

BANGLADESH: ADDRESSING INDOOR AIR POLLUTION

INCEPTION REPORT

**Submitted to
The World Bank**



**Clean Energy Program
Environment Group
Winrock International
Arlington, Virginia, USA**

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LIST OF ACRONYMS

- ARECOP – Asia Regional Cookstove Program
- BCSIR – Bangladesh Council for Scientific and Industrial Research
- BRAC – Bangladesh Rural Advancement Committee
- CBO – Community Based Organization
- CCT – Controlled Cooking Test
- CEA – Country Environmental Analysis
- DALY – Disability Adjusted Life Years
- DANIDA – Danish International Development Agency
- DPHE – Department of Public Health Engineering
- ESMAP – Environment Sector Management Assistance Program
- GDP – Gross Domestic Product
- GHG – Greenhouse Gas
- GOB – Government of Bangladesh
- GTZ – German Technical Assistance
- HEDON – Household Energy Network
- HYSAWA – Hygiene Sanitation and Water Program
- IAP – Indoor Air Pollution
- ICDDR,B – International Center for Diarrheal Diseases Research, Bangladesh
- KII – Key Informant Interview
- KPT – Kitchen Performance Test
- LGED – Local Government Engineering Department
- LGI – Local Government Institutions
- M&E – Monitoring and Evaluation
- MDG – Millennium Development Goal
- MPA – methodology for Participatory Assessment
- NGO – Non-Governmental Organization
- PCD – Project Concept Document
- PCIA – Partnership for Clean Indoor Air
- REIN – Renewable Energy Information Network

SNV – Netherlands Development Organization

TSC – Total Sanitation Campaign

SSI – Semi-structured Interview

UNICEF – United Nations Children’s Fund

VERC – Village Education Resource Center

USAID – United States Agency for International Development

WASH – Water, Sanitation and Hygiene Program

WB – World Bank

WBT – Water Boiling test

IDCOL – Infrastructure Development Company Limited

WHO – World Health Organization

WSP – Water and Sanitation Project

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BACKGROUND

This Inception Report describes the approach Winrock International will take in implementing its activities under the Terms of Reference for “Bangladesh: Addressing Indoor Air Pollution”. The inception report summarizes the objectives, and discusses the methodologies for the sub-activities and approaches, linkages between activities and relevant organizations, institutional arrangements, and the timeline.

Over the last decade, Bangladesh has achieved annual economic growth rates of 4-5% annually and the annual population growth rate has reduced from 2.5% in the 1980s to 1.7% since 1990. The per capita Gross Domestic Product (GDP) growth rate has increased to 3.7% in 2004, from a rate of 2.5% in the 1980s. The country is also on target to meet many of the Millennium Development Goals (MDGs), notably for infant and child mortality rate. Despite these achievements, recent studies have found that environmental health risks make a significant contribution to the national burden of disease, with respiratory infections and diseases about one third higher when compared to other countries in the region. The figure is twice as high for diarrheal diseases. The Bangladesh Country Environmental Analysis (CEA)¹ states that respiratory infections and diseases, from indoor air pollution and diarrheal disease from limited access to safe water and poor sanitation and hygiene, results in 17% and 12% of Disability Adjusted Life Years² (DALYs) lost per capita. The estimated economic losses associated with these environmental risk factors amount to more than 4% of GDP, out of which indoor air pollution and water and sanitation’s share is more than 50%. The CEA analysis has found that reduced exposure to environmental health risks could result in economic savings equivalent to 3.5% of GDP.

Therefore, there would be both health and economic benefits to addressing indoor air pollution and water and sanitation related issues which disproportionately affect the poor. The Total Sanitation Campaign (TSC) in Bangladesh is a successful example of implementing community based approaches to raise awareness and motivate communities to adopt improved behaviors and practices. Based on the experience of the TSC and the strong synergies between water and sanitation and indoor air pollution intervention, the World Bank has commissioned an assessment of the feasibility of developing demand based approaches, based on sanitation programs, to reduce indoor air pollution (IAP) and the development of an institutional model for a pilot project to reduce IAP. It is expected that the Local Government Engineering Department (LGED) will implement this project with assistance from the World Bank (WB).

¹ Bangladesh Country Environmental Analysis, Volume I: Main Report, August 23, 2006, South Asia and Social Development Unit, South Asia Region, World Bank.

² The Disability Adjusted Life Year or DALY is a health gap measure that extends the concept of potential years of life lost due to premature death (PYLL) to include equivalent years of ‘healthy’ life lost by virtue of being in states of poor health or disability. The DALY combines in one measure the time lived with disability and the time lost due to premature mortality. One DALY can be thought of as one lost year of ‘healthy’ life and the burden of disease as a measurement of the gap between current health status and an ideal situation where everyone lives into old age free of disease and disability. < <http://www.who.int/healthinfo/boddaly/en/index.html>>

The responsibilities of leading the sub-activities under this Assignment have been split between Village Education Resource Center (VERC) and Winrock International. There are a total of three components. The current Assignment focuses on the following two components and their respective sub-activities:

- (i) Component 1: Development of a Detailed Conceptual Design for a Pilot Project
 - a. *Sub-activity 1.1: Review and evaluation of service delivery models for possible use in and adaptation to IAP reduction programs; (Winrock lead; VERC support)*
 - b. *Sub-activity 1.2: Development of a design and institutional model for a pilot IAP program; and; (VERC lead; Winrock support)*
 - c. *Sub-activity 1.3: National workshop and thematic round tables (Winrock lead; VERC support)*
- (ii) Component 2: Consolidation of practical methods for IAP mitigation
 - a. *Sub-activity 2.1: Consolidation of IAP reducing tools and technologies; (VERC lead; Winrock support)*
 - b. *Sub-activity 2.2: Awareness raising (VERC lead; Winrock support)*

A second Assignment, which is being led by the International Center for Diarrheal Diseases Research (ICDDR,B) will address Component 3: Development of guidelines for integrating community-based health surveillance into IAP program.

The VERC and Winrock team will undertake the assignment under the overall guidance of the WB team and in close consultation with the Local Government Engineering Department (LGED), ICDDR,B and other key project stakeholders.

EXPLANATION OF OBJECTIVES OF THE ASSIGNMENT

- a. Evaluate and identify suitable service delivery models for IAP –reducing programs

Indoor air pollution has significant health impact, especially among women and children in Bangladesh, accounting for about 8% of the total burden of disease in the country³. A number of non-governmental organizations (NGOs) have been working on IAP mitigation activities, however; the effort till now has been fragmented, with a number of IAP reduction methodologies and approaches available but not necessarily validated. Due to the extent of the problem, the World Bank, has deemed it necessary to identify a suitable service delivery model, which will include successful elements and approaches from past projects and initiatives, such as the Total Sanitation Campaign (TSC), which entails a strong community awareness raising and mobilization component to motivate target households to adopt the desired behaviors and practices.

³ Bangladesh Country Environmental Analysis, Volume I: Main Report, August 23, 2006, South Asia and Social Development Unit, South Asia Region, World Bank.

- b. Review and document successful institutional approaches and outcomes of mobilizing villages, to become "smoke-free", with particular attention to formulating a viable strategy to integrate IAP prevention and sanitation programs for improved health outcomes.

The review of successful approaches will be broad based and cover a range of programs, including rural and renewable energy programs, projects focusing on participatory approaches including water and sanitation related campaigns like the TSC, and World Bank (WB) funded Government of Bangladesh (GOB) projects targeting poverty alleviation, local governance issues, water and sanitation, among other issues. Special emphasis will be given to the TSC, which has strong parallels in terms of possible approaches for an IAP reduction initiative. Both issues, increased sanitation and reduced IAP, require adoption of new practices and thus demand for sanitary latrines and improved stoves, local participation, and involvement of the local government of Parishads. Given these synergies, the review process will explore opportunities for integrating an IAP reduction campaign within the framework of the TSC, while leveraging existing infrastructure, approaches and methodologies, where possible. It should be noted that Village Education Resource Center (VERC), one of the project consultants, has pioneered the Community Led Total Sanitation (CLTS) approach in Bangladesh and has adopted methodologies, such as the Methodology for Participatory Assessment (MPA), for use in IAP mitigation projects. The review will pay particular attention to these experiences, to evaluate the success of such projects and identify areas of improvement, which can be applied in the future WB project design.

