

UNIFORM REPORTING FORMAT: ACTIVITIES IMPLEMENTED JOINTLY UNDER THE PILOT PHASE

A. Description of project

1) Title of project:

Burkina Faso sustainable Energy Management

2) Participants/actors

Please fill in one table for each participant/actor. For individuals fill in as from item “Function within activity”.

Item	Please fill in if applicable
Name of organization ^{a)}	Ministere de l’Energie et Mines
Name of organization (English):	
Department:	
Acronym:	MEN
Acronym (English):	
Functions within activity:	Burkina Faso government contact for project implementation
Street:	BP 3922
Post code:	
City:	Ouagadougou
Country:	Burkina Faso
Telephone:	226 34 0438
Fax:	226 34 0437
E-mail:	
WWW-URL:	
Contact person (for this activity):	
Surname:	Honadia
First name, middle name:	Mamadou
Job title:	Ingenieur CONAGESE
Direct tel:	226 31 2464
Direct fax:	226 31 6491
Direct E-mail:	

^{a)} Organization includes: institutions, ministries, companies, non-governmental organizations, etc. involved in the activity, i.e. research institutes associated with the project, auditors, government agency closely following the activity.

Item	Please fill in if applicable
Name of organization ^{a)}	
Name of organization (English):	Government of Norway Ministry of Foreign Affairs
Department:	Department of Natural Resources and Environmental Affairs
Acronym:	
Acronym (English):	
Functions within activity:	Governmental authority responsible for committing financial resources for AIJ projects and approval of AIJ project agreements and reports
Street:	Victoria Terrasse
Post code:	P.O. Box 8114 Dep
City:	N-0032 Oslo
Country:	Norway
Telephone:	47 22 24 36 03
Fax:	47 22 24 27 82
E-mail:	
WWW-URL:	
Contact person (for this activity):	Mr. Jostein Leiro
Surname:	Leiro
First name, middle name:	Jostein
Job title:	Head of Division
Direct tel:	47 22 24 36 08
Direct fax:	47 22 24 27 82
Direct E-mail:	

Item	Please fill in if applicable
Name of organization ^{a)}	
Name of organization (English):	World Bank
Department:	Environment
Acronym:	
Acronym (English):	ENVGC
Functions within activity:	Management and administration of the AIJ project on behalf of the government of Norway.
Street:	1818 H
Post code:	20433
City:	Washington DC.
Country:	USA
Telephone:	202-477-1234
Fax:	202-477-6391
E-mail:	ETANDBERG@WORLDBANK.ORG
WWW-URL:	www-esd.worldbank.org
Contact person (for this activity):	Mr. Eivind Tandberg
Surname:	Tandberg
First name, middle name:	Eivind
Job title:	Advisor, Program Manager
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^{a)} Organization includes: institutions, ministries, companies, non-governmental organizations, etc. involved in the activity, i.e. research institutes associated with the project, auditors, government agency closely following the activity.

3) Activity:

Item	Please fill in if applicable
General description:	At the time of project preparation in 1992, total energy consumption in Burkina Faso was 1.7 million tons of oil equivalent, of which 91% was from fuelwood, 8% from petroleum, and 1% from electricity. The principal energy consumers are the households (90%), followed by transport (6.8%) and industry and tertiary services (3.2%). On average, over 3.5 million tons of wood was harvested for fuel in 1992, and this amount has increased since then. A fast growing population and urban demand keep up the pressure on energy consumption. Current forestry practices are unsustainable and lead to depletion of carbon sinks.
Type of project: ^{a)}	Energy Efficiency/demand side management
Location (exact, e.g. city, region, state):	Mouhon and Koudougou, Burkina Faso
Activity starting date:	February 3, 1997, a letter of intent to implement the project was signed between the governments of Burkina Faso and Norway. June-July 1997 project actual implementation will begin.
Expected activity ending date:	June-July 2003
Stage of activity: ^{b)}	Mutually agreed.
Lifetime of activity if different from ending date: ^{c)}	Emissions impact of the activity will continue throughout the lifespan of the project. The pilot phase emissions reductions of 1.5 million tons of CO ₂ are based on a 6 year period including 1 year of project preparation. Monitoring and evaluation of emissions reduction for reporting to UNFCCC will be conducted on a continuous basis.
Technical data: ^{d)}	provided under section E of this report

^{a)} For example, using Intergovernmental Panel on Climate Change (IPCC) classification: energy efficiency; renewable energy; fuel switching; forest preservation, restoration; afforestation; fugitive gas capture; industrial processes; solvents; agriculture; waste disposal or bunker fuels.

