal documentation of supervision is complete.

#### *7.3 Overall Bank performance:*

The overall Bank performance is satisfactory.

### **Borrower**

#### *7.4 Preparation:*

The performance of the Borrower during the preparation stage was satisfactory. The Borrower was well prepared to discuss the project nuances during the preparatory stage, as the Borrower was very interested in implementing this project. The Borrower offered all possible expertise available at the time. The Borrower performance in the first half of the project was highly satisfactory while it later declined. The initial problem with choosing the implementation agency was quickly solved and the NFEP, although lacking somewhat the implementation capacity due to its nature, performed its function successfully.

#### *7.5 Government implementation performance:*

Government had initial difficulty assigning the Borrower as there were discrepancies regarding which ministry would preside over the project implementation. The PIU was the nest for project ownership; both MAFE and MEP slowly warmed up to project ideas displaying little project ownership on the beginning of project implementation. Even today, the policies of both Ministries are not constructed to complement each other; one could even say that they tend to be rivals. Regardless of this problem, the Government Implementation Performance was satisfactory.

#### *7.6 Implementing Agency:*

The implementing agency, NFEP, played a very positive role in the project; it is partially thanks to

the commitment of the PIU that the project achieved such good results in the field. The professionalism of PIU is to be particularly noted. Despite some bottlenecks for approvals due to the structure of NFEP, the PIU team was able to carry out the project without major delays. The cooperation with the Bank was fruitful. The changes at the ministerial level did not hamper the project implementation perhaps because the PIU remained almost unchanged throughout the project life with core PIU staff - project director, financial officer and project engineer remaining unaffected. The cohesiveness of the PIU carried it through the potential problems with changes at higher administrative levels. In addition, PIU initiated project geographical expansion in one more region during the lifetime of the project, creatively proposed testing of other option of providing advice and support to beneficiary farmers, and effectively advocated for implementation of both. Even the PIU members had previous experience with international projects in varying degree (also outside of NFEP) which accelerated the necessary training, the team grew to be knowledgeable, effective and responsible adding value to overall institutional capacity of NFEP and its ability to manage similar projects in the future. The Borrower learned to responsibly comply with project agreements and covenants which improved the level of achieved objectives. Its performance was highly satisfactory.

#### *7.7 Overall Borrower performance:*

The overall performance of the Borrower is satisfactory.

## **8. Lessons Learned**

- 1. Defining the subsidy level not only describes the cost-effectiveness of a project but also allows measuring the scale of necessary future intervention.** In cases such as this one where it is obvious that the project will not sustain itself financially without state support, it is necessary to define the level of support needed. Possibly this level should be kept at a minimum to encourage farmers to engage their in contributions in kind - which seems to be preferred option, or in cash. It is crucial to provide society with a clear justification that public support is needed to obtain public benefit.
- 2. Politicization of project procedures should be minimized.** There needs to be a detailed discussion on the form of the implementing agency for a given project. Should such an agency be necessary, a unit outside of the Ministry's administrative constraints should be considered. That way, the PIU becomes a team of technical consultants rather than politically involved Ministry employees.
- 3. The project confirmed a deep necessity for the improvement of extension services in Poland.** These services are seriously underdeveloped making progress of Polish agriculture questionable. It seems that the start of a discussion on modernizing extension services cannot take place without a sound discussion on development of funding mechanism of such activities.
- 4. Privately managed advisory firms are more effective than state ones.** Similarly, the experience of LIT showed that team members independent of central institutions such as a Ministry perform their job better because they are not weighted by the administrative constraints of their home institutions.
- 5. Previous exposure to similar interventions influences project progress.**
- 6. Flexibility of a demand-driven approach has a positive impact on project outcomes.**
- 7. Convincing farmers about the necessity of certain technological solutions is possible through displaying a demonstration farm on the local scale.** The farmer has to see that improvements are possible in his area, not in abstract places abroad. Such demonstrations awaken interest and hope that development is possible making the propagation of the idea a success.
- 8. It would be beneficial to encourage farmers to gather in groups to lower costs through joint tender procedures.** Use of the tender procedure is the only way to assure cost-effectiveness of purchases for a project. The particularly low cost for construction of of manure tanks was due to the fact that the companies participating in the tender were trying to enter the market and made their offers really competitive, in some cases even below costs.

**9. Gathering farmers into producers and equipment-using groups is financially beneficial to them.** This proven concept needs to be supported with examples presented to the farmers as they are not easy to convince.

10. To assure sustainability, **projects should consider designing a mechanism to transfer the experience of the project management into other body which may implement these projects.**

11. **Implementation of MIS.** Development of project specific MIS requires allocation of significant resources. In the future, if possible, the system should be based on the existing systems allowing for flexible utilization and encompassing required and useful functions to avoid manual checks and additional staff work during the project implementation.

## **9. Partner Comments**

*(a) Borrower/implementing agency:*

Please see Annex 10 for Borrower comments.

*(b) Cofinanciers:*

None

*(c) Other partners (NGOs/private sector):*

None

## **10. Additional Information**

It may be noted and gratefully acknowledged, that GEF involvement and its funding allowed to develop and implement demonstration of replicable mechanism to reduce agriculture non-point source pollution load discharged into the Baltic Sea, and contributed significantly to scaling-up demonstration investments in farm improvement to achieve these reductions. GEF has undertaken a risk to finance activities which have not been experimented in such a scope and such a scale elsewhere before. Activities funded by the GEF grant covered a significant portion of tank construction costs, the entire task for the development of buffer strips, and purchase of equipment for farmers. The development of buffer strips encouraged specially involvement of communities through careful preparation of buffer strips design, inclusion of them into local zoning plans, and then in selection of appropriate trees and shrubs species. Co-financing for the purchase of equipment revitalized the idea of cooperative farmers' work.



## Annex 1. Key Performance Indicators/Log Frame Matrix

### Component 1: Farm Environmental Improvements

Component Description:	This component involved farm environmental improvements, environmental advice to eligible farmers for the recommended farm investments.
Expected cost:	US\$13.8 million of which US\$1.5 from Bank loan
Actual cost:	US\$ 15.2 (US\$4.6 million and EUR3.5 million) of which US\$1.125 from Bank loan, US\$ 0.66 million from government funding and US\$ 7.2 million from co-financiers. In-kind and cash contribution received from participants to US\$ 6.2 million.