- c. Improve awareness of and commitment to indoor air pollution and its mitigation options among a range of stakeholder groups, such as communities, NGOs and local government;

Awareness regarding indoor air pollution is still minimal amongst the development community in Bangladesh. It is only recently that studies conducted by the World Bank and the World Health Organization (WHO) have highlighted the issue and its impact on health and livelihoods in the country. In order to launch a successful IAP reduction campaign, it is important to have consultations with potential stakeholders, in this case local communities where the project may be implemented and local government bodies, such as Parishads and municipal governments. A number of exposure visits and local workshops have been proposed under the current assignment to share information about the proposed project, get feedback on reviews conducted and materials developed, and get local "buy-in" for the proposed approach.

- d. Share knowledge, lessons learnt and best practices in IAP reduction programs among the key decision and policy makers, practitioners, professionals, and national and international experts;

The lessons learned and best practices identified from the review of various programs will be broadly shared along with the proposed approach for an indoor air pollution reduction pilot model. While the awareness raising activities help to solicit feedback from potential project participants, sharing information with policy makers and key

stakeholders will help to engage them further, get their “buy-in” and build commitment for this activity. This is particularly important when the pilot activity will be implemented by government organizations,

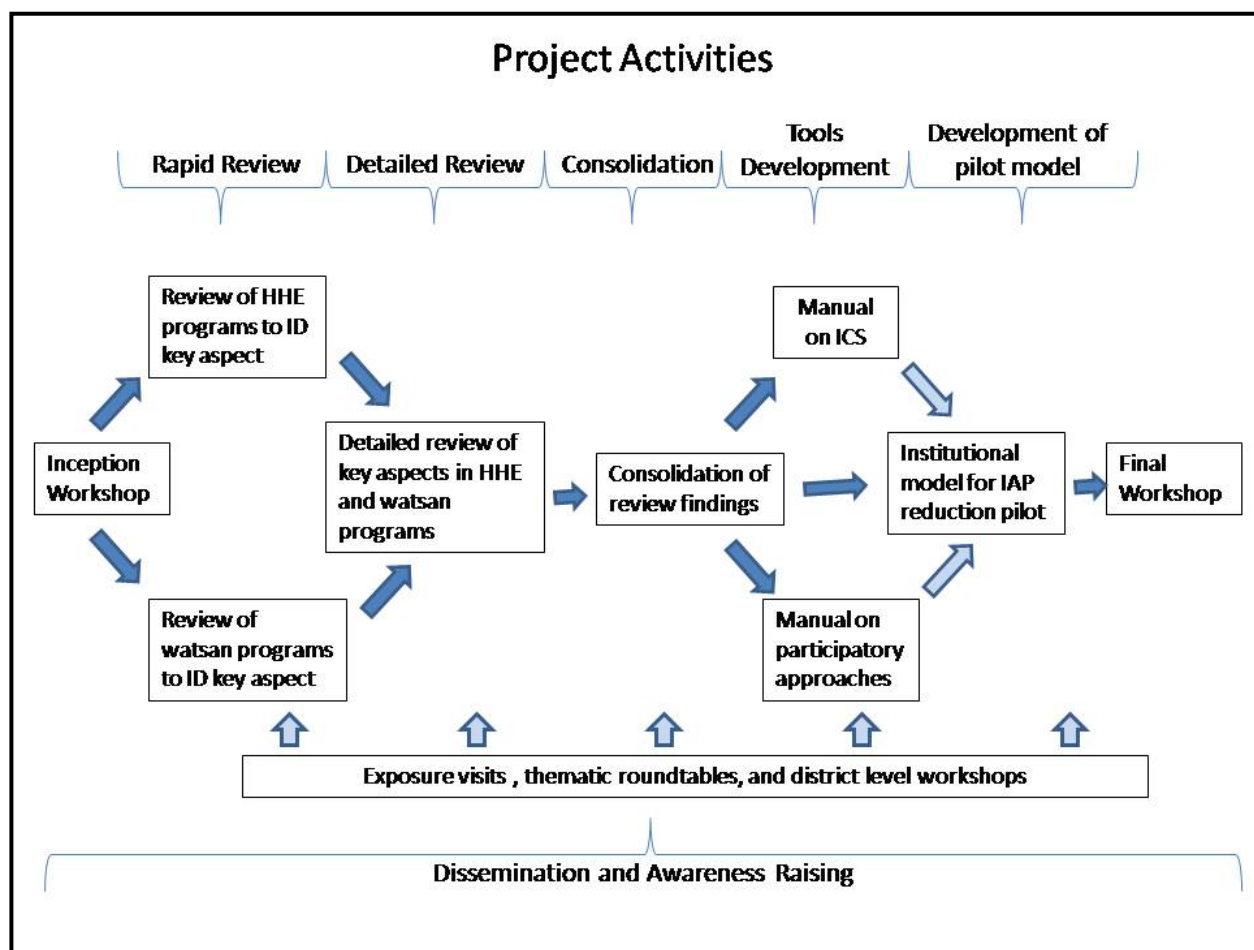
Information will be disseminated through two national level workshops. The first event will be an inception workshop, whose objective is to initiate a discussion on indoor air pollution in the context of Bangladesh and share information about the proposed activities under this consultancy and the World Bank’s broader goal of addressing indoor air pollution in the country. The second event is the final workshop, where the findings of the review will be disseminated and the pilot model presented. It is expected that a national level IAP committee will emerge from this workshop to stimulate information sharing and coordinate IAP related activities. The outcomes of the workshop will also be shared via an indoor air pollution website, and possible journal articles.

- e. Identify institutional arrangements and support mechanisms to be tested in a pilot project with a view to subsequent scaling up, paying particular attention to the role of local governments (Parishads).

Research on institutional arrangement will be led by Team C, one of the three teams that are reviewing various service delivery models and approaches. Given that the pilot model will be largely based on the experience of the TSC, it is important to put special emphasis on the institutional structure to identify the role of the local government, who are also a key stakeholder in the TSC approach; the role of the communities, implementers; and policy level decision makers. The structure also needs to be flexible enough to adapt to local conditions in different parts of the country and leverage infrastructure and/or resources from existing renewable energy or development projects. Examples may include a commercialization structure from a renewable energy project, a health network of trained volunteers from a health project, among others.

APPROACH

The following diagram gives an overview of the proposed approach:



The project team (VERC and Winrock), will develop the methodology for the review of a number of programs and approaches in the fields of renewable/household energy, community based approaches, and WB funded GOB projects. Building on the outputs of this review process, VERC will develop two manuals, on improved stoves and community based approaches, respectively. These manuals are intended to be used as practical tools for the replication and scale-up by other stakeholders in different parts of the country. During this time, awareness raising activities, such as exposure visits and district level workshops will be held in selected parts of the country, to validate the findings of the reports and tools, and also to obtain feedback from local communities and government organizations, such as Parishads. These three main activities (review, tools development, and awareness raising) will culminate in the development of an institutional model for a pilot program for IAP reduction. The project team will consult with the Local Government Engineering Department (LGED), the main GOB agency that will implement the pilot project, International Center for Diarrheal Diseases Research Bangladesh (ICDDR,B), who are developing the guidelines for an integrated community-based health surveillance tool for planning and undertaking IAP reduction interventions, and the World Bank team, for development of methodologies and finalization of

