

Social Fund for Development

Environmental Management Plan

Updated on 27th January 2009

Table of Contents

| | |
|--|-----------|
| Abbreviations and Acronyms | 3 |
| 1. Introduction..... | 4 |
| 2. National Environmental Law..... | 5 |
| 3. SFD Administrative Framework | 6 |
| 4. Basic Elements of the updated Environment Management Plan | 6 |
| 4.1. <i>Environmental Classification of Sub-Projects</i> | 6 |
| 4.2. <i>Environmental Screening and Registering</i> | 8 |
| 4.4. <i>Environmental Self Monitoring, Reporting and Periodic Inspection</i> | 9 |
| 4.5. <i>Environmental Education, Training and Awareness</i> | 9 |
| 4.6. <i>Environmental Auditing and Reporting</i> | 9 |
| 5. Requirements of Environment Impact Assessment (EIA):..... | 10 |
| Annex (1)Estimated Budget | 12 |
| Annex (2)Self Monitoring and Follow up Indicators..... | 14 |
| Annex (3)Potential Environmental Impacts and Mitigation Measures | 23 |
| Annex (4)Environmental Screening Form (B) | 37 |
| Annex (5)..... | 40 |
| Environmental Screening Form (A)..... | 40 |
| 44..... | Annex (6) |

Abbreviations and Acronyms

| | |
|------|------------------------------------|
| AEA | Annual Environmental Audit |
| EC | Environmental Coordinator |
| EER | External Environmental Reviewer |
| EIA | Environment Impact Assessment |
| EMP | Environment Management Plan |
| EPA | Environment Protection Authority |
| MIS | Management Information System |
| NGO | Non Governmental Organization |
| PO | Projects Officer |
| SWMP | Solid Waste Management Plan |
| TD | Tender documents |
| UH | Unit Head |
| YSFD | Yemeni Social Fund for Development |

Environment Management Plan of the YSFD

1. Introduction

Yemen's Social Fund for Development (YSFD) was established in 1997 as an administratively and financially autonomous agency to help implement national social and economic plans. The YSFD is supervised by a Board of Directors chaired by the Prime Minister and composed of members representing the government, the private sector and civil society. The Board defines and approves the YSFD's general policies and plans and monitors its performance and progress in achieving goals.

By improving basic services and facilitating poor communities' access to them, the YSFD helps reduce poverty and improve living conditions of poor people. It also helps refine approaches to delivering social services and empowers communities and local councils to take charge of development in their areas.

The current list of donors to SFD include: the Arab Fund for Social and Economic Development, DFID, EC, KfW, the Islamic Development Bank, Netherlands, the OPEC Fund, World Bank/IDA, Saudi Fund, and the U.S. Government. The French and Italian governments have supported the SFD through seconding experts to the SFD.

In 2008, the YSFD introduced a new program—supported by the donor-initiated Global Food Crisis Response Program—that uses a labor-intensive works approach to provide income for individuals and families most affected by the dramatic increase in food prices.

The YSFD achieves its goals through four main programs:

- *Community development* initiatives facilitate access to basic social and economic services—mainly in rural areas deprived of such services, as well as some urban areas.
- *Capacity building* of local partners, along with efforts to support capacities and organize communities and some government agencies and nongovernmental organizations (NGOs).
- *Small and Microenterprise Development* projects enhance small and microfinance services by supporting intermediaries such as NGOs and financing institutions, and develop business sector to provide nonfinancial services for small entrepreneurs.
- *Labor-intensive works* focus on creating job opportunities to temporarily absorb unskilled workers.

These four programs cover projects in a wide range of sectors and sub-programs, including education, water, sanitation, health, groups with special needs, rain-fed agriculture, rural roads, integrated interventions, training, organizational support, cultural heritage and small and microenterprise development.

SFD has an operational manual which is a dynamic document that has been subject to 7-8 revisions over the last twelve years. It is now a comprehensive document that includes details on all aspects of operations. It includes criteria for what subprojects to finance, what intermediaries to work with, as well as what process the subproject should go

through until it is contracted. The manual also includes details on monitoring and evaluation of the subprojects, procurement methods, financial management issues, etc. A technical audit is conducted every two years to ensure that the SFD's operations are based on the manual. So far, all technical audits have shown that the SFD is using the manual as the main tool to guide its operations.

Additionally, SFD contracts independent consultant to undertake annual environmental audits. In May 2004, YSFD has developed the first Environment Management Plan (EMP) and since then, three annual environmental audits have been conducted and a lot of experience has been gained in the environmental issues. As YSFD-III is approaching its end by the end of year 2010, and with the beginning of YSFD-VI it becomes crucial to update the EMP based on the results of the previous environmental audits and experience.

The updated Environment Management Plan (EMP) shall cater for the environmental needs of the YSFD sub-projects in a simple, responsive and cost effective manner that will not unnecessarily overload or slow down the project.

When implemented efficiently, the EMP should ensure that

- Any environmental issues or concerns are addressed in the design phase of the sub-projects.
- Mitigation measures minimizing environmental impacts are being implemented.
- Monitoring for compliance and sound environmental performance is continued.

2. National Environmental Law

In 1995, Parliament enacted a comprehensive Environment Protection Law (Law No. 26 of 1995), consisting of five chapters and 95 articles.

The law's objectives are to protect the environment, to combat pollution, and to protect natural resources, society, human health, and habitats from activities that damage the environment. In addition, the law is designed to protect the national environment from activities practiced beyond the national boundaries and to implement international commitments ratified by the Republic of Yemen in relation to environmental protection, control of pollution, conservation of natural resources, and the protection of such globally important environmental elements as the ozone layer and climatic changes.

To avoid future adverse environmental effects, the law stipulates the incorporation of environmental considerations in economic development plans at all levels and stages of planning for all sectors. It also, imposes the performance of environmental assessment for all projects proposed by government, public, private, and cooperative agencies, and foreign companies. No licenses are to be issued for projects that degrade the environment.

The law also broadened the role of the Environment Protection Council (established in 1990) to include planning, licensing, monitoring, and auditing functions and to develop the procedures for defining, adopting, and monitoring environmental standards. The Law also outlines the role of line ministries and other technical authorities in the protection of air, water, and soil.

3. SFD Administrative Framework

As a governmental institution, SFD follows the national environmental law through applying its EMP and maintaining good coordination with Environmental Protection Authority (EPA). Since the establishment of the EMP, the Water and Environment Unit, in the headquarter, was assigned to be the focal point for all the environmental issues. The main tasks of the WEU in the field of environment are summarized below:

- Formulation of environmental policies and ensuring the mainstreaming of such policies into SFD's activities;
- Monitoring the implementation of SFD's Environmental Management Plan into SFD's Programs;
- Formulation of environmental training programs and monitoring their implementation;
- Conduct environmental auditing to ensure application of the EMP;
- Participate in the Appraisal Committee to ensure the mainstreaming of environmental policies and guidelines;
- Coordinate with the EPA ;
- Preparing studies/manuals to promote environmental best practices and compile annual progress reports.