Objective and description	Outputs Expected	Outputs Achieved	Outcomes/Impacts Expected
Subcomponent A: <i>Operational Support and Training for Farmers</i>			
To support advice and training for farmers to reduce non-point pollution from agriculture. LIT provided agro-environmental advice in aspects of Farm Management Plan (FMP) and Nutrient Management Plan (NMP), crop rotation, etc. through a series of training and individual advising. This was done in coordination with extension agents and MAFE. The local community was extensively involved. Results measured by Project MIS, Social Assessment, Economic Assessment.  THIS OBJECTIVE WAS MET WITH DISTINCTION.	n/a	n/a	<b>KEY PERFORMANCE INDICATOR:</b> High percentage of participating farmers implementing NMP properly two years after joining the project. The expected percentage was to be 50% in CY (Calendar Year) 01 and CY 02.
	n/a	n/a	<b>KEY PERFORMANCE INDICATOR:</b> High percentage of participating farmers aware of financial impacts of adopting environmentally-responsible practices. The expected percentage among interviewed farmers is to be 50% in CY 01 and CY 02.
Subcomponent B: <i>Farm</i>			

<i>Environmental Investments</i>			
To finance and implement facility investments proposed by the NMP in selected farms. Results measured by MIS, LIT Investment Completion Reports, Social Assessment.  THIS OBJECTIVE WAS MET WITH DISTINCTION.	NMP to be developed in 3,250 ha in CY 00; 5,200 ha in CY 01; and 3,250 ha in CY 02.	23,295 ha for the two years	n/a
	Number of farms that have built, bough, or secured access to recommended investments and equipment: 264 in CY 00, 422 in CY 01 and 369 in CY 02.	952 of total 952 farms implemented slurry tanks, which is 100%. 672 of total 952 farms implemented manure pads, which is 70%. 125 of total 952 farms purchased appropriate equipment, which is 13%.	n/a
	Percentage of participating farms meeting technical performance standards: 70% for CY 00 through CY 02.	76.7%	n/a

## Component 2: Outreach and Management

Component Description:	This component supports complementary measures for increased awareness of the importance of agriculture, monitoring, a replication strategy and project management.
Expected cost:	US\$ 2.0 million of which US\$ 1.0 from Bank loan
Actual cost:	US\$ 2.5 million of which US\$ 1.375 from Bank loan, US\$ 1.15 from counterpart funding

Objective and description; Measuring device	Outputs Expected	Outputs Achieved	Outcomes/Impacts Expected
Subcomponent A: <i>Public Awareness</i>			
To raise awareness about agriculture and environment issues in Poland beyond project areas and beyond farm families – through educating about the environmentally positive project results by dissemination of project ideas by various means. Results measured through Public Awareness surveys and Social Assessment.  THIS OBJECTIVE WAS MET PARTIALLY.	n/a	n/a	<b>KEY PERFORMANCE INDICATOR:</b> Increased knowledge of non-participating farmers of the environmental issues in agriculture and of the potentially available assistance.
Subcomponent B: <i>Monitoring</i>			
To ensure that project performance meets client needs in rural Poland and to suggest appropriate modifications. After the project closing, this activity is also to ensure that the environmental results of the project will be monitored in the long-term. Results measured through Social Assessment.  THIS OBJECTIVE WAS MET.	n/a	n/a	<b>KEY PERFORMANCE INDICATOR:</b> High satisfaction rates among participating farmers. 75% of participating farmers were to be satisfied with investments in CY 00 through CY 02: 60% of participating farmers were to be satisfied with the advisory services in CY 00 through CY 02.
	Development of <i>Social Assessment</i> measuring project social needs and responses.	This document has been prepared.	n/a
	n/a	n/a	Environmental monitoring will be undertaken through design, development

			(training for specialists, data collection, lab tests and intercalibration, quality assurance, reporting) and transfer of the Environmental Monitoring System (the technical and financial responsibility will be transferred to local/national authorities).
Subcomponent C: <i>Replication Strategy</i>			
To prepare a model for a national program of environment protection in rural areas based on project achievements. This subcomponent also included the preparation of Economic Assessment.  THIS OBJECTIVE WAS MET.	A <i>Replication Strategy</i> designed on the basis of project implementation experience with appropriate modifications.	This document has been prepared.	n/a
	A document entitled <i>Economic Assessment</i> which discusses the economic underpinnings of the project and suggests the subsidy level for future operations.	This document has been prepared.	n/a
	n/a	n/a	Cost-effectiveness of project relative to similar projects in other countries as projected in Economic Assessment.
Subcomponent D: <i>Project</i>			

<i>Management</i>			
To successfully manage a high class project. Results measured by LIT and PIU quarterly progress reports and Bank reporting.  THIS OBJECTIVE WAS MET.	n/a	n/a	PIU and LIT develop and meet administrative performance standards, cooperate with SC.

There were 6 general activities in total, of which:

- 2 met their objectives with distinction
- 3 met their objectives
- 1 partially met their objectives
- 0 did not meet their objectives

## Annex 2. Project Costs and Financing

### Project Cost by Component (in US\$ million equivalent)

Component	Appraisal Estimate US\$ million	Actual/Latest Estimate US\$ million	Percentage of Appraisal
I. Farm environmental improvements Operational Support and Training Farm Environmental Investment Incremental Operating Costs	13.80	15.20	110
II. Outreach and Management Public Awareness Monitoring Replication Strategy Project Management Recurrent Costs	2.00	2.80	140
<b>Total Baseline Cost</b>	15.80	18.00	
<b>Total Project Costs</b>	15.80	18.00	
<b>Total Financing Required</b>	15.80	18.00	

### Project Costs by Procurement Arrangements (Appraisal Estimate) (US\$ million equivalent)

Expenditure Category	Procurement Method <sup>1</sup>			N.B.F.	Total Cost
	ICB	NCB	Other <sup>2</sup>		
<b>1. Works</b>	0.00 (0.00)	3.14 (3.12)	0.03 (0.00)	8.02 (0.00)	11.19 (3.12)
<b>2. Goods</b>	0.00 (0.00)	0.00 (0.00)	0.96 (0.52)	0.09 (0.00)	1.05 (0.52)
<b>3. Services</b>	0.00 (0.00)	0.00 (0.00)	1.76 (1.35)	0.41 (0.00)	2.17 (1.35)
<b>4. Miscellaneous</b>	0.00 (0.00)	0.00 (0.00)	0.92 (0.48)	0.46 (0.00)	1.38 (0.48)
<b>5. Miscellaneous</b>	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
<b>6. Miscellaneous</b>	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
<b>Total</b>	0.00 (0.00)	3.14 (3.12)	3.67 (2.35)	8.98 (0.00)	15.79 (5.47)

### Project Costs by Procurement Arrangements (Actual/Latest Estimate) (US\$ million equivalent)

Expenditure Category	Procurement Method <sup>1</sup>			N.B.F.	Total Cost
	ICB	NCB	Other <sup>2</sup>		
<b>1. Works</b>	2.89 (2.89)	4.13 (3.12)	0.11 (0.11)	6.81 (0.00)	13.94 (6.12)

<b>2. Goods</b>			0.68	0.37	1.05
	(0.00)	()	(0.68)	(0.00)	(0.68)
<b>3. Services</b>			0.10	0.00	0.10
	(0.00)	()	(1.35)	(0.00)	(1.35)
<b>4. Miscellaneous</b>	0.00		1.69	1.20	2.89
	(0.00)	(0.00)	(1.69)	(0.00)	(1.69)
<b>5. Miscellaneous</b>	0.00	0.00	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
<b>6. Miscellaneous</b>	0.00	0.00	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
<b>Total</b>	2.89	4.13	2.58	8.38	17.98
	(2.89)	(3.12)	(3.83)	(0.00)	(9.84)

<sup>1/</sup> Figures in parenthesis are the amounts to be financed by the Bank Loan. All costs include contingencies.

