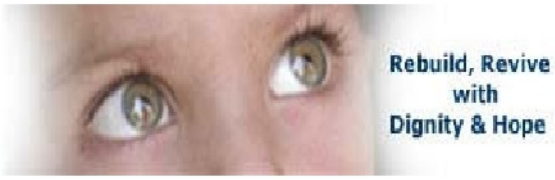
ENVIRONMENTAL STRATEGY



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EARTHQUAKERECONSTRUCTION AND REHABILITATION AUTHORITY

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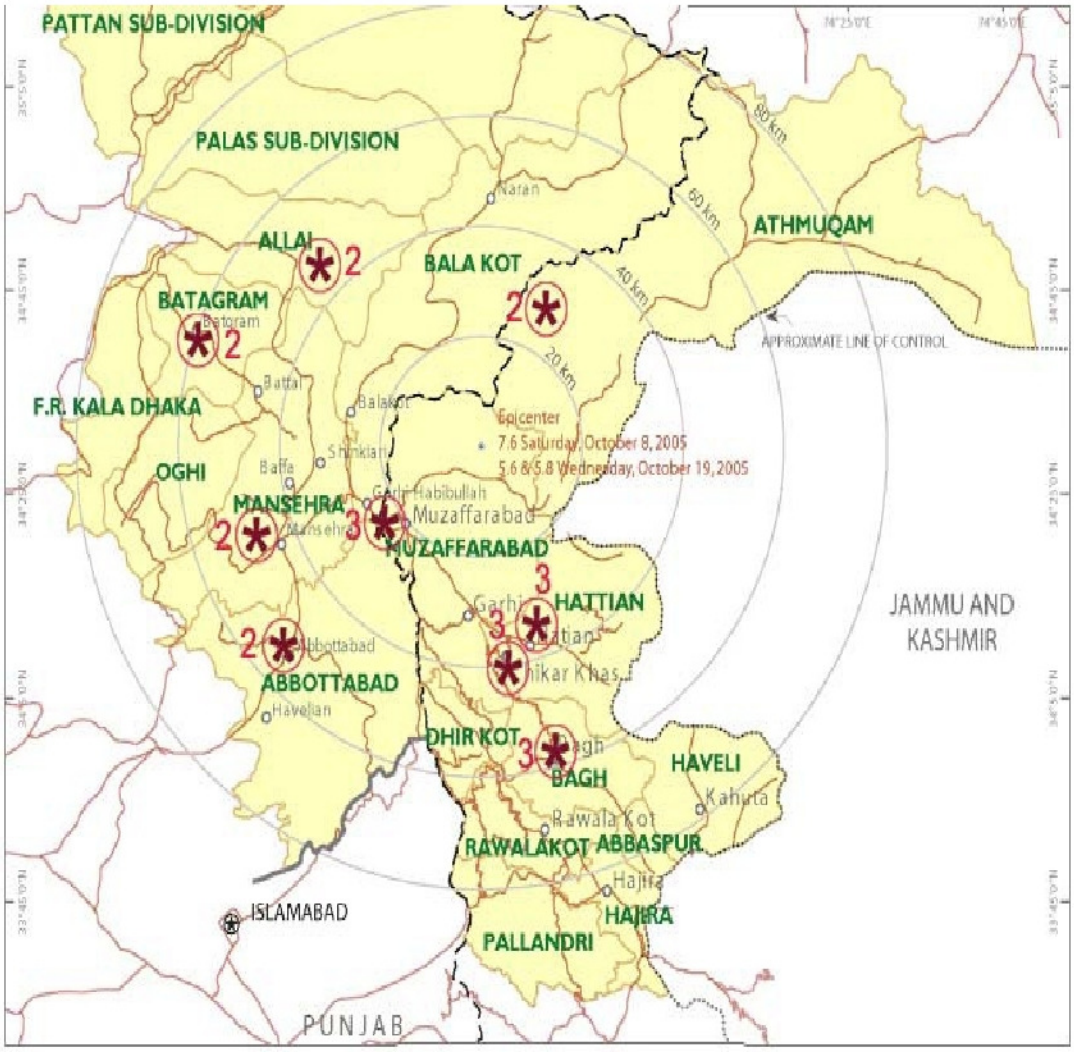
ACRONYMS

AJK	Azad Jammu and Kashmir
CBO	Community Based Organizations
CGI	Corrugated Galvanized Iron
CNG	Compressed Natural Gas
DRU	District Reconstruction Units
EP A	Environmental Protection Agency
EQ	Earthquake
ERRA	Earthquake Reconstruction and Rehabilitation Authority
FAO	Food and Agriculture Organization
GoP	Government of Pakistan
GSM	Global System for Mobile Communication
HWM	Hospital Waste Management
IUCN	International Union for Conservation of Nature
LPG	Liquefied Petroleum Gas
NGO	Non-Government Organization
NRM	Natural Resource Management
NRSP	National Rural Support Programme
NWF	North West Frontier Province
P	Provincial Earthquake Reconstruction and Rehabilitation Agency
PERRAS	State Earthquake Reconstruction and Rehabilitation Agency
ERRA	United Nation Development Programme
UNDP	World Food Programme
WFP	World-Wide Fund for Nature
WWF	Watershed Management
WSM	

GEOGRAPHIC MAP OF 8TH OCTOBER EARTHQUAKE AFFECTED AREA



EXECUTIVE SUMMARY

The earthquake on 8 October 2005 (intensity: 7.6) not only claimed at least 73,000 lives, but it left many others without food, clothes and shelter to face the harsh winter. The earthquake had its epicenter in district Muzaffarabad, AJK. It was felt over a vast area, with the most severely affected areas being Abbottabad, Mansehra, Battagram, Shangla and Kohistan in the NWFP, and districts Muzaffarabad, Neelum, Bagh and Rawalakot in AJK.

The Environmental Strategy of ERRA has been developed with the objective of turning **"challenge into opportunity"**. The aim of this strategy is to highlight issues which need to be "factored in" to the development of the cluster approach. Through the Environment Strategy 2006 - 2009, the Earthquake Rehabilitation and Reconstruction Authority will aim:

"…to protect natural resources, prevent environmental degradation, restore damages, arrange safe disposal of debris; and to establish principles and practices for environment friendly rehabilitation and reconstruction in the earthquake affected areas with sustainable use of resources".

This vision has been developed through wide-ranging consultations within the Environmental Core Group, using the concept of **"BUILD BACK BETTER"**. A number of organizations and internal stakeholders provided input via meetings, seminars and presentations, helping to shape five proposed vision statements.

The strategy is concerned with understanding the relationships between human activities and the environment, to help people and organizations behave in a more sustainable manner. This document has set out to be a package of policies and actions, developed by the ERRA and its partners, to raise awareness, change behavior and deliver environmental improvement across the borough.

An Environmental strategy was needed for several reasons:

- To preserve, protect and enhance the environment that we possess.
- The broad nature of the environment agenda requires coordination of actions.
- Different communities have different priorities.
- Resources are limited.

The affected area in NWFP and AJK carries significant environmental importance for the entire country. Most of the forested area of NWFP falls in this region. The affected areas in NWFP and AJK in the form of River Kunhar, River Jhehlum and River Neelum are also major contributory watersheds for Tarbela and Mangla

dams respectively. About 12 percent catchments area of Mangla Reservoir falls in NWFP's affected areas.

The most visible destruction to the physical environment was caused by: land shearing, liquification and slides that continued long after the main earthquake due to frequent, and often severe aftershocks; siltation of rivers and streams; damage to both natural and man-made water channels; damage to the forest resources due to landslides and rock-falls; damage to agriculture land - especially the terraced fields, roads, water mills and fish farms; and finally, the large amount of debris due to fallen public and private buildings. Safe disposal of debris alone is a major environmental challenge. Another increasing threat to water and soil is the dumping of hospital and hazardous waste in open areas and near water bodies.

Great losses were also suffered by the biological environment, with root systems being damaged over an area of about 135,250 acres in NWFP and about 187,000 Acres in AJK. The forest's ecosystem was not only damaged due to land slides but anticipated land slides and landslips during the monsoon of July-August 2006 enhanced the intensity and volume of damages. The impact on wildlife and biodiversity is yet to be properly assessed. The region affected is rich in fauna, particularly endangered species. Migration of wildlife to other areas has not been reported yet but will probably appear as a long term impact on the biodiversity of the affected areas. As per initial assessments carried out by ERRA and data collected from different stake holders, losses have been indicated at three levels a) Infrastructure damages; b) losses to skilled persons in all addressed sectors, and; c) losses to the natural environment.
Under the strategy, different components have been identified on a need basis. The livelihood of those belonging to the affected areas was mainly dependent upon forestry for fuel wood and extraction of construction timber, pastures and terraces for livestock, production of fish at commercial level in hatcheries and drinking water from fresh streams and springs. The main hatcheries of District Mansehra and Muzaffarabad have suffered great losses due to damaged water supply channels. About 253 landslides are mainly identified near to river or road sides, ultimately putting a threat to human life or may tend to decrease the life of two great sources of Hydro-Power Generation Reservoirs.

The situation in the urban areas was more severe compared to rural areas, with a great deal of debris needing to be dealt with. Heaps of concrete and cement, apart from creating hurdles in reconstructions activities, also revert the pH of soil and lead to a leaching effect on underground water during rainy seasons. Identifying the methods for proper disposal of debris, especially from residential areas is one of the main priorities of this strategy. In the city of Muzaffarabad alone, about 10.58 mm3 of rubble is dumped. The secrecy of safe disposal sites and proper technology pose further challenges for safe removal.