To insure the smooth implementation of the EMP, the following points are needed to be agreed with the EPA:

- The environmental classification of sub-projects A, B and C;
- Class C sub-projects can proceed without EIA;
- Class B sub-projects need simple EIA and can be handled within the SFD;
- Class A sub-projects need detailed EIA and should be conducted by a qualified consultant and submitted to EPA for review and approval;
- The list of qualified consultants for conducting EPA for Class A sub-projects and the Annual Environmental Audit (AEA) for SFD's programs

4. Basic Elements of the updated Environment Management Plan

The main elements of the updated environment management plan could be briefed in the following:

- i. Environmental classification of sub-projects
- ii. A simple environmental screening and registration process using classification lists
- iii. A simple environmental assessment for sub-project using environmental assessment forms, checklists and guidelines
- iv. Environmental self monitoring, reporting and periodic inspection
- v. Environmental education, training and awareness
- vi. Periodic auditing and reporting

4.1. Environmental Classification of Sub-Projects

The sub-projects of the YSFD would be classified into three groups. Lists A, B and C would represent these groups as follows:

List C:

These are sub-projects which are known to have no adverse environmental impacts, and accordingly will not require any environmental assessment or follow-up. Small and micro finance, training, institutional capacity building, awareness, minor rehabilitation and furnishing/equipping of schools and training centers are examples of sub-projects falling under this category and represent around 10% of the overall number of sub-projects.

List B:

This category of sub-projects represents a relatively large percentage of the overall number of sub-projects (about 85%). These are sub-projects that are likely to have only limited adverse environmental impacts. Sub-projects falling under this category would include, but are not limited to:

- Construction of schools, teacher's housing, training centers, etc.
- Construction of health units, dispensaries, maternity clinics, medical research and control centers, etc.
- Rural feeder roads (cut and fill is up to 60% of the total cost), stone pavement, bridges and water passage ways, etc.
- Construction of dams (up to 500,000 m³), rainwater harvesting cisterns and mechanized water systems
- Establishing livestock markets, small slaughter houses (up to 5000 beneficiaries), vaccination yards, etc
- Relevant cultural heritage sub-projects such as rehabilitation of "Megshamats", Mosques, and fortresses, etc
- Rehabilitating terraces, and flood protection
- Wastewater systems (sewerage network and treatment plant) for population up to 2,000 capita
- Municipal solid waste collection and transportation
- Land fill up to 5,000 capita

These sub-projects would require a scoped (limited) EIA using a simple "Form B". (attached in annex 4)

List A:

This list is limited only to those sub-projects with significant environmental impacts, and for which a full EIA needs to be prepared and reviewed. The list of sub-projects under this category would include, but might not be limited to:

- Landfill sub-projects for over 5,000 capita
- Centralized healthcare waste management projects (for towns or cities)
- Dams with capacities over 500,000m³
- Wastewater collection and treatment systems (sewerage networks and/or treatment plants) for population over 2,000 capita
- Rural feeder roads (cut and fill over 60% of the total cost)
- Slaughter houses serving more than 5,000 capita

Sub-projects falling under this category would require a full EIA. An "EIA form A" would guide its preparation. The EIA of all list A sub-projects shall be submitted to the

Environmental Protection Agency (EPA) for review and approval whereas that of list B sub-projects don't need to be sent to EPA as their impacts are local, and small and can be easily identified, and mitigated within the YSFD.

4.2. Environmental Screening and Registering

Environmental screening would take place at an early stage of the YSFD sub-project cycle. During the "Field Appraisal" stage, the project officer (PO), based on the sub-project proposal and with the help of the classification lists, would classify the sub-project into category A, B or C and register it on the MIS as such. The Head of the relevant Unit (UH) or the Branch Manager (BM) reviews the classification of the sub-project and might re-classify the sub-project if he/she sees the necessity to do so.

Sub-projects classified as "C" would be further processed with no environmental assessment or follow-up. Sub-projects under classes "B" and "A" would be subject to environmental assessment and follow-up as described hereafter.

4.3. Environmental Assessment of Sub-Projects

Environmental assessment takes place during the second stage of the sub-project life cycle (preparation of project document).

Sub-projects classified under category "B" would be subject to a focused EIA. The sub-project consultant would be required to complete a simple "EIA Form B". The PO will provide the consultant with checklists and guidelines to help him/her identify and include the relevant mitigation measures. Mitigation measures indicated in the "EIA Form B" should be included in the project design and reflected in the project document.

On the other hand, sub-projects classified under class "A" would require more attention and accordingly a more detailed environmental impact assessment. In this case, a short list of recommended environmental consultants prepared by YSFD and approved by EPA should be used to hire from among to conduct the EIA.

The EIA for the sub-project classified as "B", will first be reviewed by the PO in the Branch Office (BO) to check for any missing data, information or un-addressed issues. The sub-project document and the EIA, including the environmental self monitoring plan are then sent to the Unit Head (UH). The UH may forward a copy of the sub-project document and the EIA to either:

- External Environmental Reviewer (EER), or
- Environmental Coordinator "EC" within the Water and Environment Unit.

Or, in case he/she is satisfied with the EIA, may decide to submit the sub-project documents to the Sub-projects' Approval Committee.

The External Environmental Reviewer (EER) (or Environment Coordinator "EC") will provide back to the UH his comments and opinion concerning the EIA. In particular he/she will evaluate and comment on the proposed mitigation measures, as well as the environmental self-monitoring and reporting plan.

The EIA for class "A" sub-project conducted by a qualified Consultant from the shortlist agreed with EPA shall be first reviewed by the PO for any missing data or un-addressed issues, then submitted to the UH for review and then sent to the EPA with a cover letter requesting the approval.

The sub-project document including the EIA Form (A or B) as well as the opinion of the EER (or EC) in case of class B and EPA in case of class A, are then put forward to the Project Approval Committee (PAC). In case the sub-project site is changed after approval, then for class B sub-projects the EIA can be conducted for the new site within the branch office, while for class A the EIA shall be conducted with the cooperation of the EC .

4.4. Environmental Self Monitoring, Reporting and Periodic Inspection

Construction Phase:

The responsibility to insure that mitigation measures are implemented during construction phase lies on the supervision Consultants. During this phase the sub-project consultant would include in his/her periodic reports the status of the environmental concerns and the progress concerning implementation of the mitigation measures as reflected in the EIA and sub-project document. The PO reviews the periodic reports and follows-up periodically to ensure that environmental mitigation measures are being implemented.

On the other hand, quality assurance visits that are conducted frequently by the technical unit will be enriched to include the environmental issues.

