United Nations
Development Programme
Country: Lao PDR
ANNEXES[1]

Project Title: Effective Governance for small-scale rural infrastructure and disaster preparedness in a changing climate
UNDAF Outcome(s): By 2015, the Government and communities better adapt to and mitigate climate change and reduce natural disaster vulnerabilities in priority sectors (Outcome 8).

UNDP Strategic Plan Environment and Sustainable Development Primary Outcome: Strengthened capacities of developing countries to mainstream climate change adaptation policies into development plans.
UNDP Strategic Plan Secondary Outcome: National, regional and local levels of governance expand their capacities to manage the equitable delivery of public services and support conflict resolution.
Expected CP Outcome(s):
By 2015, better climate change adaptation and mitigation implemented by government and communities and natural disaster vulnerabilities reduced in priority sectors**.**
Expected CPAP Output (s)
Those that will result from the project and extracted from the CPAP)
Executing Entity/Implementing Partner:
Government of Lao PDR, Ministry of Environment and Natural Resources
Implementing Entity/Responsible Partners:
United Nations Capital Development Fund (UNCDF)

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[1] For UNDP supported GEF funded projects as this includes GEF-specific requirements

Annex 1: Risk Analysis.

Use the standard UNDP Atlas Risk Log template. For UNDP GEF projects in particular, please outline the risk management measures including improving resilience to climate change that the project proposes to undertake.

LFM level	Description of the risk	Potential consequence	Countermeasures / management response	Type (risk category)	Probability Impact (high-medium-low)	Owner	Submitteduppdated by	Last Update	Status
PO	Other risk areas may emerge as more important than climate related risks in some localities.	Climate related risk areas will be unattended Exacerbates Vulnerability of livelihoods within the unattended areas	There is increasing awareness amongst government officials, that these investments contribute to macroeconomic benefits, while livelihood improvements are barely achieved. As part of their mandate officials are in search of programs that contribute to livelihood security, such as the proposed project. There is also an increasing awareness on existing and emerging of climate threats in the districts and provinces and how climate change trends are interlinked with other ongoing land use change processes. As an example, some districts do not allow the establishment of plantation concessions any more, since they do not see the benefit for their districts and fear the long-term environmental effects.	Political Operational	P=l I=h	GoL UN Donor			

PO	Overall quality of consultations associated with district planning may not be sufficiently high to ensure key issues emerge.	Key issues will not be achieved. High dependency on quality of consultations. Increase of Vulnerability	The effects of climate change are occurring on the ground and affect peoples livelihoods even within the range of current climate variabilities. The consultations will focus on the fact that the proposed adaptation measures have lead to immediate benefits, while also counter measuring longer term impacts of climate change.	Institutional Operational	P=l I-h	GoL / MAF UN Donor			
LFM level	Description of the risk	Potential consequence	Countermeasures / management response	Type (risk category)	Probability Impact (high-medium-low)	Owner	Submitted updated by	Last Update	Status
1.1	Insufficient engagement and understanding of climate risks among key stakeholders at district and sub-district planning levels.	Quality of implemented projects will suffer. Exacerbation of Vulnerability.	The capacity development activities will provide officials with those data sets. Demonstration projects will show that CCA is not an additional burden, but a vehicle for rural development and an additional funding source to fulfil the government agencies' mandates better than under business as usual conditions.	Political Institutional Operational	P=l I=m	GoL UN Project			
1.1	The 12 districts of two provinces replicate the conventional non climate resilient planning procedures, since they are cheaper and thus a larger part of the population can be claimed to be addressed.	Compartmentalized planning in a non climate resilient manner continues. High climate vulnerabilities of the population remain.	The project objective as agreed with the government states that there is no other opportunity to spend the project budget as for CCA. There is a huge discontentment amongst officials that business as usual built infrastructure and ecosystem management fails. This is the entry point for CCA'ed measures, which in the long term are more cost efficient and contribute to more credibility of the involved agencies amongst the population.	Institutional Technical	P=l I-m	MAF NAFRI CC Office			

1.2	Existing government decentralisation policies and approaches are significantly delayed during the project period.	Officials will not discover how the long term process of climate change is linked to short term planning cycles of districts. Projects will not be implemented Exacerbation of Vulnerability.	There is currently no indication that recentralisation efforts are planned, negatively affecting decentralised delivery mechanisms such as DDF.	Institutional Operational	P=l I=l	Board UN MAF/NAF RI Project			
LFM level	Description of the risk	Potential consequence	Countermeasures / management response	Type (risk category)	Probability Impact (high-medium-low)	Owner	Submitted, updated by	Last Update	Status
2.1	Design of suitable infrastructure is not based on sufficient local consultations and is not valued and used as a consequence.	Climate resilient water supply innovations do not contribute to the wellbeing of the population since they are not understood and as a consequence not maintained	The project is informed by the locally informed V&A analysis and the detailed local consultations of the CRVA analysis	Operational Technical	P=l I=l	MAF/NAF RI Project			
2.2	Local resistance occurs to the introduction of new water management techniques on socio-cultural grounds.	Project attempts will be blocked.	The resistance of some groups is due to the fact, that they do not benefit from new water management techniques introduced in the past, while they were are asked to financially or in-kind contribute to the construction and maintenance of those innovations. The CRVA assessment at each project site will clarify differentiated rights, roles and responsibilities of local stakeholders to ensure that new management techniques will benefit the community as a whole and will be sustained.	Operational Technical	P=h I=h	Board Project			
LFM level	Description of the risk	Potential consequence	Countermeasures / management response	Type (risk category)	Probability Impact (high-medium-low)	Owner	Submitted, updated by	Last Update	Status

3.1	Land ownership issues in the vicinity of built infrastructure restrict possibilities in introducing new ecosystem based land management approaches.	Implemntation of projects might be not possible. Exacerbation of vulnerability.	The CRVA analysis at each project site will give an indication whom to involve. Subsequent management contracts with the communities as a prerequisite for further support will ensure sustainability.	Institutional Operational Technical	P=h I=h	NAFES NAFRI Board Project			

Annex 2: Agreements.