^{b)} Circle the appropriate option.

^{c)} Methodological work will be required to define lifetime of activities.

^{d)} Methodological work will be required to determine for each type of activity what the minimum data requirements are.

Project Description

Project Goals. The overall goal of the AIJ project is to contribute additional resources to rural development by managing community forests which will enhance carbon sinks with a potential to sequester 1.5 million tons of carbon dioxide during a period of 5 years. This goal will be achieved through: (i) managing 300,000 ha of community based forest, (ii) promoting efficient charcoal processing technologies, (iii) introducing solar photovoltaic (PV) systems for household lighting and water pumping systems, and (iv) introducing efficient kerosene cooking stoves that will displace use of fuelwood.

Project Description. The project will introduce efficient carbonization techniques, community-based forest management, kerosene cooking stoves and promotion of solar photo-voltaic (PV) systems to rural communities.

Project Purpose. The purpose of the project is to demonstrate the potential of AIJ in the pilot phase. The project will facilitate the learning value from and participation in AIJ pilot phase. The project will enhance carbon sinks that will sequester carbon emissions and also introduce low-or non-carbon energy technologies. This effort will contribute to further development of AIJ methodological issues that will provide some solutions to unresolved issues on baseline, carbon crediting schemes, verification and monitoring of the GHG emissions.

4) Costs (to the extent possible)

Item	1997	1998	1999	2001	2002	2003	Total
Total cost of project in US\$ Million	1.0	3.0	14.0				18.0
AIJ component in US\$ Million	0.93	0.90	0.25	0.09	0.06	0.17	2.4
US\$ per avoided ton of CO ₂ equivalent							1.66

Describe briefly how costs are determined

Costs of the projects have been calculated by the Review of Policies on Traditional Energy Sectors (RPTES) in collaboration with the Burkina Faso Government Department of

Energy and Mines. RPTES commissioned a consultant who applied incremental costing methodology to determine the costs of the project provided below.

Inputs/Activities. The financial contribution towards meeting the project outputs is US\$2.5 million. US\$100,000 of the funds was used for financing an AIJ initiation workshop in February 4-6, 1997. The balance of US\$2.4 million will be used to finance the project activities in a period of 6 years as summarized below.

Cost and net cumulative of CO₂ emissions over 6 years

Component	Cost US\$	CO₂ Emissions Abatement in tons over 6 years
Forest management	970,000	245,000
Carbonization technologies	650,000	916,000
Improved cooking stoves	500,000	271,000
Solar PV systems	280,000	18,000
Total	2,400,000	1,450,000

Cost effectiveness. Costs attributable to avoided emissions can be defined in a period of 6 years, as the ratio of the total AIJ funding to the total emissions. (About 1.5 million tons of CO₂ will be abated at a unit cost of US\$1.66 per ton of CO₂.

5) Mutually agreed assessment procedures

Describe the procedures, including name of organizations involved^{a)} :

(1) Project Implementation. The Sustainable Forest Management component of the project will be assigned to Direction de la Foresterie Villageoise et de l'Amenagement Forestier (DFVAF) within the Ministry of Mines and Energy. The component on improved kerosene cooking stoves will be assigned to the Ministry of Social Affairs and Family Matters and Burkinabe Energy Institute. The PV system component will be the responsibility of Direction Generale de l'Energie (DGE), DFVAF and the interministerial RPTES in collaboration with local NGOs. The arrangements for the implementation of the project are being done by the Government of Burkina Faso through a coordination Unit.