Operation Phase:

The party assigned for implementing the self monitoring plan, would be required to prepare and present to the PO periodic self monitoring reports as stipulated in the self monitoring plan. These self monitoring activities would be simple, straightforward and would have been already agreed to in the self-monitoring plan and presented with the EIA. The Environmental Coordinator (EC) within the Water and Environment Unit will review the environmental self monitoring reports, and will periodically inspect sub-projects for environmental compliance and performance.

4.5. Environmental Education, Training and Awareness

To be able to efficiently implement the (EMP), it is important to provide to the YSFD staff as well as the YSFD consultants focused environmental training and awareness. The following environmental educational and training events are required as a minimum:

- Present the updated EMP and explain its objectives and benefits. The process as well as roles and responsibilities will also be presented and discussed. Guidelines and checklists also will be provided and explained.
- Qualify consultants with previous records in environment studies to be hired for class "A" EIA studies and Annual Environmental Audit

4.6. Environmental Auditing and Reporting

Annually an environmental consultant will be recruited to conduct an environmental compliance and performance audit. An audit report will be presented jointly by the

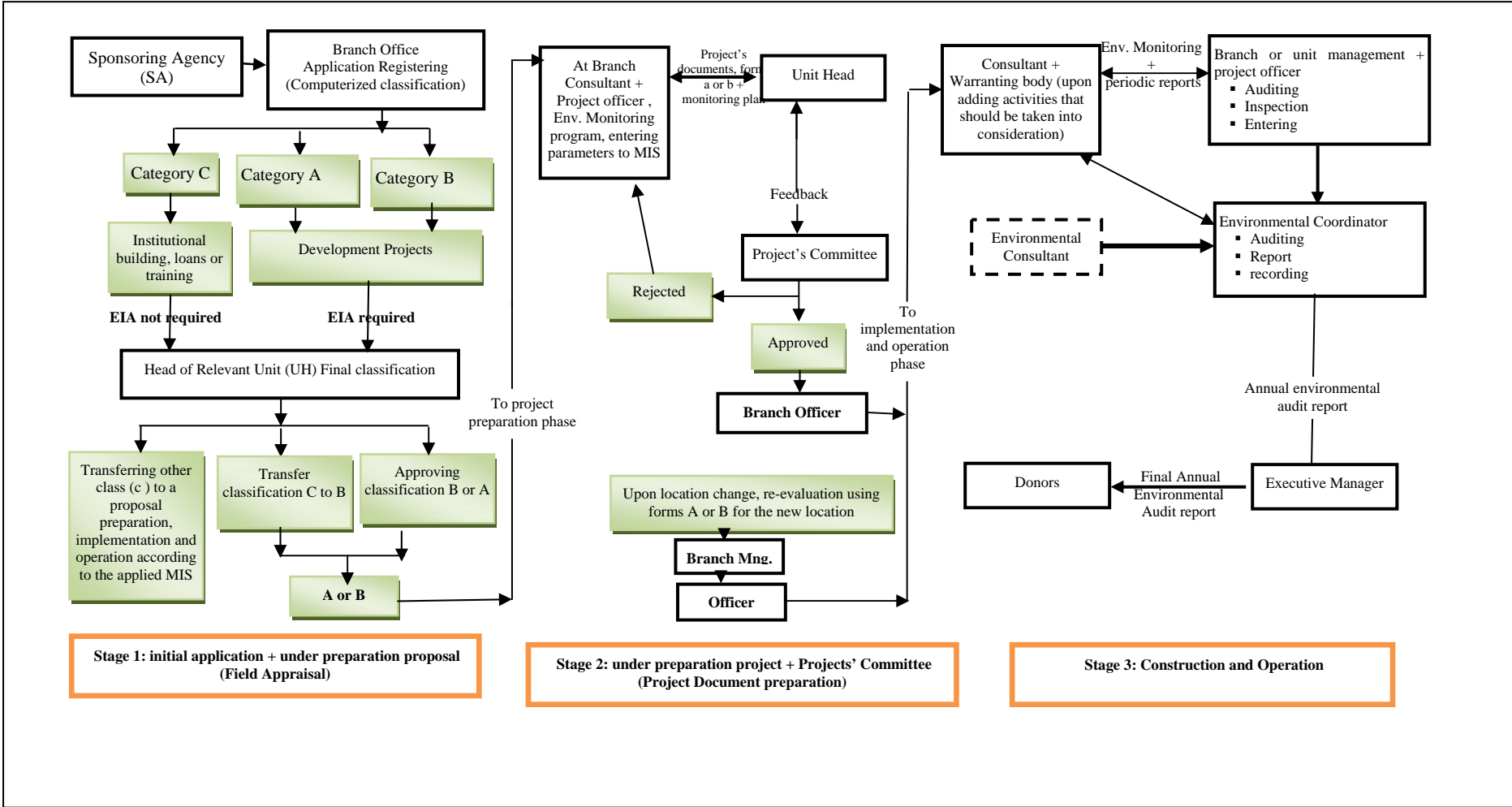
consultant and the Environmental Coordinator (EC), and presented to YSFD management. Based on the findings of this report, the Managing Director (MD) will forward an “Annual Environmental Report” to the donors.

5. Requirements of Environment Impact Assessment (EIA):

The requirements of EIA will vary according to the sub-project classification. For class "B" sub-projects, as the potential impacts are limited to the sub-project site, the consultants hired to conduct the sub-project study will be capable to conduct the simple EIA study required for this type of sub-projects. However, training the consultants on the YSFD's EMP and all its requirement including environmental screening form (B), potential environmental impacts, mitigation measures, self monitoring and follow up indicators will be needed. The task of conducting the simple EIA shall be included in the ToR for the study of the sub-project.

For class "A" sub-projects, as the potential impacts are high in terms of magnitude and scope, special arrangement is needed. To avoid conflict of interest and to come out with high quality EIA study, it is recommended that the EIA study shouldn't be conducted by the same consultant hired for the sub-project study, but should be conducted by a qualified consultant selected from the short list approved by YSFD and the EPA. Therefore, YSFD will need a list of qualified consultants to conduct the EIA for class "A" sub-projects as well as the Annual Environmental Audit. To have this list, training courses for consultants with previous records on environmental studies shall be conducted and ended with screening exam to come out with the required list. And as the EIA for class "A" shall be approved by the EPA, all the process shall be done with the full participation of EPA, and the final list shall be approved by both SFD and EPA. Annex (1) shows the estimated budget for training YSFD staff, and consultants for class "B" and "A" sub-projects through YSFD IV.