Cofinancing letters (submitted separately)

Annex 3: Terms of Reference

Project Personnel	
A. CORE PSU TEAM	
PM	Full responsibility for project operations. Acting on behalf of Implementing Partner. Informing Board, PSU and PTF regularly and seeking cross-sectoral and cross-ministerial advice. Executing technical programmes through the PSU. Preparation of work plans, budgets, reports. Preparing operational environment for M+E group. Contractor coordination and management. This post will not be funded by LDCF resources and is included in the government's cofinancing.
Assistant PM	Full responsibility for project operations under guidance of PM. Responsible for work programmes of components. Annual component workplans and budget. Integration with other components. Guiding activities in provinces. Coordination with other project on day-to-day basis. Following up monitoring results and findings related to the component.
M+E Specialist	Develop project baseline against agreed project indicators. Regular monitoring of all relevant project features in line with the projects monitoring and evaluation framework, and detailed annual monitoring plans for provinces, districts and components. Participatory monitoring tools on community level. Quality reports, quantitative and qualitative data, photos, charts, maps, presentations.
Senior Finance and Admin Officer PSU	Responsible for the management of cash flows. Administration of financing. Development of budget plans and control of budget. Responsible for financial auditing.
2 National Finance and Admin Officers for Sub PSUs	Responsible for the management of cash flows for components 1 and 3 of the project. Administration of financing. Development of budget plans and control of budget. Responsible for financial auditing. Responsibility at the district-level yet based at province level.
Translator	Translation and interpretation services as required by the Project Manager.
B. TECHNICAL CONSULTANTS	
Technical Advisor (international)	Technical supervision of project, M&E tasks, project output control, review of technical reports, technical project overview, implementation of similar projects, organize and oversee consultant inputs, develop detailed terms of references for national and international consultants. Provide direct technical inputs for the development of climate resilient district development plans under Outcome 1 and ecosystem management plans under Outcome 3.
International Infrastructure specialist	Provides initial orientation of the national infrastructure specialist specifically with detailed design tasks for 48 sub projects and the development climate resilient infrastructure guidance and related training.

National Infrastructure Specialist	Support of the District development support committees. Guidance of the District development support committee in the field of climate resilient infrastructures. Monitoring and Evaluation of infrastructure-related project components.
National Ecosystems Specialist	Support of the District development support committees. Guidance of the District development support committee in the field of Ecosystems Management and Ecosystem based Adaptation. Monitoring and Evaluation of ecosystem-related project components.
National specialist - Public Financial Management (UNDP funded)	With UNDP funds this national specialist will support coordination between Outcomes 1 and 2 specifically, also working with UNCDF in the delivery of Outputs 2.1 and 2.2. This will involve adjustments to existing PFM procedures and guidance to support the delivery of additional climate change financing to fund climate resilient infrastructure investments at local level.
SUB-CONTRACTS	
Capacity Development/Training/	Training needs assessment of professional staff, development of training curricula, implementation of training, develop a 4 year CC planning capacity development plan for district development support committees, organization of follow-up trainings and workshops at province and district level, provide specialist additional technical guidance to governments conducting CRVAs, develop a climate change adaptation information databank, develop and field test an appropriate rapid CRVA tool, carry out CRVA analyses in the project sites, integration of new information into training materials and cycles.
Construction of climate resilient infrastructures	Build climate resilient small-scale rural infrastructure – to be implemented through the nationally driven District Development Fund mechanism, with financial support from UNCDF and technical CC inputs provided under component 1 of the project.
Develop ecosystems management and action plans/ EbA training	Development of tender documentation and procedures for climate resilient ecosystem management, implementation of initial investments in the area of climate resilient ecosystem management, support of technical supervision, development of appropriate project M&E standards, support of district planning and investment unit.
Monitoring & Evaluation	Establish an M&E system for the project based on the project results framework, design and initiate baseline studies building on AMAT, provide training to all project staff in use of project indicators, review of PIR data, implementation of mid term and final evaluations.

A. PSU CORE POSTS

Project Manager

The Project Manager (PM) is a senior GoL staff who will perform the following key functions: The PM will report to the National Project Director, will receive guidance from the National Project Director and Project Board, and will be responsible for the day-to-day management, administration, coordination, and technical supervision of project implementation. The PM will lead the project team through the planning, implementation, and delivery of policies, reports, knowledge products, and other results approved in the project document and annual work plans. S/he will provide overall operational management for successful execution and implementation of the programme. S/he will be responsible for financial management and

disbursements, with accountability to the government and UNDP. The PM will be appointed by the Implementing Agency and will monitor work progress, and ensure timely delivery of Outputs as indicated in the Strategic Results Framework on time and within budget. The PM will ensure provision of high-quality expertise and inputs to the project and also be responsible for day-to-day operations.

In carrying out her/his responsibilities, s/he will advocate and promote the work of adaptation to climate change in Lao PDR and will also closely work and network with the relevant government agencies, UNDP, the private sector, NGOs, and civil society organizations.

Responsibilities

- Facilitate the day-to-day functioning of the PSU;
- Coordinate the distribution of responsibilities amongst team members and organize the monitoring and tracking system of all cluster services;
- Manage human and financial resources, in consultation with the project's senior management, to achieve results in line with the outputs and activities outlined in the project document;
- Plan the activities of the project and monitor progress against the initial quality criteria;
- Mobilize goods and services to initiative activities, including drafting TORs and work specifications;
- Monitor events as determined in the Project Monitoring Schedule Plan, and update the plan as required;
- Manage requests for the provision of financial resources by UNDP, using advance of funds, direct payments, or reimbursement using the FACE (Fund Authorization and Certificate of Expenditures);
- Monitor financial resources and accounting to ensure accuracy and reliability of financial reports;
- Responsible for preparing and submitting financial reports to UNDP on a quarterly basis;
- Manage and monitor the project risks initially identified, submit new risks to the Project Board for consideration and decision on possible actions if required; update the status of these risks by maintaining the Project Risks Log;
- Be responsible for managing issues and requests for change by maintaining an Issues Log;
- Prepare the Project Progress Report (progress against planned activities, update on Risks and Issues, expenditures) and submit the report to the Project Board and Project Assurance;
- Prepare the Annual review Report, and submit the report to the Project Board;
- Prepare the AWP for the following year, as well as Quarterly Plans if required;
- Update the Atlas Project Management module if external access is made available
- Work with co-funding partners to ensure that their activities/programs are integrated and complementary with those of the LDCF project.
- Link up project activities with related and parallel activities both within MONRE and with external implementing partner agencies;
- Support the NPD in organizing Project Board meetings;

- Report and provide feedback to UNDP-GEF and the Project Board on project strategies, activities, progress, and barriers;
- Manage relationships with project stakeholders including donors, NGOs, government agencies, and others as required.

