

## **PART I: Project Document**

**UKRAINE**

**DANUBE DELTA BIODIVERSITY PROJECT**

**GRANT AND PROJECT SUMMARY**

<b><u>Recipient:</u></b>	Ukraine
<b><u>Cofinancier:</u></b>	Not applicable
<b><u>Beneficiaries:</u></b>	Ministry of Environmental Protection, Danube Plavny Reserve Authority, Scientific Institutes under the Academy of Sciences, Municipality of Vilково
<b><u>Amount:</u></b>	SDR 1.1 million
<b><u>Terms:</u></b>	Grant
<b><u>Financing Plan</u></b>	GET US\$1.50 million equivalent GOU US\$0.24 million equivalent Total US\$1.74 million equivalent
<b><u>Economic Rate of Return:</u></b>	Not applicable
<b><u>Map:</u></b>	IBRD 25412

**UKRAINE**  
**DANUBE DELTA BIODIVERSITY CONSERVATION PROJECT**

**Background**

1. The Ukrainian part of the Danube Delta and its associated wetlands cover some 150,000 ha in the southwest part of the Odessa region. The Kiliya branch of the Danube, with 60% of its total flow, forms the border between Romania and Ukraine, but for its last part lies entirely within Ukraine. The delta region encompasses a large number of islands, marshes, tributaries and canals, lakes with aquatic plants, and a mosaic of forests, grasslands and dunes in the wetland area. The lagoons or limans to the north of the Kiliya branch are a special feature of the Ukrainian Danube Delta wetland system. Land formations in the delta are dynamic, and within the last 10 to 20 years a new generation of islands has been formed. Currently only 15,000 ha of the Ukrainian part of the Delta are protected, in the Danube Plavny (DP) nature reserve (Zapovednik).
2. Five patterns of vegetation may be noted in the delta and limans: the floodplain and estuarine vegetation; riverine and floodplain forests; young and old coastal ridges including a xerothermic vegetation unique to Ukraine; steppe areas, including refugia of festuca and stiga steppes; and lakes and limans, which were major spawning grounds for fish before being separated from the Danube by construction of low dams for irrigation. The flora of the DP comprise 563 identified species, or over 11% of Ukrainian flora. These include some unique flora complexes. Fauna consist of more than 5,000 species, including 153 species of nesting birds, and 320 species of visiting birds. These include the rare pygmy cormorant and red-breasted goose, and the common and Dalmatian pelican. Mammals include the otter, muskrat, mink, little ermine, and wildcat. Ichthyofauna are represented by 72 species. There is strong evidence that some species are in decline due to pollution and overfishing.
3. The DP Reserve Authority (DPA) is an independent entity under the Academy of Sciences. It operates out of the town of Vilkovo, which is of unusual architectural and cultural interest. DPA includes only six scientific researchers, four guards and five administrative employees. Its budget is very limited, and until recently it has had very few international contacts. The DPA currently has control only over the land, not the water, in the reserve. The protected area is presently unpopulated except for some summer cottages, although there are small gardens and some cattle grazing. Most of the DPA work to date has been directed towards scientific research rather than protected area management.
4. The Ukrainian delta region is fairly densely populated, with 68,000 people in the Kiliya rayon of 1,400 km<sup>2</sup>, including a rural population of 32,000. Agricultural land, mostly irrigated, covers 70,000 ha, with wheat, grapes, maize, sunflower, rice and fodder crops predominating. Yields are reportedly reasonable, though the quality of water from the lakes developed for irrigation is deteriorating. Livestock raising is important. Fishing employs about 600 and port activities about 2,000 people. Hunting is also of some importance in the Ukrainian delta wetlands with about 30,000 kills per year, including birds and mammals. The level of economic activity is thus much higher than in the Romanian part of the delta. Development of land for irrigated agriculture, including construction of dykes, polders and

1.06 There is an urgent need to protect the existing reserve, to identify and designate neighboring core and buffer areas with the most ecologically valuable habitats, and to design a system of protected area management. The plan under the proposed project would be to expand the protected areas to 34,000 ha and to prepare a plan for a biosphere reserve covering 67,000 ha.

#### B. Flora and Fauna

1.07 As in Romania, the Ukraine's Delta vegetation and associated fauna are diverse, due to the influence of the wide range of fresh and marine water conditions that exist as a result of deltaic development. The following patterns of vegetation may be noted:

- (a) Floodplain and estuarine vegetation: apart from the open lakes and limans the most distinguished feature of the delta is the extensive reed area dominated by *Phragmites australis*. In alluvial soil areas with an abundance of reed, the so-called "plavny" are found. Plavnies are determined by low summer and early autumn water levels and late winter/early spring inundations. Plavny succession starts when shallow bays, gulfs and inlets are cut off from the main water bodies by aquatic plants or sand ridges. *T. latifolia*, *T. angustifolia* and *scirpus lacustris/maritimus* appear, followed by *ph. australis*. In successive phases, the vegetation becomes firmer: bird colonies and wildlife become abundant; the wild boar and colonies of herons, spoonbills and ibises can be found. Plaurs, or floating islands, appear. There are dense shrub forests of *salix cinerea*, *Solanum dulcamarum* and grey willow. Aquatic vegetation is found in sheltered waters, but has been greatly affected by pollution of the river and its tributaries: water lilies have almost disappeared, while *Chara spec.* abound.
- (b) Riverine and floodplain forests: riverine forests are dominant along the Danube river and its branches, and have been effectively protected since the 1950's. There are many species, including willow, poplar, pines and shrubs, and also fruit trees. Meadow vegetation has replaced forests where felling and grazing has been prolonged.
- (c) Young and old coastal ridges: these are the result of highly dynamic coastal formation processes, including waves, wind and sand deposition. Sand banks are created and gradually develop into ridges and dunes connected with the beach. Dominant tree species include *Eleagnus angustifolia*, *Hippophae rhamnoides*, together with herbs and grasses, and, close to river mouths, species such as *bidens tripartita*. Cattle have been introduced to the coastal zone of Kubanski island threatening the unique *H. rhamnidoes* zones. Within the older sand dunes and depressions between the dunes, several vegetation types can be found, especially *J. maritimus*. On higher, dry parts of the old dunes of Zhebrijanskaya Grjada a xerothermic vegetation unique to Ukraine, including species such as *Fumana procumbens*, is found, and a number of Urainian red list species.

management, and development of the scientific basis for resource use and management plans;

- (d) Pilot wetland restoration (US\$300,000), including restoration of hydrological circulation to the Stentsovsko-Zhebrijanskije Plavni (SZP), pilot protection from Danube water of one lake ("kut") in the DP reserve and monitoring of the impact, restoration of the Vilково town canals, studies for restoration of Yermakov island partially being used by the Pogranichnik Sovkhoz for cattle and horse breeding, and studies of marketing alternatives for ecologically-friendly cultivated produce from the Lenin fisheries kolkhoz;
- (e) Public awareness and community involvement in protected area management (US\$131,000) both by DPA staff and non-governmental organizations (NGOs), including the Ecological Club of Vilково, the Nature Protection and Regeneration Fund, and Odessa Zoo;
- (f) Developing and implementing a programme for protected area expansion and creation of a biosphere reserve (US\$60,000), through land use studies and using information provided from monitoring, and community participation. The aim would be to expand protected areas from 15,000 ha to 34,000 ha over the project life, focusing on the Kiliya estuary and the Stentsovsko-Zhebrijanskije Plavny, within a biosphere reserve covering 67,000 ha;
- (g) Coordination with GEF activities in Romania and the GEF Black Sea Environmental Management Program (US\$11,000); and
- (h) Technical expertise to prepare an endowment fund to finance the recurrent costs of expanded protected areas in a second phase (US\$12,000).

9. **Project Implementation.** The MEP would have overall responsibility for the project, including procurement, disbursement, maintenance of project accounts and coordination of implementation. MEP staff would provide initial assistance to DPA staff in establishing project implementation schedules and reporting procedures, and would assist in obtaining assistance from other institutes for implementation of the various components. Day-to-day responsibility for project implementation would be with the DPA, whose staff are being increased and trained to take on their new expanded role. Although small, the Project requires the support of several agencies for its effective implementation. A foreign advisor would assist DPA and MEP in project management and implementation through periodic visits through the project period. WWF experts would assist with implementation of the biosphere expansion, monitoring and public awareness activities, and International Wetland and Wildlife Research Bureau (IWRB) experts on bird monitoring and public awareness connected with this. A small scientific advisory committee would be established, consisting of experts from the MEP, the Academy of Sciences, and experts in protected area management, which would meet quarterly to review work accomplished and offer advice and assistance. It would report to the Deputy Minister responsible for protected areas in MEP.

10. MEP and the Academy of Sciences would be responsible for the strengthening of the DPA; increased staff would be provided by the Academy of Sciences, which would have responsibility for scientific coordination and implementation support. The DPA has recently been established as an independent institute directly under the Academy of Sciences. The activities connected with protected area expansion would be implemented by DPA and NGOs with the help of the MEP, the WWF and the Ukrainian Land Design Institute. The monitoring would be implemented by the DPA experts (and WWF) with assistance from the relevant specialized institutes, including the Institute of Zoology for reptiles and birds, the Institute of the Biology of the Southern Seas for hydrobiological monitoring, and the Ukrainian Scientific Center of Ecology for hydrochemical monitoring. As regards wetland restoration, the Government Organization for Aquatic Economy and the Odessa-based Hydrometereological Institute would assist with the SZP wetlands restoration and lake protection in the DP, the Ukrainian Land Design Institute with the study on Yermakov, and the municipality of Vilkovo with town canals rehabilitation. Local NGOs (the Ecological Club of Vilkovo, the Odessa Zoo and the Nature Protection and Regeneration Fund) would assist the DPA and MEP with the public awareness component.

11. Project sustainability. One important element of the Project is to build up the capacity of the DPA, through training, TA and staff expansion, to manage the protected areas of the delta effectively. Public participation is built into the program to expand protected and buffer areas and introduce management plans: this should ensure their social sustainability. Financial sustainability is a serious issue; annual recurrent costs are estimated at US\$47,000. This compares with the current annual DP budget of US\$3,000. The project will include support for preparation of an endowment fund which could finance the recurrent costs of protected area management in a second phase: increased revenues from tourism and controlled hunting could also eventually meet some of the management costs of the DP.

12. Lessons from previous Bank involvement. Ukraine is a new member state. Thorough understanding of the necessary procedures for project administration are, therefore, especially important. Experience with previous biodiversity projects has illustrated the importance of securing the support of local communities for protected area management and for adapting project design to the capacity of implementing institutions.

13. Community Participation. The biosphere expansion and protected area management plan activities have been designed to assure substantial involvement of local communities through a series of meetings and workshops, organized both by the DPA and local NGOs as also mentioned in paras. 10 and 11. The Project also supports public awareness activities in the local community not only by DPA staff, but also by local and regional NGOs and in schools. Restoration of the canals of Vilkovo will also promote greater environmental awareness by local inhabitants.

14. Monitoring and Evaluation. Impact monitoring is built into the key wetland restoration activities, in particular water quality and ecosystem monitoring in the SZP. Ecosystems monitoring would also be strengthened, including flora, fauna and hydrobiology, and the project would support the creation and management of a uniform database (also see

para 11). Project achievement indicators have also been established, and short quarterly and longer annual reports would be produced. Funds are provided to publish research and monitoring activities. Support for coordination with Romania, the Black Sea Environmental Management Plan and other regional initiatives will also provide an opportunity for sharing wetland management experience.

15. Rationale for GEF funding. The Project, together with the Romania GEF Danube Delta project, forms the link between the GEF Danube Basin and Black Sea projects, and these three projects together will support environmental management of an international waterway; 60% of the Danube water flows down the Kiliya branch. The Danube Delta, Europe's largest remaining natural wetland, represents an ecosystem of international importance, and the Ukrainian part of the delta has its own unique characteristics. The Danube Delta project also provides a pilot for emerging biodiversity initiatives under the regional Black Sea project.

16. Actions Agreed Upon. At negotiations, the Recipient agreed to or confirmed the following:

- (a) a staffing plan and budget for it;
- (b) the implementation arrangements outlined above;
- (c) Project implementation schedule, together with an agreed schedule of project progress reporting, and a mid-term review after two years;
- (d) land was available for the new DPA headquarters;
- (e) appropriate arrangements for procurement, disbursement and maintenance of Project accounts; and
- (f) the DPA has now been established as an independent entity directly under the Academy of Sciences.

17. Environmental aspects. The Project would have a positive impact on the biodiversity of the Danube Delta. The most important concern is the need for the Project to have the support of the local population. This will be ensured by participation of local economic interest groups, elected and community groups in decisions to expand protected areas, redefine core and buffer zones and develop management strategies, through rehabilitation of Vilkovo's internal canals, and through environmental awareness programs. The project has been assigned Environmental Category C.

18. Project benefits. The Project will support a reorientation in DPA management from scientific research to protected area management and biodiversity conservation; while taking into account the interests of the local population. Improved monitoring will increase understanding of the processes in the delta; wetland restoration will enhance biodiversity,

while preparation of participatory management plans for expanded protected areas will introduce integrated management to the entire delta and surrounding wetland ecosystems.

19. **Risks.** The most serious risk concerns the implementation capacity of the DPA, and the feasibility of expanding the protected areas as envisaged under the project. A second risk concerns the level of financial support the DPA will receive from the MEP and Academy of Sciences. The third risk concerns the difficulty of securing local public support for protected area management. The first risk is addressed through building substantial training and technical assistance into project design, as well as support from other specialized institutes. Secondly, MEP and the Academy of Sciences are committed to the Project; their level of budgetary support will be secured at Negotiations. Also, the project would provide the technical expertise for the establishment of an Endowment Fund to meet future operational expenses. Finally, considerable public participation has been built into several components, in particular the biosphere expansion component, to secure the needed level of local support.

#### Attachments

Washington, D.C.



**SCHEDULE A**

**UKRAINE**

**DANUBE DELTA BIODIVERSITY PROJECT**

**Cost Estimates**

	<u>(US\$ '000 equivalent)</u>			<u>% Foreign Exchange</u>	<u>% Total Base Costs</u>
	<u>Local</u>	<u>Foreign</u>	<u>Total</u>		
<b><u>Components:</u></b>					
1. DPA Strengthening	561.0	189.8	750.8	25	49
2. Warden Strengthening	157.8	8.9	166.8	5	11
3. Monitoring, Database Management	77.7	32.7	110.4	30	7
4. Wetland Restoration	218.1	82.7	300.8	28	20
5. Public Awareness	2.0	129.4	131.4	98	9
6. Biosphere Reserve Establishment	27.2	32.3	59.5	54	4
7. Regional Initiatives & Coordination	-	10.7	10.7	100	1
8. Endowment Fund Establishment	2.6	9.6	12.2	79	1
<b>TOTAL</b>	<b>1,046.3</b>	<b>496.2</b>	<b>1,542.6</b>	<b>32</b>	<b>100</b>
Physical Contingencies	104.6	49.6	154.3	32	10
Price Contingencies	27.2	13.3	40.5	33	3
<b>GRAND TOTAL</b>	<b>1,178.1</b>	<b>559.2</b>	<b>1,737.3</b>	<b>32</b>	<b>113</b>

**Financing Plan (US\$ Million)**

	<u>Local</u>	<u>Foreign</u>	<u>Total</u>
GEF	0.94	0.56	1.50
GOU	0.24*	0.0	0.24

\* Plus contribution in kind (research facilities, incremental staff, etc.).

UKRAINE

DANUBE DELTA BIODIVERSITY PROJECT

Procurement and Estimated Schedule of Disbursements

Procurement Methods (US\$ million equivalent)

	<u>ICB</u>	<u>LCB</u>	<u>Other</u>	<u>Total</u>
Civil Works	-	-	0.75 <sup>1</sup>	0.75
			(0.60)	(0.60)
Goods	-	-	0.48 <sup>2</sup>	0.48
			(0.44)	(0.44)
Foreign Training, TA & Workshop	-	-	0.35 <sup>3</sup>	0.35
			(0.35)	(0.35)
Recurrent Costs	-	-	0.16 <sup>4</sup>	0.16
			(0.12)	(0.12)
Total	<u>-</u>	<u>-</u>	<u>1.74</u>	<u>1.74</u>
	<u>-</u>	<u>-</u>	<u>(1.5)</u>	<u>(1.5)</u>

<sup>1/</sup> Local shopping.

<sup>2/</sup> Local shopping (US\$200,000) and international shopping (US\$280,000)

<sup>3/</sup> IBRD Guidelines for procurement of consultants and training services.

<sup>4/</sup> Procedures acceptable to IBRD.

(Figures in parentheses indicate sums financed by GEF; figures may not add up to exactly US\$1.5 million due to rounding.)

Disbursements Categories

<u>Category</u>	<u>GEF Grant Allocation</u>	<u>Amount</u> (US\$M equivalent)
Civil Works	80% of total expenditures	0.5
Goods	100% of expenditures	0.4
Seminars, Training, TA	100% of expenditures	0.35
Recurrent Costs	100% of expenditures	0.12*
Unallocated		<u>0.13</u>
		1.5

\* Including fuel, materials and office supplies and maintenance of goods purchased under the project, and excluding salaries and utilities.

Estimated Disbursement Schedule (US\$ million)

<u>IBRD Fiscal Year</u>	<u>FY95</u>	<u>FY96</u>	<u>FY97</u>	<u>FY98</u>
Annual	0.4	0.5	0.4	0.2
Cumulative	0.4	0.9	1.3	1.5

**SCHEDULE C**

**UKRAINE**

**DANUBE DELTA BIODIVERSITY PROJECT**

**Timetable of Key Processing Events**

- |   |  |
|---|--|
| (a) Time taken to prepare:              | 18 months  |
| (b) Prepared by:                        | Ministry of Environment Protection,<br>Academy of Sciences with the<br>Assistance of Consultants |
| (c) First Bank mission:                 | May 1992   |
| (d) Appraisal mission departure:        | September 1993   |
| (e) Negotiations:                       | April 1994   |
| (f) Planned Date of Effectiveness:      | May 1994   |
| (g) List of relevant PCRs and<br>PPARs: | None   |

## **PART II: Technical Annexes**

## CURRENCY EQUIVALENTS

### Currency Unit = Ukrainian Karbovanski (Kb)

US\$1	=	Kb 1,002 (Jan. 1993)
US\$1	=	Kb 3,000 (April 1993)
US\$1	=	Kb 3,980 (June 1993)
US\$1	=	Kb 16,950 (Sept. 1993)
US\$1	=	Kb 31,150 (Nov. 1993)
US\$1	=	Kb 25,000 (Dec. 1993)
US\$1	=	Kb 44,000 (May 1994)

## WEIGHTS AND MEASURES

The metric system is used throughout the report.

## ABBREVIATIONS

DP	-	Danube Plavny Reserve
DPA	-	Danube Plavny Reserve Authority
EBRD	-	European Bank of Reconstruction and Development
GEF	-	Global Environment Trust Fund
GIS	-	Geographical Information System
IGCN	-	Nature Conservation Union
IWRB	-	International Waterfowl and Wetland Research Bureau
MEP	-	Ministry for Environmental Protection
NGO	-	Non-governmental Organization
NPRF	-	Nature Protection Restoration Fund
RAMSAR	-	Convention on Wetlands of International Importance especially as regards Waterfowl Habitat (Ramsar 1971)
SPOT	-	Satellite pour L'observation de la Terre
SZP	-	Stentsovsko-Zhebrijanskie Plavny
WWF	-	World Wildlife Fund

## UKRAINE - FISCAL YEAR

January 1 to December 31

GLOBAL ENVIRONMENT FACILITY

DANUBE DELTA BIODIVERSITY PROJECT (UKRAINE)

TECHNICAL ANNEX

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Map

IBRD No. 25412

- (d) **Steppe areas:** Largescale agriculture and overgrazing have almost eliminated steppe vegetation, except from steep slopes. The refugia of the festuca and Stipa steppes are best preserved in the upper reaches of Yalpug lake shore and in Bolgrad rayon. Reptiles found in the steppe zones are among the most endangered and rare species in the Ukraine, including Coluber jugalaris (red list), Lacerta viridus and lacerta taurica.
- (e) **Lakes and limans:** the water bodies near the Danube river -- lakes Kagul, Yalpug, Katlabugh and Kitaj, as well as the coastal lake of Sasyk, were once the limans (lagoons) of steppe rivers flowing into the Black Sea and Danube.

1.08 While results of systematic bird counts in the Ukrainian Danube Delta have not been published, there is information on distribution and number of breeding and nesting colonies of waterfowl. It is difficult to estimate changes in total population size without long time series data; however, there is clear evidence of species decline due primarily to loss of habitat through conversion of wetlands into agriculture and fish farming areas. Some waterbird species forage far away from their nesting site, therefore damage to a wetland habitat in one part of the Delta can affect the food availability for birds nesting a great distance away. Numbers of nests of some species can fluctuate yearly due to migration between Ukraine and Romania; for example large numbers of spoonbills have been observed flying from Romania to the coastal areas of Ukraine to forage. In the Ukraine, surveys have shown that the primary bird areas are the Kiliya Delta [especially the Danube Plavny Reserve (DP), the present nature reserve], the Stentsovko-Zhebrijanskje Plavny (SZP) and the Ozero Kugurlug area. 153 species of birds nest in the delta. Others gather after nesting to molt. During seasonal migrations, hundreds of thousands of birds pass through, while many more winter in the delta.

1.09 Of the total of 350 birds species found in Ukraine, 320 live in the Delta at various times of the year. They represent a substantial portion of the European and Palearctic populations, with 42 species of the "Red Data Book" list of globally threatened species. These include the Pygmy cormorant, the white pelican and the Dalmation pelican and spoonbill. The Ukraine delta is breeding area for large populations of herons, egrets, ibis, spoonbills and terns, as well as an important feeding area for pelicans, ruffs, godwits, swans, comorants, Caspian terns and the red breasted goose. It is also a wintering site for between 50,000-100,000 migratory waterfowl including Whooper swants, graylag and white-fronted geese.

1.10 The wetlands that remain have deteriorated in quality due to changes in flooding regimes, upstream pollution and draining of floodlands which used to remove excessive nutrients from the river water. Piscivorous and insectivorous birds are highly susceptible to chemical pollution. Eutrophication has resulted in a decline in fish, invertebrate communities (e.g. bivalves) and submerged macrophytes, all food sources for the waterfowl. Other negative impacts on the bird populations in the Delta include livestock grazing if densities eliminate rather than stimulate shrub vegetation and trampling of eggs and chicks. Hunting parties used to frequent the Delta and local hunters form cooperatives, yet in the Kiliya Delta



area over 50% of the hunters operate without a license or management. There is currently no game management plan. While there are trained ornithologists in the DP, bird counts and bird monitoring have not taken place on a systematic basis in recent years because of fuel and other financial constraints.

