

REPUBLIC OF ARMENIA

**RENEWABLE ENERGY PROJECT
(IDA CREDIT AND GEF GRANT)**

ENVIRONMENTAL MANAGEMENT PLAN (EMP)

November 2005

ABBREVIATIONS

EBRD	European Bank of Reconstruction and Development
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
KfW	Kreditanstalt fuer Wiederaufbau
GEF	Global Environmental Facility
SHPP	Small Hydro Power Plant
IDA	International Development Agency
ICR	Implementation Completion Report
MOFE	Ministry of Finance and Economy
MONP	Ministry of Natural Protection
MOUC	Ministry of Urban Construction
NGO	Non governmental organization
R2E2 Fund	Renewable Resources and Energy Efficiency Fund

ENVIRONMENTAL MANAGEMENT PLAN (EMP)¹

A. Overview

1. **Introduction.** The Government of the Republic of Armenia and the World Bank are cooperating to alleviate poverty and to achieve a sustainable economic growth in the Republic of Armenia. As a part of this effort, the World Bank is providing the IDA credit and GEF grant to finance the Renewable Energy Project (REP), which will be implemented in close cooperation with EBRD, KfW, and other financiers. The REP will be executed by the R2F2 Fund, which already is in charge of implementing the World Bank-IDA funded Urban Heating Project.

B. Proposed Project

2. The objective of the proposed Renewable Energy Project is to increase the share of privately owned and operated power generation utilizing renewable energy. Project also aims at reduction of the greenhouse gas emissions (CO₂) by overcoming the barriers to the development of the renewable energy.

3. By targeting the development of a niche area of power generation capacity, the Renewable Energy (mainly SHPPs and WPPs) Project will increase the share of renewable resources in Armenia's electricity generation structure. The development of renewable energy is worthwhile since: (i) the production costs in general are competitive with other forms of electricity generation; (ii) it will increase diversification of electricity supply and energy security; (iii) it will contribute to the reduction of emissions and pollution. While the capacity added through the Project support will not be sufficient to completely replace nuclear generation, it will still be an important contribution for the retirement of the nuclear plant.

4. REP will be implemented over the period of about 5 years. The proposed project budget is around US\$24.40 million, of which US\$5.0 million would be provided by the International Development Agency (IDA) as a credit, and US\$ 3.0 million - by the Global Environmental Facility, as grant. The rest will be contributed by the Recipient and European Bank for Reconstruction and Development.

5. Project components. A. Technical assistance to remove barriers and support project implementation (indicative amount US \$3 million from the GEF):

1. Improvement of legal and regulatory framework and capacity building for state agencies (US\$ 400,000);
2. Capacity building and other support to the private sector (US\$ 1,600,000);
3. Mechanisms to leverage additional financing (US\$ 340,000);
4. Project implementation and monitoring (US\$ 660,000).

¹ This EMP has been prepared prior appraisal of the project, and reflects the knowledge on proposed activities at that time. In the course of project implementation, the EMP will be constantly revised and updated to address the needs and realities of the Project.

6. Financing of investments (indicative amount: US \$21.4 million, of which US \$5.0 million from the IDA credit and US \$7 from the EBRD):

Private investors will be able to access financing for the development of renewable energy projects. Based on comparative analysis of economic and financial feasibility of different types of renewable projects, it is expected that the financing will be mainly targeted at SHPPs on natural (run-of the river) and artificial (irrigation and drinking water pipes and canals) water flows, and wind farms. The sub-loans are expected to be in the range of US \$100,000 to US \$2 million with an average project size of US \$500,000. Sub-borrowers will be required to contribute at least 30% of total project costs as equity financing. It is expected that the total financing, which will be mobilized from IDA, EBRD, Cascade Credit as well as the equity financing of project developers will allow adding around 40MW of new renewable capacity to the country's generation mix, representing roughly 125GWh of annual electricity generation.