Qualifications/ Requirements

- Graduate with at least 5 years working experience in project management within the disciplines of environmental science, geography, or natural resource management
- Sound policy understanding of global development concerns, climate change discourse, and adaptation to climate change
- Extensive business and information exchange contacts with national and international agencies involved in local and international studies of climate change, in general, and adaptation, in particular
- Excellent inter-personal, communication and negotiating skills
- Previous work experience in the country on issues relevant to the project
- Ability and willingness to travel within and outside Lao PDR
- Demonstrable skills in office computer use - word processing, spread sheets etc.
- Proven track record of project management and project team experience working with government, NGOs, and other key stakeholders in Lao PDR
- Excellent verbal and written skills in English and Lao

Assistant Project Manager (APM)

In principle the same TOR and qualifications like the PM, but the position is project funded and a full-time. The APM reports to PM.

Monitoring and Evaluation Specialist

Responsible for establishment and operation of a robust project monitoring and evaluation system during year 1 of the project, with regular technical support provided during succeeding years.

Responsibilities

- Develop project M&E manual and provide orientation and training to core project staff
- Design and provide technical oversight for project baseline survey drawing on existing V&A studies carried out during PPG linked to project outcome indicators
- Develop project database linked to project outcome indicators
- Design data collection and reporting protocols linked to project outcome indicators
- Carry out quarterly progress monitoring exercises providing leadership and support to the provincial PSUs
- Develop periodic monitoring reports to support routine project progress reporting
- Support annual Project Implementation Reports
- Develop ToRs and provide support for mid term and final evaluation studies

Qualifications/requirements

- Graduate with at least 7 years experience of working on project monitoring of international projects in Lao PDR.
- Excellent inter-personal and communication skills
- Previous work experience in the country on issues relevant to the project
- Ability and willingness to travel within and outside Lao PDR
- Excellent verbal and written skills in English and Lao

Senior Finance and Admin Officer

The Finance and Admin Assistant will be responsible for the day-to-day management of all finances of the project on national and provincial level. The Finance and Admin Assistant will undertake administration of the day-to-day operations of the project office.

Responsibilities

- Standardize the finance and accounting systems of the project while maintaining compatibility with UNDP financial and accounting procedures
- Prepare budget revisions of the projects based on the Combined Delivery Reports (CDRs)
- Assist in the preparation of the Annual Work Plan (AWP)
- Comply and verify budget and accounting data by researching files, calculating costs, and estimating anticipated expenditures from readily available information sources.
- Prepare financial status reports, progress reports and other required financial reports
- Process all types of payment requests for settlement purpose including quarterly advances to the partners
- Prepare periodic accounting records by recording receipts and disbursements (ledgers, cash books, vouchers, etc.) and reconciling data for recurring or financial special reports and assist in preparation of annual procurement plan
- Undertake project financial closure formalities including submission of terminal reports, transfer and disposal of equipment, processing of semi-final and final revisions, and support professional staff in preparing the terminal assessment reports
- Prepare reports and documents as per specified formats, project, or programme plans and general reference documents as well as general administrative/financial or specialised tasks related to the project which may be of a confidential nature within the assigned area of responsibility
- Assist in the timely issuance of contracts and assurance of other eligible entitlements of the projects personnel, experts, and consultants by preparing annual recruitment plans
- Provide substantive support to the Project Manager for overall implementation
- Prepare and update inventories of expendable and non-expendable project equipment
- Set up and maintain all files and records of the project in both electronic and hard copies
- Collect project related information data
- Update plans
- Administer Project Board meetings in coordination with the National Project Director
- Establish document control procedures
- Compile, copy and distribute all project reports
- Provide logistical support to the Project Manager, and national/international consultants in organising training events, workshops, and seminars

- Assist international, short-term consultants by organizing their travel schedules, arranging meetings with different stakeholders, and booking hotel accommodations
- Prepare monthly leave records for the project staff and long-term national/international consultants
- Provide support in the use of Atlas for monitoring and reporting
- Review technical reports in coordination with the Senior Technical Officer
- Assist the Senior Technical Officer to monitor technical activities carried out by responsible parties
- Draft necessary correspondence with local and international agencies and stakeholders

Qualifications/ Requirements

- Graduate Degree in Commerce, Business Management, or other relevant discipline
- At least five years practical experience in related projects
- Strong understanding of budgeting and the UN/GoB accounting system—candidates familiar with UNDP administrative, program, and financial procedures preferred
- Ability to use MS Office packages under the Windows XP Professional environment
- Initiative, sound judgment, and capacity to work independently
- Undergraduate degree and/or certificate in secretarial or computer training
- Knowledge of database packages and web-based management systems
- Excellent inter-personal and communication skills
- Proficient verbal and written English and Lao skills

Two Finance and Admin Assistant for Sub PSU

The Finance and Admin Assistants for the two Sub PSUs will report to the Senior Finance and Admin Officer and support in the administration of the day-to-day operations of the project office at district level.