<sup>2/</sup> Includes civil works and goods to be procured through national shopping, consulting services, services of contracted staff of the project management office, training, technical assistance services, and incremental operating costs related to (i) managing the project, and (ii) re-lending project funds to local government units.

#### Project Financing by Component (in US\$ million equivalent)

Component	Appraisal Estimate			Actual/Latest Estimate			Percentage of Appraisal		
	Bank	Govt.	CoF.	Bank	Govt.	CoF.	Bank	Govt.	CoF.
<b>I. Farm Environmental Improvements, incl.</b>	1.50	0.60	7.60	1.13	0.66	7.20	75.3	110.0	94.7
-- Operational Support and Training	0.50	0.10		0.10	0.02		20.0	20.0	
-- Farm Environmental Investment	0.50	0.40	7.60	0.41	0.50	7.20	82.0	125.0	94.7
-- Incremental Operating Costs	0.50	0.10		0.62	0.14		124.0	140.0	
<b>II. Outreach and Management</b>	1.00	1.02	0.00	1.38	1.15	0.00	138.0	112.7	0.0
-- Public Awareness	0.30	0.07		0.32	0.07	0.11	106.7	100.0	
-- Monitoring	0.40	0.09		0.14	0.03	0.35	35.0	33.3	
-- Replication Strategy	0.10	0.02		0.20	0.07	0.20	200.0	350.0	
-- Project Management	0.20	0.04		0.72	0.15	0.36	360.0	375.0	
-- Recurrent Costs	0.00	0.83			0.83		0.0	100.0	
<b>TOTAL</b>	2.50	1.62	7.60	2.50	1.81	7.20	100.0	111.7	94.7

Amount of US\$ 0.41 million recorded as Bank's actual financing of Farm Environmental Investment includes US\$50,000 and EUR 48,000.

The Economic Assessment and Replication Strategy were developed under the same component, thus the sum is doubled.

### Annex 3. Economic Costs and Benefits

Ms. Tijen Arin, Economist, ECSSD, is the author of the below analysis.

#### *Introduction*

The analysis aims at examining the cost effectiveness (CE) of reductions of nitrogen leakage into the environment that were achieved in the project regions as a result of two main interventions: The introduction of manure tanks, manure pads and slurry tanks; and improvements in the timing of slurry application on cultivated fields (the analysis does not include buffer strips and other measures that reduce nutrient flows to water bodies, due to lack of data on such reductions). Cost effectiveness ratios the cost of averting the leakage of one kilogram of nitrogen were computed for each of the four project regions, Lomza/Ostroleka, Torun, Elblag and the Bug River Catchment Area. The ratios are compared with the results achieved in the Chesapeake Program in the United States which had a similar objective of reducing nutrient pollution of a near closed water body, the Chesapeake Bay.

The analysis consists of two main parts. Estimating nitrogen losses achieved thanks to project interventions and estimating the cost of these interventions. This is explained in detail below.

#### *Definitions, Estimation Methodologies and Assumptions*

*Cost of reducing nutrient leakages* is defined as the total cost incurred both by the farmer and the state that supported the project through loans and grants from the World Bank and grants from the EU Phare LSIF, GEF, and NEFCO, over a period of 12 years (because of two years of farm selection, installation and technical assistance period and 10 years of operation of the installed facilities during which nutrient reduction was achieved; with the exception of the Bug River Catchment, where the selection, installation and technical assistance period was only one year). The 10 year period was chosen for consistency with reference ratios in the Chesapeake Basin. The cost elements included in the analysis are:

- a) Capital investment costs of manure and slurry storage tanks and manure pads in a total of 951 farms in four project regions, namely Lomza/Ostroleka, Torun, Elblag and the Bug Catchment Area. The facilities in Lomza/Ostroleka, Torun and Elblag were completed during 2001 and 2002, whereas those in the Bug Catchment were completed in 2003. Table 1 presents a breakdown of facilities by completion year and region. The total cost of the investments in these facilities by region were estimated by multiplying the number of facilities by their average unit costs. Cost of time and family labor used to build the facilities were not included mainly due to lack of appropriate data, leading to an underestimation of total costs;
- b) Annual cost of maintaining and operating the facilities. These were assumed to be equal to 1% of the investment cost, to start during the first year after the facility was put in place and to recur annually during the entire period of analysis. These costs are assumed to include the cost of electricity, cleaning, repair and other type of maintenance.

Table 1: Completion of manure management facilities by year.

Year	2001	2002	2003	Total
Lomza/Ostroleka	168	167	0	335
Torun	149	150	0	299
Elblag	105	107	0	212
Bug River Catchment	0	0	105	105
Total	422	419	105	951

- c) Cost of project management, including selection of farms and technical assistance provided to them by the local implementation teams (LIT) during the period 2000 – 2003 (Table 2.).



Table 2. Project Management Costs (USD)

Year	2000	2001	2002	2003	Total
LIT costs					
Lomza/Ostroleka	106,407	150,691	119,172	14,645	417,218
Torun	117,413	130,870	148,885		425,176
Elblag	79,574	141,197	188,901		435,735
Bug River Catchment	0	0	0	18,430	18,430
Total	303,394	422,758	456,958	33,075	1,296,559

d) Additional annual costs are incurred as part of proper manure management. These include: (i) the cost of energy for pumping liquid manure to the tank, estimated at about USD2.8 /farm/year; (ii) cost of mixing manure in the tank prior to application on the field, estimated at USD 30 / farm/year; (iii) cost of disposing of additional effluents from the manure tank, estimated USD 15 /hour/6 m<sup>3</sup>. These costs and relevant average manure and slurry quantities were estimated based on a survey conducted among 90 farms in the project region done by Agro-Consult company, as part of their study on "Replication Strategy and Economic Assessment Program for Rural Environmental Protection Project". In this analysis, it was assumed that farmers started incurring these costs in the first year following the installation of the facilities.

A summary of the cost flows over the period of analysis is provided in Table 3.

Table 3. Annual costs related to improved manure management activities during the project life (USD)

Year	2000	2001	2002	2003	2004	2005	...	2011
Capital Investment								
Lomza/Ostroleka	0	2,038,008	2,046,057	-	0	0	0	0
Torun	0	1,325,206	1,341,792	-	0	0	0	0
Elblag	0	972,448	1,049,169	-	0	0	0	0
Bug River Catchment	0	-	-	1,349,018	0	0	0	0
M&O								
Lomza/Ostroleka	0		20,453	42,918	42,918	42,918	...	42,918
Torun	0	0	13,299	28,026	28,026	28,026	...	28,026
Elblag	0	0	9,759	21,243	21,243	21,243	...	21,243
Bug River Catchment	0	0	-	-	13,490	13,490	...	13,490
Project Management								
Lomza/Ostroleka	187,005	308,459	262,888	74,005	0	0	0	0
Torun	199,547	291,646	295,342	60,492	0	0	0	0
Elblag	163,748	305,967	338,995	61,995	0	0	0	0
Bug River Catchment	3,560	6,969	6,348	21,052	0	0	0	0
Additional Manure Management Costs								
Lomza/Ostroleka	0	0	38,617	78,026	80,929	80,929	...	80,929
Torun	0	0	52,994	111,810	111,810	111,810	...	111,810
Elblag	0	0	42,458	89,995	89,995	89,995	...	89,995
Bug River Catchment	0	0	-	-	37,010	37,010	...	37,010

*Nutrient Leakage Reduction* is defined as the decreased in the amount of nitrogen filtering into the ground from two sources prior to project investments: storage of manure as heaps on the ground and of slurry in small tanks. In the former case, it was estimated that during 177 days of storage about 100 liters of liquid manure with a nitrogen content of 0.7 g / l ran off from one cubic meter (these data were provided by Appendix 2, page 2 in First Periodical Report of Agro-Consult). In the latter case, small tanks forced farmers to spread the slurry on their lands during seasons and at frequencies that were inappropriate from an agro-technical point of view. Through the introduction of proper tanks for manure storage, of manure pads, and of properly sized slurry storage tanks, the above run-offs into the ground were reduced in participating farms.