C. Environmental review.

7. Environmental and Safeguards Screening. The project has been placed in environmental screening category "FI" under the provisions of World Bank Operational Policy 4.01, "Environmental Assessment". The limited adverse impacts which will inevitably occur during construction and operation of the Small Hydro Power Plants and Wind Turbines can be prevented or minimized by appropriate measures in the process of design and implementation of specific activities. In the unlikely event, that Category A projects, entailing large scale and long term environmental impacts, are proposed for financing by the R2E2 fund or other participating financial institution, the loan officers will approach the World Bank for additional guidance on the scope of environmental assessment.

8. Project also triggers OP 7.50 Projects on International Waterways and the OP 4.37 Dam Safety. In accordance with provisions of OP 7.50, the riparian countries have been notified about the activities to be financed. The OP 4.37 is triggered because there is a possibility that some water for small hydro power plants may be derived from the reservoirs already controlled by the existing dams (para. 7 of the OP). However, all the dams in Armenia are covered by the on-going Irrigation Dam Safety 2 Project which is aimed at ensuring required minimum safety standards at all the existing dam controlled reservoirs in the country. That's why, for purposes of the Renewable Energy project there was no need to arrange for one or more independent dam specialists to conduct reviews, evaluations and provide with recommendations as per provisions of para.8 of the Policy. If deemed necessary, the required information about the status of the dam in question will be obtained from the team implementing the Irrigation Dam Safety 2 Project.

9. Environmental Management Plan. The Environmental Management Plan (EMP) for the REP summarizes the recommended design measures, construction supervision methods and monitoring actions to minimize and/or avoid the potential short- and long-term as well as the cumulative impacts of activities financed under the Project. EMP identifies potential environmental impacts related to construction and/or rehabilitation of small hydro-power plants and wind turbines. These potential impacts and their mitigation, as well as the monitoring actions are described below and summarized in Table A, "Mitigation and Monitoring Actions."

D. Project supported activities

10. The project will finance both the "run-of-river", which in most of the cases are believed not to alter the natural flow regime in the river; and "the diversion" SHPPs, when

water is diverted to the powerhouse via channels and/or penstocks. It is anticipated that the majority of proposed SHPP will be the “high head” plants which will not require of building dams and/or significant water chambers to regulate the discharge. The capacity of the plants is expected not to exceed 10MW, while the majority will be limited to capacity of just 1MW.

11. Project anticipates supporting erection of only few wind turbines in mountainous areas of Armenia.

E. Potential impacts

12. Background. The project is expected to have mainly positive long-term environmental effects, since it will contribute to eventual reduction of air pollution with greenhouse gases due to reduced use of fossil fuels for power generation. Potential direct, indirect, cumulative and residual adverse environmental impacts of the project financed activities will occur during construction and operation phases. These are well known, limited in scope, and the mitigation measures are developed and ready available.

13. However, if not properly addressed, the potential impacts may include the following:

- Pollution of the air, soil, the surface and underground water at construction sites and adjacent areas;
- Dust and noise due to demolition and construction;
- Dumping of construction wastes and accidental spillage of machine oil, lubricants, etc;
- Disposal of construction waste in unauthorized dump sites;
- Disturbances of sensitive ecosystems, and threat to endangered plant and animal species;
- Disruption and loss of topsoil due to erosion;
- Risk of damage to unknown historical, cultural and architectural monuments;
- Damage to the buildings and installations located in proximity to construction area;
- Adverse impact on livelihoods of local population due to increased noise levels during construction; and
- Damage to health of contractors’ staff if applicable work safety and occupational health standards are not observed

14. Potential Impacts resulting from development of Small Hydropower plants. SHPP may include:

- Inundation of natural habitats and/or agricultural land;
- Damage to aquatic ecosystem in case the reserved minimum flow conditions in the river are not ensured and too much water is directed into diversion channel;
- Damage to migrating fish stocks if no proper fish by-passes are installed, where required;
- Damage to fish stocks if no proper precautionary measures are implemented to avoid fish being sucked and killed in the turbines;
- Littering of territories adjacent to the SHPP if the trash collected at the screens in front of the water intakes or turbines, is not delivered to authorized landfills;
- Alteration of habitats in backwater areas due to inadequate design;
- Damage to habitats due to badly selected routing of the headrace and tailrace channels;
- Increase of erosion due to inadequate design characteristics of the headrace and tailrace channels;

- Increased sedimentation due to poor design of tailrace channel
- Activation of erosion processes if no proper landscaping is done during and after completion of construction penstocks;
- During operation, the area adjacent to turbines may be exposed to increased noise and vibration levels;
- Pollution of the river and the areas adjacent to the powerhouse with lubricants and sewage due to gross negligence or willful action.
- Visual disturbance of landscape due to odd architectural features or coloring schemes of the powerhouse.