Responsibilities

- Standardize the finance and accounting systems of the project while maintaining compatibility with UNDP financial and accounting procedures
- Prepare budget revisions of the projects based on the Combined Delivery Reports (CDRs)
- Assist in the preparation of the Annual Work Plan (AWP)
- Comply and verify budget and accounting data by researching files, calculating costs, and estimating anticipated expenditures from readily available information sources.
- Prepare financial status reports, progress reports and other required financial reports
- Process all types of payment requests for settlement purpose including quarterly advances to the partners
- Prepare periodic accounting records by recording receipts and disbursements (ledgers, cash books, vouchers, etc.) and reconciling data for recurring or financial special reports and assist in preparation of annual procurement plan
- Undertake project financial closure formalities including submission of terminal reports, transfer and disposal of equipment, processing of semi-final and final revisions, and support professional staff in preparing the terminal assessment reports

- Prepare reports and documents as per specified formats, project, or programme plans and general reference documents as well as general administrative/financial or specialised tasks related to the project which may be of a confidential nature within the assigned area of responsibility
- Assist in the timely issuance of contracts and assurance of other eligible entitlements of the projects personnel, experts, and consultants by preparing annual recruitment plans
- Provide substantive support to the National Project Manager for overall implementation
- Set up and maintain all files and records of the project in both electronic and hard copies
- Collect project related information data
- Help establish office and purchase office facilities;
- Update plans
- Establish document control procedures
- Compile, copy and distribute all project reports
- Provide logistical support to the National Project Manager, and national/international consultants in organising training events, workshops, and seminars
- Assist international, short-term consultants by organizing their travel schedules, arranging meetings with different stakeholders, and booking hotel accommodations
- Provide support in the use of Atlas for monitoring and reporting
- Draft necessary correspondence with local and international agencies and stakeholders

Qualifications/ Requirements

- Undergraduate Degree in Commerce, Business Management, or other relevant discipline
- At least five years practical experience in related projects
- Strong understanding of budgeting and the UN/GoB accounting system—candidates familiar with UNDP administrative, program, and financial procedures preferred
- Ability to use MS Office packages under the Windows XP Professional environment
- Initiative, sound judgment, and capacity to work independently
- Undergraduate degree and/or certificate in secretarial or computer training
- Knowledge of database packages and web-based management systems
- Excellent inter-personal and communication skills
- Proficient verbal and written English and Lao skills

B. TECHNICAL CONSULTANTS

Technical Advisor (international)

The Technical Adviser will be responsible for technical oversight of project activities with focus on monitoring and evaluation works. S/he will work with the national and international consultants and advisors to achieve the outputs of the project.

Responsibilities

- Technical supervision of project activities, monitoring and evaluation tasks, and quality control of project outputs;
- Organize and oversee consultant input, develop detailed Terms of References for national and international consultants and contractors in collaboration with PM and NPD
- Review all technical reports produced by national and international consultants
- Draft methodologies for technical activities of the project and prepare outline structure of technical reports
- Liaise with national and international consultants to design project activities
- Undertake technical oversight on a daily basis including monitoring technical aspects of project activities
- Specific technical responsibility for Output 1.4 (climate resilient district development plans) and Output 3.1 (Ecosystem management action plans).
- Identify, analyse and communicate lessons learned that may be useful in design and implementation of similar projects. The duty of identifying and analyzing lessons learned is an on-going one, and the duty to communicate those lessons is on an as-needed basis, but not less frequently than once every six months.
- Technical background in one or more of the following or related fields: Climate Change Adaptation, Integrated Water Resource Management, Rural Small Scale Infrastructure Development, Disaster Risk Management and Ecosystem Management
- Methodological background in several of the following fields is desirable: Climate Risk, Vulnerability and Adaptation Assessments or related approaches, gender sensitive participatory project identification and implementation, survey techniques, data management, GIS, management and action plans for livelihood assets (mainly infrastructures and ecosystems)

<u>Qualifications/ Requirements</u>

- Graduate with at least 8 years working experience within the disciplines of environmental science, geography, natural resource management or related fields
- Sound understanding of global development concerns, climate change discourse, and adaptation to climate change
- Extensive technical information exchange contacts with national and international agencies involved in local and international studies of climate change, in general, and adaptation, in particular
- Technical background in one or more of the following or related fields: Climate Change Adaptation, Integrated Water Resource Management, Rural Small Scale Infrastructure Development, Disaster Risk Management and Ecosystem Management
- Methodological background in several of the following fields is required: Capacity building and awareness raising, Climate Risk, Vulnerability and Adaptation Assessments or related approaches, socially-inclusive, gender sensitive participatory project identification and implementation, survey techniques, data management, GIS, management and action plans for livelihood assets (mainly infrastructures and ecosystems), agricultural extension
- Good understanding of M+E concepts, project cycle management
- Excellent inter-personal, communication and negotiating skills
- Previous work experience in the country on issues relevant to the project

- Ability and willingness to travel within and outside Lao PDR
- Demonstrable skills in computer use including and not limited to word processing, spread sheets
- Excellent verbal and written skills in English

International Infrastructure Specialist

The International Infrastructure Specialist will be responsible for oversight and delivery of Outputs 1.4 and 1.5 specifically. This will involve several trips to Lao PDR working mainly at province and district level and providing necessary technical inputs in the form of training, field work and face to face exchanges.

Responsibities

- Develop model designs for key climate resilient infrastructure sub-project with focus on water sectors.
- Develop system for district officials to apply in developing and reviewing detailed budgets for climate resilient infrastructure planning.
- Develop system for district officials to apply in technical review of sub-projects against climate resilience criteria.
- Integrate standard clauses, criteria and guidance into tender documentation and procedures for district level contracting.
- Develop climate resilient construction standards and guidelines based on a review of existing sectoral guidelines for key rural infrastructure sectors
- Provide training in the application of climate resilient rural infrastructure standards, with a focus on local contractors.
- Policy meetings with national and provincial stakeholders on revisions to national infrastructure guidelines and standards.
- Provide regional and global experience and best practices.

Qualifications/Requirements

- Advanced degree in civil engineering
- At least 7 years relevant experience
- Understanding of community level public infrastructure, particularly in the water sector
- Experience in climate adaptation relating to public infrastructure, including green engineering approaches
- Experience of working in the region.
- Good written and communication skills.