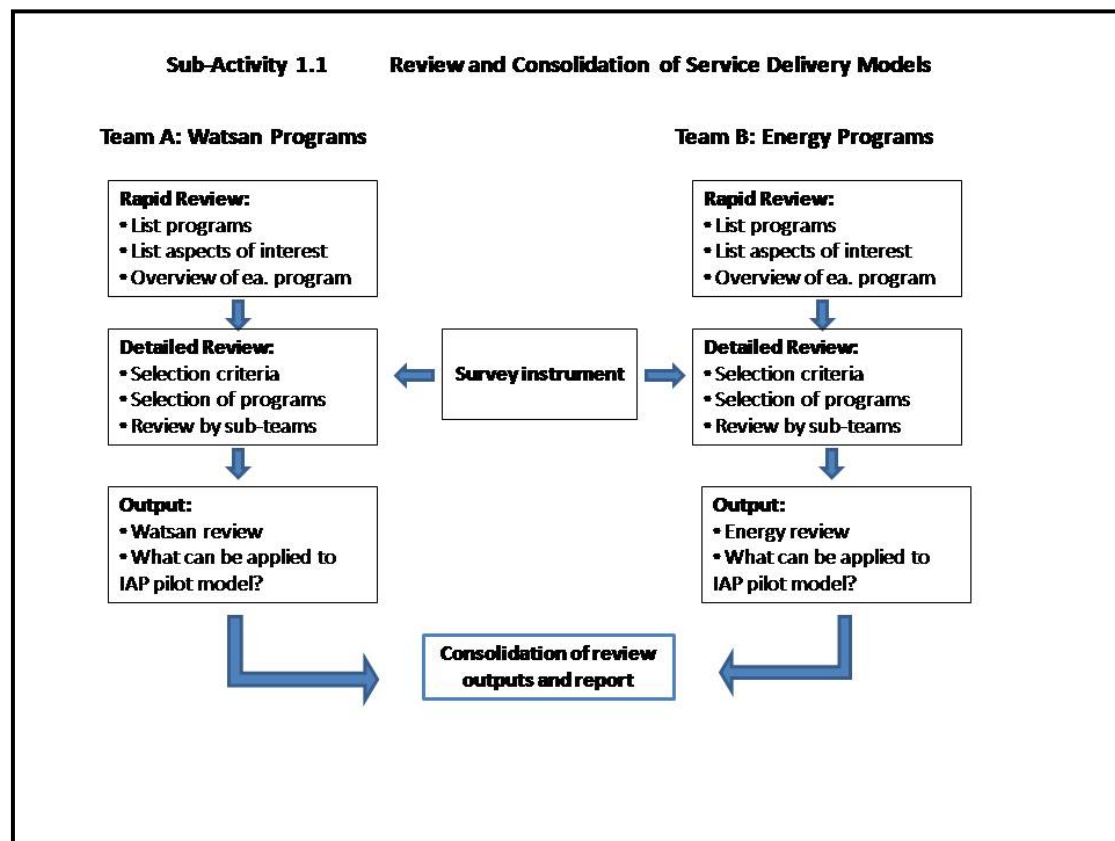
reports. The findings of the consultancy will be disseminated in a final workshop, which will also be aimed at getting commitment from key stakeholders.

METHODOLOGY

*Methodology for review and evaluation of service delivery models for possible use in and adaptation to IAP reduction programs
 (Component 1; sub-activity 1.1)*

The review and evaluation of service delivery models will primarily focus on renewable energy projects in Bangladesh; water and sanitation projects, with special emphasis on participatory methodologies such as the Community Led Total Sanitation approach; and; a review of selected projects undertaken by the Government of Bangladesh. The review will be undertaken in three phases: (i) rapid review of renewable/household energy and water and sanitation projects to be undertaken separately by Team A focusing on community based approaches in water and sanitation programs, specifically the Total Sanitation Campaign (TSC) and Team B focusing on renewable/household energy programs; (ii) detailed review of key aspects identified during rapid review, to be undertaken jointly by Teams A and B; and; (iii) consolidation of the findings of the detailed review along with the review of institutional arrangements of selected GOB programs to be undertaken by Team C. Team A is led by VERC while Team B is led by Winrock, and Team C is led by Winrock with VERC.

The diagram below presents an overview of the review process:



Details of each phase are presented below:

- **Rapid Review:** The main objective of the review process is to identify key features or innovative approaches in a range of renewable/household energy and water and sanitation programs. Aspects will be selected based on: (i) successes, (ii) failures/special lessons; (iii) innovation; (iv) potential for scale-up; (v) experience in overcoming challenges; and; (vi) the role of local governments. The rapid review will be undertaken by Team A (VERC) and Team B (Winrock) separately. Winrock will focus on the review of renewable/household energy programs while VERC will focus on the review of water and sanitation programs. The rapid review will consist of literature reviews and discussions with project implementers at the Dhaka level. Information will be collected for key aspects which have been identified during a joint WB-Winrock-VERC meeting in Dhaka on 11 September 2007. The aspects are:
- a. Financial and market development – identifying successful approaches to financing and enterprise development, including monitoring mechanism
 - b. Community engagement – exploring effective, innovative and participatory approaches to community mobilization
 - c. Demand creation and marketing – exploring effective and sustainable mechanisms for demand creation, and product marketing
 - d. Technology – identifying successful approaches to introducing improved cooking or sanitation technologies, operation and maintenance issues and monitoring system for user feedback and quality control
 - e. Scaling-up and replicability – identifying key catalytic elements for scale up, key actors, and role of stakeholders
 - f. Institutional arrangements – exploring the service delivery mechanism to identify key constraints and incentives, role of stakeholders, and inclusiveness with regard to hard core poor households

The programs selected for rapid review by Teams A and B are presented below:

Team A: Water and Sanitation Programs	Team B: Household Energy Programs
<ul style="list-style-type: none"> ▪ Water and Sanitation Project (WSP) World Bank - DISHARI Project ▪ Partnership Program of NGO Forum ▪ Department of Public Health Engineering (DPHE) – United Nations Children’s Fund (UNICEF) - Total Sanitation project ▪ BRAC – Water, Sanitation and Hygiene (WASH) program ▪ Dhaka Ahsania Mission – DANIDA - Decentralized Total Sanitation ▪ CARE’s WatSan Program ▪ VERC - People Initiated 100% Sanitation ▪ DPHE-Danish International Development Agency (DANIDA) – Hygiene Sanitation and Water project (HYSAWA) ▪ DPHE - Rural pipe water supply project 	<ul style="list-style-type: none"> ▪ Improved Stove/Biogas Program – Bangladesh Council for Scientific and Industrial Research (BCSIR)/LGED ▪ Solar Home Program – World Bank/Infrastructure Development Company Limited (IDCOL) ▪ IAP Reduction Program – USAID/ Winrock /VERC ▪ VERC’s Improved Stove Program – Asia Regional Cookstove Program (ARECOP) ▪ Biogas and Manure Program – Netherlands Development Organization (SNV)/IDCOL ▪ Sustainable Energy Development program – GTZ ▪ Grameen Shakti’s programs in Solar Home Systems, biogas and improved stove ▪ Practical Action’s program on Greenhouse Gas (GHG) reduction ▪ BRAC’s improved stove program ▪ Ahsania Mission’s Fuel Saving Program

Winrock and VERC will prepare a combined report, based on their findings from the rapid review.