1.11 The Delta's fish communities are rich with 75 species representing 22 families, one-third of which have traditionally been exploited by intensive commercial fishing. Fish communities in the Delta's three main branches include migratory species of sturgeon and shad, as well as semi-migratory species of carp and bream, using the floodplains as preferred spawning grounds. Since these floodplains have been cut off from the Danube River by dykes they have declined in productivity, catch size and overall species diversity and respective commercial value. While predatory high-commercial value species as sturgeon and shad have declined, the numbers of non-predatory species has increased. Reduction in species richness and annual catch is due to habitat degradation caused by polder construction, dams, loss of aquatic vegetation, eutrophication due to industrial and organic pollution from upstream and loss of free water movement, declining flood levels and overfishing. Polders alter normal spawning regimes and offspring have a difficult time reaching deep water sites during the winter. Threatened species now included in the Ukrainian red book include the Danube lamprey, Beluga sturgeon, sterlet, sea sturgeon, Black Sea trout, European mud-minnow, zingel and schraester. Monitoring of fish species by the DP has declined over recent years as financial constraints have increased.

1.12 Mammals have not yet been thoroughly studied in the region. About 47 species are found, including about half of the Ukrainian red book species. The Delta is one of the last refuges in Ukraine for the European mink, the wildcat, and the freshwater otter. Rodent and insectivorous mammals are the most numerous. Muskrats, introduced about 40 years ago, are trapped for their fur.

### C. Hydrology

1.13 The Danube is one of the largest rivers in Europe with a catchment of 805,300km<sup>2</sup> and an average annual discharge of 6,300m<sup>3</sup>/sec. Average discharge in the highest month of May is 8,900m<sup>3</sup>/sec, while in the lowest month of October it is 4,300m<sup>3</sup>/sec. The apex of the delta is just upstream of the town of Tulcea (Romania), from where the river divides into the northern Kiliya branch, while the southern branch divides just downstream from Tulcea into the central Sulina, and the southern Sfintu Gheorghe branches. The three branches transport respectively 60%, 18% and 22% of the total river flow at low (normal) river levels. During the high discharge season of April-May, the Kiliya branch percentage of the total discharge rises to 72%. The Kiliya branch forms the border between Ukraine and Romania. The mouth of the Kiliya branch consists of about six outlets to the Black Sea and here the most active part of delta formation takes place, causing an eastward accretion of about 50 meters per year. This corresponds about with the present 15km inland location of Vilково (Ukraine), which 250 years ago was founded on the coast. The Danube discharge is so large that the Black Sea at its mouth is only slightly brackish and no serious salt water intrusion occurs in the open water of the river outlets.

1.14 In an attempt to supply its eroding resort beaches near Constanta with more sediment, the Romanian government completed in 1992 a meander-cutting program in the Sfintu Gheorghe branch, reducing the distance to the sea by 30 km and thus increasing the slope of this branch, for the purpose of increasing water velocities and overall discharge and so divert more sediment towards the southern branch and its outlet. This program had the side-effect of reducing the flow of the Kiliya Branch from 69% to 61% of the total Danube flow.

1.15 With a mean annual rainfall in the eastern part of the delta of about 325mm and an annual evapotranspiration of about 1000mm, the surrounding country side has a steppe climate. Unlike the Romanian side, the northern Ukrainian/Moldavian side has a substantial drainage area of 6,300km<sup>2</sup> discharging into its relatively short 188km side of the Danube, contributing 15% of the river's discharge. The northern tributaries draining the steppe formed internal deltas with the Danube at their outlets named Limans. These were separated from the river by low sand bars that were covered by the Danube waters during spring flood flows. Since the early 1960s many hydraulic works have been carried out on the Danube and its tributaries. In the Ukraine 300km of dikes were built along the Danube and its islands and the important Limans were closed with low dams for the purpose of creating reservoirs to supply irrigation water during the low flow summer season. Thus the lakes of Kagul, Yalpug, Katlabugh and Kitaj were created on the sites of their former Limans. In the same way, the former salt lake Sasyk just to the north of the delta was cut off from the sea as recently as in the mid-1980s. Canals to the Danube were constructed and pumping stations located at the foot of the dams in order to supply the lakes with Danube water during the summer, when the small flow of the steppe rivers is diverted for irrigation further upstream. About 109,000ha are irrigated from the lakes. Since all return flow (drainage) returns into the lakes, with its residu from livestock concentrations, fertilizers, pesticides and herbicides, the quality of the lakes has been continuously deteriorating and cannot be used for domestic supply.

1.16 In the past the limans had fish populations similar to those in the Danube. Since they were made into lakes this has changed. The limans formed important spawning grounds for anadromous fish and the decrease in numbers of these is in part due to the reduction of their spawning grounds.

1.17 The type of civil works undertaken in the Ukraine since the 1960s are symptomatic of what happened in the entire Danube basin. Everywhere tributaries were dammed, resulting in a 35% reduction in suspended sediment, to 44 million tons per year. The use of agrochemicals increased, as did the construction of heavy and chemical industry, without a corresponding growth in the treatment of municipal waste. In western Europe the latter only started in the 1970s as a result of widespread public concern, and spectacular improvements have been achieved, but at a substantial cost to national budgets and industry. Pollution reduction in the Danube basin will have an important impact on biodiversity in the delta but is outside the scope of this project.

1.18 The cost of the production inputs agrochemicals and energy (for irrigation pumping) has increased sharply in recent years. As a result, less land is being cultivated, fewer

chemicals are applied, less irrigation water is being pumped, with less return flow. Thus the concentrations of nitrogen and phosphorus and summer algae blooms have decreased in the Danube and its delta over the last three years. As a result, it may be expected that the agricultural pollution presently affecting the Ukrainian part of the delta will be reduced as well. In particular the rice culture with its polluting drainage adjacent to the delta is likely to disappear for lack of continued government subsidies. Nevertheless, the Ukrainian side of the delta is far more densely populated than the Romanian side and eventually this will require higher investments in pollution abatement.

#### D. Economic and Human Activity

1.19 The Danube Plavny reserve occupies an area of 14,852 ha and is uninhabited. The inhabitants of the state border town of Vilково have developed small fruit and vegetable gardens on the islands of the Danube Delta. Overgrazing is a problem in some areas. The population density in the delta and adjacent limans is, however, much higher than in Romania. The population of the Kiliya rayon is 68 500, including a rural population of 32 000 which is mostly settled around the limans (lagoons) to the north of the Danube river and is dependent on highly productive irrigated agriculture. The two principal towns are Kiliya on the Danube (26 000 people) and Vilково in the delta itself (11 000 people). The total area of the four rayons of Kiliya, Bolgrad, Izmail and Renis, which include the four largest limans to the north of the Danube, is 470 000 ha; the intention is that 150 000 ha of this area will eventually come under some form of protection, with preparation and implementation of sustainable land-use plans. The proposed project would support the initial stage only of this work.

1.20 Vilково has an unusual pattern of urban development and architecture of cultural interest and with tourist potential. Houses are constructed on small artificial islands surrounded by small canals, connected by small wooden bridges and board walks, each family owning a boat. The canals were used for transport, washing and drinking, as silt for soil fertilization and maintaining the islands, and for construction materials. The houses traditionally had silt walls plastered against a reed frame, thatched reed roofs and a layer of sea shells under the floor. Many houses are still constructed of these materials. Until 1990 there were very strict border controls, and the tourist potential of the town has not been realized: there is no accommodation and some canals are silting up. It is important to maintain the special character of the town.

1.21 Shipping activities are of considerable importance: the port authorities employ about 2,000 people, mostly from Vilково, and the Ukrainian Shipping company uses the "lighter" system for river transport and for loading goods onto sea carriers at the sea port of Ust Danai. Activity has been much affected by the embargo on trade with Serbia.

1.22 Agriculture is of importance with wheat, maize, grapes, fodder and rice being the dominant crops. The kolkhoz farming system predominates. Livestock, including about 30 000 cattle and 40 000 pigs in Kiliya rayon, are mainly stall fed; the 44 000 sheep feed on semi-natural range land. Irrigated area in Kiliya rayon (see para 1.18) totals 50 000 ha and

14 000 ha have been poldered, but irrigation water from the limans is highly mineralized, and the water in Kitaj lake, to the north of Vilково, is not suitable for irrigation. Fertilizer runoff has further affected water quality. Wetland restoration and protected area management programs will have to be sensitive to agricultural considerations.

1.23 Fisheries are of considerable, though declining, importance. Inland and estuarine fisheries are organized in kolkhozes, and fishermen must deliver 60-70% of their catch to the kolkhoz. There are now about 300 fishermen in Vilково, compared with 900 in the 1940s. Vilково has one fish factory. Recovery of the fish stock and assessment of sustainable fishing levels is a priority. Before the damming of the limans about 80% of the total fish catch of about 5,000 tons in the delta area came from the limans. Following their separation from the Danube overall catch declined sharply. Through the 1980's, following artificial stocking of the limans, catch has averaged 1200-1800 tons in the limans and 600-1500 tons in the river. The main species are carp, bream, and the Danube shad.

1.24 Hunting is of considerable importance. Local hunters are organized in cooperatives, and there are about 1,500 registered hunters in Kiliya rayon. An equal number of unlicensed hunters is thought to operate, and hunting parties from outside the region used to visit the delta. From Stensovsko-Zhebranskiye plavny (SZP) and Griada alone (7 600 ha) there are about 30 000 kills annually, with a current estimated value of US\$ 12 000. With better management and control and higher fees, hunting could be a substantial source of revenue. In addition, fur trapping takes place in the winter, although the numbers have declined dramatically (para 1.26).

1.25 Up to the 1950's there existed a northern-most outlet of the Kiliya branch of the Danube, named the the Lptysh branch, which took off between Kiliya and Vilково. Its part of delta formation is called the Stensovsko-Zhebrijanskiye Plavny (SZP, 9710ha) and its outlet was in the Zhebranskiye bay, just south of the beach resort town of Primorskoye. In summer and autumn this delta was 50-70% dry, while in mid-winter and spring it was inundated by the Danube flood waters. The Lptysh was dyked off from the Kiliya branch and canalized, inlet sluices were constructed at the Danube in the 1970s and an irrigation pumping stations supply water up to 50km inland with up to 22m lift. Many canals were constructed to supply rice polders constructed at the west and north-west side of the former "sub-delta", with fish polders towards the south east.

1.26 In the early 1980s a very large canal was constructed from near the Lptysh inlet to the Sasyk lagoon, as a first link of an intended intra-coastal Danube-Dniester connection. It is unlikely that the Sasyk-Dniester connection will be ever be completed. As part of the project the Sasyk lagoon was dyked, drained and filled with Danube water, the intention being to convert Sasyk to a freshwater irrigation reservoir. Because of salinity problems, Sasyk water cannot, for the most part, be used for irrigation. Before the construction of the Sasyk canal, some 18,000 muskrats were caught each year (for fur) in the Stensovskie-Zhebrijanskiye Plavny. In 1986 this had declined to 10,000, in 1991 to a negligible number and a special "Ondatra" organization was appointed to control this activity. Annual trapping now produces about 2,000 muskrats with a value of US\$2,000. The hydrological situation was further

interfered with by constructing discharge sluices (the "ondatra sluices") in the SZP's outlet in the eastern part near Primorskoye, because it was believed that the muskrats preferred a continuously high water table. Fish are caught by the fishermen of the fishery kolkhoz of Primorskoye on a part-time basis because of low catches due to pollution. Annual catches are 20-25 tons (value: US\$0.20/kg). There is no coordination between the trappers, the fishermen and the hunters.

1.27 As a result of the construction activity, the SZP

- was reduced in size to 9,700 ha;
- cut in two by the Danube Sasyk canal;
- the western part deprived of its natural outlet because of the high canal banks, while the capacity of the drainage siphons crossing the canal is very inadequate;
- the western part exposed to the polluted agricultural runoff from the rice polders;
- the east side's drainage towards the Black Sea impaired because of keeping the Ondatra outlet sluice gates closed in the Vilkovovo-Primorskoye road. Sometimes at summer low river flow, the discharge in the outlet drain is reversed and flows from the Black Sea towards the Lapytsh canal, at the time of maximum drainage from the rice fields;
- suffers from a stagnant, anaerobic, eutrophic, polluted condition, such that the villagers and tourists of Primorskoye complain during the summer months about the stench of hydrogen sulfide. In addition, fishermen, hunters and the entire biosphere supporting those activities suffer from these ill-conceived hydro-technical projects. Only the trappers of muskrats think that maintaining the water level in the SZP constant at a high level is necessary for creating a muskrat habitat. However, the number of animals caught has decreased by 90% between 1980 and 1992.
- The SZP is currently unprotected, although it is one of the most important nesting places for birds in the delta region. Restoration of a free flow of water into and out of the SZP, together with planning and protection, will be essential to conserve its ecosystems.

1.28 Ill-conceived advice and policies from departments of the former Ministry of Fisheries and the Ministry of Amelioration and Water Management led to dredging and canal construction in the Dunavskie Plavny itself and continued until 1991. No opinion or advice from the local fishermen was sought by the central authority. The fishermen - who claim traditional rights to all open waters -- have all noticed a sharp decline in catches since the canals were built; the loss of the reproduction function of the backwaters near the coast is likely to be due to the direct influence of the polluted and nutrient-rich Danube waters.

### E. Project Justification and Regional Initiatives

1.29 Activities in Romania were responsible for initiating international interest in the Danube Delta. Following the 1989 revolution, a decree was issued halting further polderisation in the Romanian part of the Delta. In 1990 the Romanian government invited IUCN to help coordinate plans for nature conservation in the country, with an emphasis on the Danube Delta. The Romanian portion of the delta was declared a Biosphere Reserve in 1990, and the Danube Delta Biosphere Reserve Authority was established under the Ministry of Environment. The IUCN a series of missions which, summarizing work by Romanian scientists, resulted in the publication of an Environmental Status Report in 1992. In May 1991 the Danube Delta was declared a RAMSAR Wetland of international significance, and in September 1991 an International Seminar was held in Tulcea, Romania, which resulted in preparation of a series of management objectives for the delta. These included proposals for establishment of legal, administrative and planning, conservation, socio-economic, research and monitoring and public awareness and education objectives for the delta. The Government of Romania/IUCN "Management Objectives and Framework" document provided a basis for actions to be undertaken to prepare and implement a management plan for the delta. The document also provided the basis for securing financial assistance from the international community, and it was from this that the GEF project proposal was drawn up in January 1992.

1.30 The original GEF project document envisaged providing assistance only to the Romanian portion of the delta. However, at the technical review the importance of considering the entire delta ecosystems, including the Ukrainian portion, was emphasized, and US\$ 1.5 millions of the US\$ 6 millions allocated to the project were earmarked for Ukraine. A project identification mission visited Ukraine in May 1992, and arrangements were made for initiating preparation activities. In the meantime, Romania is also receiving assistance from the EBRD and may shortly receive a loan; the assistance emphasizes institutional strengthening of the Biosphere Reserve Authority and development of a biosphere reserve management plan together with support for village infrastructure and ecotourism. The Ukrainian portion of the delta has continued to receive little attention from the international community, with the exception of World Wildlife Fund (WWF) Germany, which has provided some modest equipment, training in digital mapping and land classification to DP staff. The relative neglect by the international community of the Ukrainian portion of the delta highlights the importance of the GEF project to Ukraine.

1.31 The GEF Danube Delta project is closely linked with two other GEF and other donor-funded regional projects, one for the Danube River basin, and one for the Black Sea. The Danube River basin project has attracted funding of US\$ 56.7 millions and focuses on preparation of an action plan, improved river basin management, a regional environmental survey, inventory of biological resources, strengthening monitoring, data management and applied research. The Black Sea program, for US\$ 9.3 millions, has as its objectives reversal of environmental degradation of the Black Sea, and rational natural resource management, development of a pilot pollutant monitoring program, database, policy and legislative enhancement, preparation of investment proposals and donor mobilization. There is a

subcomponent to develop a biodiversity strategy for the coastal mountains, dunes, wetlands and nearshore intertidal areas of the Black Sea. The International Waterfowl and Wetlands Research Bureau (IWRB) and Ukrainian Ministry for Environmental Protection (MEP) sponsored a conference on biodiversity of wetlands for the Black Sea in Odessa in October 1993. This will result in a joint IWRB-World Bank document that outlines initial actions for development of a broad Black Sea Biodiversity Strategy. The Danube Delta project will be a pilot for this broader regional initiative.

1.32 GEF financing for the project is thus critical not only to help develop sustainable management of the Ukrainian part of the delta and protect its biodiversity, but also as part of a much larger regional program to improve the management of the Danube Basin, Delta and Black Sea.

## II. INSTITUTIONAL SETTING

### A. System of Reserved Area Management and Key Central Agencies

2.01 The system of reserved area management in Ukraine is clearly described the recent Ukraine Environment Strategy Report (Suggested Priorities for Environmental Protection and Natural Resource Management-September 20, 1993-World Bank). Ukraine includes 15 nature reserves (zapovednik) of which the Danube Plavny Reserve (DP) is one, totalling over 200,000 ha, 4 national parks totalling 176,000 ha, and 3 biosphere reserves, as well as locally protected landscapes. Only 2.1% of the land area is under some form of protection. Government policy is to increase this proportion to 3%. The Bank report emphasizes that the focus in the short term should be on improving conditions in existing protected areas.

2.02 The zapovedniki's main objectives are to preserve natural sites for scientific research and monitoring, to develop recommendations for nature conservation, and to assist in the training of ecological specialists -- recreation is not specifically indicated, and travel by unauthorized people is prohibited. Management of the reserves falls under various agencies, and management tends to reflect their objectives, rather than those of nature conservation. The DP is under the control of the Odessa branch of the Institute of Biology of the Southern Seas, which is itself under the Academy of Sciences. The reserves are not identifiably part of one system. Landuse planning outside the reserves has rarely been attempted. The Strategy Report emphasizes that incorporation of the surrounding populations into the management of the reserves and neighboring areas is essential to build community support for the reserves and thus ensure their protection. Individual managing agencies are responsible for financing the protected area, though some reserves have a supplemental source of income, eg from timber production. The DP is the most underfunded of all the reserves relative to its size. Currently the reserves, including DP, are facing critical financial problems including a reduction in allocations.

2.03 The Ministry for Environmental Protection (MEP) was created in May 1991. It is authorized to supervise nature conservation activities and is the governmental agency responsible for the organization of protected areas and management of the countries natural

heritage. MEP has its departments including regional and district inspection agencies in every region of Ukraine and the Republic of Crimea and has a staff of 2,600. The MEP is still in a process of growth and it is underfunded. Nevertheless, it is vigorously acting to implement governmental policies concerning the protection of biodiversity, extending protected areas, preparing and giving top priority to this GEF project. A project coordination unit has been set up in the MEP. The sector report recommends a greater role for MEP in coordinating and planning protected area management, and recommends also study of the possibility of earmarking of certain earnings to protected areas to increase their revenue sources.

2.04 The DP is supervised by the DP Reserve Authority (DPA). The DP Reserve now is under the Academy of Sciences of Ukraine and is directly controlled by the Odessa branch of the Institutes of Biology of Southern Seas. It provides the DP with about US\$3,000 per year for salaries and operative expenses, and nominates staff for the reserve. Its role in the management and technical activities of the DP Reserve is insufficient. The Academy of Sciences of Ukraine together with MEP coordinate and accomplish scientific and methodological supervision of the research carried out in nature reserves. The Academy will promote institutes under its control to take an active part in the implementation of the project.

2.05 The Ukrainian Scientific Centre for the Ecology of the Sea is the main institution of the MEP responsible for marine ecological research. The centre has been established to investigate marine ecosystems under growing anthropogenic pressure and to work out the scientific grounds for the reclamation and sustainable management of coastal and wetland areas in the region of the Black and Azov seas. Over the last years it has undertaken research in river estuaries and MEP has nominated it as the coordinating research centre for monitoring Ukrainian wetlands with respect to RAMSAR conventions.

#### B. Danube Plavny Reserve Authority

2.06 The DPA was created in 1981. It currently has a staff of only 18, including a director and vice director, two ornithologists, one botanist, one herpetology/mammalia expert, an ichthyologist under contract, two scientific assistants, four wardens, one mechanic, one secretary, one administrative assistant and support staff. Its responsibilities are:

- (a) to protect the territory within the boundaries of the reserve;
- (b) to study natural complexes in the reserve, and take measures for their protection and rehabilitation;
- (c) extension concerning nature protection and management;
- (d) to undertake scientific research;
- (e) to monitor changes in the area; and



(f) to undertake research expeditions in the area.

2.07 Financial constraints, weak management and isolation have seriously reduced the effectiveness of the DPA staff work. Staff do not have clear work programs and do not work in a coordinated way. Activities need to be formulated according to nature conservation problems, and staff need to work together in multidisciplinary teams. Currently the DPA does not have its own judicial status or Bank account. A new director with management as well as research experience has recently been appointed.

2.08 Within DPA there is little legal expertise, and wardens' reports of violations of reserve regulations are rarely followed up. Some DPA staff have attempted to seek legal solutions to nature protection problems in the region, and have worked on classification of environmentally sensitive areas into core (strictly protected) areas, buffer areas (known as game reserves in Ukrainian environmental law) and areas for controlled economic use (known as anthropogenic Zones). This work needs further development and close collaboration with the local population, but it forms the basis for land-use planning and eventually creation of a biosphere reserve.

2.09 DP was created as a nature reserve without consultation of the local population: the regulations forbid all forms of vegetation cutting, gathering of fruits, cattle grazing, hunting, fishing, camping or other leisure activities, or traditional activities. Enforcement problems appeared from the outset and have become more severe in recent years -- cattle are grazed, there is fishing, hunting and trapping. There is an urgent need for increased public awareness and environmental education, and need for a management plan which will balance the various claims on the resources of the reserve.

2.10 In order to manage the protected areas of the delta effectively, DPA will need considerable strengthening; it will also need much more support from the related scientific bodies, in particular the Institute for the Biology of the Southern Seas, the Ukrainian Scientific Centre for the Ecology of the Sea, the Zoological Institute, the Institute of Botany, the Institute of Hydrobiology and the Ukrainian Land Design Institute, as well as the MEP and the Academy of Sciences of Ukraine.

### C. Other Organizations

2.11 Locally elected officials, in particular the mayors of Vilkovo and Kiliya, have played an active part in project preparation to date, as have the fisheries and agricultural kolkhozes, the hunting cooperatives and the port authority. There is one local NGO, the "Ecological Club of Vilkovo", and two regional NGOs, the Nature Protection and Regeneration fund, which has been active in the protection of the Dniester delta, and the Regional Fund to Save Wild Nature in Odessa, which is backed by powerful political and financial authorities. The schools have potentially a very important role to play in the popularization of nature protection.