National Ecosystem Specialist

The Consultant will support the International Project Development Specialist in providing a comprehensive UNDP/GEF LDCF compliant set of project documents. The key deliverables in support of this product are as follows:

- Assessment of ecosystem functions, status and vulnerability to climate risks for the South of the Country.
- Identification and inventory of critical ecosystem functions and assets which support the delivery and maintenance of key rural infrastructure in the water sector
- Knowledge on land management, natural resources and protected areas in Laos.
- Problem analysis and strategy for promoting ecosystem based resilience to climate change, based on catchment and sub-catchment level measures and actions.
- Experience with developing and implementing ecosystem management and action plans
- Sound understanding on linkages between climate change and ecosystems as well as ecosystem based adaptation
- Experience with climate risk, vulnerability and adaptation assessments or related approaches and with participatory approaches of project identification and management

Qualifications/ Requirements

- Postgraduate degree or equivalent education in ecosystems and biodiversity, natural resources and/or environment related discipline;
- Experience and skills in facilitation or multi-stakeholder workshops and broad-based consultative processes;
- Previous experience of working with International Organisations and ideally on the development of GEF
- Excellent analytical skills;
- Excellent verbal and written communication skills in English;
- Very good inter-personal skills and the ability to work with a multitude of stakeholders;
- Proficiency in computers; good working knowledge of word processing and spreadsheet programmes, particularly MS Word and MS Excel
- Basic GIS and mapping skills are desirable

National Infrastructure Specialist

The Consultant will support the International Project Development Specialist in providing a comprehensive UNDP/GEF LDCF compliant set of project documents. The key deliverables in support of this product are as follows:

- Assessment of infrastructure functions, status and vulnerability to climate risks for the target provinces
- Identification and inventory of critical infrastructures and assets which support the delivery and maintenance of key rural infrastructure in the water sector
- Problem analysis and strategy for promoting ecosystem based resilience to climate change, based on catchment and sub-catchment level measures and actions.
- Experience with developing and implementing small-scale rural infrastructure projects
- Sound understanding on linkages between climate change, ecosystems and small scale infrastructures
- Experience with climate risk, vulnerability and adaptation assessments or related approaches and with participatory approaches of project identification and management

Qualifications/ Requirements

- Postgraduate degree or equivalent education in public engineering or related discipline;
- Experience and skills in facilitation or multi-stakeholder workshops and broad-based consultative processes;
- Previous experience of working with International Organisations and ideally on the development of GEF
- Excellent analytical skills;
- Excellent verbal and written communication skills in English;
- Very good inter-personal skills and the ability to work with a multitude of stakeholders;
- Proficiency in computers; good working knowledge of word processing and spreadsheet programmes, particularly MS Word and MS Excel
- Basic GIS and mapping skills are desirable

National PFM Specialist

ToR for this UNDP funded post to be developed in collaboration with GPAR-SCSD team. The consultant will need to have a good understand ing of the existing DDF mechanism including key tools, procedures and incentives that support its application. Good knowledge of GPAR implementation in the two target provinces will also be a benefit, as well as an awareness of natural resource management issues.

Annex 4: Capacity Assessment

Background

The UNDP/GEF project ('the project') focal area in objective 2 is to "*increase adaptive capacity* to respond to the impacts of climate change" by enhancing the technical capacity of province, district and village level officials to understand and integrate climate risk information in the context of water, water resources and land use management.

Lao PDR has also completed a National Capacity Self-Assessment (NCSA) for global environmental management and is now engaging in follow up activities *to strengthen both national and local capacity* to implement natural resources legislation, with a focus on issues most relevant to the Rio Convention.

The vulnerability assessments conducted by the project preparation team (PPT) included an assessment of the adaptive capacity of provincial and district officials and local communities and other stakeholders, to determine the level of understanding of stakeholders in climate risks and resilience planning.

Project Linkages

The UNDP supported National Action Plan for Disaster Risk Management Project is currently assisting the government, in particular the National Disaster Management Office, with the development of a National Action Plan for Disaster Risk Management and will further invest in related capacity development activities at all levels. 'The project' will contribute towards the planning for *province and district level capacity development* and investment activities to improve management of climate related risks while also ensuring that the potential for duplication with other climate risk management initiatives are minimised.

The ADB supported National Integrated Water Resources Management Support Project will provide professional development for WREA and other staff at different levels in IWRM, including climate adaptation and mitigation aspects. The project will therefore help to build a core group of professionals with the *necessary competencies to engage in planning for climate change adaptation*, and it is hoped a few of these trained professionals will be deployed to the focal provinces where 'the projects' are being proposed for development.

The IUCN supported Wetland Management Initiatives in the Mekong Co-financing: Mekong Water Dialogues; Climate change impact and vulnerability for lower Mekong Basin Wetlands; Livelihoods and Landscapes of Beung Kiet Ngong wetlands. This includes forest law enforcement elements together with livelihoods improvements through *capacity development for local villagers and local administrative authorities*. The LDCF/SCCF project will link into the initiatives and outcomes provided for under this project by *developing the capacity into how local authorities can work with local communities and community structures in strengthening resilience to climate change*.

The ADB supported Capacity Enhancement for Coping with Climate Change Project which works directly with the national Office of Climate Change, which will also be engaging in some water conservation demonstration work in both drought and flood prone provinces will be capacity built and aligned with 'the project' resources during the detailed design phase.

The World Bank supported Integrated Water Resources Management Project is providing investment in the rehabilitation of medium scale rural infrastructure (irrigation, flood gates), with a geographical focus on two key river basins in the south. Under the same programme, the World Bank and ADB are providing institutional and capacity development support to river basin planning and management which will improve the availability and accessibility of hydro-meteorological data, provide water resource inventories (groundwater and surface water), leading to more informed river basin planning in the future under 'the project'.

'The project' will complement UNDP assistance to the National Disaster Management Office (NDMO) through its Institutional Strengthening and Capacity Development on Disaster Risk Management in Lao PDR. The UNDP supported LDCF project through the National Agriculture and Forestry Research Institute (NAFRI) under the Ministry of Agriculture is improving the Resilience of the Agriculture Sector in Lao PDR to Climate Change Impacts. This major new adaptation initiative covers rural development activities for enhancing the capacity of the agriculture sector and rural communities, including flood and drought preparedness in two provinces, which includes Savannakhet.