➤ **Detailed Review:** This phase of the review will be jointly undertaken by Teams A and B (VERC and Winrock). After the rapid review, the key aspects of each project will be identified. Teams A and B will then propose a short list of renewable/household energy and water and sanitation programs/projects to review in-depth. For the detailed review, Teams A and B will be integrated to form six sub-teams to review the aspects detailed above, across each of the short-listed renewable/household energy and water and sanitation projects. The sub-team structure is given below:

<i>Aspect Themes</i>	<i>Sub-Team Members</i>	
	Team A (VERC)	Team B (Winrock)
i. Financial/Economic	Yakub Hossain /Anowarul Islam	Suman Basnet/Lutfiyah Ahmed
ii. Institutional	Qumrul Islam /Subash Saha	Thomas Costa/ Suman Basnet
iii. Social	Subash Saha / Qumrul Islam	Lutfiyah Ahmed
iv. Technical	Hasan R. Khan /Anowar H. Mollah	Lutfiyah Ahmed/Redwanoor Rahman
v. Scaling-up	Yakub Hossain/Hasan R. Khan	Suman Basnet /Lutfiyah Ahmed
vi. Documentation	Anowar H. Mollah / Hasan R. Khan /Qumrul Islam	Lutfiyah Ahmed / Thomas Costa

The aspects listed under Rapid Review have been bundled into five themes:

- i. Financial/Economic: This category will look into the aspects for financial and market development and demand creation and marketing;
- ii. Institutional: This category will look into the aspect for institutional arrangements;
- iii. Social: This category will look into the aspect for community engagement;
- iv. Technology: This category will look into the aspect for technology; and;
- v. Scaling-up: This category will look into the aspect for scaling up and replicability.

Documentation has been added as a separate theme and entails the compilation of all documents and reports for consolidation by Team C. Highlighted names indicate the team leaders for each sub-team. The team leader will be responsible for overseeing the research activities for their respective sub-teams, and consolidating the aspect-specific review of renewable/household energy and water and sanitation projects. Each sub-team will produce a mini-report for each of these aspect categories. The team leaders will lead the development of these mini-reports. The mini-report will contain detailed information based on the methodology presented later in this section. For the detailed review, each sub-team will review at least two projects each in the water and sanitation and household energy sectors. VERC and Winrock will propose an outline for the mini-reports to ensure consistency in information collection and reporting.

The detailed review will include field based data collection and validation of information collected during the rapid review. Information will be collected using a range of tools including focus group discussions, case studies, key informant interviews (KII), semi-structured interviews (SII), household level survey and thematic roundtables, based on key aspect themes: financial, institutional, technical, social and scaling up. Target groups will include participating and non-participating households, implementing organization field staff persons, local entrepreneurs, local government including LGED staff persons and engineers, community leaders and other organizations providing support (if any).

For collection of field level information for renewable/household energy programs, it is proposed that one Focus Group Discussion (FGD) be conducted per site visited. There may be 10-15 household representatives/participants at each session covering various socio-economic categories, user and non-user households, etc. It is expected that candidates for two case studies, providing detailed insights into households' experience with improved cooking technologies, can be identified from each FGD session. In addition, key informants, such as entrepreneurs, community mobilizers, field level implementation staff persons and local government representatives will be consulted through semi-structured interviews. Information collected during the rapid review can be verified during these discussions and key issues identified during the FGDs can be raised and explored further. The methodology presented under Consolidation, also indicates the type of tool that may be utilized to collect information on each aspect.

Three thematic roundtables will be held in conjunction with exposure visits so that stakeholders from both energy and sanitation programs can participate in these sessions. For the exposure visits, VERC will bring key stakeholders from energy programs to watsan

program areas and vice versa. The roundtables will be based on the five aspect themes (financial/economic, institutional, social, technical, scaling-up) and will provide an opportunity to discuss the challenges for each of these themes with key stakeholders from renewable/household energy and water and sanitation programs. Winrock and VERC are working to develop a detailed survey instrument which will be used to collect information for both renewable/household energy and water and sanitation programs.

- **Consolidation:** Team C, led by Winrock with VERC, will consolidate the outputs of the detailed review, which will include five mini-reports on the review of a range of aspects of interest in the renewable/household energy and water and sanitation projects. Moreover, additional GOB projects, including a select number of WB funded projects, will be reviewed for institutional arrangement and these findings will be integrated with those of the detailed review. Projects reviewed for institutional arrangements will be in the areas of poverty reduction, local governance, water supply, and other programs which provide valuable and replicable examples of institutional models for service delivery. Programs reviewed may include Health and Population program, Bangladesh Water Supply Program, Local Government Support Project, among others.

The outcome of the consolidation process will be presented as Draft Report 1. The technical contributions on review and consolidation will be included in VERC's Draft Report 1. The timeline in Annex I provides detailed information on activities and key deliverables.

A preliminary outline for Winrock's Draft Report 1 is presented below:

Outline for Draft Report 1 (Consolidation of Detailed Review)

1. Overview of review process
 - a. Rapid review
 - b. Detailed review
2. Methodology of detailed review
3. Findings
 - a. Detailed review
 - b. Thematic roundtables
 - c. Review of institutional arrangements in GOB programs
4. Analysis
 - a. Financial
 - b. Institutional
 - c. Social
 - d. Technical
 - e. Scaling-up
5. Key challenges and recommendations
6. Annex
 - a. Sub-team reports
 - b. Notes from roundtables
 - c. Survey instrument
 - d. Summary of survey reports
 - e. Case studies
 - f. Rapid review reports

The WB and LGED will be consulted at each phase of the review process, including during selection of projects for review, identification of key aspects to be explored in-depth for each project, methodology for data collection, selection of sites for field survey and thematic roundtables.

The following table presents the key questions to be considered for the aspects to be reviewed in the energy and sanitation projects:

Key Questions for Aspects
<p>Community Engagement:</p> <ol style="list-style-type: none">1. What is the ignition point for change in behavior/technology adoption2. What was the process for community mobilization (involvement/style of entry)<ul style="list-style-type: none">- Role of community households- Role of implementation team- Rapport building methodology- Involvement of community leaders- Issues and methodologies for analysis (gender, well being status, governance of CBOs)- Process of CBO formation (institutional arrangement/action plan /role and responsibilities of CBO)- Process of catalysts/volunteer- Role of facilitating organization/implementing partners- How is resource mobilized in the community level?- What is the implementation arrangement/Execution of action plan- What is the monitoring arrangement? (participatory/external)- What is the impact of these activities?- What are phasing out/ exit strategies?3. How is the resource mobilized in the community level?4. What is the implementation arrangement/ action plan5. What is the monitoring arrangement? (participatory/external)6. What is the impact of these activities?7. What are phasing out/ exit strategies? <p>Demand creation and marketing:</p> <ol style="list-style-type: none">1. How is demand created?<ul style="list-style-type: none">- Methodology for demand creation- Link with WB and other agencies2. Is there a specific marketing approach?<ul style="list-style-type: none">- Integrating with other technologies/mart3. How is consumer preference addressed in demand creation and marketing strategies?4. Is there a social marketing approach?5. Who are the key actors in demand creation and marketing activities?6. How many people have adopted improved the technology/behavior, as a result of the activities?7. What marketing materials have been distributed?8. Which materials are most effective?<ul style="list-style-type: none">- Product availability at door steps? <ol style="list-style-type: none">1. Availability of information on product2. Demand creation and marketing strategies beyond the project <p>Technology:</p> <ol style="list-style-type: none">1. How was the technology identified?2. Is the technology validated or proven?

- Tested by households; tested in labs/in the households (Controlled Cooking Test (CCT), Kitchen Performance test (KPT), Water Boiling Test (WBT), emissions measurements etc.)
- 3. What is the role of the beneficiaries in providing feedback on technology design?
- 4. How was the feedback incorporated in the final design?
- 5. What are the perceived benefits of technology proved?
- 6. What are operation, maintenances and usage issues? (durability)
- 7. What are the training needs for technology construction and use?
- 8. Are raw materials for technology construction locally available?
- 9. Is the technology accessible?
- 10. What are the technology safety issues
- 11. **Monitoring mechanism**
 - Follow up
 - quality control
- 12. **Overall popularity of technology beyond project**
 - # of units installed after project, demand
- 13. **Process of technology dissemination**

Financing and Enterprise Development:

1. Does the project include a market development component?
2. What are the entrepreneur selection criteria?
3. What are the training needs for entrepreneur development?
4. Do entrepreneurs have access to financing?
5. **What is the financing mechanism?**
 - Credit
 - Subsidy
 - Self financing
 - Investment
6. Are loans tied to technology quality?
7. **What is the monitoring mechanism for:**
 - Loan disbursement
 - Loan utilization/recovery rate
8. Is there any link with local government institutions (LGI)/LGED

Scaling up and replicability:

1. What are the key “catalytic element” for scale in your project
2. Who are key actors for scale-up?
3. What is the role of the local government?
4. What is the role of community based organizations (CBOs)?
5. What are the challenges faced for scaling up/replicability?
6. How were these challenges overcome?