While natural resources are already under serious stress due to the earthquake, the reconstruction and rehabilitation of houses, roads, health, education, agriculture, livelihoods and irrigation etc. put additional stress on the physical as well as natural environment of the area through the increased use of water, waste generation, solid waste dumping, quarrying for sand and stone, increased transportation of construction material and dumping of debris in dry water courses and on riversides. If not properly managed, there would be pressure on forests for wood and timber for reconstruction of housing. Loss to the agricultural lands and to some extent irrigation systems in District Mansehra, Abbottabad and some parts of AJK has affected the livelihood of the population in the long term.

In addition to the above mentioned challenges, shortage of skilled manpower and availability of resources has also been felt. Since a country like Pakistan never faced a natural disaster of such magnitude, the management at different organizational levels has also been short in comparison to the requirement. The country's economic situation and the fact that environmental issues were not considered important until two decades ago are other factors explaining the shortage.

Strengthening at institutional and organizational levels to carry out environmental impact assessments of different projects and development of environmental management plan is a very essential part of whole reconstruction process. Existing institutions are not adequately staffed to accommodate the increased load of affected areas, therefore, suggestions for capacity building and imparting training at all levels and in sectors for environmental safeguard integration are included in the strategy. A detailed pollution/ load inventory needs to be developed for future assessment to identify the load of reconstruction in the area.

All efforts or plans are not applicable without cost estimation and availability of finances. Environmental strategy has been prepared based on the provided reconstruction cost by NESPAK for civil working case of Forest, Fisheries and wild life. Total budget allocation for Natural Resources has been identified as Rs.2.649 billion. For Hospital waste management initial requirement of about Rs. 75.25 million has been identified for three years. To make this programme sustainable third party contracting will be integrated as per national and international practices. For strengthening of organizations and capacity building about Rs. 70.00 million will be required. Initially based on the debris volume about Rs.900.00 million are allocated for removal and proper disposal of the debris with recycling where applicable or possible.

Overall, the strategy is based on 4 components and 15 strategic priority areas. The outcomes for each priority of the Sustainable Environment Strategy have been identified. In the last chapter of the strategy key performance indicators for each

component have been developed for monitoring and evaluation. It is a live strategy which may be revised after the completion of hardware based on the environmental assessment to be carried out. Detailed organizational arrangements have been identified for implementation of the strategy. Integration of capacity and resources at PERRA/SERRA and DRU level will enhance the implementation of the strategy

I. INTRODUCTION

1. A devastating earthquake measuring 7.6 on the Richter scale hit Northern Pakistan on October 8, 2005.The earthquake had its epicenter in district Muzaffarabad, AJK. It was strongly felt over a vast area, but the most severely affected areas were the districts of Abbottabad, Mansehra Battagram, Shanghla, and Kohistan in NWFP, and the districts of Muzaffarabad, Neelum, Bagh and Rawalakot in AJK. Almost 500,000 housing units were fully or partially destroyed, 800 health facilities and 7,669 schools were destroyed. The carnage resulted in over 73,000 deaths and about 128,300 injured. About 500,000 families were directly or indirectly affected. The initial damages were further compounded by aftershocks which continued till the end of March resulting in heavy landslides, damaging roads and further disturbing the already unsettled slopes.

A. ENVIRONMENTAL OVERVIEW OF AFFECTED AREAS:-

2. The earthquake affected area in NWFP and AJK carries significant environmental importance for the entire country. Most of the forest areas of NWFP fall in this region. The affected areas in NWFP and AJK are also major contributory watersheds for Tarbela and Mangla Dams respectively. Both areas are known for their scenic beauty and attract large numbers of local and international tourists during the summer season. Both areas are rich in natural resources but also very vulnerable to environmental degradation. The earthquake, apart from causing heavy losses to life and property, has also resulted in considerable damage to an already fragile bio-physical environment. The road network has been severely damaged, whole mountains have been cleaved apart, land-sliding has been exacerbated, terraced fields have been damaged and forested areas have suffered enormously.

Physical-Environment:

3. The most visible destruction to physical environment was caused by the land shearing, liquification and slides that continued long after the main earthquake due to frequent, and often severe, aftershocks; siltation of rivers and streams; damage to both natural and man-made water channels; damage to the forest resources due to landslides and rock-falls; damage to agriculture land - especially the terraced fields; roads, water mills and fish farms; and finally, the huge amount of debris due to fallen public and private buildings. Safe disposal of debris alone is a major environmental challenge. Apart from these damages, the next most serious danger is of flash floods and more landslides during the next monsoon. The needs of affected population in terms of fuel and shelter are resulting in further pressure on dwindling forests.

Biological Environment:

4. The impact on wildlife and biodiversity is yet to be properly assessed. The region affected is rich in fauna, particularly endangered species. Migration of wildlife to other areas has not been reported yet but will probably appear as a long term impact on biodiversity of the affected areas. The affected area in AJK is also rich in flora. *Muzaffarabad* is home to species like deodar, blue pine, spruce, chir, walnut, ash, maple, poplar, willow, and oak. *Bagh* District, in addition to afore-mentioned species, also hosts horse chestnut, quercus, *olea cafidata* and *acacia modesta*. Blue pine and chir are the two species that provide the most significant forest coverage in AJK. Among the national parks, *Machiara* is in district *Muzaffarabad*. State of Azad Jammu and Kashmir is situated at the junction of Oriental and Palearctic zoogeographic regions resulting in the most rich and diverse biological, particularly faunal assemblage in the world.

5. In NWFP, the affected areas have a significant amount of lower alpine forest cover (the primary species include pine, spruce, deodar, fir and blue pine) and support a lot of local wildlife. District Mansehra is one of the most enriched forest territories. Most of the forest is either reserved or guzara forest.

Socio-Economic Environment:

6. While the natural resources are already under serious stress due to earthquake, the reconstruction and rehabilitation of housing, roads, health, education, agriculture, livelihoods and irrigation etc. will further put additional stress on the physical as well as natural environment of the area through the increased use of water, waste generation, solid waste dumping, quarrying for sand and stone, increased transportation of construction material and dumping of debris in dry water courses and on riversides. If not properly managed, there would be pressure on forests for wood and timber for reconstruction of housing. Loss to the agricultural lands and to some extent irrigation system in District Mansehra, Abbottabad and some parts of AJK has affected the livelihood of the population in the long term.

B. STRATEGY AND KEY ENVIRONMENTAL ISSUES

7. To address all physical, biological and socio-economic environment issues and to restore the environment in the affected areas, ERRA has developed this environmental strategy, based on the damages assessed in sectors related to environment. The strategy is also based on ERRA's core principle "BUILD BACK BETTER". The proposed strategy addresses key environment related areas of forests, wildlife, water resources management, watershed management, and rubble removal. It also defines the crosscutting environmental guidelines that ought to be followed in all reconstruction and rehabilitation activities with a view to ensure sustainable use of natural resources and minimize environmental degradation.

8. For effective management of activities in this sector, the environment sector has been divided into three main sub-components. In addition, an environmental checklist has been prepared for other sectors including housing, health, education, agriculture, livelihoods, transport, water and sanitation, power generation, industry and tourism, and roads. Debris and rubble removal have been placed as a separate component due to the sheer quantity of rubble and the complexities involved in its safe disposal.

9. Following component-based approach has been adopted to address the key environmental issues in the affected areas of Northern NWFP and AJK.

A. Natural Resource Management

B. Debris and Rubble Removal C. Socio-Economic Component
D. Organization and Management

C. COMPONENT-WISE FOCUS AREAS

10. Within the four identified components, the main focus areas under each component have been clearly delineated on the basis of departmental responsibilities and mandates. This was necessary to ensure clear lines of implementation responsibility. The focus areas under each component are:

A. Natural Resource Management

i. Forestry
ii. Wildlife
iii. Water Resources Management
iv. Watershed Management v. Solid waste Management
vi. Slope Stablization

B. Debris and Rubble Reuse/Recycling/ Removal

i. Public Building Rubble
ii. Private Building Rubble

C. Socio-Economic Sector

i. Housing (Rural and Urban Housing)
ii. Health
iii. Education iv. Livelihood
v. Agricultural and Irrigation vi. Transportation and Roads
vii. Industry and Tourism
viii. Power Generation

D. Organization and Management

i. Environmental Assessment ii. Capacity Building
iii. Community Mobilization
iv. Planning, Coordination and Implementation

D. COMPARATIVE ANALYSIS OF THE EXTENT OF DAMAGES

Damages to Natural Resources

12. **Forest;** In the core area of the earthquake, standing forests on steep slopes were destroyed by landslides both in NWFP and AJK. Furthermore, many trees were damaged by rock falls. The earth shaking during the earthquake was such that some trees simply truncated about two meters above the ground. Forests are usually marked with divisional boundaries instead of district wise distribution. Therefore, damages to the forests and

forest department's infrastructure have been estimated on divisional basis and not on district basis. Details of damages in this sector are reflected in Tables 1.1, 1.2 and 1.3.

12. **Wildlife and Fisheries:** Two major conservation parks are situated in the earthquake affected areas. In AJK, it's the Machiara National Park and in NWFP it's the Palas Conservation Area. Although no accurate damage assessment has been done for wildlife, the phenomenon of landslide and destabilization of slopes would inevitably have negative bearing on nesting and feeding areas of wildlife. A large number of hatcheries and fish farming activities have also been affected both due to damages to the government operated hatcheries and research institutions facilities and the constant sliding and resultant silting of the streams, lakes and other water bodies. Damage to Fisheries and wildlife infrastructure is reflected in Tables 1.4 and 1.5.