15. Potential Impacts resulting from development of Wind Turbines

- Disruption of wildlife and plant habitats related to construction and decommissioning of wind turbines (including of the access roads, the sub- or above- surface power lines, and ancillary buildings),
- Deaths of birds (both the “local” and migrating species) due to collision with wings of the wind turbines;
- Dislocation of bird nesting sites due to increased noise levels;
- Nuisance to nearby population due to increased noise levels during construction and operation of the wind turbines;
- Increased soil erosion as a result of increased run off of storm waters due to poor landscaping and/or re-vegetation of the construction site;
- Littering of the construction area with solid and human waste during construction;
- Visual disturbance of the landscape

F. Mitigation measures

16. Overview. The mitigation measures outlined in this section will be undertaken as part of the project implementation process to mitigate potential impacts from construction activities. Table A summarizes the activities, mitigation issues and measures to be taken, and the monitoring and supervisory responsibilities.

17. In parallel to fulfillment by the sub-project proponents the requirements of the national legislation, the environmental and social aspects of the proposed sub-projects will be screened by the R2F2 and the Cascade Credit staff. If deemed necessary, the R2F2 staff may recommend including in to the sub-projects additional preventive and mitigatory measures in order to minimize the negative environmental and/or social impact of the proposed investment. The key mitigation measures would include but not be limited to:

- selection of optimal capacity and the sites for construction of new SHPP and wind turbines to avoid/minimize negative environmental and social impact;
- laying of access routes to the construction site with due respect to local environmental conditions;
- prohibition of an off-road traffic to the construction sites;
- identification of designated landfills/dumpsites where construction waste has to be delivered;
- timely identification and provision of appropriate funding for land reclamation measures;
- strict enforcement of usage of environmentally and human health-wise safe construction materials;
- noise reduction measures;
- topsoil preservation and site recultivation measures;

- strict adherence to occupational health requirements;
 - proper supervision and regular monitoring of construction activities by implementing agency and respective national and local level authorities;
18. Adherence to the environmental protection measures would be achieved by:
- Requirement to obtain all required environmental clearances and construction permits from respective national authorities prior the beginning of civil works, based on findings of the EIA Report/EMP, acceptable to R2F2 and Cascade Credit, which would identify potential environmental impacts and ways for their mitigation;
 - Additionally, for SHPPs: obtaining a water use permit from relevant national authorities which would be based on a subproject specific EIA Report or Environmental Management Plan, acceptable to national authorities and the R2F2 fund and Cascade Credit;
 - Requirement to project proponent to include into bidding documents and to prospective contractors - into their respective bids the provisions for minimizing/mitigating adverse environmental impacts, as identified in the EIA report/EMP (and the water use permit – in case SHPPs);
19. **National Water Use Permit.** As per stipulations of the Armenian Water Code, adopted on June 4, 2003, the Water use permit *inter alia* shall contain the following data:
- The specific locations of water extraction and water use;
 - Description of the types of water use allowed;
 - Quantity of water used;
 - Time periods when water use may occur;
 - Control mechanisms to support compliance with water use permit requirements,;
 - Water standards to be followed and/or reference to publications listing these standards;
 - Any special measures to be taken to promote efficient water use, protect and improve water quality, and conserve wetlands, significant coastal habitats and associated biodiversity;
 - Adequate means of recording, monitoring, reporting and verifying water use;
 - Adequate mitigation measures to reduce negative impact on water resources;
 - Associated water use permit fees and payment schedules determined by this code.
20. **Validity of the Water Use Permit.** For locations where “River Basin Management Plan” has been adopted, the permit is valid for a period for up to 25 years. In locations where no River Basin Management Plan exists, the permit is issued for a period up to 5 years, after which it has to be renewed. The Water permit can be suspended, amended or revoked at any time, if its holder does not comply with conditions contained in the permit.
21. **Obtaining permits for construction of small Hydropower plants.** In order to secure funding from the R2F2, the project proposals will have to be screened by respective Armenian authorities and the R2F2 staff for compliance with the valid national legislation and the WB safeguard policies. Working in close cooperation with the national authorities, the R2F2 and the Cascade Credit may require implementing additional precautionary and/or mitigatory measures before the decision to approve funding is passed.
22. **Contractor Requirements to Minimize Environmental Impacts.** Individual management plans, as mentioned above, will provide guidelines and actions to mitigate potential environmental impacts, through instructions to design engineers and construction