The reduced amount of run-off was estimated using soil hydrological models. Loss reductions were predicted for different types of farms and for each of the main interventions. These are presented in Table 4.

Table 4. Nitrogen loss reductions (kg N/farm/year)

Farm Type	Loss reduction due to proper manure storage	Loss reduction due to better timing of slurry spreading	Total
<b>on mineral soil</b>			
cattle, manure	86.1	0	86.1
cattle slurry	0.0	94.8	94.8
cattle, manure + slurry	38.5	39.1	77.5
pigs, manure	49.5	0.0	49.5
pig, slurry	0.0	60.1	60.1
pig, manure+slurry	32.8	37.6	70.5
cattle + pigs, manure	61.0	0.0	61.0
cattle + pigs, slurry	0.0	68.2	68.2
cattle + pigs, manure + slurry	36.6	49.0	85.6
<b>on organic soil</b>			
cattle	544.0		544.0
pigs	257.0		257.0
cattle and pigs	363.0		363.0

Total nutrient loss reductions by region and year were estimated by multiplying the figures in Table 4 by the number of farms on which investments were completed (Table 5). It was assumed that reductions in losses occurred in the first year following the completion of the facilities.

Table 5: Nutrient loss reductions by region over the project period (kg N)

Year	2002	2003	2004	.....	2011
<b>Lomza/Ostroleka</b>	14,462	28,837	28,837		28,837
<b>Torun</b>	12,826	25,738	25,738		25,738
<b>Elblag</b>	9,038	18,249	18,249		18,249
<b>Bug River Catchment</b>	0	0	9,038		9,038
<b>Total</b>	36,326	72,824	81,863		81,863

### Cost Effectiveness Ratios

The present value of the costs of manure management activities was calculated as of 2000 for Lomza/Ostroleka, Torun and Elblag, and as of 2003 for the Bug River Catchment. An annual discount rate of 10% was used for this purpose. These present values were then annualized over a 12 year period also at  $r=10\%$ . Cost effectiveness ratios were computed by dividing the present value of the total cost in region or overall, by the sum of nutrient reductions. They are presented in Table 6.

Table 6: Cost Effectiveness Ratios (USD / kg N)

	Lomza/Ostroleka	Torun	Elblag	Bug River Catchment
Cost Effectiveness	22.07	18.52	20.70	24.77

The CE ratios are found to vary between about USD 20.70/kg N and USD 24.77/kg N among the regions reflecting mainly differences in costs incurred, distribution of farm types that benefited from the project and soil characteristics. It should be noted, that these ratios somewhat underestimate the actual cost effectiveness of the project as they take into account only N reductions achieved through better storage of manure and improved application as fertilizer, but ignore the positive impact of other practices funded by the project, such as buffer strip development. This is because the cost of these is also included in the denominators of the Ces, but the nutrient reductions thanks to them are not reflected in the numerators.

The cost effectiveness ratios are compared with those achieved in the Chesapeake Basin of the USA, where a long-term, coordinated effort to reduce nutrient pollution of the Chesapeake Bay has been carried for the past three decades. A special report that analyzed financial cost effectiveness ratios of various nutrient reduction measures in the basin found the results presented in Table 7 (Source: Camacho, Rodolfo. 1992. "Financial Cost Effectiveness of Point and Non-point Source Nutrient Reduction Technologies in the Chesapeake Bay Basin". Chesapeake Bay Program Nutrient Reduction Strategy Reevaluation. Report #8. ICPRB Report 92-4). The study surveyed farmers that received state support to reduce nitrogen run-off by installing animal waste management systems and through better nutrient management. The cost estimates in the report consisted of costs of "installation", of planning and technical assistance, and of operations and maintenance. The cost effectiveness ratio was calculated as the ratio of the annualized sum of the said costs divided by kilos of nitrogen per year. As such, these ratios are comparable with those computed for the Poland Rural Environmental Protection Project.

The Chesapeake study found that those farmers who adopted a combination of both measures managed to reduce nitrogen run-off at a lower unit cost than those who relied on animal waste systems only. Cost effectiveness ranges are given for those farms located between the 25th and 75th percentile of the sample of farms surveyed. The range of ratios for the former group of farms is USD 8 - 22, and for the latter USD 16 - 45. It should be noted that these figures would be somewhat higher if they were adjusted for inflation.

Table 7: Nitrogen reduction cost effectiveness ratios achieved in the Chesapeake Basin (USD/kg N removed)

	25 percentile	Median	75 percentile
Nutrient Management and Animal Waste Systems	8	15	22
Animal Waste Systems	16	30	45

Source: Adapted from Camacho (1992), p.38

The main emphasis of the Poland Rural Environmental Protection Project was the construction of manure management structures in addition to improved timing and doses of manure application to the field (nutrient management). As such, the cost effectiveness ratios achieved in that project are within the range achieved in the Chesapeake Basin and may be considered acceptable.

## Annex 4. Bank Inputs

(a) Missions:

Stage of Project Cycle	No. of Persons and Specialty (e.g. 2 Economists, 1 FMS, etc.)		Performance Rating		
	Month/Year	Count	Specialty	Implementation Progress	Development Objective
<b>Identification/Preparation</b>					
June 1997	3	Task Team Leader Water Resources Specialist and Peer Reviewer Sr. Environmental Advisor			
<b>Appraisal/Negotiation</b>					
October 1998	9	Task Team Leader Deputy Team Leader Sr. Environmental Advisor Environmental Engineer Sr. Financial Mgt Specialist Social Fund Specialist Financial Mgt Specialist Legal Advisor Procurement Specialist			
January 1999					
<b>Supervision</b>					
06/12/2000	3	TASK TEAM LEADER (1); DEPUTY TEAM LEADER (1); ENVIRONMENTAL ENGINEER (1)	HS	S	
09/29/2000	1	TEAM LEADER (1)	HS	S	
01/02/2002	4	TASK TEAM LEADER (1); ENVIRONMENTAL ENGINEER (1); FINANCIAL SPECIALIST (1); SR. COMMUNICATION SP. (1)	S	S	
07/03/2002	5	TASK TEAM LEADER (1); PROCUREMENT SPECIALIST (1); SR. ENV. SPECIALIST (1); FINANCIAL MGT (1); SR. PUBLIC INF.OFFICER (1)	S	S	
03/10/2003	3	TTL (1); PROCUREMENT SPECIALIST (1); FINANCIAL MGT SPEC. (1)	S	S	
10/17/2003	3	TTL (1); PROCUREMENT SPECIALIST (1); FINANCIAL MGMT. SPEC. (1)	S	S	
<b>ICR</b>					
May 2004	2	TTL (1); STC (1)			

(b) Staff:

Stage of Project Cycle	Actual/Latest Estimate	
	No. Staff weeks	US\$ ('000)
Identification/Preparation	7	
Appraisal/Negotiation	11	261.7*
Supervision	29	237.2
ICR	11	16.0
Total	58	514.9

\* USD 261.7 thousand represents total costs of BB and BB-GEF for phases of identification through negotiations.