Environmental Management Plan (EMP) for YSFD



Annex (1)

The Estimated Budget for Training YSFD Staff and Local
Consultants on the Updated EMP Through YSFD IV

Estimated Budget for Training YSFD Staff and Consultants on Updated EMP

| Item | Amount in US\$ | | | | | Total | Remarks |
|---|----------------|---------|--------|------|------|---------|--|
| | 2011 | 2012 | 2013 | 2014 | 2015 | | |
| Training YSFD staff on the updated EMP | 10,000 | 10,000 | 5,000 | - | - | 25,000 | This will cover all head units, and POs |
| Training Consultants on the updated EMP and EIA for Class B sub-projects | 180,000 | 90,000 | 45,000 | - | - | 315,000 | This will cover all consultants in the data base who are involved in the study of all class B sub-projects |
| Qualifying Consultants on EIA for class A sub-projects and Annual Environmental Audit | 10,000 | 10,000 | - | - | - | 20,000 | This will cover selected consultants with previous records in environment studies and the list will be agreed with EPA |
| Total | 200,000 | 110,000 | 50,000 | - | - | 360,000 | |

Annex (2)
Self Monitoring and Follow up Indicators
for Sub-projects Funded by YSFD IV

School

| Environmental Impact | Indicator | Responsible Institution | | |
|------------------------|--|-------------------------|--------------------|-----------------|
| | | Design Phase | Construction Phase | Operating Phase |
| Air Pollution | Noise Odors Dust Smoke Asbestos Paint containing lead | | | |
| Water Pollution | Electric Conductivity BOD – COD E- Coli Nitrates | | | |
| Soil Pollution | Burnt oil Wastewater Solid wastes | | | |

Health Care Unit

| Environmental Impact | Indicator | Responsible Institution | | |
|------------------------|---|-------------------------|--------------------|-----------------|
| | | Design Phase | Construction Phase | Operating Phase |
| Air Pollution | Radiation Noise Odors Dust Smoke SO ₂ , NO _x , CO pollutants Asbestos Paint containing lead VOC | | | |
| Water Pollution | Electric Conductivity BOD – COD E- Coli Nitrates | | | |
| Soil Pollution | Burnt oil Wastewater Solid or liquid health care wastes Municipal solid wastes | | | |

Rural Feeder Road

| Environmental Impact | Indicator | Responsible Institution | | |
|---|--|-------------------------|--------------------|-----------------|
| | | Design Phase | Construction Phase | Operating Phase |
| Air Pollution | Increase of traffic Noise Odors Dust Smoke | | | |
| Various pollution (visual ...) | Solid wastes Construction wastes Historical monuments Green areas Sanitary drainage Deformation of grades | | | |
| Water Pollution | Electric Conductivity BOD – COD E- Coli Nitrates | | | |
| Decrease of water level in wells | Water productivity of wells | | | |
| Impeding water harvest | Blockage of canals at their intersection with road. Dispersion of natural canals. Abrasion of road | | | |
| Immigration | Census | | | |
| Encouraging tourism | Census on individuals entering the area | | | |
| Sliding of soil + soil erosion and instability of slopes | Soil and rocks falling on the road + narrowing of road width | | | |
| Social problems | Tribes' problems Land ownership Land holding Cultural heritage Archeological sites Historical sites Tombs and graves | | | |
| Safety problems | Sloping of road Curves | | | |

Stone Pavement

| Environmental Impact | Indicator | Responsible Institution | | |
|--|--|-------------------------|--------------------|-----------------|
| | | Design Phase | Construction Phase | Operating Phase |
| Air Pollution | Increase of traffic Noise Odors Dust Smoke | | | |
| Various pollution (visual ...) | Solid wastes Construction wastes Historical monuments Green areas Sanitary drainage Deformation of grades | | | |
| Water Pollution | Electric Conductivity BOD – COD E- Coli Nitrates | | | |
| Decrease of ground water recharge | Water productivity of wells Static groundwater level | | | |
| Encouraging tourism | Census on individuals entering the area | | | |
| Social problems | Land ownership Cultural heritage Archeological sites Historical sites Tombs and graves | | | |

Mechanized Water Supply Systems

| Environmental Impact | Indicator | Responsible Institution | | |
|------------------------------|---|-------------------------|--------------------|-----------------|
| | | Design Phase | Construction Phase | Operating Phase |
| Air Pollution | Noise Odors Dust Smoke | | | |
| Water Pollution | Electric Conductivity BOD – COD E- Coli Nitrates | | | |
| Spreading of Malaria | Mosquito larvae | | | |
| Spreading of diarrhea | Amoeba + E-Coli | | | |
| Soil Pollution | Burnt oil Wastewater Solid wastes | | | |

Rainwater harvesting

| Environmental Impact | Indicator | Responsible Institution | | |
|---------------------------------------|---|-------------------------|--------------------|-----------------|
| | | Design Phase | Construction Phase | Operating Phase |
| Air Pollution | Noise Odors Dust Smoke | | | |
| Various pollution (visual ...) | Construction wastes Wastewater Drainage | | | |
| Water Pollution | Electric Conductivity BOD – COD E- Coli Nitrates | | | |

Dams

| Environmental Impact | Indicator | Responsible Institution | | |
|---------------------------------------|--|-------------------------|--------------------|-----------------|
| | | Design Phase | Construction Phase | Operating Phase |
| Air Pollution | Noise Odors Dust Smoke | | | |
| Water Pollution | Electric Conductivity BOD – COD E- Coli Nitrates | | | |
| Spreading of Malaria | Mosquito larvae | | | |
| Spreading of diarrhea | Amoeba + E-Coli | | | |
| Spreading of Bilharzias | Snails | | | |
| Soil Pollution | Burnt oil Salinity of soil beneath the barrier Solid wastes Wastewater Submergence of soil | | | |
| Flood | Salinity of soil Submergence of land | | | |
| Social problems | Tribes' problems Land ownership Cultural heritage Archeological sites Historical sites | | | |
| Decrease in downstream run-off | Water rights conflicts | | | |
| Immigration | Census | | | |

Wastewater Management

| Environmental Impact | Indicator | Responsible Institution | | |
|------------------------------|--|-------------------------|--------------------|-----------------|
| | | Design Phase | Construction Phase | Operating Phase |
| Air Pollution | Noise Odors Dust Smoke SO ₂ , NO _x , CO pollutants | | | |
| Water Pollution | Electric Conductivity BOD – COD E- Coli Nitrates | | | |
| Spreading of Malaria | Mosquito larvae | | | |
| Spreading of diarrhea | Amoeba + E-Coli | | | |
| Soil Pollution | Burnt oil Solid wastes Wastewater | | | |
| Social problems | Tribes' problems Land ownership Cultural heritage Archeological sites Historical sites | | | |

Municipal Solid Waste Management

| Environmental Impact | Indicator | Responsible Institution | | |
|------------------------|--|-------------------------|--------------------|-----------------|
| | | Design Phase | Construction Phase | Operating Phase |
| Air Pollution | Noise Odors Dust Smoke SO ₂ , NO _x , CO pollutants | | | |
| Water Pollution | Electric Conductivity BOD – COD E- Coli Nitrates | | | |
| Soil Pollution | Burnt oil Solid wastes Wastewater | | | |
| Social problems | Tribes' problems Land ownership Cultural heritage Archeological sites Historical sites | | | |