(2) Monitoring and Evaluation. The tasks of the monitoring and evaluation will consist of systematic periodic recording and analysis of both project activity and project financial indicators, analysis of both project and process impact and analysis of project sustainability. Monitoring and analysis of project sustainability will be done to ascertain the ability of rural communities to manage the forest. Financial indicators will assess the actual disbursement schedule against the anticipated cash flow. The market ability to sustain the sales and production of kerosene stoves and PV systems will be assessed and replacement of defective stoves and PV systems will be put into account.

(3) Emissions Reductions. Projects of emissions reductions including technical parameters to be used, baseline estimation, and the plan for monitoring the quantities of emissions will be conducted in collaboration with Burkina Faso National Coordinator of Climate Change (CIMAC).

B. Governmental acceptance, approval or endorsement

Bearing in mind that all activities implemented jointly under this pilot phase require prior acceptance, approval or endorsement by the Governments of the Parties participating in these activities, which shall be shown as follows:

(a) In the case of joint reporting, the report is submitted by the designated national authority of one participating Party with the occurrence of all other participating parties as evidenced by attached letters issued by the relevant national authorities;

^{a)} Please ensure that detailed contact information for all organizations mentioned is reported under section A.2 above.

(b) In the case of separate reporting, the reports are submitted separately by the designated national authority of each and every participating Party. Information will only be compiled once reports have been received from all participating Parties.

1) For the activity:

- First report and joint reporting: please add copies of letters of endorsement by each designated national authority of Parties involved in the activity.
- Subsequent reports

Activity was: ☐ suspended
☐ terminated earlier

Describe:

2) This report is a joint report:

☒ Yes, forward copy of agreement/endorsement by the designated national authorities involved
☐ No

3) General short comment by the government(s) if applicable:

The items of the report describing the project and its effects have been the primary responsibility of the Government of Burkina Faso. The investor specific items has been completed by the Government of Norway. The World Bank, as an implementing agency, has provided assistance and advise in the preparation of the joint report.

C. Compatibility with and supportiveness of national economic development and socio-economic and environment priorities and strategies

Describe (to the extent possible) how the activity is compatible with and supportive of national economic development and socio-economic and environment priorities and strategies

Project Outputs. The project components that lead directly to the outputs include: 300,000 ha of community-based forest management, carbonization technologies, solar PV systems, improved cooking stoves and an AIJ workshop.

1. *Community-based forest management.* In a period of 6 years beginning in 1997, 300,000 ha of forest land will be managed by a local community under “Gestion de Terroir”. This natural resource management concept of Burkina Faso, is consistent with the World Bank policy on sustainable forest resource management. Community-based forest management allows for the integration of other potential land uses and investment opportunities in fuelwood trade, timber exploitation agricultural activities and pastoral practices. The project will develop capacity to monitor forest fires, undertake vegetation inventory, strengthen local community institutions for managing forests and create markets for fuelwoods.

2. *Carbonization technologies.* The project will contribute to a policy that will assist in organizing current institutions and the charcoal industry. This policy will encourage the use of better charcoal processing techniques, sustainable harvest of forests for charcoal production and trade. At present, the incentives towards charcoal processing include exceptions from stumpage fees and transportation tax. These are dis-incentives to fuelwood dealers who cut down forests for direct use as fuels and also reduces carbon sinks and minimizes the potential for carbon sequestration. It is estimated that the introduction of carbonization technologies in Burkina Faso will improve energy efficiency by 25%.

3. *Solar PV systems.* Solar photovoltaics are non carbon energy technologies used on a limited scale in Burkina Faso. The project will introduce the use of PV systems in the local communities. Lighting is a basic need in Burkina Faso and is currently satisfied through fuelwood and kerosene. Other needs include water, currently pumped by hand or with diesel pumps, refrigerators needed for storing medicine are not available, radios and television particularly for world news which are currently operated by car batteries.

4. *Improved kerosene cooking stoves.* The project will introduce alternative sources of energy. Projections show that dependence on fuelwood threatens the existence of forests in future. The improved kerosene cooking stoves will supplement increasing urban demand for energy.