Table No. 1.1 FOREST DAMAGES IN NWFP

DISTRICT WISE DAMAGES IN NWFP					**(IN ACRES)**
District	**Government Forest Area**	**Landslide Forest Area Damaged**	**Forest Damage**	**Private Area***	**Private Areas, waste land Damaged**
Abbottabad	135,574	0	0	328	1,200
Mansehra	323,532	2,925	29,000	1,143	2,300
Batagram	175,000	2,000	6,500	672	1,500
Hazara/Kohistan	463,388	2,000	21,000	250	750
Shangla	109,727	500	4,750	361	1,200
TOTAL	1,207,221	7,425	61,250	2,754	6,950

*Terraces, Trees, Shrubs 5.69% of covered government forest.

Table No. 1.2 FOREST DAMAGES IN AJK

DISTRICT WISE DAMAGES IN AJK			**(IN ACRES)**
DITRICT	**Government Forest Area**	**Forest Area Damaged**	**Private Area Damaged***
Neelum Valley	677,258	86,413	35,320
Muzaffarabad	218,168	165,808	184,987
Bagh	156,075	78,038	90,982
Poonch	65,420	32,000	19,840
Sudhnuti	55,520	10,000	7,200
TOTAL	1,172,441	372,259 (26.63%)	338,329

- Trees, Shrubs, Grasses

Table No. 1.3 CATEGORIES OF FOREST SECTOR DAMAGES

TYPE OF DAMAGES	AJK	NWFP
Heavy landslides (land turned over)	112,500	7,425
Threatened Area (root system damaged)	187,000	135,250
Threatened Area (anticipated new land slides)	70,000	2,500
Regeneration Area	2,759	1,500
Buildings/Infrastructure (sft)	193,063	276,149
Roads (km)	256	105

13. **Water Resources;** Quality and supply of both underground and surface water resources has been affected due to underground shifting of the earth's structure, soil erosion, landslides and damage to the forest and watersheds. Underground water level has generally gone down in Abbottabad region whereas it has risen in Mansehra valley. The drinking water supply related issues have been addressed in ERRA's strategy for Water and Sanitation (WATSAN). Losses to forest area have has resulted in damage to major watersheds resulting in massive silting in rivers Kunhar, Neelum, Siran and Jehlum. This is ultimately impacting upon the health and operations of Mangla and Tarbela dams. Landslides have temporarily blocked several tributaries of main rivers posing a serious danger of flash- floods in coming monsoons if any of these natural dams suddenly breaches.

Table No. 1.4 FISHERIES AND WILDLIFE DAMAGES IN AJK

1	Salkhala	Trout Hatchery	8
2	Kutan	Trout rearing PCC Tanks	9
3	Pattika	Fish Production Concrete Tanks	12
		Watcher Huts	2
		Hatching Room	11
		Committee Room	1
		Bird Incubation Room	18
		Bird Cages / Shelters	1200 rft
		Link Chain Fencing	1
4	Muzaffarabad	Office Building Fisheries	
		Office Building Wildlife	1
5	Chikar	Earthen Water Tanks	10
		Main Concrete Water Supply Tank	21
		Laboratory Building	1
		Over Head Water Tank	1 km
		Water Channel	1200 rft
		Protection Gabion Wall	1200 rft
		Link Chain Fencing	Various
		Laboratory Equipment	

Table No. 1.5 FISHERIES DEPARTMENT DAMAGES IN NWFP

1	Mansehra (Kaghan Valley) Manshera City	i) Trout Fish Farm at Naran ii) Shinu Trout Hatchery iii) Office & Residences iv) Access Road to STH v) Ichrian Carp Hatchery	5000 SFT/ 800 RFT 7400 SFT/400 RFT 4000 SFT/900 RFT 0.5 KM 720 SFT/2046 SFT
2	Shangla (Alpuri)	Damage of water supply channel to Hatchery	3373.5 M_2
3	Batagram (Pokal Allai)	Trout Fish Hatchery at Pokal, Allai	14286 SFT/1200 RFT 366 meter
4	Kohistan	Dubair Trout Fish Hatchery	Various

14. **Solid waste Management;** Solid Waste management in the affected areas has traditionally been neglected, creating a problem that has been compounded by haphazard urban development. Precious little was available to the civic bodies in terms of manpower and machinery for the proper disposal of solid waste during pre-earthquake period. Most towns had no proper landfill sites for the safe disposal of waste. The situation has become worse after the earthquake with thousands of tons of waster generated during the relief phase and millions of tons of debris from fallen buildings. Whereas safe disposal of municipal waste has been covered under ERRA's "Water and Sanitation Strategy", this strategy addresses four types of waste generated in the aftermath of earthquake **1) Relief aid waste,** which has been scattered all over the area and is still unattended, **2) Hazardous and Toxic waste,** generated due to damages to pesticides stores and underground fuel tanks of filling stations, and **3) Medical/Hospital waste,** from field hospitals established during relief, which at some camps is being managed adequately, but mostly being just mixed with domestic waste creating potential serious health hazards.

15. **Debris from Damaged Infrastructure;** The earthquake caused massive damage to buildings, roads, irrigation channels, water supply schemes and sanitation schemes, resulting in millions of tons of debris. The accumulated debris can be broadly categorized as, 1) Public Building Debris, and 2) Private Building Debris. Balakot town is one continuous heap of debris and the town is planned to be relocated. Battagram also has high concentration of debris whereas rest of the affected districts in NWFP have widely scattered debris of public and private buildings. In AJK, all the major towns in the three affected districts suffered heavy damage to both public and private buildings, resulting in about 4.86 m.m_3 rubble out of which about 25% is estimated as iron, plastic, wood or other reusable and auction-able material. Similarly in NWFP about 0.427 of debris are present in the area and needs management for private buildings only.

Table No. 1.6 PUBLIC BUILDING DAMAGED IN AJK

S.No	Departments Sector	Districts			Total
		Muzaffarabad	Bagh	Poonch	Quantity
1	Physical Planning & Housing	460054 sft	114975 sft	78329 sft	653358 sft
2	Education	463408 sft	165965 sft	191998 sft	821371 sft
3	Health	381913 sft	256909 sft	143840 sft	782662 sft
4	Other Departments	344074 sft	78912 sft	50944 sft	473930 sft
	Total Area	1648449 sft	616761 sft	464751 sft	2729961sft
@570CFT/SFT of Building Area		9396160 cft	3515537 cft	2649080 cft	15560777 cft
75% of total rubble to be Removed (25% by Auction)		7047115 cft	2636649 cft	1986809 cft	11670573 cft

*Ref: Report of DG (M&E) / Chief PP&H, P&D Dept., AJK

Table No. 1.7 PRIVATE BUILDING DAMAGED IN AJK

Districts	Private /Commercial Buildings Volume Debris from Public Buildings will million m_3**	
Bagh	1.61/Rs. 121.77/m_3	be removed by standard procedures while Private building mutually by Gov and Owners
Poonch	0.35/Rs. 121.77/m_3	
Muzaffarabad	2.4/Rs. 121.77/m_3	

**Ref: Local Govt. Board / MC Muzaffarabad PC-Is

16. **Road Infrastructure:** In AJK about 2,366 km of roads were damaged, which constitutes about 45% of roads of the State. 203 km are major link roads. In NWFP 2,063 km roads are damaged constituting 31% of total road network of area and 652 km of these roads are part of national and provincial highways. The clearance, realignment and reconstruction of damaged roads would further add to the volume of debris and amount of silt in rivers unless subjected to stringent environmental guidelines.

Table 1.8. ROAD DAMAGES IN NWFP

District	**Provincial Highways km**	**District Roads** Damaged Length in km			**Tehsil Roads** Damaged Length in km		
		Shingle	**Black Top**	**Total**	**Shingle/ Kacha**	**Black Top**	**Total**
Abbotabad	-	484	236	720	229.5	109.25	338.75
Mansehra	-	710	516	1226	378	97.75	475.75
Battagram	-	130	73	203	85.42	-	85.42
Shangla	33	173	70	243	127.2	10.53	137
Kohistan	-	147	45	192	56	30	86
Total	**33**	**1644**	**940**	**2584**	**876.12**	**1644**	**1122.92**

Table 1.9. ROAD DAMAGES IN AJK

District	**Major Road**	**Link Road km**	**Fair Weather**	**Rural Roads km**		**Total**
				Stone Sole	**Black Top**	
M.abad	42	330	731	25	122	878
Bagh	40	100	423	30	101	553
Neelum	40	70	67	-	-	67
Sudhnoti	-	-	15	36	11	62
Poonch	35.5	95	126	59	22.5	208
Total	**157.5**	**595**	**1362**	**150**	**256.5**	**2521**

17. **Damage to Mountain Slopes/Landslides:** Earthquake exacerbated most existing slides and disturbed slopes and at the same time created numerous new slides and damaged slopes. These slides continue to pose challenges to continuous supply of materials in the affected areas by regularly blocking roads. Land sliding in many areas has washed away entire tracts of agricultural land putting entire communities' livelihoods in jeopardy - as in the case of Hattian Bala, AJK. 18 villages in Muzaffarabad need to be shifted elsewhere due to persistent landslides. GSP surveys have identified 118 active slides in AJK on roadsides alone. A heavy monsoon has resulted in even more slides posing serious constraints on un-interrupted flow of supplies and materials in the affected areas. Even in Muzaffarabad city and its surroundings large cracks are visible in the mountains that can lead to more landslides in future**. A** major landslide in Hussari Nullah has imposed another challenge in the rehabilitation process, putting around 400 cft debris in River Kunhar. Details of reported land slides near to road sides are presented in

18. **Socio-Economic Damages;** Apart from physical and infrastructure damage, the massive earthquake completely altered the lives of affected regions. Most lost all their means of livelihoods and homes. Most households suffered deaths and physical trauma. Many single parent households now take care of traumatized children. Social pattern and equations have been permanently altered in most areas. Means of income and income generation sources were severely affected. These critical areas are being addressed by ERRA's Social Protection and Livelihoods Strategies.