### **III. PROJECT DESCRIPTION**

#### **A. Project Summary**

3.01 The project has the objective of introducing participatory protected area management to the Danube Delta, in order to protect the delta ecosystems and restore biodiversity, within the broader context of the regional programs described above. Detailed project costs are indicated in Annex 1 of this report. Project components may be summarized as follows:

- (i) Institutional strengthening: the project would provide for the expansion and restructuring of DP authority to develop and implement effective management plans for protected areas in and around the delta, through training and technical assistance, provision of infrastructure including an office and visitors centre, construction of a house for the director and for senior DPA staff, and office, transport and scientific equipment and its maintenance; (US\$750,000);
- (ii) Strengthening the Warden's section, through staff increases, training in patrolling and protected area management, provision of equipment, and field office and residential accommodation; (US\$167,000);
- (iii) Strengthening ecosystem monitoring, including flora, fauna and hydrological monitoring and creation of database and simple GIS, to assist with the development of management plans; (US\$110,000);
- (iv) Pilot wetland restoration, including restoration of hydrological circulation to the Stensovsko-Zhebrijanskie Plavny (SZP), pilot protection from Danube water of one lake ("kut") in the DP reserve and monitoring of the impact, restoration of the Vilково town canals, studies for restoration of Yermakov island partially being used by the Pogranichnik Sovkhoz for cattle and horse breeding, and studies of marketing alternatives for ecologically-friendly cultivated produce from the Lenin fisheries kolkhoz; (US\$300,000);
- (v) Public awareness and community involvement in protected area management both by DP staff and non-governmental organizations (NGOs); (US\$131,000);
- (vi) Developing and implementing a programme for protected area expansion and creation of a biosphere reserve DP to become Biosphere Reserve Authority, through land use studies and using information provided from monitoring, and community participation; (US\$60,000);
- (vii) Coordination with GEF activities in Romania and the GEF Black Sea Environmental Management Program; (US\$11,000) and
- (viii) Technical expertise to prepare an endowment fund to finance the recurrent costs of expanded protected areas in a second phase. (US\$12,000).

## B. Detailed Project Description

### COMPONENT 1: Danube Plavny Authority Strengthening (US\$750,000)

3.02 This component focuses on improving DPAs capability to implement the project and manage a biosphere reserve in the delta over the next four years. It focuses on:

(i) increased staffing; (ii) resident advisor; (iii) general training; (iv) DPA general infrastructure (buildings); and (v) equipment needs for DPA. More specific equipment and training is outlined in respective components. Institutional strengthening needs for the DPA ecological wardens is treated in a separate component.

#### (i) Expansion and Reorganization (Government Contribution)

3.03 It is important that the DPA be expanded in scope and scale into integrated functional groups that can adequately manage the variety of ecosystems and economic pressures that exist in the Delta as well as work with the other Ukrainian institutes and their colleagues in the Romania Biosphere Reserve. The DPA is at present only 18 in staff; the 1 director has limited management experience, the 4 wardens are not trained in environmental patrolling and management, the 4 scientists are well-trained only in their specific discipline, not in holistic ecological practices. There is a great need to make the staff stronger in integrated management, enforcement capacity, ecological monitoring and public awareness. Given this need, the following organization structure for 50 total staff (tentative figure) is proposed for the DPA, identifying roles, staff numbers and the components which they will be primarily responsible for in implementing this project. At Negotiations, a staffing plan would be agreed to, and GOU also agreed to make the necessary budget allocation for it [para 5.01(a)].

Table 1: Danube Plavny Authority Staff/Plan Expansion

Unit	Phased Staff (No.)					Lead Components
	93	94	95	96	97	
Administrative (DPA Dir., Admin. Dir.)	2	2	2	2	2	DPA Strengthening
Wardens (park management, patrol, guides)	4	10	20	20	20	Warden Strengthening
Biosphere Reserve Development Group (park planner, socio-economic specialist)	0	2	3	3	3	Biosphere Dev.
Wetland Monitoring Research Group (scientific staff and GIS specialist)	4	7	10	10	10	Ecosys. Monitor and Rehabilitation
Public Awareness (education specialist, ecotourism guides)	0	3	5	5	5	Public Awareness
Support Staff (financial, secretarial, mechanics)	8	10	10	10	10	DPA Strengthening
<b>TOTAL</b>	<b>18</b>	<b>34</b>	<b>50</b>	<b>50</b>	<b>50</b>	

Note: Figures are tentative.

(ii) Support to Project Management (US\$90,000)

3.04 A Resident Advisor will provide overall technical assistance with project implementation and biosphere development for 2mm/yr during project year 1 and 1mm/yr during project years 2 and 3. A procurement advisor would be recruited for one month in the first year to assist with the preparation of tender documents for the procurement of goods. A bookkeeper would be recruited on contract to help manage project accounts. A Scientific Advisory Committee would meet periodically in Vilkovo to assist with project implementation. The MEP would also provide administrative and technical support.

Overall DPA Training (Total Cost: US\$70,000)

3.05 Training to enhance the capacity of the existing and new staff, with an emphasis on career development would be structured as outlined below. There needs to be a strong emphasis on basic protection functions and infrastructure building during the first two years.

- (a) **On-site English Training Lab:**  
6 week intensive courses each year and lab facilities for ongoing work for DP professional staff in Vilkovo, together with on-site training in computer use by Ukrainian experts.
- (b) **Wetland Study Tour:**  
One three-week foreign study tour for 5 lead staff during the first year of the project to gain broader perspectives of wetland reserve management. This will be coordinated with the GEF Romanian study tours. The study tour host will spend one week in the Delta before the Ukrainians visit to become more familiar with the reserve needs.
- (c) **On-site wetland management course:**  
A two week on-site course on wetland management, including waterfowl management, legislative aspects and wetland protection, for DPA professional staff during the first and third years of the project. This will be done in conjunction with the GEF Romania project, and will be conducted by an organization familiar with the Danube Delta management needs, e.g. IWRB.
- (d) The World Wildlife Fund (Germany) will provide ongoing technical assistance to the DPA in the following areas: ecosystem monitoring (GIS, vegetation mapping), ecological aspects of biosphere reserve land-use planning, wetland restoration and public awareness, through the project. The times and costs are detailed in the respective components. WWF will also be providing some technical assistance to the GEF Romania project and therefore help to facilitate integrated ecosystem approaches to the Danube Delta.

(iv) Infrastructure (US\$388,000)

3.06 DP Headquarters: presently the DP only has one small office in the Vilkovo town center, away from the water, without storage facilities for field equipment. As indicated above, for the DP to manage the existing and proposed expanded protected areas (biosphere reserve) they will need additional staffing, infrastructure and equipment. The key facility will be headquarters office which will have rooms designated to service as offices, conference rooms, visitor center (for public awareness activities as designated in that component), research facilities (for scientific monitoring staff and detailed in the Monitoring component) and lodging facilities for ecotourism programs. The project would also fund construction and furnishing of 6 small visitors lodges adjacent to the DP-Office. These lodges will be used by scientists, bird watchers, photographers, filmers, etc. who wish to stay for a longer period in the Delta. A building has already been designed for this purpose and two sites identified. A house for the director would also be financed, together with renovation of apartments for senior DP staff. During the construction period of the new building, DPA would rent a building currently available in Vilkovo which could temporarily accommodate some staff increase. GOU agreed at Negotiations that the People's Councils had provided land for the new building; a site has already been identified and a preliminary

design prepared [para 5.01(d)]. GOU also identified buildings in Vilkovo which could provide satisfactory temporary accommodation while the building is under construction.

3.07 Funds are allocated to build notice boards, which will accommodate a wide range of exhibits on public awareness activities, ecological information protected area zoning and safety. Sign posts to demarcate the protected area boundaries are also supported.

(v) Equipment (US\$156,000)

3.08 Apart from furniture, the project would provide office equipment, including 4 PCs, two cars, 30 motorcycles and bicycles, audiovisual equipment and kitchen and canteen equipment for the headquarters office, gauge tools and radio equipment for communication between the DP headquarters and wardens' stations (Total cost US\$141,300).

(vi) Recurrent costs for office supplies, fuel, equipment, vehicle and building operation and maintenance would also be financed under the project. These would increase to US\$47,000 p.a. by year 4 of the project.

COMPONENT 2: Warden Strengthening (US\$167,000)

3.09 DPA's protection efforts in the present DP reserve, and enforcement of laws and regulations are in urgent need of improvement. Although most wardens are very well acquainted with the area, no special training or education programme has been provided to prepare them for their tasks. The lack of any proper legislative and administrative follow up on reported cases of law violation has seriously eroded the motivation of wardens. The wardens' duty performance falls short due to a lack of adequate staff transport and communication facilities. Four small boats are at present the only transport facility available to the wardens.

3.10 Without proper protection of the existing DP core area and planned S-ZP core area, biodiversity and ecological processes of the delta will decline with present hunting, agriculture and fishery pressures. Guards require training in regulations, law enforcement, patrolling, public relations and park management. There will need to be a Chief Warden who will oversee the day to day management of the wardens and serve as the primary warden unit development and training officer. The wardens will be equipped with patrolling equipment in addition to the office support based provided.

3.11 The staff would initially increase to 10 wardens and up to 20 in time. Their role would be primarily patrol and law enforcement, but they would need to have strong public relations skills as well as having basic wetland knowledge of the flora, fauna and hydrological process to assist the scientific staff in basic monitoring activities. They will also work closely with the other staff regarding realistic zoning and protected areas expansion strategies.

3.12 The wardens will have particular locations/districts of responsibility on a permanent or rotating basis as the protected area expansion aspects of the project develop. Wardens' stations/offices will be sited and constructed in critical locations for effective protection. These are described in more detail later in this component.

3.13 The wardens areas of primary responsibility will be:

- Assist the DPA with the design and implementation of realistic enforcement measures for wildlife management, grazing, agricultures, hydrological and recreational activities.
- Monitor and enforce the measures described above.
- Assist the DPA biosphere planning and public awareness team with the design, development and establishment of management plans, formal park boundaries, including working with local citizens; siting and placement of boundary markers and park inexpensive structures.
- Work with the town of Vilkoovo in providing emergency assistance for safety of the local community members.
- Assist the DP scientific team with routine monitoring of flora and fauna, especially bird census, mammals and fish management, and the preparation and enforcement of game management plans in the core areas and game reserves.

3.14 In order for the Wardens to be an effective unit and work with the rest of the DPA staff and local community, the following training program is proposed. This will be supported through the provision of equipment and warden stations described in subsequent sections.

(i) Training (US\$14,000)

- (a) Foreign Study Tour: One, two-week foreign study tour of other wetland reserves with an emphasis on protection techniques by the Chief Warden will be done in conjunction with the Romanian foreign Study Tours, if possible.
- (b) Protection Course: Ongoing training for all of the DPA Wardens present and newly recruited staff organized by MEP and carried out by other Ukrainian natural resource management entities, e.g. the University of Zaporozje and/or other Ukrainian forest and game management technical colleges. The course will focus on law enforcement, regulations and game management. This will be for a two-weeks time period each year, with the senior wardens taking an increasing role as trainers of a new recruits. A program would be worked out and agreed in Kiev for training wardens of protected areas.

- (c) **Romania Foundation Course:** The senior wardens (up to 10) will go to Romania in years 1 and 3 to participate in the Romanian wardens foundation course for 2 weeks in the capacity of "trainers" to bring information back to Ukraine.
- (d) **Wildlife Management Course:** On-the-job training of flora/fauna, basic ecological process and monitoring and inventory techniques so that the wardens can help carry out day-to-day wildlife monitoring. This will be taught by the DP scientific staff for 3 weeks each year. Funds are provided for materials.
- (e) **Public Awareness Course:** One-the-job training for public awareness activities and skills to help the DP public awareness/education staff carry out work with local communities, as well as handle day-to-day contact with visitors and local people. Three weeks per year, to be conducted by the DP public awareness staff. Funds are provided for materials.
- (f) Language training will be ongoing utilizing the lab established in the DPA component 1.

3.15 The above courses will together comprise a Ukraine Warden Foundation course that will have a yearly examined renewable certification with different sections on Wildlife Management Protection and Public Awareness.

(ii) **Infrastructure** (US\$72,000)

3.16 Four warden stations would be relocated to more appropriate sites and provided with sanitary facilities, kitchens and sleeping accommodation for fee-paying researchers and ecotourism visitors (US\$15,000 each, total US\$60,000). New locations would be sited close to river branches, with easy access to important areas, and would permit efficient patrolling. Sites have been selected, at north-east Kubam, west Gneushev, north-east Ankudinov and at the village of Bolshoe.

3.17 The DPA and the protected areas will serve a wide-range of public education and monitoring functions. Exhibit boards and signs for nature interpretation purposes are mentioned in the DPA strengthening component. The following will be additional infrastructure, manned by the wardens, but used for a variety of purposes:

- (a) Construction of four observation towers adjacent to the central part of the Kilia Reserve, and in the new protected zones. These towers will be used for patrol and warden activities and be able to accommodate information 'notice boards' and simple exhibits.
- (b) Construction of four bird blinds, adjacent to the cormorant and gull colonies which can be reached by boat without causing disturbances to the bird colony (safe landing and entering).



(iii) Equipment (US\$61,000)

3.18 The DPA presently has six wooden and nine aluminum small boats, but their motors are old and many beyond repair. The warden department would be supplied with four new outboard motors, motorcycles and bicycles and one 4WD vehicle, together with furniture for the warden stations which would be equipped with solar panels for lighting, new uniforms and night rescue equipment.

COMPONENT 3: Monitoring and Database Management (US\$110,000)

3.19 Monitoring activities provide information on the causes of environmental degradation and the resulting changes in biological community composition and distribution. Such information is necessary for appropriate management of the existing and planned Delta Biosphere areas with regard to zoning and activity regulation.

3.20 The monitoring framework for flora and fauna is comprised of three key activities including: (1) Ecosystem Surveys and Species Inventories, (2) Data Management, and (3) Resource-Use Management Plans. These three activities would result in the establishment of baseline conditions and monitoring programs which can be used for management recommendations targeted at key indicator species, biologically rich areas and high-risk habitats (hotspots) and control areas and wetland restoration treatments. This can provide indications of effectiveness of protection and guidelines for zoning strategies. While the flora/fauna monitoring component would primarily be carried out by the DPA Wetland Research Group with support by the Wardens Department, it will receive assistance from MEP, Academy of Science, WWF and local NGO's.

(1) Ecosystem Surveys and Species Inventories

3.21 Little research or management-based monitoring has been done at the whole ecosystem/delta-landscape level, looking at broad-scale ecological processes. Seasonal and annual general surveys can identify long-term baseline and monitoring status of major ecosystems and habitats (river tributaries, canals, lakes, reedbed swamps, forests, dunes) with regard to distribution, human-use and climate impacts and threats, protection needs, regional planning and economic opportunities. This information provides guidance to management on zoning strategies and regulatory actions.

3.22 Population and species inventories provide information on key indicator, endemic, exotic and endangered species regarding life history trends, harvesting rates, population threshold, causes for community change and population decline. These focus on forest vegetation, macrophyte aquatic plants, birds, fish, reptiles and mammals. Short term monitoring indices would focus on the level of removal of species, especially threatened ones through demographic analysis, harvest models, inventories, capture-recapture, transect counts, hunter yields, market-consumption surveys, habitat use studies. Long-term studies

would focus on population size, abundance of keystone species, age/sex ratios of keystone, recruitment rate to indicate sustainability and threshold levels.

3.23 Ecosystem surveys and inventories would be done through the assessment of remote sensing, aerial photographs, GIS, weather records, transect surveys, land-use maps, previous habitat inventories, and community interviews. These would be compiled into map and retrievable formats as indicated in the Data Management activity. This activity will be highly coordinated with the species, population studies as well as the hydrological monitoring described elsewhere in this report.

(a) Bird, Fish, Mammal and and Reptile Monitoring

3.24 The birds of the Danube Delta are perhaps the most "high profile" species of the delta with regard to conservation, yet as noted earlier migrating and breeding populations are declining due to loss of habitat and deterioration of water quality. Birds also are a good way to focus wetland management that lends itself to habitat management for other flora and fauna. In the past, bird counts were conducted regularly by a wide variety of institutions, based on aerial and ground surveys, but at present due to equipment, fuel and staff limitations these are irregular, and the existing data and present activities are uncoordinated.

3.25 This activity would support the DPA Wetland Research Group to conduct and coordinate bird monitoring in the reserves through the following activities:

- Establishment of a network of bird monitoring activities to establish both with an emphasis on mid-winter warden and waterfowl inventories in through local, national and international channels;
- Technical assistance for (a) from IWRB and the Melitopol Ornithological station in the design of baseline and ongoing monitoring-based inventory protocols as needed for wetland management.
- Annual reports on survey counts and findings which would go to all participants;
- Work with the Public Awareness staff to produce newsletters on bird monitoring development; and

Sample Bird Monitoring Program:

3.26 As with each of the monitoring activities, the exact details of the protocols of sampling, measuring, counting, etc. will be developed as the baseline data is established and refined with the project, the following is a sample approach:

- Species-based monitoring: Simple counts and population assessment is needed for priority 8-15 species (e.g. Red Breasted Goose, White pelican, Pygmy cormorant and Dalmatian pelican, spoonbills white tailed eagle and white stork),

including regular monitoring of key sites every 2 weeks and intensive mid-winter counts for the wintering waterfowl and crane migrators. Information on dates and bird numbers, nests, eggs laid/nest, fledged young leaving the nest is needed for population trends.

- Habitat-based monitoring: A variety of habitats (lakes, reed beds, marshes, meadows, grasslands, woodlands, coastal dunes/spits) to be selected with each approximately 500ha in size, to ideally represent 10-15% of the total area of that habitat and be selected on a stratified random sampling basis. Each site needs to be visited 5 times per year, 2 winter, 3 spring/summer. The number and activity of all birds present should be recorded.
- Continuous effort trapping sites: Two decoy observation places are needed for trapping with mist-netting to be placed where concentrations of migratory birds occur. Trapped birds should be ringed and information on morphology collected, and released.

### Fish:

3.27 Fishing has been a way of life for people of Vilkovo. There are active fishery Kolkozos largely for the breeding of carp. From a management perspective solutions must be sought to involve the fishermen and ensure that they understand the need for protecting breeding and spawning grounds of fish to ensure a sustainable fishery. This will require much cooperation in the monitoring and management of delta waters. There has been little regular monitoring of non-commercial fish species. This activity focuses on the following to enhance the present work by DPA in cooperation with appropriate scientific institutes, and encourage support from the other institutes and local communities:

- Development of baseline fisheries information for all species, not just commercially valuable ones, with an emphasis on endangered ones and ones which are bioindicators.
- Development of an ongoing monitoring program to look at time series change, population trends, indications of water quality and health, potential economic resources and overall biodiversity recovery.
- Development of a program to work with the fishermen in the monitoring efforts and incentives for their assistance.

### Mammals and Reptiles:

3.28 Little is known about the native mammal populations other than the introduced muskrat which is trapped for fur and there are no ongoing studies. The DPA has an excellent herpetologist who is very familiar with the Delta's reptiles. Traditionally, the delta has been a key place for hunting parties due to its rich resources. Yet, both baseline and monitoring

work is needed with a protection focus on the mink which lives on the plours, wild cats and otters in the waters. In contrast, populations of the wild boar need to be managed, possible through organized hunting. The mink and the otter have a high-profile conservation value that could be encouraged by NGO groups in public awareness activities. As with birds and fish sampling programmes need to be established to examine the role of mammals and reptiles in the delta and ensure their contribution to biodiversity.

(b) Vegetation Mapping

3.29 During the last five years, no vegetation mapping or vegetation research has taken place in the Danube Region other than those carried out by the DPA botanist. Due to logistic and transport constraints, this research was done only in the vicinity of Vilkovovo and parts of the Dunaiskie Plavny Reserve. There is a lack of up to date information on the present state of the vegetation in the region. Considering the future expansion of DPA's tasks, more sophisticated and less time consuming vegetation mapping and monitoring methods need to be introduced. Satellite image interpretation, in combination with GIS, is currently being established in the Romanian Danube Delta Institute, with support of WWF and Rijkwaterstaad. For efficiency and coordination reasons, DPA should adopt a similar system, and acquire knowledge and experience in using it.

3.30 Vegetation monitoring will provide basic data on habitat changes and on the dynamics of habitats and ecosystems. Impacts of interventions and the effectiveness of rehabilitation measures are special objectives of this monitoring programme. Coordination should be established between DPA and other scientists and vegetation monitoring activities, i.e. with the hydro-biological monitoring and scientific research programme. The vegetation monitoring programme should become the major framework for other scientific research, such as fisheries, herpetology, ornithology and other research.

Equipment and Training for Flora/Fauna Monitoring:

3.31 The project will fund the following equipment for the DPA Wetland Research Team to carry out flora and fauna surveys and inventories: 1 jeep, 2 boat engines, traps, nets, binoculars, video and camera equipment, lights, 1 global positioning system, herbarium supplies, camping gear and fuel for boats. While specific equipment is provided for the scientific team, they will work in conjunction with the rest of the DPA staff, other Ukrainian Institutes and their Romanian Colleagues.

3.32 As described earlier, the project will also fund a two week on-site course on bird monitoring and wetland management, to be taught by one specialist (e.g. from IWRB or Bird Life) and one local specialist (e.g. Meltipole) to standardize bird monitoring techniques with those in the region and to integrate these with other flora/fauna monitoring protocols and habitat management needs.

3.33 A DP ornithologist will also be funded to attend the Black Sea workshop on bird monitoring. This is costed in the Regional Initiative Component.

**(2) Data Management and GIS**

**3.34 This activity will eventually integrate all total fauna information, but the pilot emphasis will be on GIS for vegetation mapping, and then applied to birds, etc.**

- (a) Relevant information from publications, maps, aerial surveys, remote sensing, etc. in flora and fauna would be compiled into a DPA database, targeted for resource management applications, but linked with a database to clarify existing state of knowledge and gaps;**
- (b) Preparation of an accurate base map from which other data can be referenced including time series, point source and geographical coordinates. This could best be done with SPOT satellite imagery, aerial photographs and ground truthing with GPS locators. This would become a prototype and standardization for ecological zones and land-use units. Recent aerial photography is also needed;**
- (c) Preparation of the information for inclusion into a simple GIS format in the DPA to be used for management, planning and public awareness needs. The GIS system would need to be capable of selecting spatial ecosystem areas and specific species information, as well as have prediction and modeling capacity;**
- (d) Information exchange and collaborative monitoring activities (e.g. bird counts) for species and/or ecosystems that are common to both the Ukraine and Romanian sides of the delta;**

**3.35 Data Management will be a collation and analysis of existing data (reports, maps, interviews) to clarify present activities, identify gaps, recommend data collection needs and arrangements (institutional and technical). A simple GIS systems would be provided to the DPA (DPA facilities are not adequate for more sophisticated GIS at present). GIS training visits (on-the-job training) should make use of satellite images and should be attuned to specific requirements for vegetation mapping and monitoring. The initial emphasis will be on vegetation mapping, but this will be expanded to other resources to produce resource-use management plans.**

**3.36 The project will fund the following equipment and data management capacity: computer system, GIS software, aerial photography and satellite images, digitizer and CD Rom capacity.**

**3.37 The project will also fund a GIS and vegetation mapping specialist through WWF-Germany to visit the delta two times per year to assist with setting up the GIS system, data design and monitoring protocols, map and management plan production.**

**(3) Management Plans**

3.38 Monitoring requires ongoing input and assessment of the suitability of existing reserves, consider reclassification and zoning options and refine management plans, in light of ecosystem and population sustainability needs, economic pressures, infrastructure development and regional influences. The data from the surveys and inventories will be synthesized to prepare management plans for wildlife (especially waterfowl), grazing and fisheries. These will feed into the overall Biosphere Reserve Establishment Component to ensure appropriate and realistic management criteria, legislation, zoning, as well as serve to provide ongoing direction for the flora and fauna monitoring activities. These management plans will also help management of other wetland reserves throughout Ukraine and the Black Sea.