Capacity Assessment of Provincial and District Sectors on Climate Changes and Adaptation

The capacity assessment was done through interviews of provincial and district officials during the two field visits between April and May 2012 and from the consultation workshop conducted in Saravane and Sekong province dated 13-14 March 2012.

A desk study was also carried out by PPT though reviewing the following documents to assess in-house capacity in climate change risk management and impact assessment:;

- Vulnerability of Climate Risks in Attapeu Province Lao PDR (Joint Study of ADPC, MRC, UNPD and INCN, January 2005),
- Adaptation to Climate change in the Countries of Lower Mekong Basin (MRC, Sept 2009),
- Joint Assessment of Impact and Needs arising from the September 2009 Ketsana Typhoon(UN, October 2009),
- Climate risk and adaptation, Lao PDR (GFDRR, April 2011).

The capacity assessment largely concluded that *planners and decision makers* (at Sekong and Saravane Provincial and its Districts Offices) *do not have enough capacity to process and take into account climate risk information*, and are unused to addressing the linkages and interdependencies between physical investments on infrastructure and land/ecosystem management.

Within the context of limited local development and recurrent budgets, there are no financial resources available to invest in increasing resilience to climate related risks particularly ecosystem management based responses. Consequently the additional costs associated with

adaptation are not factored into new investments or the operation and maintenance of existing investments at both the Provincial and District level.

Furthermore there is a *lack of awareness* about the ecosystem functions of watersheds which is leading rural communities to overexploit the resource base and undermining the long-term resilience of its functions. This is partly a function of the systemic issue of valuation (or lack thereof) of natural systems, but also of broader institutional and capacity barriers which tend towards compartmentalised thinking and planning within bureaucracies of provincial and district government and within the social structures at the village level.

A detailed analysis was conducted assessing the capacity of provincial and district offices in the water sector. This is provided and summarised in the table below which shows the existing deficiency and knowledge gaps of climate change awareness evident at most levels of government.

Capacity Building Development

It is anticipated that capacity development will be supported by regular planning dialogues with provincial and district officials and local community groups which will provide the necessary space and technical advice to translate the analysis and assessment of climate risks into practical adaptation actions on the ground through the district planning cycle.

A key component of the capacity development measures will be to familiarise the stakeholders with the adaptation options matrix of the Prodoc that shows a positive list of feasible options per catchment zone. In addition, the stakeholders will acquire in depth knowledge on how to conduct "Climate risk, Vulnerability and Adaptation Assessments (CRVA)". This tool will be developed based on existing and accessible V&A tools such as "CRiSTAL: Community-based Risk Screening Tool – Adaptation and Livelihoods" of IUCN, IISD and SEI, and adapted to the project context. This simplified participatory assessment tool looks equally on climate threats on the natural environment of a project site and the subsequent risks on different livelihood systems of the residing population and concerned user groups. The CRVA assessment will disaggregate male and female's information from each household and will collect an inventory of family assets, main sources of income, and other socio-economic information in order to analyse patterns of socially differentiated access to infrastructures and other livelihood assets. Focus interviews will be conducted with all ethnic minority groups and other local organisations active in the village to identify those climate risks, vulnerabilities affecting their socio lives and designing for adaptation option to alleviate their concerns. An emphasis will be put on different rights, roles and responsibilities of individuals and what contributions can be made in the construction, maintenance and management of water resources, intake and supply. To capture the environmental assets side and to identify the right infrastructure and ecosystem management options for each potential project site, external input will be needed by e.g. hydrologistst, engineers or ecosystem specialists. Part of the capacity building will therefore focus on how to assemble a suitable CRVA team.

Approximately **250** individuals will be engaged in this exercise from 12 districts **districts** (in Sekong and Saravane) leading to the agreement of annual investment plans as well as proposed changes to relevant national, province and district level planning guidelines, such as the Ministry of Planning's newly developed participatory planning guidelines. These annual investment plans will provide the main vehicle for combining complementary measures to secure and extend critical household and community level infrastructure for climate resilience

with additional investments in ecosystem management in the immediate vicinity (sub-catchment scale).

These direct village level investments will be supplemented with wider measures to improve the resilience of natural systems and their capacity to buffer essential infrastructure from the likely effects of increased flooding and drought, thereby strengthening the likelihood of high EIRRs as well as wider community level economic impacts. This will involve physical works in strengthening and sustaining the hydrological process covering an area of at least **60,000 Ha** across sub-catchments which directly affect water availability in target villages. Through related public awareness activities linked specifically to the rollout of UNDP supported Governance and Public Administrative Reforms, the project will ensure that the 7 districts of Sekong and Saravane will adopt climate resilient practices linked to local planning and investment for small scale critical rural infrastructure projects.

The necessary capacity for ensuring technical oversight for the proposed project will be provided in both the selected Provinces residing within the new Provincial Departments for Natural Resources and Environment, with additional and dedicated technical support provided with project funds.

Given that the proposed project will be operating near the Savannakhet province, where there is an ongoing LDCF project focusing on resilience of the agriculture sector to climate change, it will be important to ensure that project management structures are sufficiently robust to ensure that the risk of duplication is averted. While the overall goal and objectives of the two projects are different, there is a risk that some of the capacity building and training elements could overlap, particular in the area of disaster risk reduction and the proposed support being provided to district level disaster management committees. The ongoing LDCF project is introducing a Local Integration Platform at Provincial level in Savannakhet with the objective of improving coordination of initiatives on the ground, to be chaired by the Governor's Office, in order to avoid duplication risks. Furthermore, the recent upgrade of WREA to a Ministry of Natural Resources and Environment means that disaster management comes under its purview providing a single point of coordination at province level. The project will use this medium to communicate the objectives and goals of the project.

UNDP's partner agency, the United Nations Capital Development Fund, has a track record in strengthening local administrative capacities through the provision of financing and investment via its District Development Fund mechanism. This project has been actively working in the project provinces of Saravane and Sekong. The DDF supports local financing for public services provision, particularly through the expansion of infrastructure at district and village levels. It aims to build the capacity of district and village authorities for participatory planning, local budgeting and financing, as well as project and financial management using national systems. It therefore serves both as an investment tool for local administrations but also as a vehicle for strengthening local and central capacities for improved service delivery. In order to help local authorities and communities to begin to address climate related risks, UNCDF has developed an additional mechanism to channel dedicated climate change financing through the DDF to help in climate proofing rural infrastructure. This approach is being applied for this project and will be investigated during the project design phase.