contractors to undertake certain actions on a site specific basis in compliance with the requirements of the present EMP. Specific provisions should be included in construction contracts to mandate the use of health and safety measures to minimize accidents during the construction and post-construction process. Particular emphasis will be put on use non-hazardous materials in new construction. Appropriate provisions will be included into bidding documents for construction works.

23. Archeological “Chance Find” Procedures. Although the chances to unearth valuable archeological artifacts are slim, provisions will be included in contract documents to address archeological “chance finds” should they be encountered during the course of construction activities. These provisions will follow procedures accepted by the national and/or local authorities responsible for archeological and historical sites and materials.

24. Project implementation monitoring. Project implementation process will be closely monitored by the R2E2 staff and respective environmental and occupational health (sanitary epidemiological and hygienic) authorities through regular reviews of the investment specific environmental management plans and regular site visits. The 2E2 Fund staff will pay visits to randomly selected sites during the semi-annual implementation review missions.

G. Social aspects, **Consultation and Disclosure of information**

25. Social analysis. The Project has undergone extensive social assessment during design and preparation phase. Local population in general views development of such projects positively, as they offer additional employment and investment in to the infrastructure of nearby infrastructure. Nevertheless, in accordance both with the national and the WB requirements, the consultations with the local public and the concerned organizations shall be held, and their concerns, to the extent reasonable, shall be taken into account while finalizing the sub-project proposals. Only after addressing the concerns of the local public the sub-project proposals can be approved for financing.

26. During the preparation of the whole project a variety of consultations were held with a wide range of stakeholders, which included NGOs at the regional, national and local level. As mentioned above, this process will continue during the project implementation period which will allow for inputs from stakeholders especially at the activity specific level.

27. The EMP will be made available to the public through the Info-Shop at the World Bank, and through the Ministry of Nature Protection and information service of R2F2. It is also available at the World Bank offices in the Republic of Armenia.

28. The consultation processes during project preparation were diverse and used a range of formats including meetings with responsible representatives of the Ministries of Finance and Economy (MOFE), Nature Protection (MONP) and Urban Construction (MOUC), local government/municipalities and nongovernmental organizations. These consultations emphasized the need to maintain a balance between meeting the technical objectives on the one hand, and improving environmental and social conditions at the local level on the other.

29. The renewable energy activities will not involve resettlement and land acquisition related to it. With these provisions a Resettlement Policy Framework Paper is not needed.

30. This Environmental Management Plan for REP will be endorsed by the Ministry of Nature Protection and the WB.

I. Estimated costs

31. The costs for implementation of management and monitoring activities included in the EMP have been integrated into the estimated budgets for the individual activities and management costs for the Project. This approach reflects the environmental management orientation of the project and the fact that most mitigation actions are associated with project supported management plans, design approaches and specifications in construction contracts. Monitoring of project supported implementation is an element of the work program of the project management team.

J. Reporting and supervision

32. Reporting. The Project will comply with the “Guidelines for Financial Reporting and Auditing of Projects Financed by the World Bank.” The Bank together with R2F2 will agree upon reporting requirements for Financial Monitoring Reports (FMR). Project progress will be reported through annual, semi-annual and quarterly Project progress reports. An Implementation Completion Report (ICR) will be prepared within six months of Project completion.

33. Supervision. The R2F2 staff will supervise the monitoring of project supported activities on a routine basis. This will be complemented by Bank supervision of the project. The process will include the participation of relevant Bank staff in implementation review missions, as appropriate, to review progress in the implementation of the EMP. The performance of the R2F2 in these project activities will be a standard element of supervision reports and the Implementation Completion Report (ICR).