5. *AIJ workshop.* A project initiation workshop was held on February 4-6, 1997 at Ouagadougou, Burkina Faso. The workshop was attended by 50 participants from Western, Eastern and Southern African Countries as well as NGOs, the World Bank, UNEP, UNDP, UNFCCC Secretariat, Denmark (DANIDA), Germany (GTZ) and Norway, Ministry of Foreign Affairs. The workshop discussed the practical aspects of AIJ in Burkina Faso and the implementation process. The workshop report was published and distributed as information to interested Parties of the Conference of the Parties, organizations and interested members of the public.

D. Benefits derived from the activities implemented jointly project

Whenever possible, quantitative information should be provided. failing that, a qualitative description should be given. if quantitative information becomes available, it could be submitted using the update(s). (If the amount of quantitative information is too large, the source could be indicated.)

Item	Please fill in
Describe environmental benefits in detail:	1.5 million tons of CO ₂ will be reduced by the project. Over 300,000 ha of forest land will be managed enhancing carbon sinks. Low and non carbon technologies will be introduced through carbonization, PV systems and kerosene stoves.
Do quantitative data exist for evaluation of environmental benefits?	Yes, 300,000 ha of community managed forest, annual reduction of 0.3 million tons of CO ₂ , 25% improvement in energy efficiency, installation of 10,000 units of PV systems, introduction of 8,000 improved cooking stoves.
Describe social/cultural benefits in detail:	The community-managed forest will provide shelter, regulate micro climatic conditions, provide construction poles, break the wind and minimize wind soil erosion, provide fodder for the cattle and wildlife, provide herbal medicine for the pastoralists and keep the soil moist. Additional financial and technological resources will enhance institutional and human capacity required for enhancing carbon sinks, applying low and non carbon energy technologies, training and creating awareness on the dangers of CO ₂ emissions.
Do quantitative data exist for evaluation of social benefits?	Yes, 250 villages involved in full project implementation.
Describe economic benefits in detail:	Local communities will be involved in direct charcoal processing and selling on local and national markets. The PV systems and kerosene stoves will be acquired and distributed and sold by local communities. Direct payments will be made to local communities involved in forest management schemes.
Do quantitative data exist for evaluation of economic benefits?	Yes, community managed and non managed resources, 100,000 tons of wood harvested annually and transported by trucks for sale as sources of fuel in cities.

E. Calculation of the contribution of activities implemented jointly projects that bring about real, measurable and long-term environmental benefits related to the mitigation of climate change that would not have occurred in the absence of such activities

1) Estimated emissions without the activity (project baseline):

Description of the baseline or reference scenario, including methodologies applied:

The baseline assumption for the project is the continued use of fuelwood directly by project participants. It is assumed that over the lifespan of project the government of Burkina Faso will not be able to initiate charcoal processing technologies, PV systems and improved kerosene cooking stoves. These assumptions are based on the economic hardships of the country with a Gross National Product (GNP) per capita of US\$300.

The baseline condition is the harvest of estimated 300,000 ha of forest for fuelwood consumption. The amount of emissions required by the baseline is calculated on the basis of the following parameters and assumptions.

BURKINA FASO COMPONENT I: IMPROVED CARBONIZATION

The project introduces new carbonization techniques for household charcoal production, reducing loss of forest cover.

Baseline: Business-as-usual amount of fuelwood harvested for charcoal production; no improvement in carbonization technology.

AIJ Scenario: Less fuelwood harvested for same amount of charcoal through improved carbonization techniques.

Parameters and assumptions:

- Increase in carbonization efficiency from 12% to 25 % through AIJ.
- Net CO₂ abatement of 1.7 tons per ton of fuelwood not harvested.
- Estimate of charcoal consumption for 1997 based on 1992 figures with a 10% annual increase, gradually decreased over project time towards population growth rate.
- 50% success rate for first 3 years; progressive increasing to 80% through last 3 years.

Abatement: 1st 6 years: 916,000 tons CO₂; 30 years: 15.2 million tons CO₂.