Total supervision and ICR costs are: USD 253,222 and cover BB and BB-GEF.

## Annex 5. Ratings for Achievement of Objectives/Outputs of Components

(H=High, SU=Substantial, M=Modest, N=Negligible, NA=Not Applicable)

	<u>Rating</u>					<u>Rating (Supplemental GEF)</u>				
<input type="checkbox"/> <i>Macro policies</i>	<input type="radio"/> H	<input type="radio"/> SU	<input type="radio"/> M	<input type="radio"/> N	<input checked="" type="radio"/> NA	<input type="radio"/> H	<input type="radio"/> SU	<input type="radio"/> M	<input type="radio"/> N	<input checked="" type="radio"/> NA
<input checked="" type="checkbox"/> <i>Sector Policies</i>	<input type="radio"/> H	<input checked="" type="radio"/> SU	<input type="radio"/> M	<input type="radio"/> N	<input type="radio"/> NA	<input type="radio"/> H	<input checked="" type="radio"/> SU	<input type="radio"/> M	<input type="radio"/> N	<input type="radio"/> NA
<input checked="" type="checkbox"/> <i>Physical</i>	<input checked="" type="radio"/> H	<input type="radio"/> SU	<input type="radio"/> M	<input type="radio"/> N	<input type="radio"/> NA	<input checked="" type="radio"/> H	<input type="radio"/> SU	<input type="radio"/> M	<input type="radio"/> N	<input type="radio"/> NA
<input type="checkbox"/> <i>Financial</i>	<input type="radio"/> H	<input type="radio"/> SU	<input type="radio"/> M	<input type="radio"/> N	<input checked="" type="radio"/> NA	<input type="radio"/> H	<input type="radio"/> SU	<input type="radio"/> M	<input type="radio"/> N	<input checked="" type="radio"/> NA
<input checked="" type="checkbox"/> <i>Institutional Development</i>	<input type="radio"/> H	<input type="radio"/> SU	<input checked="" type="radio"/> M	<input type="radio"/> N	<input type="radio"/> NA	<input type="radio"/> H	<input type="radio"/> SU	<input checked="" type="radio"/> M	<input type="radio"/> N	<input type="radio"/> NA
<input checked="" type="checkbox"/> <i>Environmental</i>	<input type="radio"/> H	<input checked="" type="radio"/> SU	<input type="radio"/> M	<input type="radio"/> N	<input type="radio"/> NA	<input type="radio"/> H	<input checked="" type="radio"/> SU	<input type="radio"/> M	<input type="radio"/> N	<input type="radio"/> NA
 <i>Social</i>										
<input type="checkbox"/> <i>Poverty Reduction</i>	<input type="radio"/> H	<input type="radio"/> SU	<input type="radio"/> M	<input type="radio"/> N	<input checked="" type="radio"/> NA	<input type="radio"/> H	<input type="radio"/> SU	<input type="radio"/> M	<input type="radio"/> N	<input checked="" type="radio"/> NA
<input type="checkbox"/> <i>Gender</i>	<input type="radio"/> H	<input type="radio"/> SU	<input type="radio"/> M	<input type="radio"/> N	<input checked="" type="radio"/> NA	<input type="radio"/> H	<input type="radio"/> SU	<input type="radio"/> M	<input type="radio"/> N	<input checked="" type="radio"/> NA
<input type="checkbox"/> <i>Other (Please specify)</i>	<input type="radio"/> H	<input type="radio"/> SU	<input type="radio"/> M	<input type="radio"/> N	<input checked="" type="radio"/> NA	<input type="radio"/> H	<input type="radio"/> SU	<input type="radio"/> M	<input type="radio"/> N	<input checked="" type="radio"/> NA
<input checked="" type="checkbox"/> <i>Private sector development</i>	<input type="radio"/> H	<input type="radio"/> SU	<input type="radio"/> M	<input checked="" type="radio"/> N	<input type="radio"/> NA	<input type="radio"/> H	<input type="radio"/> SU	<input type="radio"/> M	<input checked="" type="radio"/> N	<input type="radio"/> NA
<input type="checkbox"/> <i>Public sector management</i>	<input type="radio"/> H	<input type="radio"/> SU	<input type="radio"/> M	<input type="radio"/> N	<input checked="" type="radio"/> NA	<input type="radio"/> H	<input type="radio"/> SU	<input type="radio"/> M	<input type="radio"/> N	<input checked="" type="radio"/> NA
<input type="checkbox"/> <i>Other (Please specify)</i>	<input type="radio"/> H	<input type="radio"/> SU	<input type="radio"/> M	<input type="radio"/> N	<input checked="" type="radio"/> NA	<input type="radio"/> H	<input type="radio"/> SU	<input type="radio"/> M	<input type="radio"/> N	<input checked="" type="radio"/> NA

## Annex 6. Ratings of Bank and Borrower Performance

(HS=Highly Satisfactory, S=Satisfactory, U=Unsatisfactory, HU=Highly Unsatisfactory)

### 6.1 Bank performance

	<u>Rating</u>	<u>Rating (Supplemental GEF)</u>
<input checked="" type="checkbox"/> Lending	<input type="radio"/> HS <input checked="" type="radio"/> S <input type="radio"/> U <input type="radio"/> HU	<input type="radio"/> HS <input type="radio"/> S <input type="radio"/> U <input type="radio"/> HU
<input checked="" type="checkbox"/> Supervision	<input type="radio"/> HS <input checked="" type="radio"/> S <input type="radio"/> U <input type="radio"/> HU	<input type="radio"/> HS <input checked="" type="radio"/> S <input type="radio"/> U <input type="radio"/> HU
<input checked="" type="checkbox"/> Overall	<input type="radio"/> HS <input checked="" type="radio"/> S <input type="radio"/> U <input type="radio"/> HU	<input type="radio"/> HS <input checked="" type="radio"/> S <input type="radio"/> U <input type="radio"/> HU