Slaughter Houses

| Environmental Impact | Indicator | Responsible Institution | | |
|------------------------|--|-------------------------|--------------------|-----------------|
| | | Design Phase | Construction Phase | Operating Phase |
| Air Pollution | Noise Odors Dust Smoke SO ₂ , NO _x , CO pollutants | | | |
| Water Pollution | Electric Conductivity BOD – COD E- Coli Nitrates | | | |
| Soil Pollution | Burnt oil Solid wastes Wastewater | | | |
| Social problems | Tribes' problems Land ownership Cultural heritage Archeological sites Historical sites | | | |

Annex (3)
Potential Negative Environmental Impacts and Mitigation
Measures for Sub-projects Funded by YSFD IV

Schools

| Expected Negative Environmental Impacts | Mitigation Measures | | |
|--|--|--|---|
| | Design | Construction | Operation |
| Dispute among beneficiaries on the location | Choosing location so as to serve the greatest number of beneficiaries | Construct the school in the design location | NA |
| Human faeces spread around the site | Temporary bathrooms to be included in the tender documents (TD) | Building the temporary bathrooms | NA |
| Water pollution due to wastewater disposal of school bathrooms | Designing a proper simple wastewater treatment plant and Self Monitoring and Follow up Plan | Constructing the wastewater treatment plant according to the design | Implementing the Self Monitoring and Follow up Plan |
| Spread out of construction wastes | Include in the TD the collection and transportation of construction wastes to an approved site | Implementing the items in the TD related to dealing with construction wastes | NA |
| Spread out of solid municipal waste | Solid waste management plan (SWMP) shall be designed, and items for dealing with contractor's labors municipal wastes and items needed for the SWMP to be included in the TD | Implementing the items in the TD related to dealing with municipal solid wastes and the components needed for SWMP | Implementing the SWMP |

Health Facility

| Expected Negative Environmental Impacts | Mitigation Measures | | |
|---|--|--|---|
| | Design | Construction | Operation |
| Dispute among beneficiaries on the location | Choosing location so as to serve the greatest number of beneficiaries | Constructing the health facility in the design location | NA |
| Human faeces spread around the site | Temporary bathrooms to be included in the tender documents (TD) | Building the temporary bathrooms | NA |
| Water pollution due to wastewater disposal of the bathrooms | Designing a proper simple wastewater treatment plant and Self Monitoring and Follow up Plan | Constructing the wastewater treatment plant according to the design | Implementing the Self Monitoring and Follow up Plan |
| Spread out of construction wastes | Include in the TD the collection and transportation of construction wastes to an approved site | Implementing the items in the TD related to dealing with construction wastes | NA |
| Spread out of solid municipal waste | Solid waste management plan (SWMP) shall be designed, and items for dealing with contractor's labors municipal wastes and items needed for the SWMP to be included in the TD | Implementing the items in the TD related to dealing with municipal solid wastes and the components needed for SWMP | Implementing the SWMP |
| Soil pollution due to hazardous health care wastes | Design a plan for the hazardous health waste management and include its items in the TD | Construct the components of the health hazardous wastes management and supply its items according to TD | Implement the hazardous health waste management plan |
| Pollution of water sources due to discharging liquid health care wastes | Design a system to deal with liquid health care wastes and include its items in the TD | Construct the components of the system for dealing with liquid health care wastes and supply its items according to TD | Implement the system for dealing with the liquid health care wastes |

Rural Feeder Roads

| Expected Negative Environmental Impacts | Mitigation Measures | | |
|--|---|---|--|
| | Design | Construction | Operation |
| Removal of vegetation cover | Include in the TD vegetating a cover equivalent to the cover before the sub-project | Restoring vegetation cover equal to that before the sub-project | Watering and protected the restored cover |
| Deformation of graded routes | Include in the TD the restoration of the original grade routes | Restoring the original grade according to TD | NA |
| Construction wastes | Include in TD the collection and transportation of construction waste to the approved site | Collecting and transporting construction wastes to the approved location | NA |
| Human faeces spread around the site | Temporary bathrooms to be included in the (TD) | Building the temporary bathrooms | NA |
| Instability of sloping sections | Include in the TD enough retaining walls at critical sections | Constructing the retaining walls according to TD | NA |
| clogging of channels and drains | Include in the TD the restoration of channels and drains | Restoring the channels and drains according to TD | Periodical cleaning of channels and drains |
| Clogging of wells and springs due to usage of explosives | Include in the TD choosing suitable explosives not leading to blockage of wells and springs | Choosing suitable explosives not leading to blockage of springs according to TD | NA |
| Change of flood water course | Include in the TD the restoration of flood water courses as they were before | Restoring the flood water courses according to TD | NA |
| Discharge of construction equipment oils | Include in the TD instructions on how to dispose equipment oil | Follow the instructions mentioned in the TD | NA |
| Dispute on the road's pathway | Accurately choosing road's path | Construct the path as designed | NA |
| Land Ownership | Accurately defining the land required for the project and | NA | |

| | | | |
|-------------------------------|--|---|----|
| | letting beneficiaries resolve this issue through friendly methods | | |
| Hampering graves | Accurately choosing road's path | Construct the path as designed | NA |
| Increase of traffic accidents | Include in the TD the components that help in reducing traffic accidents such as signs and speed breakers at critical sections | Implement the mitigation measures according to TD | NA |

Stone Pavement

| Expected Negative Environmental Impacts | Mitigation Measures | | |
|--|--|--|--|
| | Design | Construction | Operation |
| Decreasing groundwater recharge | Include in the TD components to keep ground water recharge as before such as rainwater harvesting, and leaching pits | Construct the components for ground water recharge according to TD | NA |
| Deformation of graded routes | Include in the TD the restoration of the original grade routs | Restoring the original grade according to TD | NA |
| Construction wastes | Include in TD the collection and transportation of construction waste to the approved site | Collecting and transporting construction wastes to the approved location | NA |
| Human faeces spread around the site | Temporary bathrooms to be included in the (TD) | Building the temporary bathrooms | NA |
| clogging of channels and drains | Include in the TD the restoration of channels and drains | Restoring the channels and drains according to TD | Periodical cleaning of channels and drains |
| Change of flood water course | Include in the TD the restoration of flood water courses as they were before | Restoring the flood water courses according to TD | NA |
| Discharge of construction equipment oils | Include in the TD instructions on how to dispose equipment oil | Follow the instructions mentioned in the TD | NA |
| Land Ownership | Accurately defining the land required for the project and letting beneficiaries resolve this issue through friendly methods | NA | |
| Increase of traffic accidents | Include in the TD the components that help in reducing traffic accidents such as signs and speed breakers at critical sections | Implement the mitigation measures according to TD | NA |