TABLE 1.10. OVERALL LAND SLIDES IN AJK AND NWFP

DESCRIPTION	NWFP	AJ&K	REMARKS
Total length of the Roads	132 Km	690 Km	All these slides are
Total No. of Slides	109	121	located near active
Total No. of Priority-I Slides	56	78	roads.
Total No. of Priority-II Slides	58	32	Survey of Kaghan
Total No. of Priority-III Slides	05	11	Valley has not been
Total Volume of Landslides	20.14 mm3	18.13 mm3	carried out (Balakot Kaghan: 62Km).

II. VISION, OBJECTIVES, PRINCIPLES, STRATEGIES AND ACTIVITIES

VISION

"To protect natural resources, prevent environmental degradation, restore damages, arrange safe disposal of debris; and, to establish principles and practices for environment friendly rehabilitation and reconstruction in the earthquake affected areas with sustainable use of resources".

OBJECTIVES

20. The overarching objective of this strategy is to quickly address the damages caused to environment and to mainstream environmental concerns and safeguards in all sectors of rehabilitation and reconstruction activity. The detailed objectives are:

To coordinate environmental activities with socio-economic activities.
To introduce environment as crosscutting theme in each sectoral strategy of ERRA.
To rehabilitate and restore damages in environment friendly manner with least possible stress on natural resource base.
To mitigate the damage to the watersheds and slopes and introduce long term and sustainable measures for improved watersheds and stable mountain slopes;
To quickly restore institutional capacities of concerned agencies and departments for their effective participation in the implementation of the strategy;
To mainstream a participatory approach whereby Community, Local Authorities, Governmental organizations, NGOs, INGOs, and UN agencies join hands for sustainable use of local resources in the reconstruction and rehabilitation process;

SCOPE OF STRATEGY

21. The overall scope of Environmental Strategy of ERRA is to address the damages to environment sector in the earthquake affected areas. And, while doing so, to follow ERRA's principle of "***Build Back Better"***. This *inter alia* means addressing the direct damage to environment sector and institutions and also mainstreaming environmental concerns in the entire reconstruction and rehabilitation effort. The inputs and interventions in this strategy follow a four-pronged approach, based on comparative needs and urgency as well as time required for implementation:

Immediate interventions (Environmental Assessment and Safe Disposal of Relief waste)
Short Term interventions (Solid Waste Management and Debris Removal)
Medium Term Interventions (Mainstreaming environment safeguards in all reconstruction Activities)
Long Term Interventions (NRM, Slope stabilization, Reforestation and improved watersheds)

Immediate interventions (Environmental Assessment and Relief waste); This involves a Rapid Environmental Assessment of the damages to quantify the losses in environment sector. Environmental Impact Assessment shall be a key baseline activity in all reconstruction projects including urban housing, town planning, roads, health, education and industry etc. The EIA findings shall guide the implementation strategies so as to minimize any further damage to environment. Another immediate intervention is to manage the waste generated by relief items for the IDPs in both the residual camps and closed camps. Such waste is currently being dumped into rivers and other water bodies near the relief camps.

Short Term interventions (Solid Waste Management and Debris Removal); Removal and management of the solid waste specifically debris, hazardous waste, medical waste and its safe disposal during recovery phase is essential. A Rubble/Debris and Hazardous Waste Removal Plan shall be prepared for all towns and municipal areas along with identification of safe disposal sites. Efforts shall be made to separate the reusable materials from such rubble. Cost for the removal of rubble from public buildings would be built into the reconstruction cost for such buildings and the same is being covered under ERRA's Governance Sector Strategy.

Medium Term Interventions (All reconstruction Activities); Environment guidelines shall be integrated into the reconstruction of all health, education, governance and transportation infrastructure. In case of temporary or prefabricated structures, earthquake resistant specifications will be integrated. In case of permanent structures, emphasis shall be placed on use of recyclable materials from the damaged buildings, use of debris as aggregate for the road-base and shoulders, use of debris as aggregate for the floors of buildings and maximum use of alternate materials instead of timber. Similarly, in road construction, generation of additional debris can be reduced through the use of cold and hot treatments.

Long Term Interventions (NRM, Slop stabilization and Reforestation); Long term interventions are those which would of a long gestation period and these include overall natural resource management, slope stabilization and reforestation/rehabilitation of watersheds. Forest sector management is dependent upon the long-term rehabilitation programme agreed with provincial and state forest departments. Land degradation and slope destabilization was a result of the reduction in forest cover areas, specially near the populated areas, therefore, long term planning for increase in the forest cover area will reduce the risk of future landslides and hazards in case of an earthquake. Community participation in such long term plans and their implementation would be a key for success. Indigenous species play a vital role in holding the soil formations and shall be encouraged. Linkages shall be developed with other government and donor-funded projects and programmes like WFP's Food for Work programme and Federal Government's Watershed Management Project for community based plans and projects for NRM.

KEY OUTPUTS

22. In response to the implementation of the target programmes in each subcomponent of the environmental strategy the expected key outputs will be as under;

A baseline environmental assessment of the entire earthquake affected area;

EIA's for major reconstruction sectors;
Safe disposal of the hospital waste and hazardous waste generated during relief activities.
Community based NRM, slope stabilization and rehabilitation plans for restoration of degraded natural resources and increase in forest cover.
A comprehensive debris removal and safe disposal plan and phased disposal of the debris in the areas required for reconstruction.
Establishment of hospital waste management system on permanent basis.
Introduction of design parameters and guidelines in all public and private buildings to minimize the use of timber during reconstruction.
Selection, approval and introduction by ERRA of alternate and safe building material.
Creation of livelihood and economic growth opportunities through introduction of labor intensive activities in NRM and debris removal components;
Improved Pastures and Guzara Forest management by local community.
Mainstreaming gender concerns in all environment sector activities;
Improved water quality through protection from dumping of noxious waste in water-bodies;
Reduction in silting of rivers and enhancement of Mangla and Tarbela Reservoirs' life.

SALIENT FEATURES OF THE STRATEGY

23. Reconstruction and rehabilitation of various sectors of the affected areas is guided by sector specific strategies. However, environment is one sector which has cross-cutting implications for all sectors. Therefore, environmental concerns have to be mainstreamed into implementation approach of each sector. A brief and specific checklist at Annex V has been designed to make sure that each sector and executing agency has clear understanding of the environmental concerns and needs related to that sector.

Salient features of the environment sector strategy and implementation plan are:

A. Disaster Management through Improved NRM: Long term disaster management is definitely linked with proper natural resources management on a sustainable basis. The already deteriorated NRM in the affected area contributed to the havoc wreaked by the earthquake. A health natural resource is the first buffer against any natural disaster like an earthquake or a flood. Therefore, restoration of natural resource base and its further strengthening will be a key feature of environmental sector strategy. This would include inputs and interventions for increased forest cover, slope stabilization, improved pasture

and guzara forest management, safe disposal of noxious and hazardous materials, improved water resource management etc.

B. Capacity Building: For effective planning, coordination and implementation of NRM sub-component of environment sector strategy, capacity of relevant government agencies, DRUs, PERRA/SERRA, municipalities and EPAs will be strengthened through provision of additional manpower, equipment, training and financial resources.

C. Gender Integration: Gender concerns will be mainstreamed into all aspects of strategy and plan implementation, especially in activities linked to the communities. Social forestry is one particular area where women will be encouraged to participate in managing the nurseries for plant production. Enhancement of pastures and grazing land areas will minimize the load on women for fodder collection.

D. Community Participation: Community participation will be the key principle for forest management and rubble removal. Labour intensive approach will be adopted and targeted groups of the community including women will be encouraged to participate in all programmes on incentive based approach like "Cash for Work", "food for work" and "One tree three saplings".

E. Sectoral Guidelines: Environment is cross cutting theme in all sectors being covered by ERRA and, therefore, sectoral guidelines shall be prepared for every sector and made part of this strategy. It would be mandatory to comply with these guidelines and checklists in addition to observance of prevailing environmental laws and regulations.

F. Linkages and Partnership: Prior to the earthquake, a number of forest sector and WSM different projects were on going in the affected areas. This strategy makes a conscious effort to achieve linkages with these ongoing projects and projects. These projects include Terbela Water Shed Management, Poverty Alleviation through forest in AJK and NWFP, Palas Biodiversity Project and Machiara National Park. In addition, all environment projects proposed under UN- ERRA Early Recovery Plan and livelihood rehabilitation will be linked with environmental sector and a robust coordination mechanism at the district level through the DRUs will be established.

G. Green Procurement: Systems and procedures will be developed to introduce green procurement and disposal practices in all sectors but more specifically, construction, health and energy sectors. Organic farming will be promoted through ERRAs livelihood sector strategy.

H. Mainstreaming IEE/EIA: All reconstruction projects sponsored by ERRA shall make provision of about 3% of the total budget for the IEE/EIA/EMP. Federal and provincial/state governments will also be approached to make this a standard requirement in all development projects, especially major civil works.