Capacity Building Methodology for Climate Risk Management

This section formulates a capacity building methodology for climate risk management and consists of principles and procedures to implement those principles. The principles are fundamentals of any decision-making when planning or implementing capacity building for climate risk management especially in Lao PDR in the context of the paradigm shift where the negative influence of climate change is anticipated. The methodology and procedures are to be used as a guideline to implement 'the project', which explain processes of capacity building consisting of how to identify resources and constraints for risk management, how to improve the quality of the resources, and how to make the most use of the resources. Capacity building for 'the project' is divided into 4 principals:

Principle 1: Structural Measures & Non-structural Measures

Capacity to implement both structural and non-structural measures needs to be developed.

Principle 2: Institutional, Organizational, and Individual Capacity

All institutional, organizational, and individual capacity is crucial.

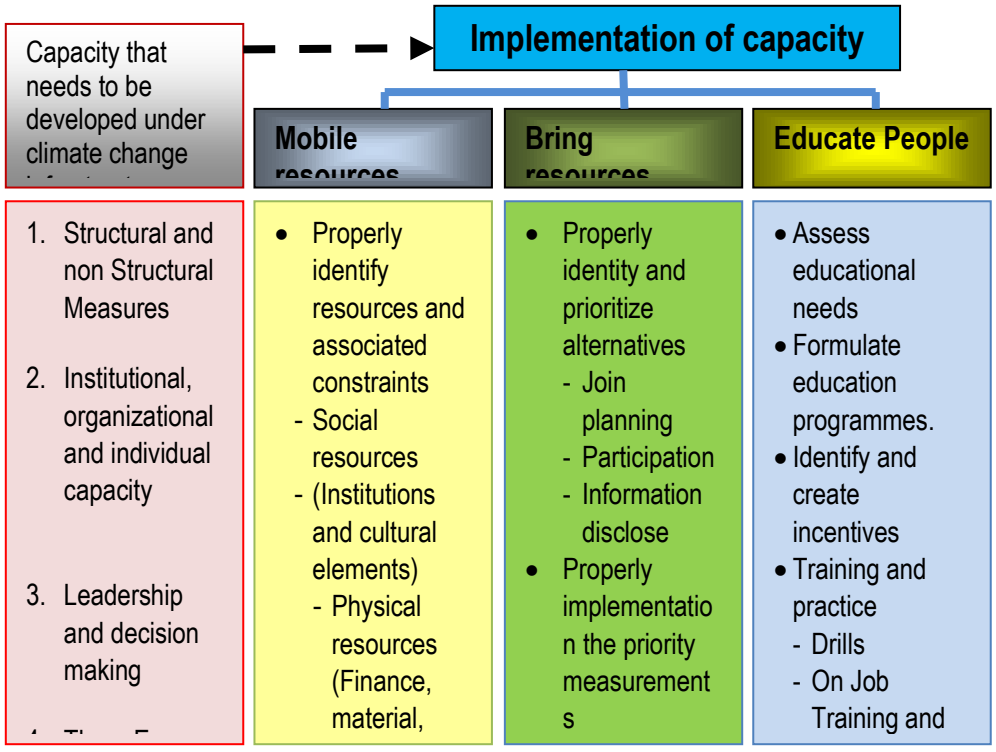
Principle 3: Leadership & Decision-Making

Leadership and decision-making capacity are more necessary under increased climate change risks.

Principle 4: Three Es (Effectiveness, Efficiency, and Equity)

Capacity to secure the three Es is the key to increasing feasibility using management means

These principals are summarised in the capacity building procedure described in **Figure 5** below which also shows how implementation of capacity building is framed by three questions: *how to mobilise resources; how to bring the resources together; and how to educate people?* In other words, these are the answers to the three questions the project is aiming at achieving through capacity building.



Capacity Assessment of Target Groups

The following table summarises the results of the capacity assessment carried out during the PPG phase at several institutional levels of relevance to the project.

Existing Capacity of Sectors at Provincial and District level												
	Provincial Level/Sector						District Level/Sector					
ISSUE	Water resources and Environment	Agriculture and Irrigation	Water Supply and Water supply and sanitation	Public health	Education and Sport	Public works and Transports	Water resources and Environment	Agriculture and Irrigation	Water Supply and Water supply and sanitation	Public health	Education and Sport	Public works and Transports
Awareness of climate change at different institutional levels	Medium (Existing but not in depth)	Medium (Existing but not in depth)	Medium (Existing but not in depth)	Low	Low	Low	Low	Low	Low	Low	Low	Low
Adaptation capacity	Medium (Existing but not in depth)	Medium (Existing but not in depth)	Medium (Existing but not in depth)	High	High	High	Medium (Existing but not in depth)	Medium (Existing but not in depth)	Medium (Existing but not in depth)	High	High	High
Institutional strength and capacity	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low
Technical knowledge among government agencies & NGOs	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low
Concrete implementation of climate change policies	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO

Perception of climate change as sector and not mainstreaming necessity	Low	Low	Low	Low	Low	Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low
Prediction and assessment tools	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
Climate change literature translated into local language	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low
Tools for advising and instructing policy makers	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
Analytical studies on climate change impacts	Low	Low	Low	Low	Low	Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low
Reliable climate change data	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low
Progress in implementation of NAPA/NTP	Medium (Existing but not in depth)	Medium (Existing but not in depth)	Medium (Existing but not in depth)	Low	Low	Low	Medium (Existing but not in depth)	Low	Low	Low	Low	Low
Sectoral implications and adaptation	Medium (Existing but not in depth)	Medium (Existing but not in depth)	Medium (Existing but not in depth)	Medium (Existing but not in depth)	Medium (Existing but not in depth)	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	
Coordination to respond to climate change in developing policies & plans	Medium (Existing but not in depth)	Medium (Existing but not in depth)	Medium (Existing but not in depth)	Low	Low	Low	Low	Low	Low	Low	Low	Low
Financial support for climate change initiatives	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low

Target Groups of Capacity Building Activities

'The project' is designed to accommodate a range of stakeholders from key decisions makers and planners in government to those implementers of technology and innovation right down to the grass root diverse community target groups. Communication between the stakeholders must be flexible and adaptable. Different communities have different levels of literacy, different gender dynamics, and different ways of communicating concepts (like, for example "climate.") Therefore, methods for communicating with communities about climate change need to be adapted to local contexts. It is evident from the field visits and from the literature reviews by the PPT that many communities are already experiencing climate change impacts. Most communities visited by the PPT have shown strong views on the impact of climate variability and change since it most directly impacts their livelihoods.