Mechanized Water Supply System

| Expected Negative Environmental Impacts | Mitigation Measures | | |
|--|---|--|--|
| | Design | Construction | Operation |
| Dropping of ground water level | Conduct pumping test and select the pump according to the results, and identifying a buffer protection zone | NA | Protecting the buffer zone identified in the study |
| Construction wastes | Include in TD the collection and transportation of construction waste to the approved site | Collecting and transporting construction wastes to the approved location | NA |
| Human faeces spread around the site | Temporary bathrooms to be included in the (TD) | Building the temporary bathrooms | NA |
| Increase in stagnating wastewater | Include a sanitation component | Construct the sanitation component according to TD | NA |
| Land Ownership | Accurately defining the land required for the project and letting beneficiaries resolve this issue through friendly methods | NA | |
| Dispute on the location of communal taps | Accurately choosing the locations of the communal taps with the participation of the community | Construct the communal taps at the selected locations | NA |

Rainwater Harvesting

| Expected Negative Environmental Impacts | Mitigation Measures | | |
|--|---|---|---|
| | Design | Construction | Operation |
| Clogging of wells and springs due to usage of explosions | Include in the TD choosing suitable explosives not leading to blockage of wells and springs | Choosing suitable explosives not leading to blockage of springs according to TD | NA |
| Construction wastes | Include in TD the collection and transportation of construction waste to the approved site | Collecting and transporting construction wastes to the approved location | NA |
| Human faeces spread around the site | Temporary bathrooms to be included in the (TD) | Building the temporary bathrooms | NA |
| Increase in stagnating wastewater | Include a sanitation component | Construct the sanitation component according to TD | NA |
| Land Ownership | Accurately defining the land required for the project and letting beneficiaries resolve this issue through friendly methods | NA | |
| Selecting location | Choosing location so as to serve the greatest number of beneficiaries | Constructing the cistern at the location specified in the TD | NA |
| Water rights | Identify the boundaries of the catchment area with the participation and agreement of the community | NA | Protecting the boundaries of the catchment area |
| Bilharzia snails – mosquito | Include components that help in minimizing mosquito breeding and the spread of Bilharzia such as covering the cistern, installing water lifting tool, and awareness | Construct the components according to TD | Monitoring the Bilharzia snails and getting rid of them |

| | | | |
|--|--|---|----|
| Dispute on the location of communal taps | Accurately choosing the locations of the communal taps with the participation of the community | Construct the communal taps at the selected locations | NA |
|--|--|---|----|

Dams

| Expected Negative Environmental Impacts | Mitigation Measures | | |
|---|---|---|---|
| | Design | Construction | Operation |
| Clogging of wells and springs due to usage of explosions | Include in the TD choosing suitable explosives not leading to blockage of wells and springs | Choosing suitable explosives not leading to blockage of wells and springs according to TD | NA |
| Construction wastes | Include in TD the collection and transportation of construction waste to the approved site | Collecting and transporting construction wastes to the approved location | NA |
| Human faeces spread around the site | Temporary bathrooms to be included in the (TD) | Building the temporary bathrooms | NA |
| Desertification of lands far downstream the barrier | Design criteria for dams adopted by YSFD shall be followed. | Construct the dam according to TD | NA |
| Land Ownership | Accurately defining the land required for the project and letting beneficiaries resolve this issue through friendly methods | NA | |
| Water rights | Identify the boundaries of the catchment area with the participation and agreement of the community | NA | Protecting the boundaries of the catchment area |
| Bilharzia snails – mosquito | Include components that help in minimizing mosquito breeding and the spread of Bilharzia such as biological combating and hygiene and awareness | Construct the components according to TD | Monitoring the Bilharzia snails and getting rid of them |
| Salinity of land due to rising of surface water level in the lands beneath the barrier. | Include a drainage system to prevent water logging | Implement the drainage system according to TD | Maintain the drainage system |

| | | | |
|--|--|--|---|
| Submergence of cultivated lands | Identify different boundaries of the dam's lake for different capacities and show the submerged lands in each case and let the community decide the capacity and the compensation of the submerged lands | Construct the dam to the height identified in the TD | NA |
| Drowning of people and animals | Include in the TD items for protecting the boundaries of the lake against the fall of animals and swimming. These may include signs, and fence at critical sections | Construct the components according to TD | NA |
| Dispute on the water distribution for irrigation | Design an irrigation system with the participation of beneficiaries, and include the system's requirements in the TD | Construct the irrigation system according to the TD | Operating the irrigation system as designed |

Wastewater Management

| Expected Negative Environmental Impacts | Mitigation Measures | | |
|---|---|--|-------------------------------|
| | Design | Construction | Operation |
| Odors from the wastewater treatment plant | Select a location for the WTP suitable to wind movement and/or far from local population | Construct the WTP in the location specified in the TD | NA |
| Construction wastes | Include in TD the collection and transportation of construction waste to the approved site | Collecting and transporting construction wastes to the approved location | NA |
| Human faeces spread around the site | Temporary bathrooms to be included in the (TD) | Building the temporary bathrooms | NA |
| Pollution of ground water | Insure the water tightness of the WTP components and the quality of the treated effluent and design a monitoring plan | Construct the WTP components according to the TD | Implement the monitoring plan |
| Land Ownership | Accurately defining the land required for the project and letting beneficiaries resolve this issue through friendly methods | NA | NA |

Municipal Solid Waste Management

| Expected Negative Environmental Impacts | Mitigation Measures | | |
|--|---|--|-------------------------------|
| | Design | Construction | Operation |
| Odors from the land fill | Select a location for the land fill suitable to wind movement and/or far from local population | Construct the land fill in the location specified in the TD | NA |
| Construction wastes | Include in TD the collection and transportation of construction waste to the approved site | Collecting and transporting construction wastes to the approved location | NA |
| Human faeces spread around the site | Temporary bathrooms to be included in the (TD) | Building the temporary bathrooms | NA |
| Pollution of ground water | Insure the water tightness of the dumping cells and design a monitoring plan | Construct the dumping cells according to the TD | Implement the monitoring plan |
| Proliferation of flies, insects and rodents | Include in the TD the supply of the equipment needed to transport soil to cover the waste promptly | Supply the needed equipment as in the TD | NA |
| Land Ownership | Accurately defining the land required for the project and letting beneficiaries resolve this issue through friendly methods | NA | NA |