Institutional arrangement:

1. How is the service being provided?
2. Who are key actor for service delivery (institution, LGI, entrepreneur)
3. What are the incentives for key actors to provide services?
4. What are incentives for key actors to provide services?
5. What are the barriers for key actors?
5. What is the accessibility to services with respect to different socio-economic classes?
6. How can the hard-core poor get access to services?
7. Are there linkages with other institutions? (Micro-finance, CBO, local government)

8. How will service delivery continue beyond the project?
9. Do CBOs have linkages with existing institutions (LGI, health, education)?

The following tables present a range of tools that have been identified by the VERC and Winrock team for information collection on each of the aspects from different stakeholders. It should be noted that this is meant to serve as guidance material and the final format will be presented in the methodology under preparation.

Tools for Information Collection	
Community Engagement	Demand creation and marketing
<p><i>Local Government</i></p> <ul style="list-style-type: none"> - Semi structured interview - Focus Group Discussions (FGD) <p><i>Organizations</i></p> <ul style="list-style-type: none"> - Semi structure interview - Open discussion - Literature review <p><i>Field staff/extension workers/CBOs</i></p> <ul style="list-style-type: none"> - FGD <p><i>Households (users/non-users)</i></p> <ul style="list-style-type: none"> - Open discussion - FGD 	<p><i>Organizations</i></p> <ul style="list-style-type: none"> - Review of materials and reports - Semi Structured Interview (SSI) <p><i>Field staff/extension workers</i></p> <ul style="list-style-type: none"> - FGD <p><i>Community leaders</i></p> <ul style="list-style-type: none"> - Open discussion <p><i>Entrepreneurs</i></p> <ul style="list-style-type: none"> - SSI <p><i>Households (users/non-users)</i></p> <ul style="list-style-type: none"> - Observation - FGDs
Technology	Financing and Enterprise Development
<p><i>Local Government</i></p> <ul style="list-style-type: none"> - Semi structured interview <p><i>Organizations</i></p> <ul style="list-style-type: none"> - Literature review - Review of manuals <p><i>Field staff/extension workers/promoters</i></p> <ul style="list-style-type: none"> - FGD <p><i>Households (users/non-users)</i></p> <ul style="list-style-type: none"> - Physical observation - Open discussion 	<p><i>Local Government</i></p> <ul style="list-style-type: none"> - Semi structured interview <p><i>Organizations</i></p> <ul style="list-style-type: none"> - Literature review - Review of manuals <p><i>Financial Institutions</i></p> <ul style="list-style-type: none"> - SSI <p><i>Field staff/extension workers/promoters</i></p> <ul style="list-style-type: none"> - FGD <p><i>Entrepreneurs</i></p> <ul style="list-style-type: none"> - FGD <p><i>Households (users/non-users)</i></p> <ul style="list-style-type: none"> - Physical observation - Open discussion - FGD
Scaling-up and Replicability	Institutional Arrangement
<p><i>Local Government</i></p> <ul style="list-style-type: none"> - FGD - Key informant interview (KII) <p><i>Organizations</i></p> <ul style="list-style-type: none"> - Literature review - KII <p><i>Field staff/extension workers/promoters</i></p> <ul style="list-style-type: none"> - FGD 	<p><i>Local Government</i></p> <ul style="list-style-type: none"> - SSI <p><i>Organizations</i></p> <ul style="list-style-type: none"> - Literature review - SSI - KII <p><i>Field staff/extension workers/promoters</i></p> <ul style="list-style-type: none"> - SSI

<p>Entrepreneurs - FGD Households (users/non-users) - FGD - KII</p>	<p>Entrepreneurs - KII Households (users/non-users) - SSI - KII</p>
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As mentioned before, Team C will consolidate the findings from Teams A and B. The following is a list of key outcomes of the review and consolidation exercise:

- A service delivery model, and identification of barriers and constraints to linking household energy and IAP reduction, with total sanitation, and, solutions and risk mitigation measures .

Structures for Team B and Team C

The following table presents the structures for Teams B and C:

Team B	
Lutfiyah Ahmed	Lead Team B in collecting information during rapid review, detailed review and consolidating lessons learned from relevant renewable/household programs on approaches and technologies effective in reducing IAP; Support sub-teams to review financial, technical, social and scaling-up of renewable/household energy and watsan programs.
Suman Basnet	Support Team B rapid review, detailed review and consolidating lessons learned from relevant renewable/household energy programs; Lead sub-team to review scaling-up of renewable/household energy and watsan programs; Support sub-teams in the review of financial/economic and institutional aspects of renewable/household energy and watsan programs.
Redwanoor Rahman	Support Team B in rapid review, detailed review and consolidating lessons learned from relevant renewable/household energy programs; Collect field level information during detailed review; Support sub-team in review of renewable/household energy and watsan technologies; Liaise with VERC to organize thematic roundtables.
Thomas Costa	Review methodology for information collection; Review draft and final reports; Support sub-team to review institutional arrangements in renewable/household energy and watsan programs.
Mashihur Rahman	Maintain day to day communication between project partners including WI, VERC, WB and LGED; Review methodology for information collection; Collect field-level information by conducting FGDs and case studies.
Anowar Mollah	Liaison from Team A to report on Team A findings; Support sub-team in review of technologies in renewable/household energy and watsan programs; Lead the documentation of sub-team reports; Lead organization of thematic roundtables in conjunction with exposure visits.
Team C	
Hasan Rashid Khan	Lead the integration of research findings from sub-team reports by preparing a draft report and contributing to the final, consolidated report

	for Team C.
Lutfiyah Ahmed	Develop a common methodological framework; Support integration of research findings from sub-team reports; Support preparation of reports; Coordinate Team research and reporting formats.
Suman Basnet	Support integration of research findings from sub-team reports; Support preparation of reports
Institutions Coordinator	Support Team C in collecting information for review of select GOB programs for institutional models for service delivery; Support organization of thematic roundtables.
Anowar Mollah	Coordinate input from VERC
Thomas Costa	Support development of methodological framework; Review draft and final reports;

Methodology for technical contributions on the design and development of an institutional framework for a pilot IAP program;

(Component 1; sub-activity 1.2)

One of the core activities of the assignment, this sub-activity will be based on the outcomes of Components 1, 2, 3. The objective of this task is to identify a design and institutional model for scale-up of indoor air pollution reduction activities. The task will include developing a project concept document for a large scale IAP reduction program that describes a detailed approach, components of the program, potential beneficiaries, institutional and delivery arrangements, and project outcomes, with focus on the multiple benefits to project participants. The project concept will also recommend areas for implementation. The research outcomes under sub-activity 1.1 will provide some guidance on suitable project areas and the final decision will be made after consultation with project partners, LGED and the WB team.

A monitoring and evaluation (M&E) framework will be developed to detail information collection process to track project progress against set indicators and project results; assign roles and responsibilities; and ensure that data is properly recorded, collected and processed. VERC will lead the development of the pilot model and M&E framework.

It is expected that the outcome of sub-activity 1.1 will provide some indication about the possible design and institutional structure of a scale-up program. The manuals developed under sub-activity 2.1 will provide viable participatory tools and cooking technologies, to be recommended in the project design. Lastly, the outcomes of Component 3 - Development of guidelines for integrating community based health surveillance into IAP programs – will provide further guidance on the most appropriate tools and, possibly, potential project locations. Awareness raising activities such as district level workshops and exposure visits will help to solidify proposed approaches through validation from stakeholders and local communities. The project plan will be presented at a national level final workshop at the end of the project period, where further comments and feedback will be solicited from key stakeholders.