Table A. Impact Mitigation and Monitoring

Project activities	Potential Impacts	Mitigation Measure	Phase	Responsible for Execution of Mitigation Measures	Monitoring Requirements	Responsible for Monitoring
Selection of the site and design of SHPPs and wind turbines	Damage to ecosystems, the plant and animal species	Selection of sites, including those for impoundment of the backwater areas, is done in a way that disturbances to plant, fish and animal species, are minimal or can be easily mitigated,	Design	Design Consultant	Project expertise	State Environmental Monitoring Agency ; Local authorities
	Visual impact	Adequate architectural design, use of natural materials and vegetation for covering the banks of the head- and tail-races as well as the backwaters; Use of neutral colors to “mask” the installations	Design	Design Consultant	Project expertise	State Environmental Monitoring Agency; Local authorities
	Damage to aquatic ecosystems due to exceeding the reserved minimum flow	Selection of sites on rivers with sufficient water debit; selection of appropriate head and capacity of the small hydropower plant	Design	Design Consultant	Project Expertise	State Environmental Monitoring Agency; Local authorities
	Noise pollution	Selection of site with due respect to proximity of human settlements and habitats of birds and wildlife	Design	Design Consultant	Project Expertise	State Environmental Monitoring Agency; Local authorities

	Reduced amenity values of the area	Proper siting of SHPPs and wind turbines; selection of neutral design and coloring schemes in order to reduce visual disturbances	Design	Design Consultant	Project Expertise	Local Environmental Service; Independent Construction Expertise Service.
	Damage to fish stocks	Foresee appropriate fish by-passes for migrating fish; foresee measures to deter fish so that they are not sucked into turbines; foresee, where feasible, fish-friendly turbines	Design	Design Consultant	Project Expertise	Local Environmental Service; Local authorities
Disturbances during construction	Digging of soil, damage to endangered plant species	Checking for endangered plant species on construction site, if found – replanting; Establishment of temporary access roads, exclusion of off-road movement of trucks and other transport	Design, Construction	Design consultant And Contractor	Check of contract documents. Supervision of construction	Urban ecological services and departments.
	Pollution of soil and water at construction site with oil materials	Daily checks of machinery for leaking of oil, ban to wash machinery at construction site	Construction	Contractor	Constant supervision of construction site for contamination	Urban ecological services and departments
	Littering of construction site	Instructions to contractor to which landfill the waste has to be delivered. If insulation contains asbestos, workers must wear protective measures – wear respirator	Construction	Contractor	Regular inspection of construction site for contamination	Local authorities

	Topsoil disturbance	Topsoil preservation, storage and recultivation	Construction	Contractor		Local authorities / municipal environmental service
	Noise pollution	Works performed strictly during the daytime and with due respect to the spawning migration of fish species	Construction	Contractor		
	Reduced amenity values of the area	Proper landscaping and replanting of construction area after completion of repair works	Construction	Contractor		Independent Urban Construction Expertise Service.
	Archeological "chance find"	Stopping works and calling in respective local authorities and experts	Construction	Contractor		R2E2, local authorities,
Operation of SHPPs and Wind Turbines	Fish do not find the bypasses due sedimentation, or "blurred" maximum flow line	Remove the sediments	Construction	Contractor	Supervision of construction	Urban ecological services and departments.