Slaughter House

| Expected Negative Environmental Impacts | Mitigation Measures | | |
|--|---|--|-------------------------------|
| | Design | Construction | Operation |
| Odors | Select a location for the slaughter house suitable to wind movement and/or far from local population | Construct the slaughter house in the location specified in the TD | NA |
| Construction wastes | Include in TD the collection and transportation of construction waste to the approved site | Collecting and transporting construction wastes to the approved location | NA |
| Human faeces spread around the site | Temporary bathrooms to be included in the (TD) | Building the temporary bathrooms | NA |
| Pollution of ground water | Insure the water tightness of the WTP components and the quality of the treated effluent and design a monitoring plan | Construct the WTP components according to the TD | Implement the monitoring plan |
| Land Ownership | Accurately defining the land required for the project and letting beneficiaries resolve this issue through friendly methods | NA | NA |

Annex (4)
Environmental Screening Form (B)

Environmental Screening Form (B)

- 1. Projects Name:** _____
2. Project's Type (health care, educational, water, environment, other utilities)

3. Brief description of the project (project's components including assisting services, scope of service, number of beneficiaries, number of workers ... etc)

4. Brief description of the project's location (nature of location: rocky or dusty, the previous usage of the location):

5. Description of the surrounding area: for a circle of 50 meters radius from the drainage point, specially locations of environmental sensitivity (utilities, constructions, land usage, water sources (¹) ... etc).
(Sketch drawing of the of the project)



¹Accurate data about water resources such as distance and elevation from the sub-project location and depth of water in case of wells

6. Environmental Impacts & Mitigation Measures * (Construction & Operation Phase)

| Project's Phase | Parameter | Influencing Factor | Mitigation Measure | Institution Responsible for Execution |
|------------------------|------------------|---------------------------|---------------------------|--|
|------------------------|------------------|---------------------------|---------------------------|--|

Design

Construction

Operation

* Example for design phase: Parameter: Water, influencing factor: Disposal of wastewater, mitigating measure: design proper wastewater treatment, Responsibility: Consultatant

7. Does the project need monitoring during its operation ? (in case there is a probability of polluting water resources, or soil or air) yes No

8. In case the answer is yes, mark the monitoring issues applicable to your project:

- Monitoring water sources
- Monitoring the performance of health care waste disposal
- Monitoring the performance of sanitary drainage system
- Monitoring the cleanness of the building's yard
- Monitoring the planting of trees in the building's yard

Table for Environmental monitoring during project operation

| Parameter | Indicator | Location | No. of samples | Intervals | Responsibility |
|------------------|------------------|-----------------|-----------------------|------------------|-----------------------|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

Example: Parameter: Water, Indicator: Nitrate, Location: Albaraka well, No of samples: 4, Interval: one year, Responsibility: YSFD

Annex (5)
Environmental Screening Form (A)

Environmental Screening Form (A)

A. General data:

1. Project's name
2. Brief description of the project
 - Project's main characteristics
 - Project's objectives
 - Project's justifications
 - Project's main components
 - Used technology (whenever possible attach illustrations showing the location's lay out and operation process charts showing inputs, outputs and wastes)
3. Alternatives considered
 - Location
 - Technologies
 - Designs
 - Materials used
 - Availability of studies concerning similar projects (please clarify their source)
4. Projects location
 - Address
 - Total area (m2), (please attach a detailed map of a suitable scale showing the location, transportation routes, pipes network, land borders and the uses of neighboring lands)
5. Brief description of the project's phases and construction methods
 - Inputs used during the construction and operation phases, and rates of consumption of used materials (in case of industrial projects, raw materials for other projects, mention the materials used).
6. Inputs of water, energy, labor – see the table

Inputs during the construction and operation phases*

| Inputs | Construction phase | Operating phase |
|-----------------------------|---------------------------|------------------------|
| Water – sanitary purposes | | |
| Water – industrial purposes | | |
| Water – other uses | | |
| Energy – electricity | | |
| Energy/ fuel (liquid, gas) | | |
| Energy / renewable sources | | |
| Labor | | |
| other | | |

* use the sign (√) in case the item exists and the sign (x) in case it does not exist

7. Outputs during the construction and operation phases

Final product (industrial project) or other outputs (all projects) * *

| Impacted factor | Emissions – effluents and wastes | Current situation | Construction phase | Operating phase |
|-----------------|----------------------------------|-------------------|--------------------|-----------------|
| Air | Carbon dioxide | | | |
| | Suspended particles | | | |
| | Smoke | | | |
| | Odor | | | |
| | Noise | | | |
| | Other | | | |
| Water | Sanitary drainage | | | |
| | Industrial wastes | | | |
| Solid wastes | Domestic | | | |
| | Industrial | | | |
| | Hazardous | | | |
| Other | | | | |

** use the sign (√) in case the item exists and the sign (x) in case it does not exist

Other information: Any other information of special importance pertinent to the safety of the workers and environment (like safety factors, fire protection facilities ... etc).

8. Work environment:

- Industrial wastewater drainage
- Air protection against pollution
- Solid wastes

B. Brief description of the surrounding environment (basic information):

1. General description of the project's location and its most important characteristics.
2. Current services and infra structure
 - Water
 - Electricity
 - Sanitary drainage.
 - Disposal of solid wastes.
 - Hospitals
3. Fragile or sensitive environmental systems or systems having a special nature at the project's area, like
 - Description of historical and archeological sites within the project's area.
 - Description of protectorates within the project's area

C. Preliminary analysis of environmental impact:

1. Quality of air (possible effects concerning the quality of air).
 - Construction phase
 - Operation phase.
 For the following sites:
 - Location.
 - Neighboring areas.
 - Trans-boundary of location

Mention the sensitive facilities near the project's location (like hospitals, schools, housing zones ...etc.)

2. Quality of water:

- Will the project's activity significantly affect water concerning availability, usage, water characteristics, drainage, temperature and quality of water
- Are there risks or hazards occurrence (clarify possible hazards type, quantity and effect).
- Will the activity affect the use of surface water?
- Fishery
- Tourism and entertainment
- Other activities.

3. Quality of soil:

- Will the project's activity significantly affect the soil concerning usage, general layout, vegetation cover, fertility, biological diversity or quality of soil.
- Please determine the degree to which the change in soil quality will affect the various activities.

4. Please clarify any other possible or significant effects resulting from the project's activity.

D. Mitigation Measures:

1. Air pollutants
2. Drainage water
3. Solid and hazardous wastes
4. Other mitigation measures.
5. Are there any communication with a public community society or the like concerning the project.

Annex (6)
SFD's interventions in the field of Cultural Heritage (C.H.)

Annex (6)

SFD's interventions in the field of Cultural Heritage (C.H.) Refined Vision for Phase IV (2011-2015)

Introduction

Yemen enjoys a rich, diverse and very much endangered cultural heritage expressed by its unique architecture, cultural landscape, antiquities, traditional handicrafts, music, costume & ritual, dialects, wealth of manuscripts and other aspects all representing a strong expression of deep rooted civilization, national identity as well as a considerable potential economic resource.