Winrock will assist with the development of the outline for the project concept document (PCD) and provide inputs on best practices and key findings, based on the review and evaluation of

community based approaches in watsan programs, renewable/household energy programs, and service delivery models. Winrock will also provide input and feedback on the selection of pilot project areas to ensure that it is consistent with the findings from the other activities; and; will consult with VERC, WB, LGED, and ICDDR,B, during this process.

Winrock will review the M&E framework to ensure that all key indicators have been included and the monitoring process is consistent with the outputs of the project. Winrock will also provide feedback on VERC's final report which will include the pilot design.

The technical contributions to the design of the IAP reducing institutional framework will be included in Winrock's Final Report. VERC's final report will contain the pilot design concept.

The following is a list of key outcomes of the pilot design exercise:

- Consensus among key stakeholders including LGED, World Bank on the proposed Pilot design;
- Institutional arrangements for an IAP Pilot;
- Identification of tentative pilot areas through dialogue with LGED on criteria for area selection for the pilot;
- Pilot project incorporating relevant best practices from ongoing IAP and watsan projects, with special emphasis on linking these two intervention areas to promote a holistic approach to overall health improvement in rural and urban poor communities in Bangladesh.

Plan for final workshop, development of proceedings and information dissemination

(Component 1; sub-activity 1.3)

The primary objective of the final workshop is to share the findings of the review of delivery services, promote the manuals developed and solicit feedback and comments on the pilot project model developed. The project team expects that the workshop will provide an opportunity for stakeholders to “buy-in” to the proposed pilot model and commit to actively participate in reducing indoor air pollution in Bangladesh. The final workshop may be organized with the WHO, as the organization plans to host an IAP workshop on an annual basis.

Since the pilot project model will have many components, ranging from technology, participatory methodologies, commercialization and sustainability, policy level implications, etc., the following thematic round tables may be organized during the event. These discussions will be held in parallel to each other and culminate in a session providing recommendations from respective discussions which may be incorporated into the closing discussions and project document. Thematic round tables may include the following topics:

- Financial/Economic issues;
- Institutional issues;
- Technical issues; and;
- Social issues

It is likely that discussions may be necessary beyond the scope of the workshop. Winrock proposes that a national level IAP committee be launched at the workshop, comprising of workshop participants. The WHO has already proposed the formation of an IAP network during the inception workshop. Winrock will coordinate with WHO as necessary, if such a network or committee is to be established. Issues raised at the workshop can be further discussed through an IAP listserv, which may be moderated through IAP related web pages on LGED's Renewable Energy Information Network (REIN) website. A national committee will help to foster communication between stakeholders and also help coordinate IAP related activities in the country. If possible, then an online discussion may be conducted via the website to help develop the workshop agenda.

Winrock will document and organize the outputs from each round table and the workshop as a whole for dissemination amongst workshop participants, members of the press (if needed), for posting on the IAP web pages, and for dissemination in the broader household energy and indoor air pollution community through available Partnership and network websites. A summary of the project, including outputs of the workshop may also be published in household energy related publications such as Boiling Point, Partnership for Clean Indoor Air (PCIA) Bulletin etc.

The summary proceedings of the final national workshop will be included in Winrock's Final Report.

Key outcome of this activity include:

- Dissemination of information regarding the proposed pilot design, outputs such as manuals and key reports that will trigger policy level changes among key stakeholders including decision makers, energy and health professionals among others.

Methodology for technical feedback on improved stove manual and manual for participatory tools and methodologies

(Component 2; sub-activity 2.1)

The objective of this task is to review successful community based programs to address indoor air pollution and water and sanitation issues, and consolidate these approaches in the form of manuals which will be used by stakeholders and implementers.

The manual for participatory tools and methodologies will include successful community based planning tools, behavior change methodologies and strategies, and social mobilization, including social marketing campaigns which have positively impacted indoor air pollution interventions by promoting improved behaviors, use of improved stoves, and greater awareness about the adverse impacts of indoor air pollution and use of traditional household energy devices. The manual will provide a menu of options for community based interventions that implementers can select for intervention purposes. The manual will also recommend which tools are most suitable under which conditions. VERC will lead the development of this manual.

The manual for improved stove technologies will include a range of cooking technologies which have been validated for performance and by local communities. It should be noted that only a handful of improved stoves promoted in Bangladesh have been tested on emissions and

efficiency. Given this situation, the team will collect all available information on performance and technology’s impact on indoor air pollution and recommend further testing or validation where required. Each stove technology will include information on technical design, construction procedure, operation and maintenance, average cost of construction, trouble-shooting, advantages and disadvantages from the user’s perspective. The information will be presented in a user friendly format. VERC will lead the development of this manual. Both manuals will be available in English and Bengali and be a key resource for household energy and indoor air pollution related interventions.

Winrock will provide technical feedback on the manuals. Feedback will be based on coherence, in depth-ness, and user friendliness of the manuals. Winrock will meet with VERC to develop an outline and methodology for information collection. It is expected that the researches carried out by Teams A and B will provide key information and help guide the development of the manuals.

The following table provides a list of key questions that will be considered while providing technical feedback on the manuals:

Manual on Improved Stove Technologies	Manual on Community Based Approaches
1. Does the manual include all available improved stoves being promoted in Bangladesh?	1. Does the manual discuss all available tools and methodologies?
2. Is there in-depth information on fuel use, stove performance, design specifications, pricing, use and maintenance?	2. Is there in-depth information on the tools presented?
3. Is the information for each of the stoves comparable to one another?	3. Is there information on pros and cons of each participatory tool?
4. Is the information clearly presented?	4. Does the manual provide flexibility in terms of a menu of options?
5. Are there recommendations on next steps, where stove performance data is not available?	5. Is the information clearly presented in the context of IAP reduction?
6. Does the information on stove performance take seasonality into consideration?	6. Is there information on the impact of the tools?
7. Is there adequate information on stove pricing and quality control issues?	

The technical feedback on the manuals developed will form part of Winrock’s Draft Report 2, whereas; the manuals will form part of VERC’s Draft Report 2.

Key outcome of manual development activities will include:

- Manuals on participatory approaches and improved cooking technologies, which will include consolidated information on approaches and technologies available in Bangladesh.

Awareness raising

(Component 2; sub-activity 2.2)

This sub-activity will include activities, such as exposure visits and local district workshops to share the outputs of Component 1 and 2, and get feedback on the proposed approach and raise awareness about the impacts of indoor air pollution. The exposure visits in particular will give an opportunity to local government representatives, NGOs and community leaders to experience, first hand, the benefits of a successful community based IAP reduction program and/or programs promoting improved cooking technologies.

VERC will lead this sub-activity and share outputs of the awareness raising activities, including summary proceedings of the inception workshop, as part of VERC's Draft Report 1.

Key outcomes of awareness raising activities include:

- Mobilization of key stakeholders such as selected Union Parishad chiefs and communities in selected TSC areas; and;
- Mobilization of private sector including private entrepreneurs and NGOs to take up IAP technology training, requirements of a training module/content, supply and installation of IAP reducing technologies, and maintenance support.

Plan for written contributions to the IAP website

The indoor air pollution website will be an important tool in disseminating indoor air pollution related information and raising the profile of the issue within the development community of Bangladesh. LGED's REIN website (www.lged-rein.org), which will be an appropriate platform for introducing web pages dedicated to indoor air pollution.

Winrock will provide updated information for the website on a monthly basis and coordinate the posting of all reports and manuals developed during the project period. In addition to contributing text for the IAP pages, Winrock will provide information on IAP and household energy related website and networks at the national and international level. These may include the PCIA, which Winrock helps to coordinate, the Household Energy Network (HEDON), Bioenergy lists, SPARKNET, Breathe Easy Network, GVEP, Energy Sector Management Assistance Program (ESMAP) among others. Winrock proposes to have quarterly website meetings with the WB team, LGED, and VERC, to review information available on the website and discuss communication and outreach activities through the website. It is expected that the IAP related pages of the REIN website will be a key resource for the final workshop planned for March 2008.