I. Coordination: A Core Group, consisting of all key stakeholders, will be established at each level of planning and implementation to effectively coordinate the environment sector planning and implementation. ERRA, PERRA/SERRA and DRUs shall chair the monthly meetings of these groups.

J. Public Awareness: A public awareness campaign with be designed in association with other implementation partners to promote environment friendly practices among the general public and private and public sectors.

K. Promotion of Alternatives: Alternative environment friendly fuels and materials shall be promoted through a mix of policy and market incentives for producers, marketing companies and agents and buyers. This would include promotion of alternate fuels like CNG, LPG etc. and alternate building materials etc.

III. KEY INPUTS AND ACTIVITIES

24. Following key inputs and activities shall be carried out under the three components of this strategy in both AJK and NWFP:

Component 1: NATURAL RESOURCE MANGEMENT

25. Reconstruction and Rehabilitation of Physical Infrastructure; All damaged buildings and infrastructures of forest, wildlife and fisheries departments in AJK and NWFP will be reconstructed and rehabilitated with initial provision of damaged equipments, office accessories and logistics. An estimated cost of Rs. 366.144 million will be incurred for all reconstruction and repair of buildings in NWFP. In AJK building reconstruction has been estimated Rs. 399.979 million. For details of buildings to be reconstructed, see Annexure-1.

26. Rehabilitation of Forest(Green) Damages; All damaged forest both NWFP and AJK will be rehabilitated by developing detailed project proposals for each forest division after taking into account interventions from ongoing projects under forest departments and Ministry of Environment. Estimates of over all forest damages due to landslides and after shocks have been done by the concerned department. These estimated shall be properly verified and cross- checked before the preparation of detailed plans. Total cost of the green areas rehabilitation in NWFP has been estimated about Rs. 372.336 million with work plan of three years. And in AJK Rs. 914.79 million (including slope stabilization through vegetation). Outcomes of this component will be monitored on the basis of increased covered area of forest, livelihood sustainability of population of project areas. Mostly afforestation will be done in white forest.

27. Rehabilitation of Fisheries and Wildlife Damages; Fisheries and wild life related damages have been addressed together in case of AJK. Presently damages of wildlife are not assessable while in fisheries sector damages to hatcheries and infrastructure will be addressed. Fish hatcheries at Pattika, Kutton, Salkhala and Chikar have been damaged due to earthquake and also need to reconstruct for further functioning. Total R& R cost of Fisheries and wildlife department in AJK has been estimated about Rs. 41.700 million, details are presented in Table No.1.4. While in NWFP wildlife department has repaired few of its building and estimated budget for further R&R of subcomponent of wildlife is about Rs. 3.8 million as mentioned in Table No.1.6. AJK fisheries department has proposed a detailed survey and estimated study for wildlife and impact of earthquake on it. Estimate of about Rs. 3.5 million has been provided. It will also include training, TA and other facilitation. In NWFP over all rehabilitation of fisheries damages for regeneration of seeds and yield will be done from regular programmes of the departments and by mutual cooperation of non affected areas. Rehabilitation cost of fisheries department including all facilities have been estimated Rs. 50.422 million. Reconstruction of all damages will be done by the Works & Services Department. Tendering for construction of physical structures will be done through DRUs as per approved procedures.

28. Establishment of Hospital Waste Management System; No Hospital waste management system existed in the affected area prior to earthquake. This is now being introduced at tertiary level in the spirit of "Build Back Better". Environment Sector will guide the process for selection of suitable systems and Health Sector of ERRA will lead the implementation in association with concerned governments and donor agencies. On the basis of preliminary assessment for waste generation cost estimation has been carried out for all districts for installation of incinerators but the geographic location of BHUs and RHC can be linked with other districts in order to reduce the travel cost and duration for storage of waste. If in standard conditions facilities to be installed in all district total budget will be Rs. 75.250 million. For details, see Annexure 3.

29. Rehabilitation of slopes and land slips; Slope stabilization is the one of the priority component for rehabilitation. A long-term comprehensive plan will be prepared for slope stabilization with priority being given to land slips occurring on road sides, near populated areas, posing future risk or threat for disaster etc. Based on the preliminary estimates prepared by experts, a lump sum amount of Rs. 350 million for NWFP and Rs. 584.890 million is budgeted for AJK and exact allocation will be determined under detailed projects prepared for each area.

30. Watershed/Water Resource Management: The affected area is also catchments area for Mangla Reservoir and Terbela Reservoirs. Links will be developed with the ongoing projects for the conservation of these watersheds to ensure inclusion of post-earthquake needs and concerns in their activities. Waste-water treatment, safe disposal of sewage in urban and rural areas, proper drainage etc. will be an integral part of ERRA's Rural Housing, Urban Panning/Housing and WATSAN strategies. Similarly, safe landfill sites will be identified and prepared for major urban centres. Under this strategy, the only key activity will be installation of grills, backed by awareness campaign for controlling access of people to water streams for disposal of garbage and other waste. Total budget for this activity for both NWFP and AJK would be Rs. 12 million, bulk of which will be focused on Neelum and Jhelum rivers in Muzaffarabad. Under the same activity, a research study is also proposed for a comprehensive study of water quality assessment of all water getting into rivers and streams.

Component 2: Rubble/Debris Removal and management

31. Activities under this component will be closely coordinated with the reconstruction phasing of public and private buildings. Sites will be cleared based on the requirement for reconstruction. Removal, reuse, reduction of volume and recycling will be the basic methodology adopted for this component. It will be carried out by public private partnership. Areas where municipalities lack the capacity for execution of activities, the same will be carried out through subcontracting. Based on estimated volume of debris TMAs and MCs will prepare detailed proposals and will out source the bulk removal. For major public buildings, debris removal will be made part of reconstruction cost and will be responsibility of the contractor. A lump sum provision of Rs. 900 million is made to cover rubble removal from all major towns in both AJK and NWFP.

Component 3: Socio-Economic Sector

32. Sectoral Guidelines: This strategy will inform the environmental safety needs for all socio-economic sectors being covered under ERRA mandate. These guidelines have been integrated into concerned sectors' strategies. In addition, a brief guideline/checklist for each sector is included in this strategy as Annex-V.

Component 4: Organization and Management

33. Environmental Assessment; It is one of the key input that will lead to future planning and management for sustainable restoration of all damages. A detailed survey and study will be carried out to assess i) Quantity and Quality of damages to natural resources, ii) Assessment of long term impacts of land slides on habitat of the areas iii) Impacts of disaster on biodiversity of the areas iv) Quality and level of ground water in affected area, v) Construction activities and pollution levels in the area. It will be outsourced to a competent consultant/service provider. A lump sum provision of Rs. 40 million/US$ 0.6 million is being made for this purpose.

34. Capacity Building; Capacity building of green sector at institutional and organizational level based on the rationalization of projects and damages in terms of technical resources will be integrated. Specifically for rapid growing indigenous species and forest management, for future timber requirement will be carried out through technical assistance of the departments. For effective monitoring of programmes, development of indicators and monitoring mechanism by strengthening of the DRUs, forest, fisheries, wildlife and health department will be carried out. Training and technical assistance for IEE, EIA, EMP development and establishment of HWM will be provided. Funding requirements for capacity building under each sub-component is included in the budget of that sub-component. In addition, Rs. 10 million for the capacity building of EPAs in both AJK and NWFP.

35. Technical Assistance; Key organizations will be provided short term technical assistance, training or consultancy for identification of risks and hazard management plan. For safe disposal of debris district management will also be facilitated for identification of environmental friendly disposal sites. Training for hospital waste management will be integrated. Funding for such TA would be either sourced from donor agencies or provided from the budget of related sub-component.

36. Community Mobilization; Community participation through mobilization for implementation of green and grey component will be supported. Implementation of social forestry, rubble removal programme on "Cash for Work" basis will be done. Promotion of alternate fuel use and forest conservation in affected areas will be integrated. Financial requirements for this activity are covered under the concerned sub-components of this strategy.
In addition, linkages will be forged with community mobilization activities of

partner organizations like WFP and UNEP and those of Livelihood Sector Strategy of ERRA.

37. Pollution Load Inventory; Reconstruction activities and transportation of heavy machinery in the areas will add to the pollution load in terms of air and water pollution including suspended particulate matters (SPM), NOx, SOx, and some other air pollutants. Therefore it becomes essential to conduct an ambient air quality and water survey of the whole urban area prior to massive reconstruction. It will provide the baseline data for control of pollution and future mitigation plans development. Funding will be covered for this activity under Environmental Assessment. Budget required for PLI is about Rs. 20 million.

IV. IMPLEMENTATION MECHNISM AND MONITORING

IMPLEMENTATION ARRANGEMENTS

i. The organizational linkages of environmental sector strategy are reflected in Figure 1.1. ERRA environment protection cell shall be the lead agency in planning, coordination and implementation of this strategy. A Core Group consisting of all key partners in this sector will be notified and this group will meet on regular basis and provide the main forum for policy formulation, coordination and resource mobilization. The Group will be chaired by ERRA.