3.39 A number of management plans need to be developed as part of the monitoring activities and further integrated into the Biosphere Reserve Establishment Process. These need to focus specifically on wildlife management with regard to hunting, grazing, fishing and farming. Data produced from the survey and inventories will be digitized into the GIS form and result in a series of maps and reports. These can be used as valuable tools to discuss ecological needs, resources-use priorities, zoning and permitting strategies, which together will comprise a wildlife management plan or plans for wildlife, fisheries and agriculture. The project funds basic production (printing, publishing) costs, while the equipment to produce the plans is provided in the previous two sections.

**(4) Hydrochemical Monitoring**

3.40 Proposed hydrotechnical interventions under the project will focus to improve or restore isolated problem areas. For the largest of these, the Stensovsko-Zhebrijanskje Plavny (SP), the project will provide a stock of laboratory equipment that will be installed in the DP's new laboratory facilities in Vilkovo and will be used for other investigations as well. The equipment for in-situ testing will arrive and be tested during year one, with as priority to locate the sources and types of worst agrochemical pollution and eutrophication. This is needed for the final selection/elimination of presently proposed solutions. Thus, execution of improvement measures in SP will start in year two. The project will provide TA of a hydraulic engineer and a wetland restoration/water quality specialist from the WWF/Auern Institute. Further monitoring of hoped-for water quality improvements and supervision of civil works construction will be carried out by hired Ukrainian technicians, who will also work on other areas proposed for improvement, such as Anankin Kut. These activities are costed under Component 4.

**COMPONENT 4: Wetland Restoration (US\$300,000)**

3.41 The deteriorated condition of a number of wetlands near the DP has been described above. In addition to those, there has been further modification/destruction of natural habitats on the Ukrainian side of the Danube, in particular caused by the damming of

tributaries that used to drain the northern steppe, resulting in the creation of, from west to east, lakes Kagul, Yalpug, Katlabukh and Kitaj, and the empoldering of most of the 1-4km wide stretch of flood plain between the Danube and the steppe escarpment.

3.42 Although the foregoing areas deserve conservation or restoration of their habitats to protect some unique vestiges of the former steppe fauna and vegetation, the purpose of the project - and the available funds - preclude this, being earmarked for the delta itself. In addition, it is necessary to consolidate first of all the tenuous authority of the DPA. Enlarging its area of responsibility far away from its present modestly-sized home base would only exacerbate the problems of recognition of its authority.

3.43 In order of importance, to be executed as a function of available funds, support from the project for wetland restoration will focus on three pilot restorations and two feasibility studies. In all cases chemical water quality, micro and macro fauna should be monitored in the "before" and "after" situation.

#### Stentsovsko-Zhebrijanskije Plavny (SZP) (US\$12,000)

3.44 Flora and the rich bird fauna in these plains suffer from insufficient water circulation since the construction of the Danube-Sasyk canal in 1984. In addition, the polluted return flow from 42,000 irrigated ha enters the western Stentsovsko Plavny from the north. The main task therefore is to restore the water circulation that is presently interrupted because the gates of the Lapysh canal, of the inverted siphon underneath the Danube-Sasyk canal, and of the two culverts underneath the Vilково-Primorskoye road are kept closed most of the time, preventing drainage of the SZP. A special contract with the Godwodkhos gate operator from Ismail would ensure to keep those gates open at all times during a two year monitoring period to provide alternating inundation and drying periods in an annual cycle. The change in water quality would be monitored during that period during the months of May and September under a contract with an Odessa-based institute. The project would also clean the inverted siphon underneath the Sasyk canal during the autumn low water season. It would investigate whether water from the Sasyk canal could be supplied through new outlets in the eastern canal embankment to the (eastern) Zhebrijanskije Plavny during high Danube water levels in the spring-summer period.

#### Pilot Blocking of one "Kut" (US\$14,000)

3.45 The project would block the open connection made by the local fishing cooperative, between one of the coastal lakes, such as the Lazarkin Kut, and the Danube and monitor the change in fauna and flora. This proposal was suggested for several lakes in the consultant's preparation report. As it is controversial, it was decided to include blocking of only one lake on a pilot basis. The cost of blocking by barge-mounted clamshell is estimated at US\$14,000. The monitoring is not costed separately as it would be part of the regular monitoring program.

Vilkovo Canals (US\$173,000)

3.46 To restore the unique urban attractiveness of Vilkovo as a tourist destination and so contribute to potential ecotourism in the delta, the project would re-excavate (by hand) 18 km of the small internal canals in old-town Vilkovo, estimated at US\$22,500. Also, 2 km of the main canal through Vilkovo has to be dredged and the problem is the long distance to the nearest disposal site for the dredging spoil. It is estimated that half of the 40,000 m<sup>3</sup> to be dredged can be done by one of the Godwodkhos-owned cutter dredges, near the mouth of the canal where space is available for hydraulic disposal (US\$50,000). However, the remainder would have to be removed by a barge-mounted clamshell and this would require costly double handling (US\$88,000) for spoil removal. The total of this component, which would enhance the local population's attitude towards the DPA, would amount to US\$160,500.

Ostrov Yermakov (US\$3,000)

3.47 A study would be made to see to what extent the use of the Ostrov Yermakov Island could be restored to a wetland destination keeping in mind that the higher part of the island is presently used for cattle and horse grazing. The island is located between the Romanian islands of Cernovka and Babina that will be restored entirely to wetland condition to the south and the Lenin fish ponds to the north. Local consultants would investigate the possibilities for a more ecological land use change for the local market and two trips abroad are foreseen to investigate Hungarian and other solutions for similar conditions.

Kolkhoz "Lenin" Fish Ponds (US\$4,000)

3.48 An amount of US\$4,000 has been reserved to study the possible conversion of the 1,000 ha of the Lenin Kolkhoz fish ponds to a more remunerative production, preferably for the eastern European market. The solution has to be ecologically friendly, as the area is located between the to be restored SZP to the north and Yermakov island to the south. Local consultants and three brief foreign visits are foreseen to investigate market potential for aquatic products.

Equipment (US\$56,000)

3.49 The project would provide for hydrological and water quality monitoring equipment, which in the first place would be used by the local consultant/institute and the WWF for the Stentsovsko-Zhebrijanskije Plavny reclamation program. Of course this equipment would also be used in other locations of the DP. The equipment would consist of two sets of portable, complete water and waste water chemical analysis labs, refill packages for 2,000 multiple analyses, assorted sampling probes, dissolved oxygen, turbidity and pH meters. Also, a current meter set, staff gauges, a level and one OB motor (for an existing small boat) would be provided for hydrological measurements.



**COMPONENT 5: Public Awareness (US\$131,000)**

3.50 The communities need to understand why the Delta is important in ways that make sense to them. It is also important that there be a devolution of management, giving local people more authority through contracts and concessions between government and private parties. The Public Awareness group in the DPA will be the primary implementers of this component, with assistance from the other the rest of the DPA, international and local NGOs and other organizations. It is important that the evolving process of establishing boundaries and zoning categories (e.g. core conservation areas and multi-purpose buffer or support zones) within the Delta be done in a participatory manner, between government, NGO and local communities, with mutual understanding of the need for maintaining the Delta's ecological processes. This component has the following overall objectives:

- (a) To raise awareness of the value of the Delta through establishing public awareness the ecotourism activities and centers and preparing environmental education materials, field courses, etc. which will encourage involvement; and
- (b) To encourage international support for protection of the Danube Delta and the Black Sea through international information exchange and coordination of action between the riparian countries.

3.51 The public awareness component comprises the following activities:

- (a) Public Awareness Plan (complementing other management plans);
- (b) Ecological Education Activities;
- (c) Public Awareness Production Capacity and Materials;
- (d) Field and Transport Equipment;
- (e) Interpretive Infrastructure (detailed in Component 1);
- (f) Tourism and Visitor Facilities (detailed in Component 1);
- (g) Support to Local NGOs;
- (h) Technical Assistance by WWF; and
- (i) Black Sea Workshop (detailed in Component 7).

(a) Public Awareness Plan

3.52 During the first year of the project, the DPA Public Awareness Group would develop a plan that is based on identification of targeted resource users (e.g. fishermen, farmers, school

children, birdwatchers, local and foreign visitors, etc.) to develop appropriate activities for the different reserve areas, age groups and the implementation of specific management objectives (e.g. managed hunting, recreation). This activity will require making surveys and interviews with the resource users, educators, examining the demographics of the areas, looking at public awareness activity programs in other Ukraine reserves (e.g. Black Sea Reserve) and nature-based recreation facilities. It will provide the working framework to guide the implementation of the activities presented in this component. It will be directed by the DPA Public Awareness staff, but require joint effort by the rest of the DPA staff and local, regional and international NGOs. The workshops costed in the Biosphere Reserve Establishment, component will provide a mechanism for the ongoing development of this plan.

(b) Ecological Education Activities

3.53 Activities would include:

- Conducting annual workshops on ecological education with teachers, NGOs, regional representatives of schools and Ministry of Education;
- Development and implementation of programme for ecological education of schoolchildren, and adjust with the assistance of NGOs and teachers;
- Production and distribution of popular brochures, about the DPA project approaches and objectives, for schools, authorities, services, kolkhozes and cooperatives;
- Production and distribution of brochures on protected area legislation, including extracts of laws pertaining to nature protection, and of specific articles, degrees and laws that apply to the Danube Delta. The laws on protection of soils, water resources, forests, rare and endangered species should also be included;
- Prepare lists of protected species found in the Danube Delta with illustrations;
- Establishment of a mobile herbarium and animal collections for use in schools and community centers;
- Prepare slide series and videos of the most common species in the Danube Delta, for schools (and adult education).;
- Creation of an Information Visitors Centre, within the main building of the DPA-Office (see component 1), with audiovisual facilities and exhibitions and video programs on ecology, nature protection and the natural history of the Danube Delta and the protected areas;

- Popular booklets for the general public, on nature in the Ukrainian Danube Delta, with photo's, drawings, maps and illustration of interesting species and their habitats;
- Organizing schoolcamps (pioneer camps) in the Delta;
- Establishing excursion programmes guided by experienced naturalists or guides.

(c) Public Awareness Production Capacity and Materials (\$47,000)

3.54 A wide variety of printed and audio-visual materials will be needed to communicate nature-conservation ideas to different audiences. These include: brochures, stickers, calendars, posters, videos, slide-shows, information boards, education books, field guide sets. The following equipment will be funded by the project in order for the PA team of DPA to be able to produce their own materials, purchase ready-made materials (e.g. posters, brochures, guidebooks) and contract other companies to produce some materials: video camera, recorder and TV, slide projector and screen, tapes and film, camera, computer, lazer printer, photocopier, tapes, film, exhibition tables and herbarium set. These will be housed in the DPA Headquarters and contribute to the development of the Visitors Center, exhibits and interpretive infrastructure described in Component 1.

(d) Field and Transport Equipment (included in [c] costs)

3.55 Many of the activities will take place out-of-doors throughout the different reserves, requiring special equipment for excursions targeted at school groups and visitors (local and foreign). The guides and education specialists of the DPA will work closely with the Wardens and the Wetland Researchers in developing effective and safe field excursions. Equipment to be provided through this activity includes: camping gear for 20 people, binoculars, an excursion boat for up to 25 people, and 1 jeep. This equipment will also be utilized for carrying out the other activities outlined in this component. The field activities will be done with cooperation of the DPA Wetland staff and Wardens, and NGOs.

(e) Interpretive Infrastructure (detailed in Component 1)

3.56 A variety of different physical structures are needed for effective management of the park including signs, boundary markers, information exhibits, watchtowers. Many of these will be multi-purpose and effective for both monitoring and public awareness aspects of the reserve areas. The awareness activities outlined in this component will be developed concurrently with the design and implementation of these facilities.

(f) Ecotourism Activities and Visitor Facilities (Infrastructure detailed in Component 1)

3.57 As previously expressed, nature-based tourism, or ecotourism, is an effective link between nature conservation, community development and economic opportunities.

3.58 Although some important tourist centres and activities exist in close vicinity to the Kiliya Delta hardly any tourists visit the delta. This is partly due to a lack of proper infrastructure for excursions and visits and to a lack of visitor information on the existence of the reserve and its rich nature. For example, the village of Primorksyne, 20 km north of Vilково, has a capacity of some 2,000 beds for beach tourists. But neither in the village nor in the resort camps an information can be found on the delta. Occasionally, cruiseboats from Odessa, with some 200-300 foreign visitors visit Kiliya and Vilково.

3.59 The warden stations and the DPA visitor center should accommodate guests, such as, scientists, professional photographers, ornithologists. Foreign visitors should pay a reasonable fee for the use of facilities and for arrangements made for them. For them, western price standards should be introduced. For Ukrainian visitors, national price levels should be maintained, as a measure to stimulate them to visit the area.

(g) Support to Local NGOs (US\$38,000)

3.60 In the Vilково and Odessa area there are several NGOs who have been actively working in the delta for several years. They play an effective role in working with local communities and add a necessary complement to government-based activities. The project supports the following NGO activities to be done in coordination with those of DPA:

(i) Support to Nature Protection and Regeneration Fund (NPRF)

3.61 The purpose of the NPRF is to organize citizens to carry out activities that balance nature protection, maintenance of ecological processes and improvement of public health in the wetland areas of northern-Ukraine, including the Danube and Dniester delta. Projects include ecological monitoring, education, socio-economic proposals and legislature and policy mechanism, including expeditions, lectures, clean-up groups, exhibits, brochures and attendance at local, regional or international meetings. They are financed by voluntary fees are registered in Ukraine as the NGRF and have eight years of experience, primarily in the Dniester delta.

3.62 The NPRF will contribute to both the GEF Danube Delta project and help facilitate coordination with the GEF Black Sea Project, especially in the area of wetland protection. They will continue their nature and biodiversity inventories and recommendations for reserves in Danube, Dniester and Dnieper delta. 30 plots in the whole region have been set aside for nature inventories, conservation and local community involvement with a total target area of 100,000 ha. The emphasis will be on the Danube for this project. Activities will be closely integrated with the Biosphere Reserve Establishment Component.

3.63 NPRF activities will include visiting the plots 5 times year, including pictures and videos of ecology and human uses to establish a "video-photo bank" of the region, lobbying governments and monitoring. They will work closely and share equipment with the following NGO (Ecoclub) through a shared office spaces in Vilково, but will also have a regional office in Odessa, as well as work closely with DPA.

(ii) Support to Ecological Club of Vilkovo

3.64 The Ecological Club of Vilkovo is a new NGO that focuses on environmental education, especially for children. They will conduct workshops as follows: biology courses for 23 teachers in the Kiliya region, ecological children's summer camp for the 23 Kiliya schools, Danube expeditions for local visitors, assistance with an information center in Vilkovo, workshop as conservation and development issues in SZP and monitor articles in local newspapers.

3.65 The two NGO's (NPRF and Ecoclub) have respective expertise in environment assessment/lobbying and children's education respectively. Both approaches are needed and the project proposes the two agencies work together and with the DPA.

3.66 The project will assist NGOs with transport, computers/printers, fax and phones, video/camera sets with films, office supplies (paper), photocopies and 15 binoculars. The project will also fund 5 tents (6 people each) and 30 sleeping bags for the Ecoclub. It is assumed that additional boat needs will be part of the involvement of the local community.

3.67 More specific phasing and role clarification on activities will be developed through the Public Awareness Plan detailed at the beginning of this component. It is important that the value and necessity of local community of NGO involvement is understood, appreciated and utilized by the DPA staff and that a sense of partnership towards common biodiversity conservation goals realized by all.

(iii) Support to Odessa Zoo

3.68 The Odessa Zoo is a traditional zoo in downtown Odessa with a wide variety of exotic and indigenous animals; it is strongly hoped that in the near future the zoo will find funds to establish a "safari park" for the now closely caged animals. This project will fund the establishment of a wetland exhibit on the present zoo premises, highlighting the value of the Danube delta. The zoo is an ideal place for public awareness about the Delta as it receives many visitors from all over Ukraine and can spread the value of the Delta to the Odessa region, beyond Vilkovo. The exhibits will explain the ecology, natural resource uses and focus on protection of threatened species in the delta, especially the waterbirds.

(h) Technical Assistance by WWF-Germany

3.69 WWF will contribute on several of the components. A public awareness/education specialist will come 2 times each year and will contribute to the Public Awareness Plan, helping the DPA and the NGO's outline appropriate activities and audiences. WWF staff will help greatly with the communication and cooperation between the DPA, NGO's and local community, as well as integrating the public awareness component with others, e.g. design of signs, boundary markers, exhibits (costed in component 1). They will also

contribute directly in helping design and implement a nature program and teacher training for the areas schools with the Ecoclub, lobbying efforts and international awareness with NGRF.

- (i) One member of the Public Awareness staff will be funded to participate in the Black Sea Workshop on Public Awareness. This is costed and detailed under Component 7.

**COMPONENT 6: Biosphere Reserve Establishment (US\$59,000)**

3.70 At present the only core protected area in the Ukrainian Danube Delta is the 14,851 ha part of the Kiliya estuary, now called the Dunaiskie Plavni. This area is only approximately 10% of the Ukraine Danube Delta's 150,000 hectare area. The extensive mosaic of wetland habitats in the Ukraine are moving towards to extinction without some sort of a comprehensive management protocol that balances ecological, economic and cultural needs. A protocol that is increasingly used worldwide for similar valuable but threatened areas is the "Biosphere Reserve".

3.71 Biosphere Reserves are founded on the basis of nature reserves, national parks and game reserves or other sites and are part of the global network of Biosphere Reserves. Within a Biosphere Reserve, special regimes of conservation, resource production and utilization of natural ecosystems are recognized, in accordance with functional zoning. In Ukraine these categories are as follows:

- Reserve (sanctuary) zone: degree of protection similar to nature reserves. In this zone, important ecosystems, habitats and wildlife populations are preserved. In Ukraine these zones are referred to as "zapovedniki" and are strictly protected.
- Buffer zone: is defined in accordance with the protection requirements of the reserve zone of nature reserves. The purpose of buffer zones is to absorb possible negative impacts of economic activities on lands bordering the reserved area. These areas may also play the same role as "game reserves" in Ukraine.
- Special use zones: includes areas with traditional land uses, water and forest reserves, settlements and recreation sites, or other types of economic activities. In Ukraine these areas are called "anthropogenic zones".

3.72 The Danube Delta in Romania was established as a biosphere reserve in 1990. Given that the Ukraine Delta comprises the same wetland complex and has equivalent biodiversity and greater economic pressures, the same should be accorded to the delta in Ukraine.

3.73 Given the high population density, political transitions and weak economy of Ukraine delta region at present, it will be a challenge to give ecological habitats the strict protection that some require. This requires a zoning strategy that caters to a wide-range of user groups and habitats a long-term process of ecological monitoring, mapping, community involvement, planning and protected area designation and staffing must be initiated.

3.74 The project will focus on protecting three areas of critical habitats and wetland processes, including the Kiliya Delta, the Stentsovsko-Zhebrijanskije Plavny (SZP) and Yermakov Island, together comprising approximately 34,000 ha. The present Dunaski Plavny Reserve needs to be expanded to incorporate all of the wetland of the Kiliya Delta into reserves, buffer zones and special use zone with an emphasis on nature protection. This would incorporate an area of approximately 25,000 ha. The second area is the SZP, a valuable marsh complex which is home for some of the primary breeding colonies of herons, spoonbills and ibises. This area would be zoned with strictly protected areas for the breeding colonies and game reserves (buffer zones) for fisheries, hunting and vegetation management. The proposed SZP reserve system would include approximately 7,700 ha. The third area is Yermakov Island, which is the only remaining river island not fully converted to agriculture development. It is presently used for some cattle and horsebreeding. The wetland restoration component includes the preparation of a feasibility study for restoring the island to its original wetland regime. Across the river in Romania, two adjacent islands are part of the same ecological complex and are included in the Romanian GEF project for wetland restoration. This island would become zoned for a nature and game reserve area as part of the broader biosphere reserve complex in the Delta.

3.75 The establishment of a Biosphere Reserve is a phased process. The three areas identified above represent only about one half of the total areas in need of protection and management in the Delta. They must be established as pilot area in light of the broader context of wetland environments and resource uses throughout the entire Ukrainian Danube Delta with the eventual establishment of a larger Biosphere Reserve (incorporating sanctuaries, nature reserves, game areas and anthropogenic zones) area totalling up to 67,000 ha.

3.76 The additional areas that should be addressed in the long-term planning framework include: the Zhebrijankaja Grjada (1,600 ha forest area), the Ozero Kugurluj and Kartal Plavny (23,600 ha with important bird breeding sites), the riverine forests along the Danube (150 km in each side), the lake shores and steeper zones of Ozero Yalpug (520 ha), Ozero Kitaj (925 ha) and Ozero Sasyk (2,200 ha), the Cafian-Katlabukh Plavny (1,000 ha of important bird breeding habitats) and the river islands of Bolshoj Daller, Malyj Daller, Malyj Tatarv and Katenika (total 1,500 ha). The management plans that are developed should also take into account the importance of the extensive lakes and limans beyond the Danube Plavny region.

3.77 This component will largely be directed by the DPA with assistance from the MEP, the Ukrainian national "Mar and Biosphere" Programme Committee and the Ukrainian Institute and Land Design. The involvement of the process must be done closely with the Public Awareness Staff Team of the DPA. The WWF will assist with the identification of ecologically sensitive and significant areas, preparation of a land-use plan and management objectives for these areas. This component will largely draw on all of the information from the other components. Only with detailed descriptions at hand, the public user organizations, authorities and NGO's learn about objectives and aims for protected areas.

3.78 The following items should be described in a Management Plan for each area reserve:

- (i) site description and ecological and political boundaries;
- (ii) nature conservation values, biodiversity values, vegetation and ecosystem characteristics;
- (iii) socio-economic situation;
- (iv) legislative and administrative contexts;
- (v) laws and regulations pertaining to the protected area;
- (vi) objectives for management of protected areas (area and resource-specific);
- (vii) scientific justification for proposed management measures;
- (viii) tasks and responsibilities for management, including authorities; and
- (ix) supporting explanatory maps of zones and resource use.

3.79 In addition, or as part of the above, specific management strategies are needed for wildlife, hydrological regimes, agriculture, forestry and ecotourism management in the delta. These resource uses are both the opportunity and constraints for "wise-use" in the delta. Resource-specific (e.g. wildlife and tourism) management plans are identified in more detail in the other components, but they would feed into this overall planning framework. The "data-management" subcomponent in the Ecosystem Monitoring Component details "GIS" technology to digitize environmental and socio-economic data into thematic maps that will become part of the management plan production.

3.80 The project will support the following activities to establish a biosphere reserve in the delta:

- (a) Preparation of Management Plans and Maps (Production and Publication Costs): While the project will focus various activities in the three areas described earlier (DP reserve, SZP and Yermakov Island) in the development of a multi-purpose biosphere reserve, these must serve as the pilot areas for broader applications for the rest of the Ukrainian Danube Delta. Therefore, a series or phased management plan(s) is necessary for both specific areas and ecological and socio-economic needs within and beyond these areas.
- (b) Local Workshops: This activity would fund two workshops per year in Vilково for 35 people throughout the project to provide formal opportunities for community leaders to provide information and comments on the planning and reserve establishment process.