While employing SFD's capacity and managerial advantage was a much needed contribution to the national C.H. preservation efforts, safeguarding and preserving this heritage was also regarded increasingly by SFD as a possible area for addition to its poverty alleviation efforts from the perspective of the generating temporary and longer term employment as well as from the poverty targeting perspective.

SFD's relation to Cultural Heritage has evolved from no intervention, as C.H was not foreseen as one of SFD's areas of action upon its establishment to a careful limited intervention by the year 99 till C.H became officially one of its supported sectors since the start of the second phase.

By 2002 SFD became the most important and active partner to the Ministry of Culture as regarded by the World Bank and others. SFD's operations increased and developed further to become more diverse and achieve wider geographical coverage putting the Social Fund as the first player in this area at the national level.

However, the size and nature of threats facing different cultural heritage assets is simply much bigger than to be addressed by SFD's efforts; it is even beyond Yemen's resources and capacity if best used for safeguarding its rich, diverse, and patrimony.

While poverty, lack of awareness, social, urban and architectural metamorphosis in addition to other factors coalesce with the time caused decay to form an accelerating threat to Yemeni Cultural Heritage assets; concerned agencies experience chronic structural weaknesses at the managerial & technical levels in addition to the lack of adequate legislative bases and financial resources enabling to play an effective role in protecting Yemen's C.H. which makes a catastrophic picture for the current situation and less optimistic for the future.

As Yemen's well known genuine architecture represents the most immediate symbol of its rich culture and the strongest expression of its heritage, SFD initially directed its operations to the built heritage as to document and save as many endangered important sites and monuments as possible, and to enhance the conservation status of historic cities, especially those inscribed in the World Heritage.

Over the time SFD's interventions grew and became more diverse addressing various aspects of tangible and intangible heritage to the extent allowed by the technical and financial capacity. Generally, the implemented interventions were of high technical

quality and represented a real; much needed improvement in the conservation status of many endangered aspects of the country's cultural heritage.

Despite the above, a real progress towards improving the legislative, administrative, managerial and technical environment still stands as a fundamental requirement for saving Yemen's cultural heritage and avoiding a regrettable loss of the important value it bears.

Directions of SFD IV relating to Cultural Heritage activities

Towards the fourth phase of its operations, SFD still considers the continuation of rescuing and restoring endangered significant sites and monuments in addition to improving conservation status of Yemeni historic cities as a necessary, realistic and badly needed strategy. This is due to the fact that endangered assets cannot wait till sufficient improvement of the institutional and legislative environment gets achieved, as many of those sites and monuments could collapse, disappear or fall beyond restoration if SFD's continued interventions do not take place.

However, SFD recognizes the importance of expanding and scaling up its interventions in the area of urban conservation by *enhancing the national capacity at the central and local levels* in protecting historic cities against negative effects of accelerated urbanization on their authentic urban fabric, and architectural traditional styles. This will be given a steadily growing attention throughout the upcoming phase, particularly through the ongoing program "*Development of Historic Cities of Yemen*" co-financed by SFD.

For this positive effort to preserve cultural assets, SFD is using qualified national and international expertise to secure quality interventions, trying at the same time to enhance and expand national technical capacity. The French Government has seconded a cultural heritage expert to work with SFD. SFD has secured Yemen's membership in the International Center for studying Conservation of the Cultural property (ICCRUM) of UNESCO, in addition of carrying out a number of explicit activities for technical and institutional capacity building for relevant partners. Recently, SFD and the Ministry of Culture have signed a MOU which supports SFD's vision in Phase IV, and both parties sides will work together to achieve critical objectives. Some of these include: (i) convincing and providing support to the Ministry of Higher Education to adopt standard conservation as a mandatory subject in the curricula of Architecture and Engineering faculties in Public and Private universities, and (ii) pushing forward the draft of the Preservation of the Historic Cities and Sites law, which represent the absolute necessary legislative basis for protecting Yemen's Cultural Heritage. Currently Yemen does not have any guidelines for preservation and restoration of cultural heritage.

In Phase IV, a growing number of projects will enhance SFD's interventions links to the direct capacity building, developmental needs and employment issues. Temporary and longer term **employment** will be among the major and default indicators of C.H. projects.

Such evolution in SFD's strategies in C.H. will also enhance effectiveness of SFD's contribution towards protecting Yemen's endangered heritage through wider coverage

and probably longer term impact, in comparison with exclusively focused support on saving individual sites and monuments—although the latter will continue to represent a major component.

With the above in mind, the refined strategic lines through which SFD foresees the delivery of its overall contribution to the national Cultural Heritage preservation efforts will be stated as follows:

- Contribution to the conservation of main historic sites especially those inscribed in the World Heritage sites and those of architectural importance;
- Expansion of the nation’s technical, professional and managerial capacity at different levels to protect cultural heritage;
- Assisting in the establishment of inventories of the country’s cultural heritage assets;
- Saving the most threatened most significant sites and monuments (Given the large number and diversity of threatened assets); and
- Exploring possibilities and piloting operations to associate Cultural Heritage with development and the use of different C.H assets as means of income generation.

Quality assurance for SFD’s Cultural Heritage interventions

SFD has a separate Cultural Heritage Unit.

Though C.H. conservation projects of SFD follow and use traditional –still living-traditional building skills & methods, SFD benefits from regional and international expertise to ensure quality of interventions to comply with international standards, especially in major conservation operations (main monuments and interventions within historic cities inscribed in the World Heritage).

SFD’s project officers, national consultants and trainees from relevant Governmental Organizations participated in special training events where they were introduced to the concepts of preservation and to the international relevant charters and practices (i.e. Venice Charter, Borra Charter and the Narra Document in particular - with which the major operations comply). Officers from SFD C.H. Unit attended further specialized courses organized by ICCROM- Athar program.

Meanwhile, a number of specialized experts² lead and also provide technical supervision for SFD’s main conservation operations through direct on-site supervision or regular visits that take place on monthly, bi-monthly & semi annually basis.

² E. Ronald Lewcock - Professor of Architecture at Georgia Tech. Institute and Cambridge University.
Dr. Chris Edens (Archaeologist – former director of the American Institute for Yemeni Studies).
Dr. Ala'a Al Habashi, Professor Eves Eagles, Eng. Issam Awwad, Renzo Ravagnan, Abdullah Al Hadrami

²Marina Djabbarzade (Heritage Management Specialist Sustainable Development Department Europe and Central Asia Region (explicit statements in the Aide memoires 2007,2008,2009)

Additionally it should be noted that the technical quality of SFD's interventions was positively acknowledged by a World Bank review mission undertaken by a Cultural Heritage expert².

Furthermore, two SFD supported projects were awarded the Aga Khan prestigious architectural award in 2007 → http://www.akdn.org/akaa_award10.asp#yemen.