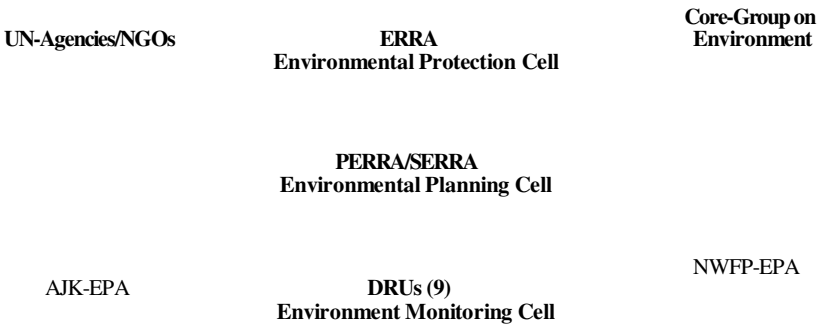


Fig 1.1 CAPACITY BUILDING FOR MONITORING OF STRATEGY

39. Work Plans and Flow of Funds: Implementation of environmental strategy is anticipated to take from three to five years. Implementation will be guided by annual work plans prepared by the concerned departments and coordinated by DRUs. This plan will be approved by the District Reconstruction Advisory Committees and Provincial/State Steering Committees. Funds will be released to PERRA/SERRA against approved annual plans that would transfer funds onwards to concerned DRUs and departments against approved PC-Is. The implementation will be responsibility of line ministries, provincial and state departments in collaboration with district authorities, district management, local government departments and project directors of on going projects.

40. Civil Works related to Forest Departments; Forest departments in AJK and NWFP have their own civil work establishments and reconstruction of the buildings will be carried out by each concerned departments based on the ERRA's specifications for the earthquake resistant designs and material recommendations. Primarily as a focal component for forest protection and timber conservations, maximum options for alternate material will be adopted. Reuse of recovered material will also be targeted based on,-

Selection and prioritization of the buildings to be reconstructed.

Use of building codes and GPA values for designs.

All designs will be approved by the NESPAK through ERRA.

Detailed project proposals will be submitted to DRU/PERRA/SERRA/ERRA.

Only those contractors that are pre-qualified by ERRA shall be sued for construction works.

Completion certificates will be obtained from M&E wing of ERRA.

41. Afforestation: All afforestation will also be responsibility of forest department through lines departments and community participation with on going projects approach. Rehabilitation of landslides through bio-engineering will be integrated. MTDF will also be targeted under detailed programmes.

42. Implementation through District Government, NGOs, Municipal Corporations: Projects of rubble removal for whole districts or municipal limits will be implemented by concerned district government, TMA, MC or NGOs in coordination with each other. ERRA will be submitted with the project proposals for rubble removal in concerned district. NGO/INGOs working in this sector can prepare their project proposal for specific areas. Hospital waste management programme will also be implemented by Health Department in each district with coordination of the hospital management of each DHQ/CMH identified for HWM-Programme. Both programmes of Rubble Removal and HWM will be done by;

Developing detailed project proposal based on the assessment of waste and debris.

Hiring of the consultants for identification of sites and preparation of plans.

Development of detailed plan with environmental sustainability and soundness. For future prevention of disaster and risks for human life.

43. Implementation by Fisheries and Wild life Departments: In AJK fisheries and wildlife departments are working together, therefore, all reconstruction of damaged facilities and buildings will be carried out by the respective department for whole of AJK. In case of NWFP, Fisheries Department has provincial as well as district set up and there is considerable overlap in their functions. Therefore both components will be implemented as per existing management arrangements in the district. For regeneration of seedlings and fish propagation, services of departmental facilities in non affected areas of NWFP will be utilized. Departments shall use pre-qualified contractors of ERRA for the civil works.

44. Implementation by National or International Organizations: There are certain areas of the strategy where implementation can be done through national and international NGO or UN agencies. Presently environmental projects other than reconstruction of buildings in environmental sector have been reflected in UN/ERRA Early Recovery Plan under different components viz. livelihoods, shelters and agriculture. All such projects will be implemented on the basis of:

- Project Proposal will be reviewed through DRUs/PERRA/SERRA/ERRA
- Principle of equity in spatial and sectoral coverage shall be ensured
- ERRA will be the implementing partner through identified DRU/line department
- Community participation will be emphasized.
- Project proposal will be developed on need assessment basis.
- No direct implementation will be done by any partner organization.
- Supervision and monitoring by the third party/consultant, ERRA, DRUs, PERRA, SERRA and sponsoring agencies.

MONITORING ARRANGEMENTS:

44. Monitoring of implementation of all environmental programmes will be the responsibility of the DRUs in collaboration with respective environmental Protection Agency both in AJK and NWFP after the capacity building of these agencies. M & E field offices of ERRA will also be responsible for monitoring of all reconstruction and rehabilitation activities with reference to environmental impacts. An environmental monitoring cell will be established in each DRU for strong enforcement of environmental rules and regulations and implementation of strategy. Based on the work plan and targets mentioned in the proposal of NRM component, monitoring will be carried out on the basis of development of performance indicators of each sector.

MONITORING INDICATORS:

45. For effective monitoring of all programmes and projects following indicators will be used against implementation mechanism.

Table 4.1: KEY PERFORMANCE INDICATORS FOR ALL COMPONENTS

COMPONENTS AND INPUTS	MONITORING INDICATORS
Component 1. Natural Resource Management	
1. Reconstruction/Rehab of Forest Department Offices/Buildings	-Number of offices surveyed for damage assessment -Number of office buildings designed and cost estimates prepared -No of PC-Is prepared, submitted and approved by DRAC, Steering Committee, ERRA -No of contracts awarded and civil works completed and completion certificate issued Amount released and utilized
2. Rehabilitation of Forests(Green Sector)	Number of acres/compartments surveyed Number of plans prepared and submitted for approval to DRAC, Steering Committee and ERRA Number of plans approved and amount of funds released Number of nurseries established and plants produced Number of trees planted and survival rate Number of rehab works initiated (check dams etc.) and No completed Number of acres rehabilitated and amount of funds Utilized.
3. Rehabilitation of Fisheries Deptt.	Number of Proposal prepared. -Number of PC-Is prepared, submitted and approved by DRAC, Steering Committee, ERRA -Number of contracts awarded and civil works completed and completion certificate issued Amount released and utilized

	Number of facilities surveyed for damage assessment Number of facilities surveyed for reconstruction Number of facilities require retrofitting Number of contract awarded for retrofitting Establishment of hatching facilities Production of fish in term of volume Length of channels completed
4. Rehabilitation of Wildlife Facilities	Damaged assessment of wildlife department buildings. Assessment of wildlife facilities Number of PC-Is prepared, submitted and approved by DRAC, Steering Committee, ERRA Area covered for assessment survey of biodiversity Number of repaired buildings in each district Number of civil work completed in each district Number of increased wildlife in areas
5. Establishment of Hospital Waste Management Facilities	Number of hospital identified for HWM Number of hospital surveyed for data collection for hospital waste generation Number of BHU, THQ, RHC identified for management system. Number of hospitals/facilities have HWM system Number of PC-1 prepared by each DHQ/RHC Number of Contact awarded for procurement of incinerators Number of training provided in each hospital Training workshops carried out in each districts Completion of installation of incineration Number of contract awarded for operational contract to third party.
6. Slope Stabilization	Number of slopes identified in affected areas. Number of roads cleared from slides rubble. Number of slopes to be stabilized by civil engineers. Number of slopes to be stabilized by NHA FWO/NLC / Number of slopes stabilized by road construction parties. Number of slopes identified for long-term stabilization Number of slopes identified for vegetation Areas in acres covered for vegetation on slopes. Number of slopes identifies for bio-engineering. Number of saplings planted on identified slopes.
7. Watershed/Water Resource Management	Number of projects under regular programme implemented for watershed management. Number of rural areas identified near to main water bodies. Number of sewerage facilities established in rural areas. Number of sewerage treatment plants identified to establish. Survey carries out for assessment of water quality of the water bodies. Length of protecting grills fixed in main urban cities for river protection.

	Number of plants planted in areas of water shed management. Number of the studies carried out for water quality analysis.

COMPONENT 2: DEBRIS /RUBBLE REMOVAL

8. Debris/Rubble Removal From Public Buildings	Number of towns/cities identified for rubble removal. Number of public buildings identified for demolishing or Tagged. Volume of rubble in each identified town/city. Cost estimation of rubble in each area to be removed. Identification of the dumping sites for rubble. Preparation of stacking sites for rubble dumping for reuse.
9. Debris/Rubble Removal From Private Commercial Buildings/	Number of private buildings identified for demolishing. Number of houses identified in each town/city to be demolished. Number of commercial buildings identified or tagged. Cost estimation of rubble removal. Identification of dumping sites. Number of people involved for income generation in rubble removal.

COMPONENT 3: SOCIO-ECONOMIC

10**. Socio-Economic Components**	Number of projects identified for IEE/EIA Number of IEEs conducted in projects Number of EIA carried out for different projects. Number of projects integrated Checklist for project preparation Number of projects completed on yearly basis.

COMPONENT 4. ORGANIZATION AND MANAGEMENT

11. Environmental Assessment	Number of areas identified for environmental damages assessment. Number of district identified for environmental assessment. Number of IEE/EIA carried out in each construction activities.
12. Capacity Building	Number of organizations identified for capacity building. Number of proposal prepared for capacity building. Number of technical personals procured. Number of Trainings provided to number of department. Number of workshops held for trainings.

13. Technical Assistance

Number of areas identified for TA
Number of Tas provided.
Number of experts involved for TA.
Numbers of organizations require TA.
Proposal prepared for Tas.
Number of officer trained under programme.

14. Pollution Load Inventory

Number of districts identified for study.
Number of proposals prepared for study.
Number of parameters identified for inventory.
Contract award for study.
Report preparation data
Draft Report preparation and dissemination.

15. Community Mobilization

Number of CBOs mobilized
Number of new CBOs formulated.
Size of population benefited from projects.
Number of villages involved in projects.
Number of activities carried out by community.
Number of trainings given to community.