	Fish do not use the bypasses	Wrong type of bypass used. Consider building a different type of the bypass (fish ladder, fish lift, a by-pass imitating the hydrology and morphology of the “real” river)	Operation	Operator, Contractor	Constant supervision of execution of appropriate measures	Operator, local Environmental authorities
	Stimulation of erosion of land, disturbance of topsoil	Proper landscaping of slopes and replanting of vegetation	Design, Construction, Operation	Design Consultant, Contractor	Supervision of observance of security measures	
	Trash collected at the trash rack	Indicate landfill to which the collected trash has to be delivered	Design, Operation	Design Consultant	Project expertise and supervision of construction	Local environmental authorities
	Water pollution with sewage	Foresee appropriate sanitary water treatment next to the SHPP and wind turbines and maintain them properly	Design, construction, operation	Designer, contractor, operator	Regular inspections	Environmental authorities
	Littering of area by solid waste	Timely delivery of the solid waste collected at screens to the designated landfill	Operation	Operator	Regular Inspections	Environmental Authorities
Occupational health issues	Damage to human health due to exposure to asbestos containing materials	When asbestos containing materials encountered, the workers should wear protective gear; asbestos containing waste promptly delivered to designated landfills/dumpsites	Construction	Contractor	Project expertise and supervision of observance of security measures of construction	Local hygiene services; When asbestos containing materials encountered, the workers should wear protective gear; asbestos containing waste promptly
	Damage to human health due to potential ice-throw from the blades of wind	Designate safe areas around the wind turbine and prevent trespassing by fencing them	Design, Construction, Operation	Owner/operator		

	turbines.					
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Draft Environmental Review Chapter for Operations Manual

Environmental Review at PFI

The environmental review process comprises the following 7 steps:

Step 1: The borrower prepares an initial investment project concept. Following informal discussions with the PFI/R2E2 Fund, in which the PFI/R2E2 alert the borrower of its environmental assessment requirements, the borrower prepares Part A of the environmental screening form and attaches the screening form to the initial project concept. At this time, it is the responsibility of the borrower to initiate clearance process with the competent environmental authorities in Armenia in order to fulfill any local and national environmental review or environmental clearance requirements. It will be the responsibility of the borrower to obtain the appropriate permits and licenses as required by national law in order to facilitate the clearance process with the authorities.

In practical terms, the loan officer at PFI (and R2E2 – if appropriate) has to visit the proposed project site together with project proponent. In relation to environmental, social and occupational health impacts of the project, the loan officer shall guide himself by Environmental Management Plan for the Project. However, s/he may wish to pay particular attention to the following:

- will natural ecosystems or habitats, if any, be affected as a result of digging the pit for foundations of the buildings or trenches for the pipelines?
- Are there any rivers or other water bodies in vicinity which potentially can be polluted during construction or operation of the small hydro-power plant
- Will the water after passing through the turbines be returned to the river/canal, or used for other purposes, e.g. irrigation or drinking?
- Ask the project proponents and local residents what kind of activities, if any, had been taking place on the site earlier. If liquid fuel was stored and used, it is likely that soil is contaminated with oil products. PFI may wish to include the cost of site clean-up into the cost of the project.
- What construction materials the proponent intends to use? Any asbestos containing materials proposed for insulation or roofing²?
- What turbines/transformers will be installed?
- Are the proposed sites for wind turbine construction located in protected areas? If yes, how the proposed construction will affect the protection regime? The amenity values of the landscape also may be an issue in certain cases.
- Are the proposed wind turbinees in the vicinity of bird nesting sites, as the noise from operating windmills may have a negative impact on them
- At early stage obtain information on which landfill will be used for delivery of construction waste.

² E.g., the use of asbestos containing materials shall not be rejected outright. Rather, a balanced approach shall be used in decision making, based on the feasibility, available alternatives and common sense. However, if it is decided to use asbestos containing materials, the applicable occupational safety measures shall be foreseen in order to protect workers.

Step 2: Based in documentation provided and findings of the field visit, the PFI/R2E2 informs the borrower of the environmental risk category. There are three environmental risk categories:

Category A: Projects that may result in diverse and significant adverse environmental impacts³. For such project, the applicant must prepare an Environmental Assessment (EA), including an Environmental Impact Assessment (EIA) and an Environmental Management Plan (EMP)

Category B: Projects that may have moderate, specific environmental impacts for which mitigating measures are well known and easily implementable. A concise EMP is enough to describe potential issues and ways for mitigating them.

Category C: Projects that have no or only negligible anticipated direct or indirect environmental impact. No EIA action is required by the applicant.

Normally, the projects will fall into categories “B”. However, the loan officer shall use his/her judgment and when in doubt – contact World Bank for guidance.

PFI/R2E2 shall also inform the borrower if the environmental assessment and any additional permits from authorities are required.