The written contributions to the IAP website will form part of Winrock's Draft Report 2.

Key outcome of this activity will include:

- Dedicated web pages for indoor air pollution with information on the progress of the World Bank-LGED IAP Initiative, information on other IAP related activities and

stakeholders in the country, and a platform for sharing relevant information and engaging in discussions.

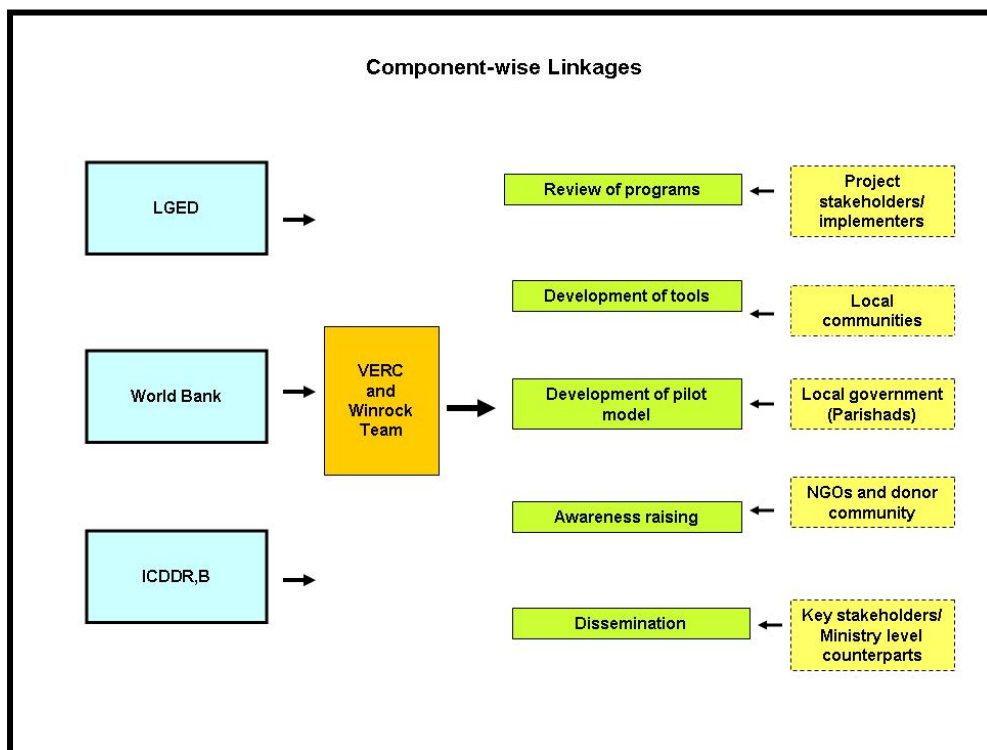
ROLES OF VERC AND WINROCK

As the lead organizations for this assignment, VERC and Winrock will work collaboratively and actively participate in all the sub-activities. The following table lays out the roles and responsibilities for each of the sub-activities under Components 1 and 2.

Sub-activity	Lead Organization	Support Organization
Component 1: Development of a Detailed Conceptual Design for a Pilot Project		
1.1 Review and evaluation of service delivery models	Winrock	VERC
1.2 Development of a design and institutional model for a pilot IAP program	VERC	Winrock
1.3 National workshop and thematic round tables	Winrock	VERC
Component 2: Consolidation of practical methods for IAP mitigation		
2.1 Consolidation of IAP reducing tools and technologies;	VERC	Winrock
2.2 Awareness raising	VERC	Winrock

COMPONENT WISE LINKAGES

The following diagram represents the component-wise linkages in the project.



The VERC and Winrock team will consult with the World Bank team, LGED and ICDDR,B. A number of stakeholders, ranging from local government, local communities, implementing NGOs, donors, and government line agencies will be consulted for the various tasks which are categorized under program review, development of tools and manuals, design of institutional pilot model, awareness raising and dissemination.

INSTITUTIONAL ARRANGEMENT

The VERC and Winrock team will work in close collaboration with the World Bank team, LGED and ICDDR,B. Regular consultations will also be held with key stakeholders, including German Technical Cooperation (GTZ), Grameen Shakti, WHO, IDCOL, among others.

It is proposed that the three organizations leading the three assignments, namely, ICDDR,B, VERC and Winrock, meet on a monthly basis to discuss the progress of work and any other issues and report back to the World Bank and LGED.

SCHEDULE OF ACTIVITIES

Please refer to the timeline in Annex I for information on the schedule of activities. A list of key deliverables and associated due dates is presented below:

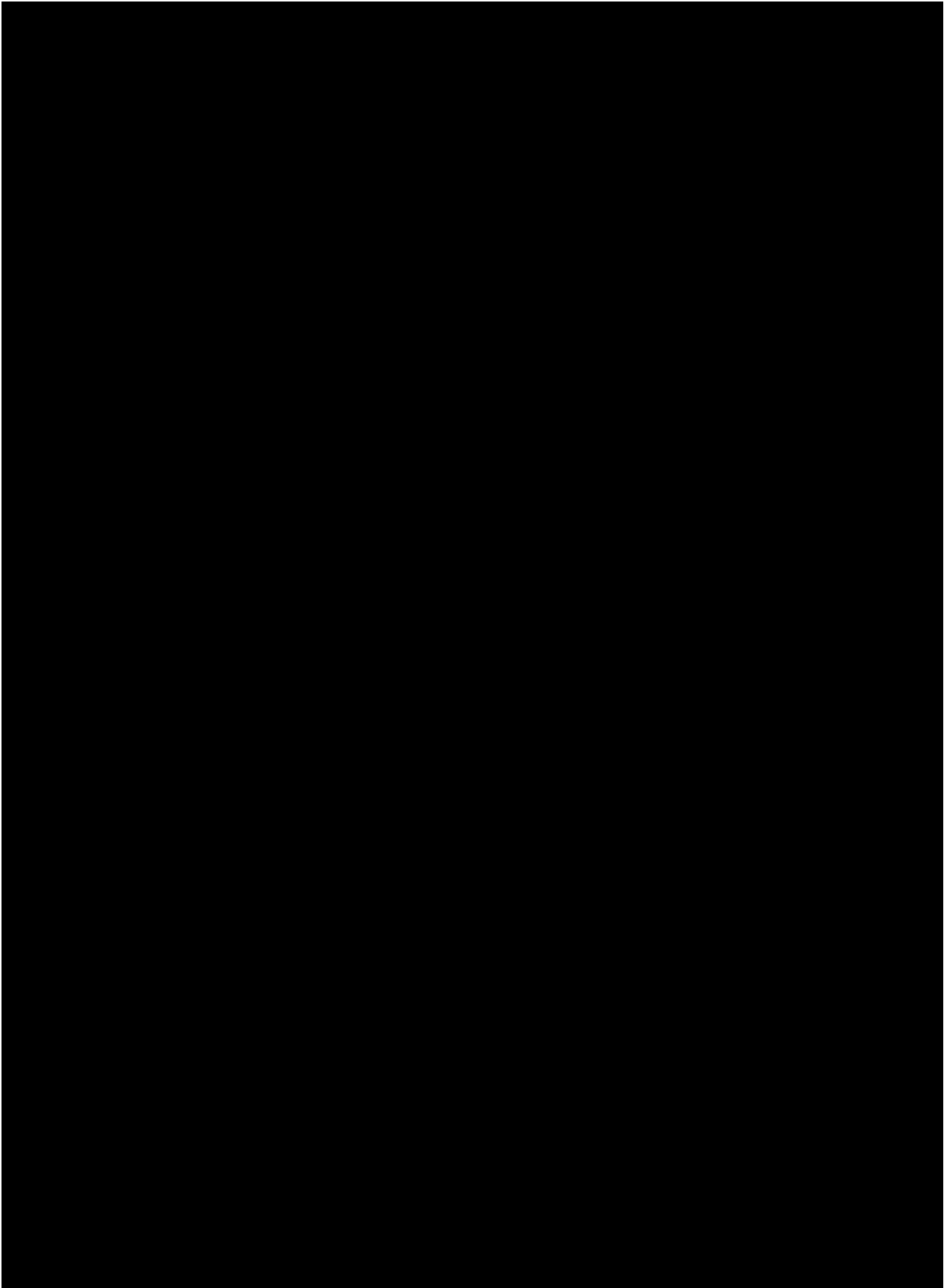
Deliverable	Report Content	Lead Organization	Due Date
1. Draft inception report	Project plan	Winrock and VERC	August 17, 2007
2. Final inception report	Project plan	Winrock and VERC	September 25, 2007
3. Report on rapid review	Outputs of rapid review	Winrock/VERC (jointly)	October 5, 2007
4. Draft report 1*	Consolidation of review outputs	Winrock	November 22, 2007
5. Draft report 1*	Technical contributions on review; summary of inception workshop, district level workshop, exposure visits	VERC	November 22, 2007
6. Draft report 2	Written contributions to IAP website; technical feedback on manuals	Winrock	February 27, 2008
7. Draft report 2	Manual on community based approaches and technology; update on summary proceedings from awareness workshops and exposure visits	VERC	February 27, 2008
8. Final Report	Technical contributions to design and institutional model of IAP pilot; summary proceedings from final workshop	Winrock	March 27, 2008