ANNEXURE-I
DISTRICT WISE DAMAGES OF BUILDING IN FOREST DEPARTMENT IN NWFP

Name of District	Name of Forest Entity/ Division	No. of Main Office Buildings	No. of Field Office Buildings	Residential Buildings	Other Buildings
Abbottabad	Galies Forest Division Daur Watershed Division Sarhad Forest School	8 4 24	3 - 15	13 7 4	- 4 5-
Battagram	Hazara Tribal Forest Division Unhar Watershed Division	4 -	- 3	25 3	4 -
Kohistan	Kohistan Forest Division Kohistan Watershed Division	- 2	- 1	- -	2 -
Mansehra	Agror Tanawal Forest Division Kaghan Forest5 Division Siran Forest Division Kunhar Watershed Division	20 4 4 4	46 5 - 15	4 4 31 2	- 7 2 -
Shangla	Alpuri Forest 3 Division Kohistan Watershed Division	3	-	6 2	1

DETAILS AND RECONSTRUCTION COST OF BUILDING DAMAGES IN FOREST DEPARTMENT OF NWFP

Name of District	Name of Forest Entity/ District	Activity	Cost
Abbottabad	Galies Forest Division	Construction of various Buildings	32.368
	Daur Watershed Division	Construction of various Buildings	4.394
	Sarhad Forest School	Construction of various Buildings	9.120
Sub-Total			**45.882**
Battagram	Hazara Tribal Forest Division	Construction of various Buildings	38.724
	Unhar Watershed Division	Construction of various Buildings	3.633
Sub-Total			**42.357**
Kohistan	Kohistan Forest Division	Construction of various Buildings	0.989
	Kohistan Watershed Division	Construction of various Buildings	0.617
Sub-Total			**1.606**
Mansehra	Agror Tanawal Forest Division	Construction of various Buildings	6.383
	Kaghan Forest Division	Construction of various Buildings	120.514
	Siran Forest Division	Construction of various Buildings	72.958
	Kunhar Watershed Division	Construction of various Buildings	26.294
Sub-Total			**226.149**
Shangla	Alpuri Forest Divisison	Construction of various Buildings	46.352
	Kohistan Watershed Division	Construction of various Buildings	3.798
Sub-Total			**50.150**
Total			**366.144**

ANNEXURE-II

DISTRICT WISE DAMAGES OF BUILDING IN FOREST DEPARTMENT IN AJK

Name of District	No. of Main Buildings	No. of Field Others Buildings	Residential Total	Office Buildings	Office
Neelam	2	6	3	8	19
Muzaffarabad	21	11	21	7	60
Bagh	3	1	7	6	17
Poonch	3	2	9	3	17
Sudhnutti	1	0	0	2	3
Total	30	20	40	26	116

DETAILS AND RECONSTRUCTION COST OF BUILDING DAMAGES IN FOREST DEPARTMENT OF AJK

DISTRICT	Name Of Forest Entity/Division	Type Of Damage	Covered areas (Sft)	Reconstruction cost (in million Rs)
Neelam	Sharda Forest Division	Complete	13500	21.600
	Keran Forest Division	Complete	12300	19.68
	Reforestation Division Neelum Valley	Complete	2000	3.2000
	Sub Total Of District	**27806**		**44.4800**
Muzaffarabad	Central Forest Office	Complete	24970	39.9520
	Muzaffarabad Forest Circle	Complete	53928	86.2848
	Reforestation Circle	Complete	30044	48.0704
	Project Director ILM	Complete	9507	15.2112
	Kashmir Forest School	Complete	30784	49.2544
	Senior Protection Officer	Complete	3788	6.0608
	Project Director Forestry Dev. Directorate North	Complete	6480	10.3680
	Sub Total Of District	**159501**		**255.2016**
Bagh	Bagh Forest Division	Complete	24814	39.7024
	Forest Protection Officer	Complete	756	1.2096
	Sub Total Of District	**25570**		**40.9120**
Poonch	Rawlakot Forest Circle	Complete	9800	15.6800
	Poonch Forest Division	Complete	15516	24.8256
	Reforestation Division Rawlakot	Complete	1600	2.5600
	ILM Division Rawlakot	Complete	4000	6.4000
	Sub Total Of District	**30916**		**49.4656**
Sudhnuti	Poonch Forest Division	Complete	6200	9.9200
	Sub Total Of District	**6200**		**9.9200**
G. TOTAL		**249993**		**399.9792**

ANNEXURE-III

DETAILS OF DAMAGES IN FISHERIES AND WILDLIFE DEPARTMENT OF AJK

S#	DETAIL OF ITEM	LOCATION	NO./QUANTITY	NO./QUANTITY COST (M. RUPEES)
1	Trout Hatchery	Salkhala NV	8	0.600
2	Trout rearing PCC Tanks	Kutan	9	0.900
3	Fish Production Concrete Tanks	Pattika	12	0.900 4
	Watcher Huts	Pattika	2	1.600 5
	Hatching Room	Pattika	1	2.000 6
	Committee Room	Pattika	1	2.000 7
	Bird Incubation Room	Pattika	1	2.000 8
	Bird Cages / Shelters	Pattika	18	4.000
9	Office Building Fisheries	Mabad	1	6.000
10	Office Building Wildlife	Mabad	1	3.500
11	Earthen Water Tanks	Chikar	10	0.500
12	Main Concrete Water Supply Tank	Chikar	2	4.000
13	Laboratory Building	Chikar	1	9.000
14	Over Head Water Tank	Chikar	1	1.000
15	Water Channel	Chikar	1 km	1.000
16	Protection Gabion Wall	Chikar	1200 rft	1.500
17	Link Chain Fencing	Chikar	1200 rft	1.200
TOTAL				**41.700**

DETAILS OF DAMAGES IN FISHERIES OF NWFP

S No	DISTRICT	NAME OF FACILITY DAMAGED	AREA	ESTIMATED COST (M.RS.)
1	Mansehra (Kaghan Valle)	i. Trout	5000 SFT/800 SFT	7.320
		Fish	7400 SFT/ 400 RFT	11.400
		Farm	4000 SFT/ 900 RFT	6.
		at		
		Nara		
		n		
		ii) Shinu Trout Hatchery iii		
		Office & Residences)		
2	Shangla (Alpuri)	Damage of water supply channel to Hatchery	3373.5M²	0.714
3	Batagram	Trout Fish Hatchery at Pokal, Allai	14286 SFT 1200RFT/ 366 meter	18.25
4	Kohistan	Dubair Trout Fish Hatchery	Various	4.20
5	Manshera (Ichrian Carp Hatchery)	i) Office Building	720 SFT	0.864
		ii) Area Fish Ponds	2046 SFT	1.227
TOTAL				**50.422**

ANNEXURE-IV

DETAILS OF DAMAGES IN WILDLIFE DEPARTMENT OF NWFP

S No.	Name of District	Name & Location of Building	Name of Damage	Covered area Sft.	Estimated Reconstruction Cost (million Rs.)
1	Abbottabad	Information Centre Ayubia National Park, Abbottabad.	Partially	1000	1.600
		Wildlife Hut Abbottabad	Collapsed	800	1.280
		DFO Wildlife Office, Abbottabad	Partially	2500	4.000
		DFO Wildlife Residence, Abbottabad	Partially	2500	4.000
		Tourist Hut Ayubia National Park, Abbottabad	Collapsed	1200	1.920
2	Mansehra	Information Centre Dhodial Pheasantry, Mansehra	Partially	3000	4.800
		Wildlife Hut, kanshian, Balakot	Collapsed	800	1.280
		Wildlife Hut, Naran Kaghan.	Collapsed	800	1.280
		Wildlife Hut, Saiful Malook	Collapsed	800	1.280
		Deputy Ranger Office, Naran	Collapsed	1000	1.600
3	Kohistan	Wildlife Hut, Palas	Collapsed	800	1.280
		Wildlife Hut, Keyal, Kohistan	Collapsed	700	1.120
		Hydro Power Unit at Shyrial Nullah	Collapsed	0.5rft	2.000
		Hydro Power Unit at Gaddar Bar Palas	Partially	0.5rft	2.000
Total					**29.440**

ANNEXURE-V

ENVIRONMENTAL CHECKLIST FOR ALL DEVELOPMENTAL AND RECOSTRUCTION ACTIVITIES

I. SUBPROJECT RELATED ISSUES

S.No	ISSUES	No	Small	Mediu m	Large
A.	**Zoning and Land Use Planning**				
1.	Will the subproject affect land use zoning and planning or conflict with prevalent land use patterns?				
2.	Will the subproject involve significant land disturbance or site clearance?				
3.	Will the subproject land be subject to potential encroachment by urban or industrial use or located in an area intended for urban or industrial development?				
B.	**Utilities and Facilities**				
4.	Will the subproject require the setting up of ancillary production facilities?				
5.	Will the subproject make significant demands on utilities and services?				
6.	Will the subproject require significant levels of accommodation or service amenities to support the workforce during construction (e.g., contractor will need more than 20 workers)?				
C.	**Water and Soil Contamination**				
7	Will the subproject require large amounts of raw materials or construction materials?				
8.	Will the subproject generate large amounts of residual wastes, construction material waste or cause soil erosion?				
9.	Will the subproject result in potential soil or water contamination (e.g., from oil, grease and fuel from equipment yards)?				