If additional environmental assessment is deemed not necessary, proceed to Step 6.

Step 3: The borrower, or its environmental consultants, prepare the environmental analysis and/ or project specific Environmental Management Plan (EMP). While the Environmental Impact Assessment/EMP will be prepared in accordance with Armenian legislation, the PFI/R2E2 may require on including into TOR for preparing a project specific EMP the tasks to clarify specific issues which PFI/R2E2 consider to be important. The Contents of EMP is broadly described in bank’s OP 4.01 Annex “C” which is available in Annex [...] to OM. However for practical purposes, the specific project EMPs may follow the layout of the overall Environmental Management Plan which has been prepared for the Armenia Renewable Energy Project (Annex [...] to OM).

Step 4: The PFI/R2E2 review the environmental analysis/EMP, that has been submitted and reports its findings to the borrower. The PFI/R2E2 provide their clearance once the Environmental Impact Assessment/EMP is judged to be satisfactory.

Step 5: The borrower incorporates the recommendations (including the associated costs) provided in the environmental analysis/EMP into the investment project design, implementation plan, and bidding documents.

³ Bank’s OP 4.01 Environmental Assessment: “A proposed project is classified as Category A if it is likely to have significant adverse environmental impacts that are sensitive, diverse, or unprecedented”. However, this is very unlikely to be the case in Armenia Renewable Energy Project, given its the scope and nature.

Step 6: The borrower finalizes the loan package, including the relevant environmental and other clearances from authorities, and submits it to the PFI/R2E2 for its final appraisal.

- The Loan officer has to review whether the proposed project designs are in conformity findings of environmental analysis/EMP and the permits issued.

Step 7: The PFI/R2E2 monitors the implementation of the mitigation plan for identified environmental issues. Responsibilities of key participants are summarized in Table A of the project-wide EMP (Annex [...] to OM).

- Loan officer has to visit the construction site several times during construction to check whether the conditions set forth by PFI/R2E2 are adhered to. Final payment shall not be made until the small hydro-power plant or the windmill are commissioned, the construction site cleaned up and waste delivered to the designated landfill

ENVIRONMENTAL SCREENING FORM

PART A (To be completed by final beneficiaries)

- A.1 Financing Institution:
- A.2 Project Title:
- A.3 Brief description of project (project cost, physical size, capacity, reconstruction of existing facilities or new construction)
- A.4 Preliminary environmental information (List of environmental documents already available at the time of loan application, description of emissions, materials to be used, if applicable, etc.)

PART B (To be completed by financing institution)

- B.1 Environmental Screening Category:
- B.2 Environmental issues apparent at screening (What environmental issues are raised by the project?)
- B.3 Compliance with pollution control, nature and water protection, fire safety, construction and occupational health standards
- B.4 Proposed mitigation measures (if not done already by applicant, indicate measures to be taken to address the environmental issues raised by the project, how they may be incorporated into the project design, and any potential covenants)
- B.5 Terms of Reference for Environmental Studies to be undertaken (Indicate briefly, scope, timeframe, and approximate cost of any environmental study required)
- B.6 Community participation requirements (List any requirements under national or local laws for the final beneficiary to inform, consult or involve the public entities)
- B.7 Next Steps (List actions for the financing institution, the final beneficiary, the environmental consultant)

SIGNATURES:

LOAN OFFICER _____ DATE:
ENVIRONMENTAL SCREENER: _____ DATE:

MINUTES

of Public Discussion of Environmental Management Plan within the Framework of Renewable Energy Project (IDA/WB/EBRD/GEF)

11 November, 2005

Yerevan

Chairman: A. Marjanyan – “Energyinvest PIO” State Institution, Grant Project Coordinator

Participants:

1.	Director of the R2E2 Fund	Tamara Babayan
2.	Executive Director of Financial Institution Cascade Credit	Garegin Gevorgyan
3.	Environmental Monitoring Specialist /Cascade Credit /	Aren Hovhannisyan
4.	Environmental Impact Assessment, independent expert, Ex-Minister of RA Ministry of Nature Protection	Vram Tevosyan
5.	“Environmental Expertise” State Non-Commercial Organization, Expert	Arthur Minasyan
6.	Alliance to Save Energy MUNEE Program Manager	Astghine Pasoyan
7.	Member of Public Board of Renewable Energy in Armenia, Doctor of State Engineering University of Armenia	Joseph Panosyan
8.	Deputy Chairman of “E ³ ” NGO	Suren Shatvoryan
9.	Grant Project Specialist of “Energyinvest PIO” SI	Nona Mirzoyan