BURKINA FASO COMPONENT II: SUSTAINABLE FOREST MANAGEMENT

The project supports the establishment of community-based sustainable forest management systems.

Baseline: 300,000 ha of community-managed forest area implemented under business-as-usual scenario with 50% sustainability.

AIJ Scenario: Managed forest areas located near national parks, reserves, protected areas constituting well managed buffer zone. Training, environmental education, information, monitoring and evaluation, women's interest assumed to guarantee 100% sustainability.

Parameters and assumptions:

- 1 ton of fuelwood saved = 1.7 ton of CO₂ sequestered
- 50% of the cumulative harvested wood during 30 years period used to calculate CO₂ abatement.

Abatement: 1st 6 years: 245,000 tons of CO₂, 30 years: 3.8 million tons CO₂.

BURKINA FASO COMPONENT III: KEROSENE STOVES

The project introduces kerosene stoves to replace fuelwood used in households.

Baseline: Increasing urban fuelwood demand and unsustainable wood harvesting over 30 years.

AIJ Scenario: Kerosene stoves to replace part of urban charcoal demand, reducing wood harvesting.

Parameters and assumptions:

- Fuelwood harvest based on linear increase reaching 306,000 tons in year 30.
- 15 % burning efficiency for fuelwood, 43% for kerosene stoves.
- 1 ton of kerosene = 3.1 tons of CO₂.

Abatement: 1st 6 years: 271,000 tons CO₂, 30 years: 6,006,000 tons CO₂.

BURKINA FASO COMPONENT IV: SOLAR LIGHTING AND WATER PUMPING

The project introduces solar units for lighting and water pumping to rural households using increased income from sustainable forest management.

Baseline: Solar units for lighting and water-pumping remain unaffordable.

AIJ Scenario: Rural communities spend increased revenues from community-based forest management on solar home units and waterpumps, replacing kerosene and diesel fuel.

Parameters and assumptions:

- 30% of households (8,036) assumed able to afford and interested in solar system.
- Each household consumes 0.4 liter of kerosene for lighting per day.
- 1 l kerosene = 1.3 kg kerosene with CO₂ emission factor of 3.1.
- 250 villages supported to invest in solar waterpump instead of diesel.
- Diesel waterpumping of 36 m³ water per day, consuming 3.84 l diesel.

Abatement: 1st 6 years: 18,000 tons CO₂, 30 years 163,000 tons CO₂.

2) Estimated emissions with the activity:

Description of the scenario, including methodologies applied:

The emissions with the project are estimated as those resulting from managing 300,000 ha of forest, introducing carbonization technologies, PV systems and kerosene cooking stoves. The methodology used is similar to that for the estimation of emissions for the baseline scenario.

Fill in the following tables as applicable:

Summary table: *Projected emissions reductions:*

	GHG	1997	1998	1999	2000	2001
A) Project baseline scenario	CO ₂		0.1	0.75	0.75	1.5
	CH ₄					
	N ₂ O					
	Other					
B) Project activity scenario^{a)}	CO ₂		0.09	0.6755	0.6755	1.35
	CH ₄					
	N ₂ O					
	Other					
C) Effect (B-A)	CO ₂		0.01	0.075	0.075	0.15
	CH ₄					
	N ₂ O					
	Other					
D) Cumulative effect	CO ₂		0.01	0.085	0.16	0.31

F. Bearing in mind that the financing of activities implemented jointly shall be additional to financial obligations of the Parties included in Annex II to the Convention within the framework of the financial mechanism as well as to current official development assistance flows, please indicate

Source of project funding (For each source one line)	Amount (US dollars)
Government of Burkina Faso	1,000,000
DANIDA	14,000,000
IDA/PNGTII (DGIS)	3,000,000
Government of Norway	2,400,000

The Government of Norway contributes US\$2,400,000 to finance the AIJ components of the project. The funds are from the Government of Norway Climate Change Fund established separate from and in addition to the development assistance accounts.^b The

^{a)} Includes indirect GHG leakages, energy not consumed as a result of the use of processed charcoal and PV systems adjusted to take into account 10% energy losses on the carbonization process. Emissions are expressed in million tons of CO₂ equivalent.