10.	Will the subproject lead to contamination of ground and surface waters by herbicides for vegetation control and chemicals (e.g., calcium chloride) for dust control?				
11.	Will the subproject lead to an increase in suspended sediments in streams affected by road cut erosion, decline in water quality and increased sedimentation downstream?				
12.	Will the subproject involve the use of chemicals or solvents?				
13.	Will the subproject lead to the destruction of vegetation and soil in the right-of-way, borrow pits, waste dumps, and equipment yards?				
14.	Will the subproject lead to the creation of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito breeding and other disease vectors?				
15.	Will the project require large amount of water for construction?				
16.	Will there be any water conservation or water reuse option for construction activities?				
17.	Will there be water harvesting options adopted in buildings or grey water reuse plan?				
D.	**Noise and Air Pollution, Hazardous Substances**				
18	Will the subproject increase the levels of harmful air emissions?				
19	Will the subproject increase ambient noise levels?				
20	Will the subproject involve the storage, handling or transport of hazardous substances?				
21	Will the subproject will restrict the movement of heavy machinery in day time only.				
E.	**Fauna and Flora**				
22.	Will the subproject involve the disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies (wetlands, marshes)?				
23	Will the subproject lead to the destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development?				
24	Will the subproject lead to the disruption/destruction of wildlife through interruption of migratory routes, disturbance of wildlife habitats, and noise-related problems?				
25	Will subproject involve clearing of land from vegetation for any constructional activities or road development specifically?				
26	Will subproject require timber or any wood material for reconstruction?				
F.	**Destruction/Disruption of Land and Vegetation**				
27	Will the subproject lead to unplanned use of the infrastructure being developed?				
28	Will the subproject lead to long-term or semi-permanent destruction of soils in cleared areas not suited for agriculture?				
29	Will the subproject lead to the interruption of subsoil and overland drainage patterns (in areas of cuts and fills)?				

30	Will the subproject lead to landslides, slumps, slips and other mass movements in road cuts?				
31	Will the subproject lead to erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains?				
32	Will the subproject lead to long-term or semi-permanent _isruption of soils in cleared areas not suited for agriculture?				
33	Will the subproject lead to health hazards and interference of plant growth adjacent to roads by dust raised and blown by vehicles?				
34	Will subproject will lead to use of more land area as compared to pre-esrthquake?				
G.	**Cultural Property**				
35.	Will the subproject have an impact on archaeological or historical sites, including historic urban areas?				
36.	Will the subproject have an impact on religious monuments, structures and/or cemeteries?				
37.	Will the subproject have any management plan for any religious or cultural monument?				
H.	**Expropriation and Social Disturbance**				
38.	Will the subproject involve land expropriation or demolition of existing structures?				
39.	Will the subproject lead to induced settlements by workers of existing structures?				
40.	Will the subproject lead to environmental and social disturbance by construction camps?				

II. Site Related Issues

S.No	*ISSUES*	YES	NO	DO NOT KNOW
1	Does the subproject require land acquisition? [Note: Fill in the land acquisition form if YES]			
2	Will the subproject negatively impact livelihoods [Note: Describe acquisition form if YES]			
3.	Is the subproject located in an area with designated natural reserves?			
4.	Is the subproject located in an area with unique natural features?			
5.	Is the subproject located in an area with endangered or conservation			
6	Is the subproject located in an area falling within 500 meters of National forests, protected areas, wilderness areas, wetlands, biodiversity, critical habitats, or sites of historical or cultural importance?			
7	Is the subproject located in an area which would create a barrier for the movement of conservation-worthy wildlife or livestock?			
8	Is the subproject located close to groundwater sources, surface water bodies, water courses or wetlands?			
9	Is the subproject located in an area with designated cultural properties such as archaeological, historical and/or religious sites?			
10	Is the subproject in an area with religious monuments, structures and/or cemeteries?			
11	Is the project located in an area from where people have been displaced?			
12.	Is the project located in an area where IDPs are temporarily settled?			
13.	Is the project in a politically sensitive area?			
14.	Is the subproject in a polluted or contaminated area?			
15.	Is the subproject located in an area of high visual and landscape quality?			
16.	Is the subproject located in an area susceptible to landslides or erosion?			
17.	Is the subproject located in an area of seismic faults?			
18.	Is the subproject located in a densely populated area?			
19.	Is the subproject located on prime agricultural land?			
20.	Is the subproject located in an area of tourist importance?			
21.	Is the subproject located near a waste dump?			
22.	Does the subproject have access to potable water?			
23.	Is the subproject located far (1-2 kms) from accessible roads?			
24.	Is the subproject located in an area with a wastewater network?			
25.	Is the subproject located in the urban plan of the city?			
26.	Is the subproject located outside the land use plan?			

Prepared

By…….....

Date ……..

N.B.All other projects falling under the preview of Pakistan Environmental Protection Agency (Review of IEE and EIA) Regulations, 2000. will follow regular procedures for compliance. For details visit website; www.environment.gov.pk.

ANNEXURE-VI
LAND SLIDES DETAILS IN NWFP LOCATED ON ROAD SIDES

S. No.	Road	Number of Landslides - NWFP		
		Priority - I	Priority - II	Priority - III
1.	Garhi H - Balakot	03	06	01
2.	Garhi H - Hassa	01	02	– -
3.	Manda - Gucha	01	–	- –
4.	Shinkiari - Nawazabad	02	02	–
5.	Shohal - Balakot	06	–	02 -
6.	Balakot-Satbani	03	05	-
7.	Balakot-Mang	07	01	– -
8.	Balakot-Rein	01	–	- –
9.	Balakot-Sarash	07	–	– -
10.	Balakot-Sarash-Khait	01	–	- –
11.	Balakot-Sarash-Rin	01	–	–
12.	Balakot-Sarash-Jigan	01	–	– -
13.	Allai-Pushto	06	–	- –
14.	Tandol-Bana	13	–	–
15.	Bana-Gantar	02	–	01
16.	Baili-Gantar	01	–	01
17.	Balakot-Hungrai	–	33	
18.	Thakot-Darband	–	09	
19.	Nawazabad-Naralban	–	– -	
20.	Shinkiari-Manda-Gucha-Jaccha	–	-	

ANNEXURE-VI
LAND SLIDES DETAILS IN AJK LOCATED ON ROAD SIDES

S. No.	Road	Number of Landslides - AJK		
		Priority - I	Priority - II	Priority - III
1.	Bagh - Ratnoi	02	--	--
2.	Bagh - D Qazian	01	--	--
3.	Pader - D Qazian	02	--	--
4.	D Qazian - Bani M D	02	--	--
5.	Qazian - Khawaja	02	--	--
6.	Malot - Dirkot	01	02	--
7.	Bagh - Sudan Gali	01	01	01
8.	Dirkot - Bagh	01	01	--
9.	Khori - Deolian	02	07	--
10.	Mzd - Chakothi	40	05	--
11.	CMH Rwkt	01	01	--
12.	Rwkt.	01	--	05
13.	Rwkt. (Goi Nullah)	01	--	-
14.	Rwkt. (Dhal Kot)	01	--	--
15.	Rwkt. (Faisal Hotel)	04	--	--
16.	Rwkt. (Paniola)	01	04	--
17.	CMH Rd.	01	--	--
18.	Airport - Hotreri	04	--	--
19.	Makri	01	--	--
20.	Pirchinasi	01	--	--
21.	Azad Pattan	06	--	-
22.	CMH Hospital	01	--	03
23.	Mujahidabad	01	--	01
24.	Azad Pattan (Rehra Bridge)	01	04	01
25.	Tain	01	02	
26.	Bagh - Lasdana	--	02	
27.	Sanikas - Lasdana	--	03	
28.	Bagh - Dhuli	--	--	
29.	Dhuli - Raikot	--	--	
30.	Malot - Rangla	--		
31.	Sural - Bani M			
32.	Lungerpura - Dabn			

RE-VII

) BUDGET OF ENVIRONMENTAL STRATEGY OF ERRA

Natural Resources Management	Units/Quantity	Year 1	Year 2	Year 3	Total Rs. in million
Reconstruction of Buildings in AJK		99.995	199.99	99.995	***399. 980***
Rehabilitation of Forest in AJK		84.77	102.86	142.268	***329. 900***
Rehabilitation Equipment damages in AJK		29.820	0.370	23.085	***53.275***
Reconstruction of Buildings in NWFP		183. 073	183. 073	–	***366.146***
Rehabilitation of Forest in NWFP		*186.168*	*186.168*	–	***372.336***
Fisheries Sector		–	–	–	–
Reconstruction of Facilities in NWFP		37.8165	12.6055		***50.422***
Reconstruction of Facilities in AJK		41.70	–	–	***41.70***
Wildlife Sector		–	–	-	–
Reconstruction of Facilities in NWFP		13.30	-		***13.30***
Watershed/Resources Management		3.00	6.00	3.00	***12.00***
Hospital Waste Management		64.550	6.250	4.450	***75.250***
Slope Stabilization		–	–	–	–
Slope Stabilization in AJK*		190. 125	189. 695	205. 07	***584.89***
Slope Stabilization in NWFP*	**0.427mm3***	75.00	175.00	100.00	**350.00**
	4.86 mm3				**2649.199**
Rubble/Debris Removal		–	–	–	**900**
Private Buildings NWFP		**308.19780**	–	–	***308.1978***
Private Buildings AJK		***591.8022***	–	–	***591.8022***
		–	–	–	**900.00**
Sectoral Guidelines (Part of Project Cost)		–	-	-	–
Organization and Management		-	10.00	10.00	–
Environmental Assessment		20.00	–	–	**40.00**
Capacity Building		10.00	–	–	**10.00**
Technical Assistance		–	-	-	–
Community Mobilization		–	–	10.00	–
Pollution Load Inventory		10.00			**20.00**
					70.00
					3619.1990

ach component are available for reference and project preparations