A. Marjanyan welcomed the participants of the discussion and shortly introduced the objectives and main achievements of the GEF/WB grant project currently under implementation. The implementation of the current project was pointed out to be the preparation stage of the IDA/WB/EBRD/GEF Renewable Energy Project. Renewable Energy Project main objectives, scope of activities, scope of the expected outcomes and the evaluation criteria were introduced. The role and involvement of the R2E2 Fund, as well as those of Cascade Credit financial institution during implementation of the project were outlined.

T. Babayan detailed the structure, scope of activities and main objectives of the R2E2 Fund. Thoroughly were introduced the main trends and peculiarities of the Fund’s Environmental Management Plan of the activities in district heating.

A. Marjanyan introduced the provisions and approaches of the Environmental Management Plan of the Renewable Energy Project. It was underlined that as a result of construction and

operation of small HPPs (SHPP) and wind power plants (WPP) the inevitable negative impact on the environment has a limited character and comparatively low level. This impact does not lead to long-lasting or cumulative negative environmental consequences. Thus, it is classified into the category FI specified in the World Bank Environmental Assessment operational policy 4.01. Moreover, through a long period the implementation of the project will result in positive environmental effect, as it will contribute to the prevention of emission of greenhouse gases.

It was underlined that the efficiency of the Environmental Management Plan within the framework of Renewable Energy Project is anchored on the facts that each SHPP or WPP program under consideration shall have its Environmental Management Program already in the stage of the detailed design describing the potential environmental impact and description of mitigation actions for such impact. Besides, the projects under discussion shall be granted all the environmental permits and Environmental Impact Assessment as stipulated by the RA Legislation. Finally, in the bidding documents the programs for support of the R2E2 Fund shall cover the description of actions for mitigation of the environmental impact.

The list of actions for mitigation of environmental impact of the Environmental Management Program and the provisions of activities for monitoring the implementation thereof were introduced.

G. Gevorgyan pointed out that Cascade Credit being an affiliate of Cascade Holding of Cafesjian Foundation in its activities attends also to environmental issues. In particular, during the implementation of the Renewable Energy Project when discussing the perspectives of energy projects the compliance of these to the requirements of the Environmental Management Program will be considered as mandatory.

A. Pasoyan underlined the issue of possible negative impact on existence of endemic species of fauna, highlighting the importance of corresponding provisions of Environmental Management Plan of Renewable Energy Project in the stage of selection of perspective platforms of SHPPs and WPPs. It was pointed out that this issue is most important from the point of view of biodiversity and has also global importance especially now, that the Republic of Armenia has ratified the respective convention and implements projects for biodiversity protection.

V. Tevosyan highlighted the importance of proper and timely notification of the independent experts of the sphere of environment on energy projects to be carried out in the near future. The importance of a number of improvements in the sphere was indicated. But also was pointed out the fact that during EIA of energy structures the experts still had to be based on normative documents of Soviet period. These apart from some positive aspects are generally obsolete. And for such fields of renewable energy as wind power, geothermal energy or biomass energy the required normatives, methodologies and description of assessment criteria are currently missing. With this respect Mr. Tevosyan underlined the importance and urgency of acquirement of the respective approaches of the World Bank.

T. Babayan, G. Gevorgyan, A. Marjanyan provided clarifications to the questions addressed at the discussion.

The participants of the discussions positively assessed the provisions and approaches of the Environmental Management Program of Renewable Energy Project. With the objective of higher awareness of the interested organizations and public it was proposed to post the Environmental Management Program in the constantly available internet sites of the World

Bank Armenian Representative Office and of international conference for issues of renewable energy development in Armenia, as well as submit it to the Armenian representative office of Orhuss convention.

Ara Marjanyan

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