- (c) **National Seminars**: In order to encourage exchange between the local communities, and regional authorities as well as assistance from lessons learned in other Ukrainian reserves, a national 4-day seminar in the region would be held in years two and four of the project, with up to 40 participants.
- (d) **Ukraine/Romania Delta Seminars**: To ensure coordination and complementary actions of the Delta on both sides of the Danube, a four day seminar in years one and three of the project will be held for four days, for up to 30 people.
- (e) **International Seminar**: An international seminar would be held to share the results of the project and help ensure conservation and biodiversity goals and actions are continued beyond the life of this pilot phase, as well as have the lessons learned about delta ecosystem management and protection shared to a global audience.
- (f) **Technical Assistance - WWF Germany**: WWF will be providing assistance to a number of components. With respect to Biosphere Reserve establishment they will help with the planning and zoning process especially in light of ecological needs through sending one expert for two weeks, two times per year.
- (g) **Technical Assistance - Legal and Cadastral**: Local experts on legislation, law and cadastral survey will provide 1 month of assistance each during each year of the project.
- (h) **Technical Assistance - Resident Advisor**: The Resident Advisor will play a key facilitation role in the biosphere reserve establishment process, both in ensuring that concrete activities along the way are implemented as well as providing the stimulation for a long-term focus and vision of a biosphere reserve. This is costed in Component 1.

#### COMPONENT 7: **Regional Initiatives and Coordination** (US\$10,700)

3.81 As described earlier in the report, there is a parallel GEF project, targeted at pollution mitigation of the Black Sea, entitled Black Sea Environmental Management Program. One component of this project is the Black Sea Coastal Biodiversity Strategy which will emphasize wetland conservation. The Ukraine and Romania Danube Delta projects will serve as valuable pilot effort for in-situ nature protection as part of this broader regional initiative.

3.82 **Black Sea Biodiversity Strategy Cooperation**: The project will fund the participation of DP staff in a series of workshops that will be developed as part of the Black Sea Biodiversity Strategy. These include small, focused training workshops on:

- (a) **Public Awareness and Environmental Education for Black Sea Wetland, proposed to be held in Turkey in September 1994. One member of the DPA Public Awareness staff would be funded to attend the 1 week workshop.**
- (b) **Planning Approaches (National Plans and Management Plans), tentatively proposed to be held in Romania (funded by the GEF Romania Danube Project) for 1 week in October of 1994. One DPA staff from the Biosphere Reserve Establishment Team would be funded to attend.**
- (c) **Bird Inventory and Monitoring Methods: This one week workshop is proposed to be held in Russia in 1995. A DPA ornithologist would be funded to participate.**

**3.83 Cooperation with Romania GEF Danube Delta Project: Many references to this parallel project have been made in this report. There will be an emphasis on continued cooperation and data exchange between these two projects to ensure the delta is managed as an integrated ecosystem between the two countries. Components 1, 2, 3 have already funded cooperative training and seminars. A lump sum of US\$3,000 is set aside here to reserve funds for future cooperative activities that are not yet detailed.**

**3.84 Other Initiatives: There are several other regional initiatives and/or advisory groups that the Ukraine project staff need to have access to, again to both contribute and have new ideas. Examples include participation with the Mamand Biosphere Program, IUCN's Wetland Advisory Board, Birdlife International activities through their Important Bird Areas and IWRB. A lump sum of US\$5,000 is provided for participation in these or similar initiatives that arise through the project.**

#### **COMPONENT 8: Endowment Fund Establishment (US\$12,200)**

**3.85 Ukraine's budgetary situation is very difficult, and the situation is unlikely to improve over the next five years. Continued financing of protected area management after the GEF support is over may well be very difficult. One mechanism which has been developed in several countries facing similar difficulties is establishment of a Trust Fund, the income from which would be used to finance the recurrent costs of managing a protected area. At present, funding for such a trust Fund is not available. However, it is proposed under the project to finance the technical expertise necessary to put in place the administrative, legal and financial mechanisms for establishing such a Fund. This would assist the Ukrainian government in seeking capital finance for the Fund. A similar Fund has already been established for the East Carpathians National Park, also with the support of a GEF project.**

**3.86 The project would fund three weeks for foreign and three weeks of local legal/financial expertise, in the third year of the project, to undertake the preparatory work for establishing the fund. The activities to be funded through such a fund and their cost would be decided**

together with DPA and MEP officials, the realistic minimum size of the fund would be determined, together with the best form of investment management arrangement, and the legal and administrative steps required. TOR are summarized in Annex 3.

### C. Project Costs

3.87 Total project costs are indicated below in Table 1. They are estimated at US\$1.74 million including physical and price contingencies and US\$1.54 million base costs. Foreign exchange comprises 32% of total project costs. Taxes are estimated at 4.6% of total project costs. Given the present hyperinflation in the Ukraine, all costs have been expressed in US dollars, and the MUV price projections have been used to calculate price contingencies. Physical plus price contingencies constitute 13% of total project costs.

Table 2: Project Cost Summary

	<u>(US\$'000 equivalent)</u>			<u>% Foreign Exchange</u>	<u>% Total Base Costs</u>
	<u>Local</u>	<u>Foreign</u>	<u>Total</u>		
<b>COMPONENTS:</b>					
1. DP Authority Strengthening	561.0	189.8	750.8	25	49
2. Warden Strengthening	157.8	8.9	166.8	5	11
3. Monitoring, Database Management	77.7	32.7	110.4	30	7
4. Wetland Restoration	218.1	82.7	300.8	28	20
5. Public Awareness	2.0	129.4	131.4	98	9
6. Biosphere Reserve Establishment	27.2	32.3	59.5	54	4
7. Regional Initiatives & Coordination	-	10.7	10.7	100	1
8. Endowment Fund Establishment	<u>2.6</u>	<u>9.6</u>	<u>12.2</u>	<u>79</u>	<u>1</u>
<b>TOTAL</b>	<u>1,046.3</u>	<u>496.2</u>	<u>1,542.6</u>	<u>32</u>	<u>100</u>
Physical Contingencies	104.6	49.6	154.3	32	10
Price Contingencies	<u>27.2</u>	<u>13.3</u>	<u>40.5</u>	<u>33</u>	<u>3</u>
<b>GRAND TOTAL</b>	<u>1,178.1</u>	<u>559.2</u>	<u>1,737.3</u>	<u>32</u>	<u>113</u>

3.88 The financing plan is indicated in Table 3 below. GOU would in addition provide local staff, use of existing research facilities and use of some existing boats and laboratory equipment. These items have not been costed, however, although GOU have committed to providing the incremental staff they have not indicated what their salaries would be. Operating costs, financed initially by the GEF and included in total costs, are estimated at US\$160,000 over the project period and US\$47,000 per year by year 4.

Table 3: Financing Plan (US\$ million equivalent)

	<u>Local</u>	<u>Foreign</u>	<u>Total</u>
GEF	0.94	0.56	1.50
GOU	0.24*	0.0	0.24

\* Plus contribution in kind (research facilities, incremental staff, etc.)

#### D. Procurement

3.89 Procurement methods are indicated in Table 4. Civil works total US\$0.75 million and comprise principally construction of the new headquarters of the DPA (US\$0.3 million), staff housing (US\$0.08 million), renovation of the Vilkovo canal (US\$0.17 million) and scattered earthmoving and structure renovation throughout the delta. Although the local contracting industry is not developed an attempt will be made to use local shopping procedures for these works, by obtaining quotes from three qualified local suppliers for each contract for items such as dredging and building construction.

3.90 Goods total US\$0.48 million and comprise vehicles (US\$0.085 million), motorcycles (US\$0.02 million), engines (US\$0.04 million), computers (US\$0.04 million), water quality measuring equipment (US\$0.05 million) and other laboratory, office and field equipment and furniture. These items cannot easily be purchased by ICB. They will be packaged as far as possible; packages above US\$20,000, up to an estimated US\$280,000, will be purchased in accordance with international shopping procedures consistent with IBRD Procurement Guidelines on the basis of at least three price quotations from suppliers from at least three different eligible source countries. Packages below US\$20,000 up to an aggregate of US\$200,000 will be purchased by local shopping on the basis of a minimum of three price quotations from qualified local suppliers.

3.91 Technical assistance and training total an estimated US\$0.35 million. Of this, study tours total US\$0.09 million, local training US\$0.04 million, foreign technical assistance US\$0.123 million, local technical assistance US\$0.035 million and workshops US\$0.06 million. US\$55,000 of the foreign technical assistance would be provided directly by WWF and Birdlife free of fees, the project financing only transport and per diem costs. All other training and technical assistance would be procured using IBRD Guidelines for the Use of Consultants' Services of August 1981.

3.92 Recurrent costs comprise fuel, operation and maintenance of goods purchased under the project, materials and office supplies, and exclude salaries, telephone and electricity. They would be purchased using procedures acceptable to IBRD. GOU agreed at Negotiations to use the procedures outlined above.

Table 4: Procurement Financed by GEF

	Procurement Methods (US\$ million)			
	<u>ICB</u>	<u>LCB</u>	<u>Other</u>	<u>Total</u>
Civil Works	-	-	0.75 <sup>1</sup>	0.75
			(0.60)	(0.60)
Goods	-	-	0.48 <sup>2</sup>	0.48
			(0.44)	(0.44)
Foreign Training, TA & Workshop	-	-	0.35 <sup>3</sup>	0.35
			(0.35)	(0.35)
Recurrent Costs	-	-	0.16 <sup>4</sup>	0.16
			(0.12)	(0.12)
<b>Total</b>	<u>-</u>	<u>-</u>	<u>1.74</u>	<u>1.74</u>
	<u>-</u>	<u>-</u>	<u>(1.5)</u>	<u>(1.5)</u>

<sup>1/</sup> Local shopping.

<sup>2/</sup> Local shopping (US\$200,000) and international shopping (US\$280,000)

<sup>3/</sup> IBRD guidelines for procurement of consultants and training services.

<sup>4/</sup> Procedures acceptable to IBRD.

(Figures in parentheses indicate sums financed by GEF; figures may not add up to exactly US\$1.5 million due to rounding.)

#### E. Disbursements

3.93 The Project is expected to be completed in about four years and the grant to be disbursed over four and a half years. Project completion is expected by June 30, 1998 and grant closing by December 31, 1998.

3.94 The GEF grant would disburse funds at the following rates:

Table 5: Disbursements

<u>Category</u>	<u>GEF Grant Allocation</u>	<u>Amount</u> (US\$M equivalent)
Civil Works	80% of expenditures	0.5
Goods	100% of expenditures	0.4
Seminars, Training, TA	100% of expenditures	0.35
Recurrent Costs	100% of expenditures	0.12*
Unallocated		<u>0.13</u>
		1.5

\* Including fuel, materials, office supplies and maintenance of goods purchased under the project, and excluding salaries and utilities.

Table 6: Estimated Disbursement Schedule  
(US\$ million)

<u>IBRD Fiscal Year</u>	<u>FY95</u>	<u>FY96</u>	<u>FY97</u>	<u>FY98</u>
Annual	0.4	0.5	0.4	0.2
Cumulative	0.4	0.9	1.3	1.5

3.95 Disbursements would be made against statements of expenditures for incremental operating costs, civil works, goods procured through direct purchases or prudent shopping, and training and technical assistance locally and abroad. Use of SOE would be limited to contracts under US\$100,000 except for contracts related to operating costs, consultants services and training, where the limit would be US\$20,000. Implementing agencies would retain support documentation for these items for review by IBRD and external auditors. At negotiations, the Recipient agreed to the disbursement arrangements outlined above [para 5.01(i)].

3.96 The Recipient agreed to establish a special account at a Commercial Bank satisfactory to the IBRD to facilitate implementation of the project into which it would deposit US\$150,000 of GEF grant funds. This account would be opened in accordance with arrangements for existing Bank assisted projects, and would be used for most disbursements.

3.97 A consolidated report will be prepared annually by MEP, within 2 months of each calendar year. In addition, an annual audit will be carried out by the Treasury inspectors, including specific reference to, and comments on, SOEs and supporting documents and disbursements from the special account, and submitted to the Bank within nine months of the end of each fiscal year. At negotiations the Recipient agreed that these accounting and auditing practices would be followed [para 5.01(j)].

#### IV. IMPLEMENTATION AND MONITORING

##### A. Project Organization and Implementation

4.01 The MEP will have overall responsibility for the Project, including procurement, disbursement, maintenance of Project accounts and coordination of implementation. The Academy of Sciences of Ukraine has responsibility for realization of general scientific coordination and scientific support in implementation. MEP staff will provide initial assistance to DPA staff in establishing project implementation schedules and reporting procedures, and would assist in obtaining assistance from other institutes for implementation of the various components.

4.02 Day-to-day responsibility for project implementation will be with the DPA, whose staff are being increased and trained to take on their new expanded role (described in para

3.03). The Recipient agreed at negotiations to the staff plan outlined in para 3.03 and agreed to make the necessary budgetary allocations for this. The Academy of Sciences, which has ultimate responsibility for the DPA (and for budget allocations to it), has revised the legal status of the DPA; as of January 1994 it was established as an independent institute, able to maintain its own financial accounts, directly under the Academy. At negotiations the Recipient provided a copy of the administrative arrangements confirming that this had occurred [para 5.01(j)].

4.03 Although small, the Project requires the support of several agencies for its effective implementation. As mentioned above a foreign advisor would assist DPA and MEP in project management and implementation through periodic visits through the project period, and WWF experts will assist with implementation of the biosphere expansion, GIS monitoring and public awareness activities. IWRB would assist with bird monitoring and public awareness connected with this activity. Review of project implementation by the Ukrainian scientific community and protected area management experts will contribute to project success. A small scientific advisory committee has been established (maximum 8 persons), consisting of experts from the MEP, the Academy of Sciences, and experts in protected area management (e.g., managers of the Carpathian reserve or experts from the Ministry of Forestry), which will meet quarterly to review work accomplished and offer advice and assistance. It will report to the Deputy Minister of the MEP in charge of protected areas. The Recipient agreed on the staffing of this committee at negotiations [para 5.01 (c)].

4.04 MEP and DPA are responsible for the strengthening of the DPA; increased staff will be provided by the Academy of Sciences. Newly appointed wardens will be graduates of the forest and game management technical colleges or the University of Zaporozje, and selected wardens will also attend initial training in Romania. MEP will be responsible for identifying appropriate follow-up training. The activities connected with protected area expansion will be implemented by DPA and NGOs with the help of the MEP, the WWF and the Ukrainian Land Design Institute. The monitoring will be implemented by DPA experts (and WWF) with assistance from the relevant specialized institutes, including the Institute of Zoology for reptiles and birds, the Institute of the Biology of the Southern Seas for hydrobiological monitoring, and the Ukrainian Scientific Center of Ecology for hydrochemical monitoring.

4.05 As regards wetland restoration, the Government Organization for Aquatic Economy Gosvodkhoz and the Odessa-based hydrometeorological Institute Hydromet will assist with the SZP wetlands restoration, the Ukrainian Land Design Institute (and WWF) with the study on Yermakov, WWF and DPA with the lake protection in the DP, and the municipality of Vilkovo with town canals rehabilitation. Local NGOs (the Ecological Club of Vilkovo, the Odessa Zoo and the Nature Protection and Regeneration Fund) will assist the DPA and MEP with the public awareness component.

4.06 At negotiations the Recipient agreed to the organizational arrangements outlined below [para 5.01(b)].

## B. Project Monitoring and Supervision

4.07 Proposals for establishment of ecosystems monitoring arrangements are discussed in component 3. It must be emphasized that monitoring has been adapted to the project budget and the capacity of the implementing institutions. Monitoring of the impact of the pilot ecosystems restoration components has been built into each activity. Reporting is described above. The WWF expert and resident advisor will help the DPA initially with preparation of formats and content of progress reports.

4.08 The Implementation plan is summarized in Annex 2. The DPA will prepare short quarterly progress reports outlining progress and highlighting problems. The MEP will consolidate these into longer 6-monthly progress reports, which will be translated into English for onward transmittal to the World Bank. DPA will prepare annual work program and budgets for review and approval by MEP and the Academy of Sciences; these work programs would specify the support to be given by other institutes and organizations in the coming year. At negotiations, the Recipient agreed to the reporting schedule outlined above [para 5.01(g)]. It is expected that the Project would require approximately eight weeks of supervision per year, to be carried out in conjunction with the supervision of the Romanian Danube Delta Biodiversity Project. Skills required would include a wetlands ecologist with protected area management experience, and a hydrologist. After two years a mid-term review would be carried out jointly by a Ukrainian team and the World Bank, and the project redesigned as necessary. Terms-of-reference for the review would be prepared 18 months into project implementation. At negotiations, the Recipient agreed to carry out a mid-term review with the Bank [para 5.01(g)].

## C. Public Participation

4.09 Public participation and community involvement is built into the design of the protected area expansion program (component 2) and also into the public awareness and ecological education activities (component 5). Given the rather high population densities and the difficult experience with protecting the DPA to date, particular attention has been given to the design of these components; the need for cooperation of local communities is even more important than in Romania.

## D. Project Benefits and Risks

4.10 Given the isolation and neglect of the DPA and the very limited attention that it has received to date from the international community (or from the Ukrainian authorities), support from the GEF will be of particular benefit. It should increase international understanding of the ecological process of the Ukrainian portion of the Danube delta. Most importantly, by strengthening and reorienting the DPA, the Project should help to introduce public support for the effective protected area management that is necessary to conserve the biodiversity of this key part of the delta. It will establish appropriate land-use planning for sustainable resource use in the areas surrounding the core areas, conserving and restoring breeding grounds for delta wildlife.



4.11 The Project has a number of risks. Most important is the implementation capacity of the DPA, which without substantial support and expansion will not be able to play the role assigned to it in this project. At the local level, the DPA is currently not able to plan and manage the reserve in a manner consistent with protecting biodiversity. The MEP is committed to the Project, and the Academy of Sciences has agreed to budget the staff expansion and provide technical support. Progress will be reviewed carefully after two years, and the situation reassessed if necessary. The second risk concerns the introduction of participatory land use planning techniques in a country which has very little experience of them. This can only be fully assessed once implementation starts. A project objective is to improve coordination between management of the Ukrainian and Romanian portions of the Delta. During preparation, this proved extremely difficult because of inadequate communications between Tulcea and Vilkovo. It will take time for the situation to improve.

## V. AGREEMENTS REACHED

5.01 At negotiations, the Recipient agreed to or confirmed the following:

- (a) The broad staffing plan and budget for it outlined in para 3.03;
- (b) The organizational arrangements, including support by other agencies, outlined in paras 4.01 to 4.06;
- (c) Establishment of a Scientific Advisory Committee, as outlined in para 4.03;
- (d) Provision of land for the proposed new DPA headquarters and evidence that arrangements have been made to rent adequate office space in the meantime (para 3.06);
- (e) The project implementation schedule mentioned in para 4.08 and outlined in Annex 2;
- (f) The project reporting and monitoring arrangements, and mid-term review outlined in para 4.08;
- (g) The procurement arrangements described in paras 3.89 to 3.92;
- (h) The disbursement arrangements described in paras 3.93 to 3.97;
- (i) Maintenance and auditing of project accounts and establishment of a Special Account as outlined in paras 3.96 to 3.97; and
- (j) Establishment of DPA as an independent entity directly under the Academy of Sciences (para 4.02).

Ukraine  
 Danube Delta Biodiversity Project  
 Project Components by Year  
 (US\$ '000)

	Totals Including Contingencies				
	1994	1995	1996	1997	Total
1. Danube Plavny Authority Strengthening	293.1	242.9	193.9	115.7	845.6
2. Warden Strengthening	40.5	98.9	36.7	11.4	187.4
3. Monitoring and Database Management	20.4	71.9	17.9	14.1	124.3
4. Pilot Wetland Restoration	77.8	119.6	136.5	4.9	338.8
5. Public Awareness	85.9	33.3	14.5	13.4	147.1
6. Biosphere Reserve Establishment	12.8	11.7	13.5	30.0	68.1
7. Coordination with Romania and Regional Initiatives	5.2	2.2	2.3	2.3	12.1
8. Endowment Fund Establishment	-	-	13.9	-	13.9
<b>Total PROJECT COSTS</b>	<b>535.7</b>	<b>580.5</b>	<b>429.2</b>	<b>191.9</b>	<b>1,737.3</b>

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Ukraine  
Danube Delta Biodiversity Project  
Expenditure Accounts by Years  
(US\$ '000)

	Totals Including Contingencies				
	1994	1995	1996	1997	Total
<b>I. Investment Costs</b>					
A. Civil Works	201.5	239.5	233.1	70.4	744.5
B. Vehicles and Boats	81.1	101.7	2.5	-	185.3
C. Technical Assistance and Studies	57.7	72.1	62.8	40.1	232.8
D. Training	45.1	11.0	13.0	11.5	80.7
E. Equipment and Supplies	120.2	113.1	66.7	1.2	301.1
F. Seminars/Workshop	4.6	3.4	4.7	20.9	33.7
<b>Total Investment Costs</b>	<b>510.2</b>	<b>540.8</b>	<b>382.8</b>	<b>144.2</b>	<b>1,578.0</b>
<b>II. Recurrent Costs</b>					
A. Operating Costs	25.5	39.7	46.3	47.7	159.2
<b>Total Recurrent Costs</b>	<b>25.5</b>	<b>39.7</b>	<b>46.3</b>	<b>47.7</b>	<b>159.2</b>
<b>Total PROJECT COSTS</b>	<b>535.7</b>	<b>580.5</b>	<b>429.2</b>	<b>191.9</b>	<b>1,737.3</b>

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Danube Delta Biodiversity Project  
 Expenditure Accounts by Components - Totals Including Contingencies  
 (US\$ '000)

	Monitoring and Database Management			Pilot Wetland Restoration		Public Awareness Establishment		Biosphere Reserve Establishment		Coordination with Romania and Regional Initiatives		Endowment Fund Establishment	Total
	Danube Plavny Authority Strengthening	Warden	Strengthening	Monitoring and Database Management	Pilot Wetland Restoration	Public Awareness Establishment	Biosphere Reserve Establishment	Coordination with Romania and Regional Initiatives	Endowment Fund Establishment				
<b>I. Investment Costs</b>													
A. Civil Works	437.4	81.2	-	-	225.9	-	-	-	-	-	-	-	744.5
B. Vehicles and Boats	58.0	37.5	23.0	-	4.8	62.0	-	-	-	-	-	-	185.3
C. Technical Assistance and Studies	139.9	-	-	-	37.8	11.4	29.9	-	-	-	13.9	-	232.8
D. Training	33.7	15.7	14.7	-	-	-	4.5	-	-	12.1	-	-	80.7
E. Equipment and Supplies	125.1	30.5	49.4	-	58.1	38.1	-	-	-	-	-	-	301.1
F. Seminars/Workshop	-	-	-	-	-	-	33.7	-	-	-	-	-	33.7
<b>Total Investment Costs</b>	<b>794.1</b>	<b>164.9</b>	<b>87.1</b>	<b>87.1</b>	<b>326.5</b>	<b>111.4</b>	<b>68.1</b>	<b>12.1</b>	<b>13.9</b>	<b>1,578.0</b>			
<b>II. Recurrent Costs</b>													
A. Operating Costs	51.5	22.5	37.2	-	12.3	35.7	-	-	-	-	-	-	159.2
<b>Total Recurrent Costs</b>	<b>51.5</b>	<b>22.5</b>	<b>37.2</b>	<b>37.2</b>	<b>12.3</b>	<b>35.7</b>	<b>68.1</b>	<b>12.1</b>	<b>13.9</b>	<b>1,737.3</b>			
<b>Total PROJECT COSTS</b>	<b>845.6</b>	<b>187.4</b>	<b>124.3</b>	<b>124.3</b>	<b>338.8</b>	<b>147.1</b>	<b>147.1</b>	<b>147.1</b>	<b>147.1</b>	<b>1,737.3</b>			
Taxes	39.3	10.9	6.3	-	21.3	-	-	-	-	-	-	-	77.8
Foreign Exchange	213.4	10.0	37.2	-	93.7	144.8	-	-	-	12.1	-	-	559.2