^b The AIJ contribution is financing the introduction of low emission carbonization technologies, enhancement of carbon sequestration through community managed forest, introduction of solar PV systems and improved cooking stoves. Other financial sources from DANIDA, IDA/PNGTII (DGIS) and Government of Burkina Faso support institutional reform, energy policy change and community development.

purpose of the AIJ funding is to demonstrate the potential of AIJ as a mechanism for the flow of additional resources. The AIJ financing made the project financially viable.

G. Contribution to capacity building, transfer of environmentally sound technologies and know-how to other Parties, particularly developing country Parties, to enable them to implement the provisions of the Convention. In this process, the developed country parties shall support the development and enhancement of endogenous capacities and technologies of developing country Parties

Describe briefly the transfer of environmentally sound technology and know-how including where appropriate the type of technology, terms, education, capacity building etc.

The project would contribute to strengthening of Burkina Faso's capacity at national and local levels in the areas selected for sustainable forest management, introduction of carbonization, PV systems and cooking stoves' technologies. The project will develop experience with the design of charcoal processing, application of PV systems and improved kerosene cooking stoves.

The carbonization technologies, PV systems and improved kerosene cooking stoves are so advanced and well established in the neighbouring country Senegal. The developments of these technologies in Burkina Faso are so limited due to lack of capacity and financial resources.

H. Additional comments, if any, including any practical experience gained or technical difficulties, effects, impacts or other obstacles encountered

Fill in as appropriate:

1) Any practical experience gained:

On 4-6 February 1997, a regional workshop on AIJ under the UNFCCC was held in Ouagadougou to initiate the AIJ project. The workshop was attended by more than 50 participants from 12 African countries. The workshop report was prepared and distributed. The workshop generated information necessary for demonstration in the AIJ pilot phase. The information on the workshop and project have been on high demand and several copies have been reprinted.

A letter of intent to undertake an AIJ project was signed between the Governments of Burkina Faso and Norway. The agreement endorsed the project implementation.

The project is executed by the Bank and implemented by local institutions. Institutional interaction is demonstrated through the activities of the project.

Practical experience gained is that AIJ is a potential mechanism for flow of additional resources needed by developing countries.

2) Technical difficulties:

The project was initially designed for GEF funding. AIJ components required redesigning to capture additional funding.

3) Negative impacts and/or effects encountered:

Whenever possible, quantitative information should be provided. Failing that, a qualitative description should be given. If quantitative information becomes available, it could be submitted using the update(s). (If the amount of quantitative information is too large, the source could be indicated.)

4) Other obstacles encountered:

5) Other:

Project Risks. The project benefits could be affected by (i) delays in implementation; (ii) performance by local institutions executing the project; (iii) inflation and depreciating local currency that might make the prices of solar PV systems very expensive for local communities; (iv) lack of skills in use of solar PV systems and carbonization technologies may make implementation of the project difficult and calculation and recording of CO₂ emissions abated impossible. (v) Property ownership between the government and local

communities and possible resource conflicts resulting from fuelwood wholesalers, charcoal processors, increasing urban demand for energy creating shortages for fuelwood, and (vi) creating and expanding a sustainable market for solar PV systems and non carbon energy technologies.

Monitoring and Evaluation Process. The project monitoring and evaluation for the government of Burkina Faso will be carried out by its own structures. On the Bank's side, standard procedures will be followed by the Bank's staff. Monitoring and evaluation information will be recorded in the audit reports for the government executing agencies, Bank supervision reports and project mid-term review.

ANNEXES

1. Letter of Agreement between the Governments of Burkina Faso and Norway.
2. A summary of the AIJ initiation workshop, Ouagadougou, February 4-6, 1997.
3. AIJ Grant Contract between the Government of Burkina Faso and the IDA-World Bank
4. A Burkina Faso Project Brief.
5. A Burkina Faso Project Design

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