### 6.2 Borrower performance

	<u>Rating</u>	<u>Rating (Supplemental GEF)</u>
<input checked="" type="checkbox"/> Preparation	<input type="radio"/> HS <input checked="" type="radio"/> S <input type="radio"/> U <input type="radio"/> HU	<input type="radio"/> HS <input checked="" type="radio"/> S <input type="radio"/> U <input type="radio"/> HU
<input checked="" type="checkbox"/> Government implementation performance	<input type="radio"/> HS <input checked="" type="radio"/> S <input type="radio"/> U <input type="radio"/> HU	<input type="radio"/> HS <input checked="" type="radio"/> S <input type="radio"/> U <input type="radio"/> HU
<input checked="" type="checkbox"/> Implementation agency performance	<input checked="" type="radio"/> HS <input type="radio"/> S <input type="radio"/> U <input type="radio"/> HU	<input checked="" type="radio"/> HS <input type="radio"/> S <input type="radio"/> U <input type="radio"/> HU
<input checked="" type="checkbox"/> Overall	<input type="radio"/> HS <input checked="" type="radio"/> S <input type="radio"/> U <input type="radio"/> HU	<input type="radio"/> HS <input checked="" type="radio"/> S <input type="radio"/> U <input type="radio"/> HU



## **Annex 7. List of Supporting Documents**

### **BOARD DOCUMENTS**

Country Assistance Strategy 1997 and 2002

Memorandum of Understanding IBRD, EC, EBRD, EIB – April 1998, amended March 2000 and June 2003

### **PROJECT DOCUMENTS**

Project Appraisal Document, Report No. 19868

Aide Memoires

- (i) Identification Mission, June 1997
- (ii) Preparation Mission, October 1998 (no AM; instead, BTO and Memorandum of Understanding between IBRD and NFEP)
- (iii) SPN June 2000
- (iv) SPN June 2001
- (v) SPN December 2001
- (vi) SPN June 2002
- (vii) SPN March 2003
- (viii) SPN October 2003

Back-to-Office Report: Regional Workshop on Agriculture Non-Point Pollution Control, September 17-20, 2002, Przysiek, Poland

Project Status Reports (11 pcs):

- (ix) Initial Summary, March 2000
- (x) Site Visit, June 2000
- (xi) Site Visit, November 2000
- (xii) Update, January 2001
- (xiii) Mid-term Review, June 2001
- (xiv) Update, November 2001
- (xv) Site Visit, January 2002
- (xvi) Site Visit, July 2002
- (xvii) Update, February 2003
- (xviii) Site Visit, April 2003
- (xix) SPN, November 2003

Documentation on loan and GEF grant extension

Documentation on amendment to Loan Agreement to allocate funds among expenditure categories

Documentation on amendment to GEF Grant agreement to add expenditure category

Documentation on GEF grant re-denomination

### **OTHER DOCUMENTS**

Replication Strategy and Economic Assessment, December 2002

RFP for Replication Strategy and Economic Assessment, NFEP

Social Assessment, December 2002

Operational Handbook, January 2000

*Podstawowe zasady realizacji inwestycji w zakresie ochrony srodowiska w rolnictwie i zagospodarowania odchodów zwierzecych [The basic assumptions behind investments in environmental protection in agriculture and manure management]* – a NFEP brochure authored by Andrzej Dobkowski

and Bohdan Skopiec, November 2003

## **Annex 8. Beneficiary Survey Results**

### ***Rural Environmental Protection Project: 2004 Beneficiary Survey. A Summary.***

The survey of project beneficiaries, called the Social Assessment, was carried out by an external evaluation firm specializing in social evaluation and presented in December 2002. The survey's purpose was to evaluate the degree to which the project objectives were achieved as perceived by its beneficiaries: the farmers and other stakeholders. The survey participants appraised the tangible (mainly the manure storing equipment) and intangible (mainly training) help received through this World Bank project. The measurement was done among the farmers in the three original project areas in the summer of 2001 (434 farmers responded), in the winter 2001/2002 (279 farmers) and in the summer of 2002 (361 farmers). An additional measurement among 174 non-participating farmers was performed in the winter 2001/2002.

The study showed a very low level of ecological awareness among the farmers participating in the project on the beginning of project implementation and demonstrated how this level rose during the project implementation. It needs to be noted that the level of awareness among non-participating farmers was even lower. Yet it also showed that farmers may consider employing a pro-ecological activity potentially beneficial to their farm. The study clearly demonstrated that the awareness of project benefits was related to the level of farmer's sophistication as well as the stage of project progress. It was also clear that a more advanced level of education about the project helped in perceiving barriers to the project success as less severe. In general, however, farmers were satisfied with extension services; the relationship between the farmer and his advisor was strengthened through better access to knowledge. Training and seminars, in addition to individual visits, served to farmers as important source of further information about the project ideas. Additionally, training financed by the Bank loan was perceived as significant to individual professional development of the Local Implementation Team members. Thus, investing in the human capital of local advisors proved at least equally important as the usual investment into physical outputs. Yet, equipment was generally perceived as very appropriate to the needs of the farm. Major problems with use were not reported. In terms of similar operations in the future, the Social Assessment helped in establishing the level of financial participation acceptable to the farmer.

In general, the Social Assessment showed or confirmed the following. Projects implemented in the conditions of a Polish countryside must be supported by the cooperation of the farmers, their representatives and extension agents by the means of open information and example, not only substantial funds. Training is essential in proper preparation of the farmer to receive aid and to develop fruitful cooperative relationships. In sum, the percentage of average satisfaction among farmers was 99.7%, 99.4% of farmers were satisfied with advisory services, 100% of participating farmers were satisfied with investments and the awareness of financial impacts of adopting environmentally sound practices was at 96%.

## **Annex 9. Stakeholder Workshop Results**

The workshop entitled “Agricultural Non Point Source Pollution Control in Black Sea and Baltic Sea Riparian Countries” provided a forum for exchanging experiences on agricultural pollution control measures in the region. In particular, the workshop discussed the reduction of nutrients discharge from agricultural sources to water bodies. Thus the meeting focused on the promotion of environmental considerations in the mainstream agriculture which presents implications for improved agricultural productivity, income, health and biodiversity of the region. The workshop was organized by the Polish National Fund for Environmental Protection and Water Management, the Project Implementation Unit of the World Bank co-funded Rural Environmental Protection Project (REPP) and the GEF-supported Black Sea Danube Strategic Partnership Program. The workshop was also a response to a growing concern over the deteriorating conditions of the Black Sea waters and their adverse effect on the region.

The Black Sea has suffered severe environmental damage over the last few decades mainly due to coastal erosion, eutrophication, pollution from sewage, conversion to wetlands, run-off from agriculture and inadequate resource management. The biggest problem proved to be excessive nutrient discharge into the Black Sea and the Strategic Partnership Program on the Black Sea and Danube Basin has been established in response. Projects in Poland (and in other countries) constitute efforts to mainstream environmental considerations into agriculture by promoting environmentally friendly practices in agriculture which mitigates nutrient flows onto the Baltic Sea and the Black Sea.

The workshop gathered about 80 participants from the Black Sea and Baltic Sea riparian countries (Albania, Denmark, Estonia, Finland, Georgia, Latvia, Lithuania, Macedonia, Moldova, Norway, Poland, Romania, Russia, Sweden, Tajikistan, Turkey, and the United States), the Bank staff, representatives of the Polish government, and the Ministry of Environment and the Ministry of Agriculture and Rural Development. The meeting had a character of a conference where each of the countries presented the status, methods, successes and weaknesses of their non point source agricultural pollution control projects and subsequently discussed them. Common issues were identified and possible solutions discussed. A World Bank representative presented an overview of appropriate actions undertaken in the region. The Polish side discussed the Project achievements and shared knowledge gained. The presentations on computer soil testing, farm advisory services, the Code of Good Agricultural Practices, public awareness campaign and replication methods were very well received.