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Ukraine  
Danube Delta Biodiversity Project  
Inflation and Exchange Rates

	Up to Project				
	Negotiation	Start	1994	1995	1996 1997
<b>Inflation (in %'s) /a</b>					
all					
<b>Annual rates</b>					
Local	0.0	0.0	1.3	1.2	2.4 3.2
Foreign	0.0	0.0	1.3	1.2	2.4 3.2
<b>Compounded rates</b>					
Local	0.0	0.0	0.6	1.9	3.7 6.7
Foreign	0.0	0.0	0.6	1.9	3.7 6.7
<b>Exchange rates (Local/Foreign) /b</b>					
all					
Rates actually used	1.0	1.0	1.0	1.0	1.0 1.0
Constant purchasing parity rates	1.0	1.0	1.0	1.0	1.0 1.0
% deviation	0.0	0.0	0.0	0.0	0.0 0.0

\a Yearly values are within Each Project Year  
\b Yearly values are at Project Year Midpoints

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Ukraine  
Danube Delta Biodiversity Project  
Table 1. Strengthening of the Danube Plavny Authority  
Detailed Costs

	Unit	Quantities					Unit Cost (US\$)	Base Cost (US\$ '000)				
		1994	1995	1996	1997	Total		1994	1995	1996	1997	Total
<b>I. Investment Costs</b>												
<b>A. Civil Works</b>												
1. Office, Visitors Cent.	lumpsum	0.2	0.3	0.3	0.2	1	294,840	59.0	88.5	88.5	59.0	294.8
2. Directors House	lumpsum	-	-	-	-	-	-	-	-	-	-	-
3. Staff Housing Renovation	lumpsum	10	-	-	-	10	8,640	86.4	-	-	-	86.4
4. Notice Boards	each	-	-	4	-	4	432	-	-	1.7	-	1.7
5. Boundary/Signposts	each	25	25	-	-	50	108	2.7	2.7	-	-	5.4
<b>Subtotal Civil Works</b>								<b>148.1</b>	<b>91.2</b>	<b>90.2</b>	<b>59.0</b>	<b>388.4</b>
<b>B. Goods</b>												
<b>1. Office Equipment and Materials</b>												
Canteen (20 person)	lumpsum	-	-	1	-	1	6,912	-	-	6.9	-	6.9
Kitchen Equipment	lumpsum	-	-	1	-	1	5,400	-	-	5.4	-	5.4
Conference Room, Furniture, Equipment	lumpsum	-	-	1	-	1	11,016	-	-	11.0	-	11.0
Visiting Lodge Furniture	each	-	-	10	-	10	324	-	-	3.2	-	3.2
Individual Office Equipment	set	10	-	15	-	25	216	2.2	-	3.2	-	5.4
PC	each	-	4	-	-	4	1,800	-	7.2	-	-	7.2
PC Printer	each	-	2	-	-	2	1,500	-	3.0	-	-	3.0
Software	each	-	3	-	-	3	1,000	-	3.0	-	-	3.0
Telephone	each	-	-	10	-	10	108	-	-	1.1	-	1.1
Office Furniture	set	10	-	15	-	25	540	5.4	-	8.1	-	13.5
Garage Tools	set	-	1	-	-	1	23,000	-	23.0	-	-	23.0
Cars (1 car and 1 Van)	each	-	2	-	-	2	13,000	-	26.0	-	-	26.0
Motorcycles	each	10	10	-	-	20	1,080	10.8	10.8	-	-	21.6
Bicycles	each	10	10	-	-	20	216	2.2	2.2	-	-	4.3
Field Radio Equipment	set	1	-	-	-	1	21,600	21.6	-	-	-	21.6
<b>Subtotal Office Equipment and Materials</b>								<b>42.1</b>	<b>75.2</b>	<b>39.0</b>		<b>156.3</b>
<b>C. Technical Advisor</b>												
1. Resident Advisor	mnts	1	1	1	-	3	13,500	13.5	13.5	13.5	-	40.5
2. Airline Ticket	ticket	1	1	1	-	3	1,000	1.0	1.0	1.0	-	3.0
3. Board and Lodging	month	1	1	1	-	3	1,600	1.6	1.6	1.6	-	4.8
4. Miscellaneous Travel	month	2	1	1	-	4	400	0.8	0.4	0.4	-	1.6
5. Procurement Advisor	mnts	1	-	-	-	1	16,500	16.5	-	-	-	16.5
<b>Subtotal Technical Advisor</b>								<b>33.4</b>	<b>16.5</b>	<b>16.5</b>		<b>66.4</b>
<b>D. Training</b>												
1. Fees for Trainer (English)	mo	6	6	6	6	24	200	1.2	1.2	1.2	1.2	4.8
2. Fees for Trainer (Computer)	mo	2	2	2	2	8	200	0.4	0.4	0.4	0.4	1.6
3. Tape Recorder	each	6	-	2	-	8	500	3.0	-	1.0	-	4.0
4. Books (40 people)	no.	1	-	0.5	-	1.5	1,000	1.0	-	0.5	-	1.5
5. Cassettes Tapes	no.	1	-	0.5	-	1.5	1,000	1.0	-	0.5	-	1.5
<b>Subtotal Training</b>								<b>6.6</b>	<b>1.6</b>	<b>3.6</b>	<b>1.6</b>	<b>13.4</b>
<b>E. Training - Wetland Study Tour</b>												
1. Airline Tickets	persons	5	-	-	-	5	1,000	5.0	-	-	-	5.0
2. Per diem	person	5	-	-	-	5	2,000	10.0	-	-	-	10.0
3. Study tour host Ukraine	person	1	-	-	-	1	1,000	1.0	-	-	-	1.0
4. 1 week per diem	person	1	-	-	-	1	350	0.4	-	-	-	0.4
5. Tutition Fees	person	5	-	-	-	5	1,500	7.5	-	-	-	7.5
<b>Subtotal Training - Wetland Study Tour</b>								<b>23.9</b>				<b>23.9</b>
<b>F. Technical Assistance - Wetland Mgm. Course</b>												
1. Fees for 2 Trainers	per week	-	4	-	4	8	3,000	-	12.0	-	12.0	24.0
2. Per diem for 2 Trainers	per week	-	4	-	4	8	350	-	1.4	-	1.4	2.8
3. Airline Tickets	person	-	2	-	4	6	1,000	-	2.0	-	4.0	6.0
<b>Subtotal Technical Assistance - Wetland Mgm. Course</b>									<b>15.4</b>		<b>17.4</b>	<b>32.8</b>
<b>G. Guidance to the Project</b>												
Scientific Advisory Committee	mo	3	3	3	3	12	200	0.6	0.6	0.6	0.6	2.4
Administrative & Technical Support	mo	12	12	12	12	48	200	2.4	2.4	2.4	2.4	9.6
Annual Audit	yr	-	1	1	1	3	1,000	-	1.0	1.0	1.0	3.0
Bookkeeper	mo	12	12	12	12	48	200	2.4	2.4	2.4	2.4	9.6
<b>Subtotal Guidance to the Project</b>								<b>5.4</b>	<b>6.4</b>	<b>6.4</b>	<b>6.4</b>	<b>24.6</b>
<b>Total Investment Costs</b>								<b>259.4</b>	<b>206.2</b>	<b>155.7</b>	<b>84.4</b>	<b>705.7</b>
<b>II. Recurrent Costs</b>												
A. Paper Supplies	lumpsum	1	1	1.5	1.5	5	1,000	1.0	1.0	1.5	1.5	5.0
B. Fuel	'000L	2.5	7.5	7.5	7.5	25	300	0.8	2.3	2.3	2.3	7.5
C. Communication	lumpsum	1	1	2	2	6	1,000	1.0	1.0	2.0	2.0	6.0
D. Building Maintenance	lumpsum	0.5	0.5	1	1	3	1,000	0.5	0.5	1.0	1.0	3.0
E. Equipment Maintenance	lumpsum							<b>2.1</b>	<b>5.9</b>	<b>7.8</b>	<b>7.8</b>	<b>23.6</b>
<b>Total Recurrent Costs</b>								<b>5.4</b>	<b>10.6</b>	<b>14.6</b>	<b>14.6</b>	<b>45.1</b>
<b>Total</b>								<b>264.8</b>	<b>216.8</b>	<b>170.2</b>	<b>98.9</b>	<b>750.8</b>

Ukraine  
Danube Delta Biodiversity Project  
Table 2. Warden Strengthening  
Detailed Costs

	Unit	Quantities					Unit Cost (US\$)	Base Cost (US\$ '000)				
		1994	1995	1996	1997	Total		1994	1995	1996	1997	Total
<b>I. Investment Costs</b>												
<b>A. Civil Works</b>												
1. Wardens Station	each	1	2	1	-	4	16,200	16.2	32.4	16.2	-	64.8
2. Lookout towers	each	-	2	2	-	4	1,080	-	2.2	2.2	-	4.3
3. Bird Blinds	each	-	3	3	4	10	324	-	1.0	1.0	1.3	3.2
<b>Subtotal Civil Works</b>								16.2	35.5	19.3	1.3	72.4
<b>B. Goods</b>												
1. Furniture	each	1	2	1	-	4	1,512	1.5	3.0	1.5	-	6.0
2. Kitchens	each	1	2	1	-	4	324	0.3	0.6	0.3	-	1.3
3. Sola Panels and Accu.	each	1	2	1	-	4	1,080	1.1	2.2	1.1	-	4.3
4. Rescue Equipt.	each	1	-	-	-	1	2,700	2.7	-	-	-	2.7
5. Infrared Binoculars	each	1	-	-	-	1	2,160	2.2	-	-	-	2.2
6. Uniforms	each	10	10	-	-	20	540	5.4	5.4	-	-	10.8
7. 4 Wheel Drive	each	-	1	-	-	1	16,200	-	16.2	-	-	16.2
8. 25 Hp Motors	each	-	4	-	-	4	4,320	-	17.3	-	-	17.3
<b>Subtotal Goods</b>								13.2	44.7	2.9	-	60.8
<b>C. Training</b>												
<b>1. Overseas Study Tour</b>												
Airline Tickets /a	person	1	-	-	-	1	600	0.6	-	-	-	0.6
Per diem /b	amount	1	-	-	-	1	1,400	1.4	-	-	-	1.4
Tution Fees	person	1	-	-	-	1	750	0.8	-	-	-	0.8
<b>Subtotal Overseas Study Tour</b>								2.8	-	-	-	2.8
<b>2. Protection Course</b>												
Tution Fee /c	no.	2	2	2	2	8	100	0.2	0.2	0.2	0.2	0.8
Per diem	no.	2	2	2	2	8	300	0.6	0.6	0.6	0.6	2.4
Transport	no.	2	2	2	2	8	100	0.2	0.2	0.2	0.2	0.8
Materials	no.	1	1	1	1	4	200	0.2	0.2	0.2	0.2	0.8
<b>Subtotal Protection Course</b>								1.2	1.2	1.2	1.2	4.8
<b>3. Romania Foundation Course</b>												
Transport /d	no.	10	-	10	-	20	100	1.0	-	1.0	-	2.0
Per Diem /e	lumpsum							0.6	-	0.6	-	1.2
<b>Subtotal Romania Foundation Course</b>								1.6	-	1.6	-	3.2
<b>4. Public Awareness Course</b>												
Materials /f	no.	1	1	1	1	4	400	0.4	0.4	0.4	0.4	1.6
<b>Subtotal Training</b>								6.4	2.0	3.6	2.0	14.0
<b>Total Investment Costs</b>								35.7	82.2	25.8	3.3	147.1
<b>II. Recurrent Costs</b>												
A. Car (2500L/veh/yr)	'000L	-	2.5	2.5	2.5	7.5	300	-	0.8	0.8	0.8	2.3
B. Motors (1500L/boat/yr)	'000L	-	6	6	6	18	300	-	1.8	1.8	1.8	5.4
C. Warden Station	lumpsum	1	3	4	4	12	200	0.2	0.6	0.8	0.8	2.4
D. Equipment Maintenance	'000L							0.7	2.9	3.0	3.0	9.6
<b>Total Recurrent Costs</b>								0.9	6.0	6.4	6.4	19.7
<b>Total</b>								36.6	88.3	32.2	9.7	166.8

\a 1 participant for 2 weeks  
 \b \$100 per day for 14 days.  
 \c For 20 wardens by 2 Ukrainian trainers for 2 weeks per year.  
 \d 10 wardens for 2 weeks  
 \e 10 wardens for 2 weeks.  
 \f 20 participants for 3 weeks per year.

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Ukraine  
Danube Delta Biodiversity Project  
Table 3. Monitoring and Database Management  
Detailed Costs

	Unit	Quantities					Unit Cost (US\$)	Base Cost (US\$ '000)				
		1994	1995	1996	1997	Total		1994	1995	1996	1997	Total
<b>I. Investment Costs</b>												
<b>A. Ecosystem Monitoring - Flora/Fauna</b>												
<b>1. Survey / Inventory Equipment</b>												
Jeep	no.	-	1	-	-	1	16,200	-	16.2	-	-	16.2
+10 hp. Boat Engines	no.	-	1	1	-	2	2,160	-	2.2	2.2	-	4.3
Bat detector	no.	1	-	-	-	1	324	0.3	-	-	-	0.3
Reptile Traps	no.	10	10	10	-	30	54	0.5	0.5	0.5	-	1.6
Mammal Traps	no.	10	10	10	-	30	54	0.5	0.5	0.5	-	1.6
Trap back packs	no.	2	-	-	-	2	54	0.1	-	-	-	0.1
Day Binoculars	no.	1	1	-	-	2	216	0.2	0.2	-	-	0.4
Night Binoculars	no.	1	-	-	-	1	540	0.5	-	-	-	0.5
Rechargeable lights	no.	2	2	-	-	4	32.4	0.1	0.1	-	-	0.1
Batteries and Charges	no.	1	-	-	-	1	108	0.1	-	-	-	0.1
Camera and Accessories	no.	1	-	-	-	1	540	0.5	-	-	-	0.5
Film and Tapes	no.	1	1	1	1	4	216	0.2	0.2	0.2	0.2	0.9
Video Camera	no.	-	1	-	-	1	540	-	0.5	-	-	0.5
Stereo microscopes	no.	1	-	-	-	1	756	0.8	-	-	-	0.8
Herbarium shelves	no.	1	2	-	-	3	108	0.1	0.2	-	-	0.3
Bird ringing sets	no.	1	-	-	-	1	864	0.9	-	-	-	0.9
Fish nets set	no.	1	-	-	-	1	324	0.3	-	-	-	0.3
Waterproof clothing	no.	4	2	2	-	8	216	0.9	0.4	0.4	-	1.7
Tents ( four people)	no.	2	2	-	-	4	216	0.4	0.4	-	-	0.9
Sleeping bags	no.	3	2	-	-	5	108	0.3	0.2	-	-	0.5
Gps	'no.	1	-	-	-	1	540	0.5	-	-	-	0.5
<b>Subtotal Survey / Inventory Equipment</b>								<b>7.4</b>	<b>21.8</b>	<b>3.9</b>	<b>0.2</b>	<b>33.3</b>
<b>2. Data Management / GIS</b>												
Computer and Monitor	no.	-	1	-	-	1	2,160	-	2.2	-	-	2.2
GIS software	no.	-	1	-	-	1	1,080	-	1.1	-	-	1.1
Printer and Plotter	no.	-	1	-	-	1	3,240	-	3.2	-	-	3.2
Aerial Photography	no.	-	1	-	-	1	5,400	-	5.4	-	-	5.4
Stereoscopes - mirror	no.	-	1	-	-	1	2,700	-	2.7	-	-	2.7
Digitizer	no.	-	1	-	-	1	2,700	-	2.7	-	-	2.7
Ce - ROM data input	no.	-	1	-	-	1	2,700	-	2.7	-	-	2.7
Satellite Imagery	no.	-	1	-	-	1	1,620	-	1.6	-	-	1.6
<b>Subtotal Data Management / GIS</b>								<b>-</b>	<b>21.6</b>	<b>-</b>	<b>-</b>	<b>21.6</b>
<b>3. Management Plans and Maps</b>												
Wildlife Production	amount	1	-	-	-	1	540	0.5	-	-	-	0.5
Agriculture Production	amount	-	1	-	-	1	540	-	0.5	-	-	0.5
<b>Subtotal Management Plans and Maps</b>								<b>0.5</b>	<b>0.5</b>	<b>-</b>	<b>-</b>	<b>1.1</b>
<b>4. Training - GIS and Veg. Mapping</b>												
Ticket /a	no.	2	2	2	2	8	1,080	2.2	2.2	2.2	2.2	8.6
Per diem	amount	2	2	2	2	8	540	1.1	1.1	1.1	1.1	4.3
<b>Subtotal Training - GIS and Veg. Mapping</b>								<b>3.2</b>	<b>3.2</b>	<b>3.2</b>	<b>3.2</b>	<b>13.0</b>
<b>5. Training - Bird Monitoring and Management</b>												
Ticket ( one specialist) /b	no.	-	1	-	-	1	1,080	-	1.1	-	-	1.1
Per diem	amount	-	3	-	-	3	540	-	1.6	-	-	1.6
Travel and Per diem ( local)	amount	-	1	-	-	1	540	-	0.5	-	-	0.5
Local Fee	amount	-	1	-	-	1	108	-	0.1	-	-	0.1
Foreign Specialist Fee	amount	-	1	-	-	1	5,400	-	5.4	-	-	5.4
<b>Subtotal Training - Bird Monitoring and Management</b>								<b>-</b>	<b>8.7</b>	<b>-</b>	<b>-</b>	<b>8.7</b>
<b>Total Investment Costs</b>								<b>11.2</b>	<b>55.9</b>	<b>7.1</b>	<b>3.5</b>	<b>77.7</b>
<b>II. Recurrent Costs</b>												
A. Fuel for one jeep (2500L/veh/yr)	'000L	1	1	1	1	4	300	0.3	0.3	0.3	0.3	1.2
B. Fuel for two boats (1500cc/boat/yr)	'000L	2	2	2	2	8	300	0.6	0.6	0.6	0.6	2.4
C. Helicopter rental (including fuel) /c	hours	60	60	60	60	240	100	6.0	6.0	6.0	6.0	24.0
D. Equipment Maintenance	'000L							0.4	1.5	1.7	1.7	5.1
<b>Total Recurrent Costs</b>								<b>7.3</b>	<b>8.4</b>	<b>8.6</b>	<b>8.6</b>	<b>32.7</b>
<b>Total</b>								<b>18.5</b>	<b>64.3</b>	<b>15.7</b>	<b>12.0</b>	<b>110.4</b>

\a 2 visits a year for 2 weeks for 4 years.  
\b For 2 weeks in year 1995.  
\c 6 hrs. a day for 10 days a year at \$100 per hour.