9. Final Report	Draft report 2; design of an institutional model for IAP reducing pilot	VERC	March 27, 2008
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**The team proposes to extend the deadline for Draft Report 1 from October 17, 2007 to November 22, 2007 due to Eid-Ul-Fitr and Durga Puja holidays during the 2nd and 3rd weeks of October. Given the sequence of activities, the deadline for Draft Report 2 has also been pushed back to February 27, 2008.*

ANNEXES

ANNEX I: TIMELINE *(the timeline is also available as an Excel attachment)*



ANNEX II: LIST OF KEY STAKEHOLDERS TO BE CONSULTED*

1. Bangladesh Council for Scientific and Industrial Research (BCSIR)
2. Bangladesh Rural Advancement Committee (BRAC)
3. Bangladesh Rural Development Board (BRDB)
4. Bangladesh University of Engineering and Technology (BUET)
5. Columbia University
6. Concern Worldwide Bangladesh
7. Department of Environment (DOE)
8. Dustho Shasthya Kendra (DSK)
9. German Technical Cooperation (GTZ)
10. Grameen Shakti
11. IDEA
12. Infrastructure Development Company Limited (IDCOL)
13. Local Government Engineering Department (LGED)
14. Local Government Institutions (LGIs)
15. Ministry of Environment and Forest (MOEF)
16. Ministry of Health and Family Welfare
17. Nature Conservation Movement
18. Population Services and Training Center (PSTC)
19. Practical Action
20. Prokousholi Sangstha Limited (PSL)
21. RahimAfrooz
22. United Nations Development Program (UNDP)
23. United States Agency for International Development (USAID)
24. WaterAid
25. World Health Organization (WHO)

**please note that this list is not prioritized.*

ANNEX III: LIST OF KEY DOCUMENTS TO BE REVIEWED*

1. Bangladesh Country Environmental Analysis, Volume I and II; June 2007, World Bank
2. Bangladesh Rural Sanitation Supply Chain and Employment Impact, 2006 ,Human Development Report 2006, Human Development Report Office Occasional Paper, Practical Action Consulting
3. Bangladesh: Community Based Local Governance Support Project, December 2005, World Bank
4. Bangladesh: Country Assistance Strategy (2006-2009)
5. Bangladesh: Poverty Reduction Strategy Paper, November 2005, International Monetary Fund
6. Bangladesh: Urban Service Delivery, a Score Card, May 2002, World Bank, Proshika, Survey and Research System
7. Changing Lives: Community Based Advocacy, February 2006, WaterAid Bangladesh
8. Dasgupta, S., et al, "Indoor Air Quality for Poor Families: New Evidence from Bangladesh, September 2004, Development Research Group, World Bank
9. Dasgupta, S., et al, "Who Suffers from Indoor Air Pollution? evidence from Bangladesh", October 2004, Development Research Group, World Bank
10. Davis, R., and Hirji, R., "Water Quality: Assessment and Protection", Water Resources and Environment Technical Note no. D 1., Water Quality Management Series, World Bank
11. Dhaka: Improving Living Conditions for the Urban Poor, August 2006, World Bank
12. Draft Renewable Energy Policy of Bangladesh, October 2002, Ministry of Energy and Natural Resources, Government of the People's Republic of Bangladesh
13. DSK: a Model for Securing Access to Water for the Urban Poor, March 2003, Fieldwork Report, WaterAid Bangladesh
14. Economic and Social Impact Evaluation Study of the Rural Electrification Program in Bangladesh, October 2002, NRECA International Limited
15. Eusuf M., Dissemination of Renewable Energy Technology in Bangladesh. Paper presented in the workshop on "Renewable Energy Sources: Social Acceptance and Economical Prospects in Bangladesh." German Cultural Centre, Goethe Institute, Dhaka January 8-11, 1995
16. Expanding Renewable Energy in Bangladesh, November 2005, Global Environmental Facility (GEF)
17. Feasibility of a National Program on Domestic Biogas in Bangladesh, August 2005, Netherlands Development Organization
18. Green Energy Program under Sustainable Rural Energy, Sustainable Rural Energy, Local Government Engineering Department
19. Implementation Plan: National Domestic Biogas and Manure Program in Bangladesh, January 2006, Infrastructure Development Company Limited, Netherlands Development Organization

20. Jinnah, S.I.A., “Case Study: Rights of Water Connections in Urban Slum Dwellers in Bangladesh, A Study on DSK’s Experience in Three Slums of Mirpur Dhaka”, March 2007, Advancing Sustainable Health, WaterAid Bangladesh
21. Khan A.H.M.R. et al., “The Development of Improved Cooking Stove Adapted to the Conditions in Bangladesh”, Final Report of Collaborative Research Project Between IFRD, BCSIR, Bangladesh & Eindhoven University of Technology, Eindhoven, the Netherlands sponsored by November 15,1995
22. Khan, A.H.M.R., “Development & Dissemination of improved stoves in Bangladesh”, National Workshop on Promotion of Renewable Energy, Energy Efficiency and Greenhouse Gas Abatement (PREGA), Dhaka, 2002
23. McLeod,D. and Tovo, M., “Social Services Delivery through Community Based Projects”, July 2001, Social Protection, World Bank
24. Opportunities for Women in Renewable Energy Technology Use in Bangladesh (Phase I), April 2004, Joint UNDP/World Bank Energy Sector Management Assistance Program (ESMAP) and Bank Netherlands Water Partnership Program (BNWPP)
25. Program Framework: Sustainable Energy Program, United Nations Development Program, Government of the People’s Republic of Bangladesh
26. Reduction of Exposure to Indoor Air Pollution through Household Energy and Behavioral Improvements: Final Report, September 2007, Winrock International, United States Agency for International Development
27. Shifting Millions from Open Defecation to Hygienic Latrines (Process Documentation of 100% Sanitation, Approach), February 2002, Village Education Resource Center
28. Targeting Resources for the Poor in Bangladesh, December 2005, Bangladesh Development Series – Paper no. 5, World Bank
29. The Bangladesh Integrated Nutrition Project: Effectiveness and Lessons, December 2005, Bangladesh Development Series – Paper no. 8, World Bank
30. To the MDGs and Beyond: Accountability and Institutional Innovation in Bangladesh, January 2007, World Bank
31. Total Sanitation in South Asia: the Challenged Ahead, May 2006, Discussion Paper, WaterAid Bangladesh

**please note that this list is not prioritized.*