The workshop also hosted several technical presentations supplementing the discussions by the riparian countries. The topics included: policy and regulatory mechanisms necessary for promoting nutrient management plans and for developing a proper Code of Good Agricultural Practices; agricultural pollution control mechanisms in Western Europe; U.S. experiences in Chesapeake Bay watershed management practices. On a base of these presentations, discussions were held in relation to the Black Sea and the Baltic Sea riparian countries.

The satisfaction with the workshop was very high, especially that the participants were able to visit some of the farms partaking in REPP. Voices of appreciation suggested more of similar activities in the future.

## **Additional Annex 10. Borrower Contribution to the ICR**

*The text below is a summary of Borrower's contribution. The summary is followed by a Borrower's project implementation report prepared to be included in this ICR in the exact wording of the Borrower.*

*(i) Assessment of the project objective, design, implementation and (if any) operation experience;*

The project was well prepared which was a result of several preparatory World Bank missions to Poland and thorough consulting between the international and Polish experts at the design stage. Field reconnaissance was also performed through meetings with local government representatives. Most importantly, however, personal engagement of Bank experts benefited the project development. Project goal were clear and, after several sessions of consultations, achievable; for example, the project financing was adjusted from 50%-50% to maximum 70% minimum 30% and some of the performance indicators were adjusted as well. The project fit well with the needs of Poland regarding the non-point pollution problem; the level of environmental awareness in various groups in Poland at that time was also a challenge to the project designing team as well as, later, to the PIU. Also the fact that the future PIU Director and MEP and MAFE representatives were able to visit similar undertaking in the US did not remain without impact on the project implementation. All project goals have been achieved, both the investment part and the post-investment activities. The quality of manure storing facilities is very high while the equipment is used with success. It is important to note that the facilities and equipment are used according to the Code of Good Agricultural Practice. The implementation process itself can also be judged as very good. The most important experience from this project element is convincing skeptics that the investment part is as important as the post-investment aspect of the project, chiefly the advisory services. The Borrower rates the project as very good.

*(ii) Evaluation of the borrower's own performance during the evolution and implementation of the project, with special emphasis on lessons learned that may be relevant in the future;*

There were some organizational problems (such as changes in the PIU and the reduction of its members). The common idea among the potential project beneficiaries about the project purpose (that it serves to build tanks and pads) evolved to the understanding of true project purposes which include agricultural and environmental knowledge besides appropriate investments. It is thus necessary to underline that future project must contain the advisory service element, as well as proper investment and equipment on the farms. Making the farmers and, surprisingly, the decision makers aware of this fact was a huge challenge for the PIU. This is why so important were the preparation and implementation of training for advisors and farmers, as well as seminars and media presence during the course of the project.

*(iii) Evaluation of the performance by the Bank, any cofinanciers, or other partners during the evolution and implementation of the project, Borrower's including the effectiveness of their relationships, with special emphasis on lessons learned.*

The main problem of this project was the necessity to conduct multiple bids financed by one financial source, i.e. without the possibility to cumulate available sums for investment activities even in the same project area. Summing the amounts from various financing source together with appropriate decision about the bidding procedures would make the farmers recruitment easier and would lower the bidding costs and simplified the accounting. It would most of all allow to avoid a situation when different prices were quoted for exactly the same size and kind of a tank by the same company in different bids. Such requirements were difficult to explain to the farmers. NEFCO, World Bank and GEF used World Bank procurement

procedures and reporting on these activities, which was a good example of inter-institution cooperation. PHARE-LSIF demanded separate procedures which were very different from the World Bank ones. Simplification of the procurement and financial management procedures in project with multiple financing is truly necessary. This aspect of project implementation is rated as average.

Large dispersion of project investments presented itself as a challenge and demanded good management. Another good experience was testing of the new project management practice together existing ODR (without establishing new LIT); this exercise required much flexibility and organizational skill from the PIU. All experiences of the project, presented at the international workshops in Przysiek (17-20.09.2002) and Bucharest (30.09-3.10.2003), show that the REPP experiences in Poland are worth considering when discussing future projects in the Baltic Sea and the Black Sea regions which experience similar environmental problems.

*Summary of achievements of the project "Rural Environmental Protection Project" (co-financed in the period of 2000-2004 by the World Bank, NEFCO, GEF, PHARE and National Fund for Environmental Protection and Water Management)*

*A. Introduction*

Poland has taken the obligation to implement ecological directives of the EU, among them the Nitrates Directive (No 91/676/EU of Dec. 12, 1991). Poland has also ratified Helsinki Convention which includes decisions concerning required capacity of tanks for storing animal wastes and their design. The act on fertilizers and fertilization of July 26, 2000 (Gazette No 89, item 991) puts farms specializing in animal production under the duty to have equipment for liquid manure storage starting from October 24, 2008. The lack of equipment for storing and management of animal wastes can disqualify farms soliciting for EU support funds and also prevent production of goods (e.g. due to the lack of certificates allowing to sell milk).

*B. Project "Rural Environmental Protection Project" (co-financed by the World Bank, NEFCO, GEF and PHARE).*

According to the loan agreement with the World Bank, and to the agreements on grants from GEF, NEFCO, PHARE including contribution of NFEP&WM, a pilot project has been realized in about 1000 individual farms in Poland.

*C. Financial structure of the Project (together about 16.0 million USD)*

NFEP&WM contribution	(means from statutory funds together with means available as credit provided by the World Bank equal to 1.25 mln USD and 1.10 mln EUR)	3.45 million USD
Grant of Global Environmental Facility (GEF)		3.00 million SDR
Grant of Nordic Environmental Finance Corporation (NEFCO)		1.00 million USD
Grant of PHARE – Large Scale Infrastructure Facilities (LSIF'99)		3.50 million EUR
Contribution of farmers (Project beneficiaries)		4.00 million USD
Contribution of Polish government and local self-government		0.76 million USD

The Project included 24 000 large animal units (LAU) and about 29 000 ha arable land (target livestock population in the region of Project implementation is to reach about 47 000 LAU).

The following communes (*gminas*) were selected to participate in the project:

In the region of Elblag:	Nowy Dwor Gdanski, Elblag, Sztutowo, Stegna, Nowy Staw, Stare Pole, Gronowo Elblaskie, Markusy, Paslek Tolkmicko
In the region of Torun	Lubicz, Obrowo, Ciechocin, Kowalewo, Lubianka, Chelmza
In the region of Ostroleka/Lomza	Zbojna, Lysee, Kadzidlo, Baranowo, Lelis, Myszyniec, Turosl, Sniadowo

and additionally three administrative districts: Wegrow, Sokolow and Ostrow (the Lower Bug catchment area).

*D. Achievements of the Project "Rural Environmental Protection Project"*

The results of economic and sociologic-social studies confirm that the Project is seen as a success. This is due not only to the specific pro-ecological additions created within the project, but also to stirring rural communities to activity. The farmers are glad to have participated in the Project (the results of the polls indicate that 86.8% declare that they are very satisfied, 10.8% rather satisfied). Agricultural advisory service has been also positively judged, because 82.8% of farmers were decidedly satisfied with it, 13.5%

rather satisfied, and only 0.3% of farmers were rather dissatisfied.