Ukraine  
Danube Delta Biodiversity Project  
Table 4. Pilot Wetland Restoration  
Detailed Costs

	Unit	Quantities				Total	Unit Cost (US\$)	Base Cost (US\$ '000)				
		1994	1995	1996	1997			1994	1995	1996	1997	Total
<b>I. Investment Costs</b>												
<b>A. Civil Works</b>												
<b>1. SE Plavnie</b>												
Vilkovo - Prim. culvert cleaning	each	1	-	-	-	1	540	0.5	-	-	-	0.5
Welding of gates	each	1	-	-	-	1	1,080	1.1	-	-	-	1.1
Cleaning Sasyk Canal Syphon	each	1	-	-	-	1	10,800	10.8	-	-	-	10.8
<b>Subtotal SE Plavnie</b>								12.4	-	-	-	12.4
<b>2. Lazarkin Kut</b>												
Channel Blocking	'000m	-	3	-	-	3	4,752	-	14.3	-	-	14.3
<b>3. Vilkovo Canals</b>												
Hand Excavation	'000m	10	35	-	-	45	540	5.4	18.9	-	-	24.3
Cutter Dredge	'000m	-	20	-	-	20	2,700	-	54.0	-	-	54.0
Clamshell Dredge	'000m	-	-	20	-	20	4,752	-	-	95.0	-	95.0
<b>Subtotal Vilkovo Canals</b>								5.4	72.9	95.0	-	173.3
<b>Subtotal Civil Works</b>								17.8	87.2	95.0	-	200.0
<b>B. Goods</b>												
1. Water Analysis Kit	each	2	-	-	-	2	3,240	6.5	-	-	-	6.5
2. Refill Packages	each	20	-	20	-	40	540	10.8	-	10.8	-	21.6
3. Humidity Meter	each	2	-	-	-	2	756	1.5	-	-	-	1.5
4. Water Sampling Kit	each	2	-	-	-	2	540	1.1	-	-	-	1.1
5. Van Veen grab dredge	each	1	-	-	-	1	1,944	1.9	-	-	-	1.9
6. Subsurface grab Sampler	each	2	-	-	-	2	1,080	2.2	-	-	-	2.2
7. Dissolved Oxygen Meter	each	2	-	-	-	2	1,512	3.0	-	-	-	3.0
8. Ph Meter	each	2	-	-	-	2	432	0.9	-	-	-	0.9
9. Turbidity Meter	each	2	-	-	-	2	756	1.5	-	-	-	1.5
10. Bomb Sampler	each	1	-	-	-	1	648	0.6	-	-	-	0.6
11. La Motte Sampler	each	1	-	-	-	1	216	0.2	-	-	-	0.2
12. Current Meter	set	1	-	-	-	1	4,320	4.3	-	-	-	4.3
13. Staff gauges	each	10	-	-	-	10	32.4	0.3	-	-	-	0.3
14. Level, tripod, rod	each	1	-	-	-	1	3,240	3.2	-	-	-	3.2
15. 10 Hp Motor	each	1	-	-	-	1	4,320	4.3	-	-	-	4.3
16. Miscellaneous Supplies	each	1	-	-	-	1	3,240	3.2	-	-	-	3.2
<b>Subtotal Goods</b>								45.7	-	10.8	-	56.5
<b>C. Technical Assistance</b>												
1. Water Quality Monitoring	mnts	4	6	6	6	22	200	0.8	1.2	1.2	1.2	4.4
2. Ostov Yermakov Study	mnts	-	5	5	-	10	200	-	1.0	1.0	-	2.0
3. Loca Travel	lumpsum	-	1	1	-	2	300	-	0.3	0.3	-	0.6
4. Foreign Travel	day	-	10	10	-	20	300	-	3.0	3.0	-	6.0
5. Tickets	each	-	1	1	-	2	1,000	-	1.0	1.0	-	2.0
6. Fish Kolhoz Study	mnts	3	5	5	-	13	200	0.6	1.0	1.0	-	2.6
7. Local travel	lumpsum	-	2	1	-	3	300	-	0.6	0.3	-	0.9
8. Foreign travel	day	-	20	10	-	30	300	-	6.0	3.0	-	9.0
9. Tickets	each	1	1	-	-	2	3,000	3.0	3.0	-	-	6.0
<b>Subtotal Technical Assistance</b>								4.4	17.1	10.8	1.2	33.5
<b>Total Investment Costs</b>								67.9	104.3	116.6	1.2	290.0
<b>II. Recurrent Costs</b>												
<b>A. Motor</b>												
B. Equipment Maintenance	lumpsum	0.5	0.5	0.5	0.5	2	300	0.2	0.2	0.2	0.2	0.6
<b>Total Recurrent Costs</b>								2.3	2.3	2.8	2.8	10.2
<b>Total</b>								2.4	2.4	3.0	3.0	10.8
<b>Total</b>								70.3	106.7	119.6	4.2	300.8

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Ukraine  
Danube Delta Biodiversity Project  
Table 5. Public Awareness  
Detailed Costs

	Unit	Quantities					Unit Cost (US\$)	Base Cost (US\$ '000)				
		1994	1995	1996	1997	Total		1994	1995	1996	1997	Total
<b>I. Investment Costs</b>												
<b>A. Technical Assistance</b>												
1. WWF education officer	mmts	-	-	-	-	-	-	-	-	-	-	-
2. Airpassage	ticket	2	2	2	2	8	1,000	2.0	2.0	2.0	2.0	8.0
3. Board and lodging allowances	month	1	1	1	1	4	500	0.5	0.5	0.5	0.5	2.0
<b>Subtotal Technical Assistance</b>								2.5	2.5	2.5	2.5	10.0
<b>B. Management Plan Production</b>												
1. Printing Maps etc.	amount	-	1	-	-	1	1,000	-	1.0	-	-	1.0
<b>C. DPA Equipment</b>												
1. Video Camera	no.	-	1	-	-	1	1,000	-	1.0	-	-	1.0
2. Recorder	no.	-	1	-	-	1	500	-	0.5	-	-	0.5
3. Television	no.	-	1	-	-	1	500	-	0.5	-	-	0.5
4. Slide Projector/ Screen	no.	-	1	-	-	1	500	-	0.5	-	-	0.5
5. Desk Computer	no.	-	1	-	-	1	3,000	-	3.0	-	-	3.0
6. Laser Printer	no.	-	1	-	-	1	1,500	-	1.5	-	-	1.5
7. Photocopier	no.	-	1	-	-	1	2,500	-	2.5	-	-	2.5
8. Tapes and films	no.	2	2	-	-	4	1,000	2.0	2.0	-	-	4.0
9. Camera	no.	3	-	-	-	3	250	0.8	-	-	-	0.8
10. Binoculars	no.	5	5	-	-	10	100	0.5	0.5	-	-	1.0
11. Posters	year	1	1	1	1	4	200	0.2	0.2	0.2	0.2	0.8
12. Guide Books	year	1	1	1	1	4	300	0.3	0.3	0.3	0.3	1.2
13. Posters and Brochures	year	1	1	1	1	4	300	0.3	0.3	0.3	0.3	1.2
14. Exhibition tables	no.	-	1	-	-	1	1,000	-	1.0	-	-	1.0
15. Herbarium Sets	year	-	-	1	-	1	400	-	-	0.4	-	0.4
16. Camping gear (20 people)	no.	-	1	-	-	1	2,000	-	2.0	-	-	2.0
17. One Excursion Boat (25 Hp)	no.	1	-	-	-	1	10,000	10.0	-	-	-	10.0
18. Jeep	no.	1	-	-	-	1	15,000	15.0	-	-	-	15.0
<b>Subtotal DPA Equipment</b>								29.1	15.8	1.2	0.8	46.8
<b>D. NGO Equipment (NPRF&amp; ECO Club)</b>												
1. Jeep	no.	1	-	-	-	1	15,000	15.0	-	-	-	15.0
2. 2 Engines	no.	2	-	-	-	2	8,000	16.0	-	-	-	16.0
3. Computer and Printer	no.	2	-	-	-	2	1,000	2.0	-	-	-	2.0
4. 2 Fax/Phone	no.	2	-	-	-	2	500	1.0	-	-	-	1.0
5. 1 Video Set	no.	1	-	-	-	1	2,000	2.0	-	-	-	2.0
6. Office Supplies	amount	1	1	1	-	3	400	0.4	0.4	0.4	-	1.2
7. Camping gear	no.	1	-	1	-	2	500	0.5	-	0.5	-	1.0
<b>Subtotal NGO Equipment (NPRF&amp; ECO Club)</b>								36.9	0.4	0.9	-	38.2
<b>E. Odessa Zoo</b>												
1. Wetland Exhibit Production	lumpsum	-	-	-	-	-	-	2.0	2.0	-	-	4.0
<b>Total Investment Costs</b>								70.5	21.7	4.6	3.3	100.1
<b>II. Recurrent Costs</b>												
<b>A. Operating Costs</b>												
1. DPA Fuel (1 jeep, 1 boat)	'000L	4	4	4	4	16	300	1.2	1.2	1.2	1.2	4.8
2. NGO fuel (1 jeep, 2 boats)	'000L	5	5	5	5	20	300	1.5	1.5	1.5	1.5	6.0
3. NGO paper comm.	lumpsum	1	1	1	1	4	500	0.5	0.5	0.5	0.5	2.0
4. DPA paper comm.	lumpsum	1	1	1	1	4	500	0.5	0.5	0.5	0.5	2.0
<b>5. Equipment Maintenance</b>												
DPA	lumpsum	-	-	-	-	-	-	1.5	2.2	2.3	2.3	8.3
NGO	lumpsum	-	-	-	-	-	-	1.8	1.9	1.9	1.9	7.5
Odessa Zoo	lumpsum	-	-	-	-	-	-	0.1	0.2	0.2	0.2	0.7
<b>Subtotal Equipment Maintenance</b>								3.4	4.3	4.4	4.5	16.6
<b>Total Recurrent Costs</b>								7.1	8.0	8.1	8.2	31.4
<b>Total</b>								77.5	29.7	12.7	11.5	131.4

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Ukraine  
Danube Delta Biodiversity Project  
Table 6. Biosphere Reserve Establishment  
Detailed Costs

	Unit	Quantities					Unit Cost (US\$)	Base Cost (US\$ '000)				
		1994	1995	1996	1997	Total		1994	1995	1996	1997	Total
<b>I. Investment Costs</b>												
<b>A. Ukraine Danube Delta Biosphere</b>												
<b>1. Production Mgmt. Plans and Maps</b>												
3 core area	months	0.2	0.2	0.3	0.3	1	1,000	0.2	0.2	0.3	0.3	1.0
Overall Plan	months	0.2	0.2	0.4	0.4	1.2	1,000	0.2	0.2	0.4	0.4	1.2
Maps	months	0.1	0.1	0.1	0.1	0.4	200	0.0	0.0	0.0	0.0	0.1
Preparation & Implementation of Mgmt Plans	year	1	1	1	1	4	2,000	2.0	2.0	2.0	2.0	8.0
<b>Subtotal Production Mgmt. Plans and Maps</b>								2.4	2.4	2.7	2.7	10.3
<b>2. Training</b>												
Local Workshop (3 days) /a	per year	2	2	2	2	8	500	1.0	1.0	1.0	1.0	4.0
<b>3. National Seminar</b>												
Transport /b	amount	-	1	-	1	2	1,200	-	1.2	-	1.2	2.4
Food /c	amount	-	1	-	1	2	1,600	-	1.6	-	1.6	3.2
Preparation /d	amount	-	1	-	1	2	250	-	0.3	-	0.3	0.5
<b>Subtotal National Seminar</b>								-	3.1	-	3.1	6.1
<b>4. Ukraine/ Rumanian Seminar</b>												
Board and Lodging /e	no.	1	-	1	-	2	2,400	2.4	-	2.4	-	4.8
Preparation	amount	1	-	1	-	2	250	0.3	-	0.3	-	0.5
Airline Tickets /f	amount	1	-	1	-	2	1,500	1.5	-	1.5	-	3.0
<b>Subtotal Ukraine/ Rumanian Seminar</b>								4.2	-	4.2	-	8.3
<b>5. International Seminar</b>												
Airline Tickets /g	amount	-	-	-	1	1	10,000	-	-	-	10.0	10.0
food /h	amount	-	-	-	1	1	3,800	-	-	-	3.8	3.8
Preparation	amount	-	-	-	1	1	1,000	-	-	-	1.0	1.0
<b>Subtotal International Seminar</b>								-	-	-	14.8	14.8
<b>6. Technical Assistance by WWF</b>												
Airline Tickets	trip	2	2	2	2	8	1,000	2.0	2.0	2.0	2.0	8.0
Board and Lodging	amount	2	2	2	2	8	500	1.0	1.0	1.0	1.0	4.0
<b>Subtotal Technical Assistance by WWF</b>								3.0	3.0	3.0	3.0	12.0
<b>7. Technical Assistance - Local</b>												
Legal (Misc. Exp)	months	1	1	1	1	4	500	0.5	0.5	0.5	0.5	2.0
Cadastral	months	1	1	1	1	4	500	0.5	0.5	0.5	0.5	2.0
<b>Subtotal Technical Assistance - Local</b>								1.0	1.0	1.0	1.0	4.0
<b>Total</b>								11.6	10.5	11.9	25.6	59.5

\a 2 per year for 35 people.  
 \b 40 people at \$30 per person for 4 days.  
 \c 10 per day for 4 days for 40 participants.  
 \d \$250 per workshop.  
 \e 30 participants at \$20 per person for 4 days.  
 \f 30 people at \$50 per ticket.  
 \g 200 participants at \$50 per ticket.  
 \h 50 participants for 5 days at \$15 a day.

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Ukraine  
Danube Delta Biodiversity Project  
Table 7. Coordination with Romania & Regional Initiatives  
Detailed Costs

	Unit	Quantities				Unit Cost (US\$)	Base Cost (US\$ '000)				
		1994	1995	1996	1997		Total	1994	1995	1996	1997
<b>I. Investment Costs</b>											
<b>A. Training</b>											
<b>1. Black Sea Workshop</b>											
Public Awareness (Turkey)- Airfare	no.	1	-	-	-	1 1,000	1.0	-	-	-	1.0
Per diem	no.	1	-	-	-	1 700	0.7	-	-	-	0.7
Planning Workshop (Romania)- Ticket	no.	1	-	-	-	1 100	0.1	-	-	-	0.1
Per diem	no.	1	-	-	-	1 400	0.4	-	-	-	0.4
Bird Inventory - Russia- Ticket	no.	1	-	-	-	1 100	0.1	-	-	-	0.1
Per diem	no.	1	-	-	-	1 400	0.4	-	-	-	0.4
<b>Subtotal Black Sea Workshop</b>							<b>2.7</b>				<b>2.7</b>
2. Coop/ Romania GEF	no.	1	1	1	1	4 750	0.8	0.8	0.8	0.8	3.0
3. Regional Activities	no.	1	1	1	1	4 1,250	1.3	1.3	1.3	1.3	5.0
<b>Total</b>							<b>4.7</b>	<b>2.0</b>	<b>2.0</b>	<b>2.0</b>	<b>10.7</b>

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Ukraine  
Danube Delta Biodiversity Project  
Table 8. Endowment Fund Establishment  
Detailed Costs

	Unit	Quantities				Total	Unit Cost (US\$)	Base Cost (US\$ '000)				Total
		1994	1995	1996	1997			1994	1995	1996	1997	
<b>I. Investment Costs</b>												
<b>A. Preparation of Trust Fund</b>												
1. Foreign Legal Advisor	month	-	-	0.75	-	0.75	16,000	-	-	12.0	-	12.0
2. Local Legal Advisor	month	-	-	0.75	-	0.75	200	-	-	0.2	-	0.2
<b>Total</b>										12.2		12.2

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UKRAINE

DANUBE DELTA BIODIVERSITY PROJECT

Implementation Plan

Explanation of Numbered Critical Events

<u>Number</u>	<u>Event and Date</u>	<u>Explanation</u>
1	Mid term review, 5.31.96	Eliminate unsuccessful components from project
2	Obtain building site, 12.31.94	If not, drop visitor center construction from project and reduce costs of other components for lack of storage space
3	New wardens appointed, 12.31.94 and 12.31.95	If not, reduce equipment associated with wardens
4	Warden station construction, 6.30.95	If not yet started, reduce number
5	OB motors procurement, 12.31.95	If not started, reduce numbers
6	Flora and fauna maps production, 12.31.95	If not first maps completed, reduce component
7	Godwodkhos gate operator contracted to weld gates, 12.31.94	If not, delay rest of SZ Plavnie component
8	Ostrov Yermakov study, 12.31.95	If not started, drop from project
9	Fish kolkoz study, 12.31.95	If not started, set time limit for start
10	Produce management maps, 12.31.95	If no first maps available, set time limit for start
11	Produce management plan, 12.31.95	If no plan available, set time limit to produce it
12	Legal advisor contracted, 12.31.95	If not yet done, drop component

Ukraine  
Danube Delta Biodiversity Project  
Implementation Plan

Component and Activity Mid-Term Review	1994		1995		1996		1997		1998	
	1	2	1	2	1	2	1	2	1	2
<b>Prepare TOR for Mid-term Review</b>										
* Mid-term Review					(1)					
<b>1. Strengthening of Danube Plaving Authority</b>										
* Obtain Building Site for Visitor Center		(2)								
Staff Housing Renovation										
Goods Purchase										
Vehicle (2), Motorcycle (20), Bicycle (20) Purchase										
Technical Advisor										
Procurement Advisor										
English Training										
Wetland Study Tour										
Wetland Management Course										
<b>2. Warden Strengthening</b>										
* New Warden Appointments			6 (3)	10 (3)						
* Warden Station Construction				(4)						
* Vehicle (1), O-B motor (4), Purchase				(5)						
Overseas Study Tour										
Goods Purchase										
Protection Course										
Foundation Course In Romania										
Public Awareness Course										
Wildlife Management Course										
<b>3. Monitoring and Database Management</b>										
Goods Purchase										
Vehicle (1), Boats (2) Purchase										
Data Management/GIS										
* Flora and Fauna Maps Production				(6)						
Training GIS and Vegetation Mapping										
Training Bird Monitoring										
<b>4. Pilot Wetland Restoration</b>										
<b>Stensovsko-Zhebranski Plevnie:</b>										
Vilkovo-Primorskoye Culvert Cleaning										
* Welding of Gates		(7)								
Cleaning Sasyk Canal Siphon										
Lazarkin Kut Channel Blocking										
<b>Vilkovo Town Channels:</b>										
Hand Excavation										
Cutter Dredging										
Clamshell Dredging										
Equipment Purchase										
* Ostrov Yermakov Study					(8)					
* Fish Kolkhoz Study					(9)					
Water Quality Monitoring										
<b>5. Public Awareness</b>										
<b>WWF Education Officer</b>										
Maps and Brochure Printing										
Goods Purchase										
Vehicle (2), Boat (1), O-B motors (2) Purchase										
<b>6. Biosphere Reserve Establishment</b>										
* Produce Management Maps					(10)					
* Produce Management Plans					(11)					
Local Workshops										
National Seminar										
Ukraine/Romania Seminar										
Technical Assistance by WWF										
International Seminar										
* Legal Advisor					(12)					
<b>7. Coordination, Regional</b>										
Black Sea Workshops (3)										
Cooperation with Romania										

\* Critical Event

UKRAINEDANUBE DELTA BIODIVERSITY PROJECTTECHNICAL ASSISTANCE

1. The project funds substantial technical assistance, mostly on a short-term basis, and all with a strong training role. The WWT technical assistance is provided free, from WWF resources, the project funding only the logistics costs. The following table indicates technical assistance to be provided through the course of the project draft terms-of-reference follow:

Technical Assistance  
(Staffweeks)

<u>Expertise</u>	<u>Local/Expatriate</u>	<u>Year1</u>	<u>Year2</u>	<u>Year3</u>	<u>Year4</u>	<u>Total</u>
Resident Advisor	expatriate	8	8	4	4	12
Procurement Advisor	local	4	-	-	-	4
English Trainer	local	6	6	6	6	(100)
Wetland Planning trainers	expatriate	2	-	2	-	4
Protection Trainer	expatriate	2	-	-	-	2
Protection Trainers (2)	expatriate	4	4	4	4	(16)
Ornithologist (IWRB)	expatriate	-	3	-	-	3
Ornithologist (Melitipole)	local	2	3	-	-	(2)
GIS/data management (WWF)	expatriate	4	4	4	4	16
Botanist/mapper (WWF)	expatriate	4	4	4	4	16
Public Awareness (WWF)	expatriate	4	4	4	4	16
Environmental Lawyer	local	4	4	4	4	(16)
Cadastral Expert	local	4	4	4	4	(16)
Protected Area Expert (WWF)	expatriate	4	4	4	4	16
Legal/Financial Expert	expatriate	-	-	3	-	3
Legal/Financial Expert	local	-	-	3	-	(3)
Bookkeeper	local	52	52	52	52	(208)
Scientific Advisory Committee	local	12	12	12	12	(48)
Annual audit	local	-	1	1	1	(3)
Admin. & technical support	local	52	52	52	52	(208)
Fish Kolkhoz study	local	12	20	20	-	(42)
Ostrov Yermakov Study	local	-	20	20	-	(40)
				Total expatriate		110
				(Total local)		(699)

Note: Of the 127 weeks of expatriate TA, 80 are provided as a donation from WWF, the project paying only the transport and accommodation costs.

TECHNICAL ASSISTANCE FOR DPA STRENGTHENINGRESIDENT ADVISOR POSITION

## Qualifications and Experience

2. The Resident Advisor should have qualifications (educational training) and work experience in protected area management, in particular with temperate delta ecosystems, including experience with institutional strengthening, flora/fauna monitoring, public awareness needs of wetland protected areas. The advisor must be comfortable with both process/planning oriented components and implementing technical, on-site activities. They should have specific



experience in Ukraine with the Danube Delta and familiarity with the relevant local and national institutions (governmental and non-governmental) in the region.

#### Scope of Work

3. The contractor will work primarily with the MEP and DPA, but also coordinate with other national and international organizations in providing overall technical assistance and particular help with implementing the following project components:

- Biosphere Reserve Establishment: this includes setting up conservation activities and preparing management plans in the Dunaski Plavni and the SZP, as well as assessing other sites for long-term conservation goals;
- DP and Warden Strengthening: overall assistance to the training activities of the DPA and specifically the wardens in patrol, survey and public awareness activities; and
- Public Awareness: working with community members and NGOs in the protected area planning process and environmental education.

4. The contractor will ensure that all project components are interactive and compatible and build upon successful practices in other wetland systems and will be compatible with ongoing work in the parallel GEF Ukraine Danube Delta Project and throughout the Black Sea through the Black Sea GEF project.

#### Place/Duration of Duty

5. The Contractor will work in Ukraine, primarily in Vilkovo, with some time in Kiev and Odessa as needed. He/she will work Ukraine for 1 month per year for the first three years of the project.

#### Terms of Reference for Procurement Advisor

#### Qualifications and Experience

6. The consultant should have qualifications and experience in procurement procedures, including World Bank procurement procedures, for goods, works, technical assistance and training. Knowledge of contracting procedures in the Former Soviet Union, together with some knowledge of Russian/Ukrainian, would be an advantage.

#### Scope of Work

7. He would assist MEP and DPA in preparation of tender documents, including technical specifications for goods and works to be procured under the project. He would advise on local and international tendering procedures and on appropriate packages for procurement of goods.

Location

8. He would spend about half of his assignment in Vilkoovo and half in Kiev.

TECHNICAL ASSISTANCE FOR DPA STRENGTHENING  
ENGLISH TRAINER POSITION

Qualifications and Experience

9. The English Trainer should have qualifications (educational training) and work experience in teaching English as a second language for Ukrainian residents. They should also have experience with setting up a language lab, e.g. as in a university setting, designing formal and intense courses as well as ongoing, continuing education activities.

Scope of Work

10. The contractor will primarily with the DPA, but also other community leaders and MEP as necessary in instructing a formal training program in English language. The courses are being taught so that the Ukrainians can interact with foreign visitors and colleagues in the implementation of the project. The Trainer will be responsible for setting up the English Lab, arranging the course structure, overseeing the lab equipment in conjunction with the DPA procurement staff, providing courses that are intense for 6 weeks at a time, but also arrangements and curriculum for students to continue at their own pace after the formal courses.

Place/Duration of Duty

11. The Contractor will work in Ukraine, primarily in Vilkoovo, with some time in Kiev and Odessa as needed. He/she will work Ukraine for 6 weeks each year of the project.

TECHNICAL ASSISTANCE FOR DPA STRENGTHENING  
WETLAND MANAGEMENT COURSE

(IWRB possibly)

Qualifications and Experience

12. The course trainers and host organization should have qualifications (educational training) and work experience in protected area management, in particular with temperate delta ecosystems, including experience with institutional strengthening, protected area legislation, flora/fauna monitoring for ecosystems, habitats and species, wetland restoration, public awareness needs of wetland protected areas. The trainers must be comfortable with both process/planning oriented components and implementing technical, on-site activities in wetland conservation areas. They should have specific experience in Ukraine with the Danube Delta and familiarity with the relevant

local and national institutions (governmental and non-governmental) in the region.

#### Scope of Work

13. The contractor will primarily direct the course for the DPA, but also coordinate with other national and international organizations in providing overall technical assistance. The course will focus on waterfowl management, wetland restoration and legislative aspects of wetland restoration primarily. But the contractor should be familiar with the overall GEF project goals and design the course to best fit these needs. While there will be some classroom and lecture components, the emphasis should be on field and site-based activities.

14. The contractor will ensure the course is multi-disciplinary and builds upon successful practices in other wetland systems and will be compatible with ongoing work in the parallel GEF Romania Danube Delta Project and throughout the Black Sea through the Black Sea GEF project.

#### Place/Duration of Duty

15. The Contractor will work in Ukraine in Vilkovo for a two-week period during the first and third years of the project.

#### TECHNICAL ASSISTANCE FOR DPA STRENGTHENING OVERSEAS WETLAND STUDY TOUR

#### Qualifications and Experience

16. The tour trainers and host organization should have qualifications (educational training) and work experience in protected area management, in particular with temperate delta ecosystems, including experience with institutional strengthening, protected area legislation, flora/fauna monitoring for ecosystems, habitats and species, wetland restoration, public awareness needs of wetland protected areas. The host area(s) should provide examples of different wetland management strategies focusing on nature protection and ecosystem restoration, but with techniques that are applicable to the Ukraine Danube Delta. The host must be comfortable with both process/planning oriented components and implementing technical, on-site activities in wetland conservation areas. They should have specific experience in Ukraine with the Danube Delta and familiarity with the relevant local and national institutions (governmental and non-governmental) in the region.

#### Scope of Work

17. The contractor will primarily direct the study tour for 5 lead DPA staff. The tour will focus on waterfowl management, wetland restoration and legislative aspects of wetland restoration primarily. But the contractor should be familiar with the overall GEF project goals and design the tour to

best fit these needs. While there will be some classroom and lecture components, the emphasis should be on field and site-based activities. The host will be expected to visit Ukraine before the DPA study to tour in order to better understand the needs of the DPA and Danube Delta conservation situation.

18. The contractor will ensure the tour is multi-disciplinary and builds upon successful practices in other wetland systems and will be compatible with ongoing work in the parallel GEF Romania Danube Delta Project and throughout the Black Sea through the Black Sea GEF project.

#### Place/Duration of Duty

19. The Contractor will first visit Vilково for a one week period during the first and the project. The Ukrainians will then visit the overseas study area(s) for a three week period during the first year of the project, during which time the host will accompany them.

#### TECHNICAL ASSISTANCE FOR WARDEN STRENGTHENING OVERSEAS STUDY TOUR FOR CHIEF WARDEN IN PROTECTION TECHNIQUES

#### Qualifications and Experience

20. The trainers and host organization should have qualifications (educational training) and work experience in protected area management, in particular with temperate delta ecosystems, including experience with institutional strengthening, protected area legislation, law enforcement techniques for different species, habitats (especially waterfowl management), recreational, agricultural, hydrological and forestry activities, as well as public awareness needs of wetland protected areas. The host area(s) should provide a strong and well-established wetland protected area, that has an effective staff, positive relations with governmental and non-governmental counterparts and daily activities that address different wetland protection issues strategies focusing on nature protection but with techniques that are applicable to the Romanian Danube Delta. They should have specific on-site experience in Romania with the Danube Delta and familiarity with the relevant local and national institutions (governmental and non-governmental) in the region.

#### Scope of Work

21. The contractor will primarily direct the overseas study tour experience for Chief Warden of the DPA. The internships will provide hands-on experience with focus on nature protection, law enforcement, communication skills, public relations, waterfowl management, and administration of the Warden staffs. But the contractor should be familiar with the overall GEF project goals and design the tour to best fit these needs. While there will be some classroom and lecture components, the emphasis should be on field and site-based activities.

22. The contractor will ensure the internship is built upon successful practices in the host park and will offer training opportunities that are also compatible with ongoing work in the parallel GEF Ukraine Danube Delta Project and throughout the Black Sea through the Black Sea GEF project. The contractor also needs to make translation arrangements.

Place/Duration of Duty

23. The Ukrainian will visit the overseas site for two weeks during the first year of the project.

TECHNICAL ASSISTANCE FOR WARDEN STRENGTHENING  
WARDEN PROTECTION COURSE (UKRAINE GAME UNIVERSITIES)

Qualifications and Experience

24. The trainers and should have qualifications (educational training) and work experience in protected area management, in particular with temperate delta ecosystems, including experience with institutional strengthening, protected area legislation, law enforcement techniques for different species, habitats (especially waterfowl management), recreational, agricultural, hydrological and forestry activities, as well as public awareness needs of wetland protected areas. They should have experience in teaching and applying these techniques in field situations. They should have specific on-site experience in Romania with the Danube Delta and familiarity with the relevant local and national institutions (governmental and non-governmental) in the region.

Scope of Work

25. The contractor will primarily design and direct the Warden Protection Course. The course will provide hands-on experience with focus on nature protection, law enforcement, communication skills, public relations, waterfowl management, and administration of the Warden staffs. But the contractor should be familiar with the overall GEF project goals and design the tour to best fit these needs. While there will be some classroom and lecture components, the emphasis should be on field and site-based activities. The more senior wardens will in time work with the trainers so they can become trainers themselves.

26. The contractor will ensure the course builds upon successful practices in the host park and will offer training opportunities that are also compatible with ongoing work in the parallel GEF Romania Danube Delta Project and throughout the Black Sea through the Black Sea GEF project.

Place/Duration of Duty

27. The Ukrainian trainers will work for two weeks each year in the delta region to train the wardens.

TA FOR BIRD MONITORING (IWRB)

## Qualifications and Experience

28. IWRB (hereafter Contractor) should have qualifications (educational training) and work experience in bird inventorying and monitoring techniques that are appropriate with temperate delta ecosystems. They should have specific experience in Romania with the Danube Delta and familiarity with the relevant local and national institutions (governmental and non-governmental).

## Scope of Work

29. The contractor will work with the DPA and local NGOs in enhancing the existing activities related to bird monitoring and wetland management for the protection of species and habitats. They will set up a course, on-site to standardize bird monitoring techniques between the DPA staff and other bird groups, they will teach the DPA Wetland team to be trainers themselves. They will work closely with Ukrainian experts from Melitipole to ensure techniques are similar for the Black Sea region. They will coordinate with WWF on GIS applications in Ukraine and Birdlife in Romania for parallel monitoring activities. They will ensure that the monitoring activities build upon successful practices in the Mediterranean and will be compatible with ongoing work throughout the Black Sea through the Black Sea GEF project.

## Place/Duration of Duty

30. The Contractor will work throughout the Danube Delta, based in Vilkovo for two weeks during year one of the project.

TA FOR BIRD MONITORING (MELITIPOLE SCIENTIST)

## Qualifications and Experience

31. Melitipole (hereafter Contractor) should have qualifications (educational training) and work experience in bird inventorying and monitoring techniques that are appropriate with temperate delta ecosystems. They should have specific experience in Ukraine with the Danube Delta and familiarity with the relevant local and national institutions (governmental and non-governmental).

## Scope of Work

32. The local contractor will work with the DPA and local NGOs in enhancing the existing activities related to bird monitoring and wetland management for the protection of species and habitats. They will work with the IWRB to set up a course, on-site to standardize bird monitoring techniques between the DPA staff and other bird groups, they will teach the DPA Wetland team to be trainers themselves. They will work closely with IWRB to ensure techniques are similar for the Black Sea region. They will coordinate with WWF on GIS applications in Ukraine and BirdLife in Romania for parallel monitoring

activities. They will ensure that the monitoring activities build upon successful activities in the region and will be compatible with ongoing work throughout the Black Sea through the Black Sea GEF project.

Place/Duration of Duty

33. The Contractor will work throughout the Danube Delta, based in Vilkovo for two weeks during year one of the project.

TECHNICAL ASSISTANCE FOR GIS/DATA MANAGEMENT (WWF-GERMANY)

Qualifications and Experience

34. WWF-Germany (hereafter, Contractor) should have qualifications (educational training) and work experience in GIS techniques and data management applications that are appropriate with temperate delta ecosystems. They should have specific experience in Ukraine with the Danube Delta and familiarity with the relevant local and national institutions (governmental and non-governmental).

Scope of Work

35. The contractor will work primarily with the DPA in Vilkovo to develop a basic data management capacity through GIS tools for the guidance and compilation of monitoring data (for all basic flora and fauna in the delta) into GIS formats that will be useful for the production of maps and other products necessary for the production of management plans. They will contribute to the development of the resource-specific management plans (e.g. waterfowl, game, tourism) in data management. They should coordinate activities with the UMass and Flevoland teams in the Romania project and the Romanian colleagues to exchange ideas and ensure compatibility, to better manage the delta as one wetland complex. They will help with the communication between the government and the NGOs as well as integrating the data management/GIS activities with others, especially the flora/fauna monitoring and the biosphere reserve establishment components. They will help to ensure these aspects are compatible with other components of the GEF project and build upon successful practices elsewhere and will be compatible with ongoing work throughout the Black Sea through the Black Sea GEF project.

Place/Duration of Duty

36. The Contractor will work throughout the Danube Delta, based in Vilkovo for two weeks, two times per year, for the total project period of 4 years, 1994-1997. The Contractor will contribute the staff time and the GEF project will cover all travel and related board/lodging expenses during this period.

TECHNICAL ASSISTANCE FOR VEGETATION MAPPING (WWF-GERMANY)

## Qualifications and Experience

37. WWF-Germany (hereafter, Contractor) should have qualifications (educational training) and work experience in GIS vegetation mapping techniques to study biodiversity and ecological succession that are appropriate with temperate delta ecosystems. They should have specific experience in Ukraine with the Danube Delta and familiarity with the relevant local and national institutions (governmental and non-governmental).

## Scope of Work

38. The contractor will work primarily with the Wetland Research team of the DPA in Vilkovovo to develop vegetation monitoring procedures that will provide basic data on habitat changes and on ecosystem dynamics. Impacts of interventions (hydrological, protected area strategies - fences, grazing restrictions) and rehabilitation activities will be assessed. The primary project areas of Dunaski Plavni, SZP and the Yermakov Island will be the key sites to be mapped and measured, but procedures should be such that they can be extended to other areas. This activity needs to tie in closely with water quality studies and the data management/GIS activities, as well as provide a framework for other flora/fauna monitoring activities.

39. The contractor will help with the communication between the government and the NGOs as well as integrating the activities with others, especially the data management and the biosphere reserve establishment components. They will help to ensure these aspects are compatible with other components of the GEF project and build upon successful practices elsewhere and will be compatible with ongoing work throughout the Black Sea through the Black Sea GEF project.

## Place/Duration of Duty

40. The Contractor will work throughout the Danube Delta, based in Vilkovovo for two weeks, two times per year, for the total project period of 4 years, 1994-1997. The Contractor will contribute the staff time and the GEF project will cover all travel and related board/lodging expenses during this period.

STENTSOVSKO-ZHEBRIJANSKIE PLAVNI RECLAMATION  
TERMS OF REFERENCE FOR ASSISTANCE

## Duration

41. An Ukrainian team consisting of one hydrologist and one water chemist should visit the S-ZP during May and September of year one of the project, and subsequently in September of the two following years. The total number of visits (for the team of two persons) is five. Each visit will have a duration of 12 days, of which 10 in Vilkovovo/Odessa, and two connecting days.



## Scope of Work

42. The hydrologist should form an opinion about the various proposals submitted for correction of the hydraulic regime in the S-ZP. The particular correction required is to reestablish a regime of water circulation (continuous or seasonal) under conditions of minimal head differentials. The latter leads to a need for large cross sections of proposed hydraulic structures adding considerably to their cost. Low cost solutions should be investigated. Before project execution, the hydrologist will check on the proper location of the staff gauges and their reading and recording arrangements.

43. The water chemist will review prior water analyses and form an opinion about their reliability. He will execute spot water quality analyses with a portable test kit and monitor the "before and after" change in water quality. He will also locate sources of concentrated agricultural pollution and test their quality. These sources supposedly are small streams at the northern boundary of the Stentsovsko Plavni. He will suggest, together with the hydrologist, methods of reducing, intercepting or bypassing the polluted discharge.

44. During their first visit, the WWF team should contact the Hydrometeorological Institute in Odessa, in particular Dr. Peli Kulakova, who has studied the area and is proposing a solution to the problems.

45. The team should assist the Director of the Dunavski plavni in drafting a contract for local engineering services, first for a program of installation of staffgauges and their observation during the first year of the project and of location, frequency and type of water analysis to be taken.

## Qualifications

46. Both the hydrologist and the water quality engineer should have some experience in wetland restoration. They should be preferably young persons in view of the adverse living conditions prevailing in the project area.

## TECHNICAL ASSISTANCE FOR PUBLIC AWARENESS (WWF-GERMANY)

### Qualifications and Experience

47. WWF-Germany (hereafter, Contractor) should have qualifications (educational training) and work experience in public awareness and environmental education activities to promote nature conservation, specifically birds, and bird-related tourism that are appropriate with temperate delta ecosystems. They should have specific experience in Ukraine with the Danube Delta and familiarity with the relevant local and national institutions (governmental and non-governmental).

## Scope of Work

48. The contractor will work primarily with the DPA, the NPRF and the Ecoclub in Vilkovovo to develop public awareness, environmental education and community development activities related to wetland management for the protection of species and habitats. They will contribute initially to the development of the Public Awareness Plan, helping the DPA and the NGOs outline appropriate activities and targeted audiences.

49. They will help with the communication between the government and the NGOs as well as integrating the public awareness activities with others, especially the interpretive infrastructure, e.g. design of signs, boundary markers and exhibits. They will contribute directly in helping design and implement a nature program(s) and teacher training for the area schools with the EcoClub and lobbying efforts for international awareness with the NPRF.

50. They will help to ensure these aspects are compatible with other components of the GEF project, in particular Monitoring and guiding activities by the DPA staff and exhibit development of the Odessa Zoo. They will ensure that the Public Awareness activities build upon successful practices elsewhere and will be compatible with ongoing work throughout the Black Sea through the Black Sea GEF project.

## Place/Duration of Duty

51. The Contractor will work throughout the Danube Delta, based in Vilkovovo for two weeks, two times per year, for the total project period of 4 years, 1994-1997. The Contractor will contribute the staff time and the GEF project will cover all travel and related board/lodging expenses during this period.

TECHNICAL ASSISTANCE FOR BIOSPHERE RESERVE ESTABLISHMENTLOCAL LEGAL ASSISTANCE

## Qualifications and Experience

52. The legal expert should have qualifications (educational training) and work experience in zoning and regulations as they relate to protected area management, in particular with temperate delta ecosystems. They should have specific experience in Ukraine with the Danube Delta and familiarity with the relevant local and national institutions (governmental and non-governmental) in the region.

## Scope of Work

53. The contractor will work primarily with the DPA Biosphere Reserve Group in assessing the ongoing legislative, legal, zoning, resource use aspects of the biosphere programme. They will work to help establish legal boundaries initially for the Dunaski Plavni and the SZP, but make recommendations on legislation and zoning requirements that would be appropriate for the broader area. They will assist in the transfer of this information into the management plans, both in

visual boundaries on maps and legal language in legislation. They will also coordinate with the MEP and other national and regional organizations to ensure that legal status is compatible with existing national and international legislation. The contractor will examine successful practices in other wetland systems and look for legislative practices that would be compatible with ongoing work in the parallel GEF Romania Danube Delta Project and throughout the Black Sea through the Black Sea GEF project.

#### Place/Duration of Duty

54. The Contractor will work primarily in Vilkovo, for one month each year, but may need to also spend some time in Odessa and Kiev.

#### TECHNICAL ASSISTANCE FOR BIOSPHERE RESERVE ESTABLISHMENT LOCAL CADASTRAL ASSISTANCE

#### Qualifications and Experience

55. The cadastral expert should have qualifications (educational training) and work experience in zoning and regulations as they relate to protected area management, in particular with temperate delta ecosystems. They should have specific experience in Ukraine with the Danube Delta and familiarity with the relevant local and national institutions (governmental and non-governmental) in the region.

#### Scope of Work

56. The contractor will work primarily with the DPA Biosphere Reserve Group in implementing the zoning strategies that are developed for the Dunaski Plavni and the SZP, but make recommendations on requirements that would be appropriate for the broader area. They will carry out the necessary land-ownership background work and clearance for establishment of areas in conservation status. They will work closely with the legal expert and assist in the transfer of this information into the management plans, both in visual boundaries on maps and legal language in legislation. They will also coordinate with the MEP and other national and regional organizations to ensure that cadastral boundaries are compatible with existing national and international legislation.

#### Place/Duration of Duty

57. The Contractor will work primarily in Vilkovo, for one month each year.

#### TECHNICAL ASSISTANCE FOR BIOSPHERE RESERVE ESTABLISHMENT (WWF-GERMANY)

#### Qualifications and Experience

58. WWF-Germany (hereafter, Contractor) should have qualifications (educational training) and work experience in establishment of protected areas that are appropriate with temperate delta ecosystems. They should have specific

experience in Ukraine with the Danube Delta and familiarity with the relevant local and national institutions (governmental and non-governmental).

#### Scope of Work

59. The contractor will work primarily with the Biosphere Reserve Establishment Team of the DPA in Vilkovovo to develop management plans that are both area and resource specific for the three primary project sites of Dunaski Plavni, SZP and Yermakov Island, taking into account the following: socio-economic considerations, community needs, ecological and hydrological parameters and nature protection capacity by the DPA and others over time. These plans will be part of a participatory process to involve the community the establishment of truly effective nature reserves, nature-tourism areas and areas of ecologically sound activities through well-designed zoning strategies. They will work closely with the GIS/Data Management specialist in the production of maps for the plans, the wardens on the boundary demarkations, the legal and cadastral assistants as well as the Wetland Research Team of the DPA on ecological inputs. They should help to move the process of a large, multiple-purpose biosphere reserve forward, through the implementation of specific on-site activities.

60. They will help with the communication between the government and the NGOs as well as integrating the activities with others, especially the data management and the biosphere reserve establishment components. They will help to ensure these aspects are compatible with other components of the GEF project and build upon successful practices elsewhere and will be compatible with ongoing work throughout the Black Sea through the Black Sea GEF project.

#### Place/Duration of Duty

61. The Contractor will work throughout the Danube Delta, based in Vilkovovo for two weeks, two times per year, for the total project period of 4 years, 1994-1997. The Contractor will contribute the staff time and the GEF project will cover all travel and related board/lodging expenses during this period.

#### LEGAL/FINANCIAL SPECIALISTS FOR ENDOWMENT FUND ESTABLISHMENT

##### Qualifications and Experience

62. The expatriate legal/financial specialist would have qualifications in law and finance. He would have previous experience in financial management and in the establishment of trust funds for environmental protection. He would have knowledge of East European legal system. He would focus on:

##### Scope of Work

63. He would focus on: (a) the mandate and objectives of the trust, the activities it would finance and its management; (b) financial arrangements for the trust, including guidance on how the trust's capital should be invested; and (c) arrangements for establishing the trust and suggestions of potential donors.

64. The output would be legal document, agreed to by all parties, which would form a sound basis for establishment of such a trust.

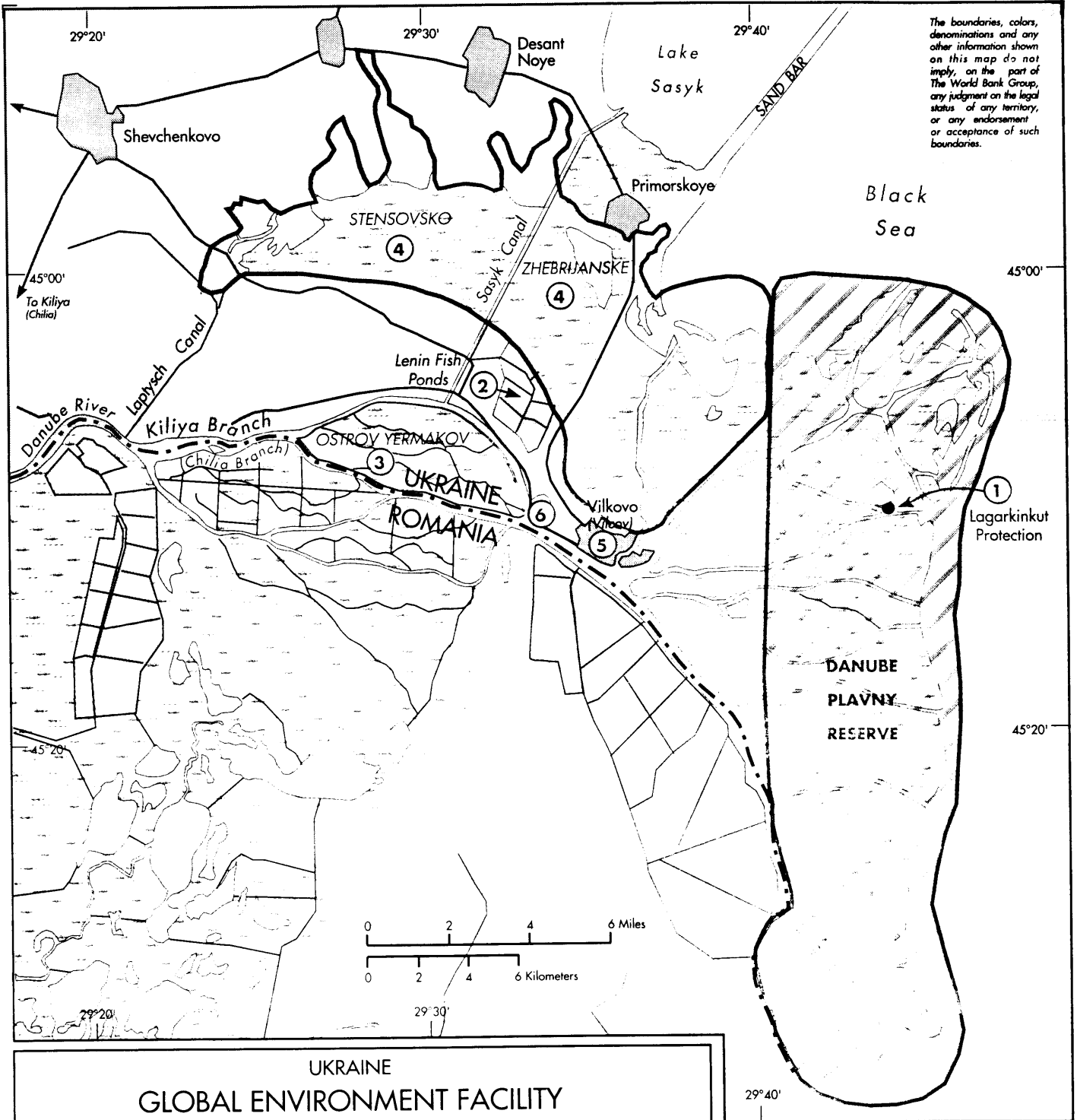
65. The Ukrainian legal/financial expert would also have qualifications in law and finance. He would have a sound knowledge of Ukrainian financial law.

Place/Duration of Duty

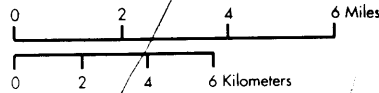
66. 3 weeks in Ukraine. He would focus on the mechanisms for establishing an endowment fund and utilizing income from it in the context of the Ukrainian legal and financial system.

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September 1, 1994



The boundaries, colors, denominations and any other information shown on this map do not imply, on the part of The World Bank Group, any judgment on the legal status of any territory, or any endorsement or acceptance of such boundaries.



**UKRAINE**  
**GLOBAL ENVIRONMENTAL FACILITY**  
**UKRAINE DANUBE DELTA BIODIVERSITY PROJECT**

— PROPOSED ADDITIONAL PROTECTED AREA	○ EXISTING PROTECTED AREA
PROJECT ACTIVITIES:	
① LAGARKINKUT PROTECTION	▤ EXISTING IRRIGATED AREAS
② LENIN FISH PONDS	▤ EXISTING FISH PONDS
③ OSTROV YERMAKOV	— CANALS
④ STENSOVSKO - ZHEBRIJANSKE PLAVNY	— RIVERS
⑤ TOWN CANAL RESTORATION	▨ MARSHY AREAS
⑥ DANUBE PLAVNY RESERVE AUTHORITY HEADQUARTERS	▨ SANDY FOREST AREAS
	▤ MAIN SETTLEMENTS
	— INTERNATIONAL BOUNDARIES