*D1. Main effects of the project (status on April 30, 2004)*

Area of activity	# of PUG*	# and area [ha] of farms for which PN** were developed	# and area [ha] of farms implementing PN	# of visits of advisors in farms	Number of man-hours of training	# of constructed tanks/ # of commissioned tanks	# of constructed manure pads/ # of commissioned pads
LZW-Torun	243	299 farms per area of 7836 ha	200 farms per area of 5741 ha	5 755	7188	299	298 (one farm without bedding)
LZW-Elblag	181	171 farms per area of 6121 ha	160 farms per area of 5315 ha	4 631	7 366	212	183 (174 formally received)
LZW-Ostroleka/Lomza	325	327 farms per area of 6049 ha	327 farms per area of 5453 ha	15 293	11 132	336	85 pads accepted (while the total number of investments was 219)***
Ostrow district	-	31 farms per area of 1050 ha	15 farms per area of 550 ha	1 436	746	31	24 (21 formally received)
Wegrow district	-	31 farms per area of 1019 ha	13 farm per area of 365 ha	877	936	31	23 (23 formally received –the remaining farms are without bedding)
Sokolow district	-	34 farms per area of 1220 ha	15 per area of 395 ha	867	956	32+ additional 11	42 (41 formally received (one farm without bedding))
<b>Total</b>	<b>749</b>	<b>893 farms per area of 23295 ha</b>	<b>730 farms per area of 17819 ha</b>	<b>28 859</b>	<b>28 342</b>	<b>952</b>	<b>655</b> (642 formally received)

\* - *Farm Management Plan (PUG)*

\*\* - *Nutrient Management Plan (PN)*

\*\*\* *Comment: In the region of Ostroleka/Lomza there is a majority of without bedding farms, therefore no manure pads are needed, and the contribution of the farmers consists in buying pumps, mixers for slurry, and in financial outlays directly for the companies under contracts to install tanks within the Project.*

*D2. These effects should be supplemented with the list of targets achieved, in particular:*

- Training and preparation for work of specialized advisors both from the standpoint of factual knowledge and methodological approach, including development of the Advisor's Handbook;
- Development and validation of procedures of selection of farmers for participation in the Project;
- Gathering experience in the area of administrative procedures such as selecting contractors or consulting firms by bidding according to international procedures, such as ICB (*International Competitive Bidding*), LCS (*Least Cost Selection*) or QSBS (*Quality and Cost Based Selection*), principles of



supervision and accounting of construction investments and procedures of purchasing pro-ecological equipment for joint use.

- Non-investment tasks of the project, in particular: Programme of Environment Monitoring, Programme of Economic Assessment and Replication Strategy, Programme of Social Assessment, Public Awareness and Outreach Programme, as well as development and implementation of Management Information System.
- Systematic ecological advice provided to about 1000 farmers over four years, not only concerning farming in agreement with the principles of good farming practice, but also in the area of investing and proper choice of economic solutions at the level of a farm.
- Development and dissemination of exemplary standards of equipment for animal waste storage (such as tanks for liquid animal waste and manure slabs);
- Development of exemplary Nutrient Management Plans (PN) and their preparation by advisors for 893 farms on an area of 23.2 thousand ha and implementation of 730 fertilization plans on an area of 17 000 ha.
- Development of exemplary Farm Management Plans (FMP) and implementation of 749 pro-ecological plans in 24 communes in three regions of Project implementation;
- Creation of over 100 groups of farmers utilizing jointly pro-ecological equipment;
- Carrying out bidding procedures for selection and purchase of 112 machines for joint utilization (which means that among the farms involved in the Project these machines will be used in every third farm);
- Purchase of over 500 000 seedlings of trees and shrubs, and 180 000 guards for 41 communes in four regions of Project implementation for the total sum of 828 000 PLN.
- Development of instruction materials useful in advisory work (films, Advisor's Handbook, leaflets, Internet page [www.OSTW.pl](http://www.OSTW.pl), participation in international agricultural fairs etc.)
- Enlargement of territorial reach of the project to include three administrative districts (powiats -Wegrow, Sokolow and Ostrow) in the region of the Lower Bug catchment area while testing simultaneously another, more cost efficient method of project implementation basing on agricultural advisory services of existing local Agricultural Advisory Centres in Poland (instead of creating expensive Local Implementation Units);
- Creation in the area several exemplary farms, which can be utilized in instruction work and are models to be followed by other farmers;
- Widening understanding of ideas and principles of the Project and pro-environmental activities in the sphere of agricultural production.

### *D3. Closing remarks*

Public opinion polls made several times by the Centre of Public Opinion Studies (CEBOS) for the needs of the Project have shown an improvement of awareness in this sphere in Poland from the level of 23% to 30%. In the regions of Project implementation more than 90% of farmers participating in the Project are aware of negative environmental side effects of agricultural activities and understand the need to counteract such effects. This awareness has also grown among their neighbours who have not participated in the Project and reached the level of 55% during the implementation of the Project.

In the regions of Project implementation, the actions realized in the Project resulted in the decrease of nitrates emissions from each ha of arable land to the environment by 17 kg on the average (recalculated to elementary nitrogen). After completion of all Project activities including implementation of Good Agricultural Practices the ecological effect expressed as the reduction of nitrate loss to the environment will increase to 28 kg N/ha. This corresponds to the reduction of overall emission of nitrogen to the environment by 800 tons per year from the farms involved in the project, or prevention of contamination of 136 million cubic metres of water.

The calculated unit cost of the Project determined as the cost of reducing nitrogen losses to the environment by one kg/year was - depending on assumed bank rates – from 9.20 NPL to 12.30 NPL and was lower than the unit costs of similar projects in the European Union.

Questionnaire polls among farmers indicate that the expected level of co-financing of pro-ecological projects from public funds, being the condition of realization of such projects (without loss of financial liquidity of the farms specializing in animal production) should be within the range of 50-70% of total costs. What is equally important, it has been found out in a representative sample of the whole Polish society that there is wide public approval for such support from public funds, since actions contributing to the improvement of the state of environment in Poland serve the whole society.

Long term effects of the Project can be considered from various standpoints, including the point of view of the farmer and the social aspects. In the long term the pro-ecological investment realized within the Project can be important for improving competitiveness of Project beneficiaries. Having modern buildings and pro-ecological equipment not only improves aesthetic aspects of the farm, but also has psychological and marketing importance.

It is significant that the activities conducted within the Project are understood and accepted both by the farmers and by their families. Another important activity within the Project were joint purchases of equipment for application of organic fertilizers. This has both economic significance (large reduction of costs of purchase and utilization of this equipment, and therefore of costs of agricultural production) and technological (precise application of fertilizer) and social – being an incentive to further joint actions of farmer groups. Also important both in social scale and for individual farmers is widening the understanding of principles of good agriculture. This is aimed to implement recommendations of EU *Nitrates Directive* concerning water protection against nitrate contamination from agricultural sources, which has become obligatory after Poland accession to the EU.