The PPT have listed in table 4 below the type of target groups identified from the field, the needs of these target groups and examples of activities and tools that could be used to promote capacity building within selected institutions and communities groups.

Table4: Target groups and types of Capacity Building Activities

Target Group Type	Target Groups Needs	Activity Examples
1. Senior decision makers, planner, budgeting at central government, provincial and district	General awareness of CC issues, policy and program options, best practices, tools for decision making	Study tours and participation in regional forum, and producing policy briefs on specific topics, national forum, vocational training on the application tools for decision making Training on CC specific issues, management support in coordinating climate change activities with local governments and sectors and participation in regional forums and study tours, and assist in the preparation of training, workshops and development of public awareness materials, training on technical assessment of the climate change impacts, informed by V&A of Prodoc and through CRVA, basic knowledge on how to interpret results of the analysis and link to project implementation
2. Project Coordinator, Climate change officer	Ability to coordinate and lead a range of CC activities, knowledge of climate change and it impact to rural infrastructure , basic knowledge on impact and vulnerability assessment	
3. Technical Working Groups in general and local governments	Awareness of CC issues, existing situation of projects and infrastructure and vulnerability in their sector, policy and program options, funding procedures, climate change project development etc	General training and technical training, support on policy and planning, support on pilot project development and assist in the implementation of national workshops for the consultation of cc policy and programs with stakeholders
4. Technical team (Engineer, Technician, Operator, designer)	More in-depth knowledge on rural infrastructure (Engineering design), existing situation and	In-depth technical training on how to evaluate existing (Baseline conditions) through CRVA, knowledge of climate change, can use and analyses climate change data, understand impact and vulnerability and apply technical data for adaptation planning and

	practical skills on analysis and interpretation of vulnerability results, how to apply to sectors and regions / provinces in Laos.	implement the project. This will be trained through a comprehensive programme at international or regional research institutions outside the country or inside the country if available.
5. Provincial and district local staff	Awareness of CC issues and vulnerability in sectors and provinces, how to design and implement pilot projects, how to adapt provincial programs for CC resilience	General training and awareness, general understanding of vulnerability results and now to apply them in selected provinces and producing policy briefs suitable to the local context (e.g. based on lesson learnt from pilots), and support participation in national workshop
6. Public, infrastructure user, private sectors and	General understanding of CC risks, simple and practical steps to deal with CC risk at community / farm level	General awareness/training in selected locations and sectors through pilot projects and through public media and campaign

Training

Training activities are anticipated to be divided into two types: (i) general and (ii) technical training. General training is aimed at developing the general and common understanding of climate change issues and the use of climate risk, vulnerability and adaptation assessments (CRVA) in developing climate change adaptation policies, plans and programs for rural infrastructure development. The technical training is aimed at developing the technical skills of staff from government and private sector institutions to develop tools in analysing the result of climate impact, vulnerability and adaptation assessment in order to make informed decisions for adaptation recommendations and measures for planning, monitoring and implementation of propose rural development projects

A Climate Change Technical Team (CCTT) will be established comprising representatives from government, private and communities groups with the responsibility to impart the various capacity building activities to a wider audience. The training by the CCTT will be done using various forms of training aids from open forums workshop types training to more intense technical and on-the-job training. The types of training will be tailor to suit the recipient audience.

The general and technical training will be implemented at both the national and local levels. At the local level the training will be conducted in provinces or districts selected for the demonstration projects. The technical and in-depth technical training will be conducted only for target group at the national level, i.e. CCO staff, TWGs and the CCTT. For this type of specialist training, participants will be from technical / mid-level management personnel.

The in-depth training will be conducted by an recognised international or a regional research institute or INGO either inside or outside Lao PDR.

A Technical Training

It is important for training and awareness raising to be matched to the level and role of staff. Senior and middle managers need broad understanding of climate change impacts and

adaptation options and models of policy and program responses. Junior or technical staff, on the other hand, needs training on more technical issues and planning tools. They need to be able to conduct investigations, interpret research results and respond to planning and policy questions. Training efforts will be largely wasted if they are not correctly matched to the level of staff and their respective roles.

The membership of most of the TWGs is rather mixed, both in terms of the level of staff and the specific agencies which they represent. Senior staffs are often very busy and therefore assign more junior staff to attend TWG meetings and training activities. This leads to considerable variation in the specific people attending from one training event to the next, making it difficult to achieve sustained capacity building.

Considering these factors, it is recommended to establish a Climate Change Technical Team (CCTT) that can assist the TWGs in using climate impact assessment tools in evaluating and developing short and long-term adaptation strategies. The members of this CCTT should be selected staff from the main technical agencies such as the Department of Meteorology and Hydrology (DMH) and the Water Resource and Environment Research Institute (WERI), the National Agricultural and Forestry Research Institute (NAFRI) and the National University of Laos (NUOL). The selected members of the CCTT should have an adequate level of prior technical skills and should be in jobs which will allow them to apply the technical training on climate change adaptation which they will receive. They should also be committed, as individuals, to attending all of the technical training which will be provided under this project.
The CCTT should be assisted to design a program of climate change investigations which will meet the broader needs of the TWGs and local stakeholders. This CCTA program should also be incorporated into the training program so that training activities can be focused and practical rather than simply theoretical.

The UNDP will propose and facilitate the formation of the CCTT and provide on-the-job training for the member to improve their skill on using the tools.

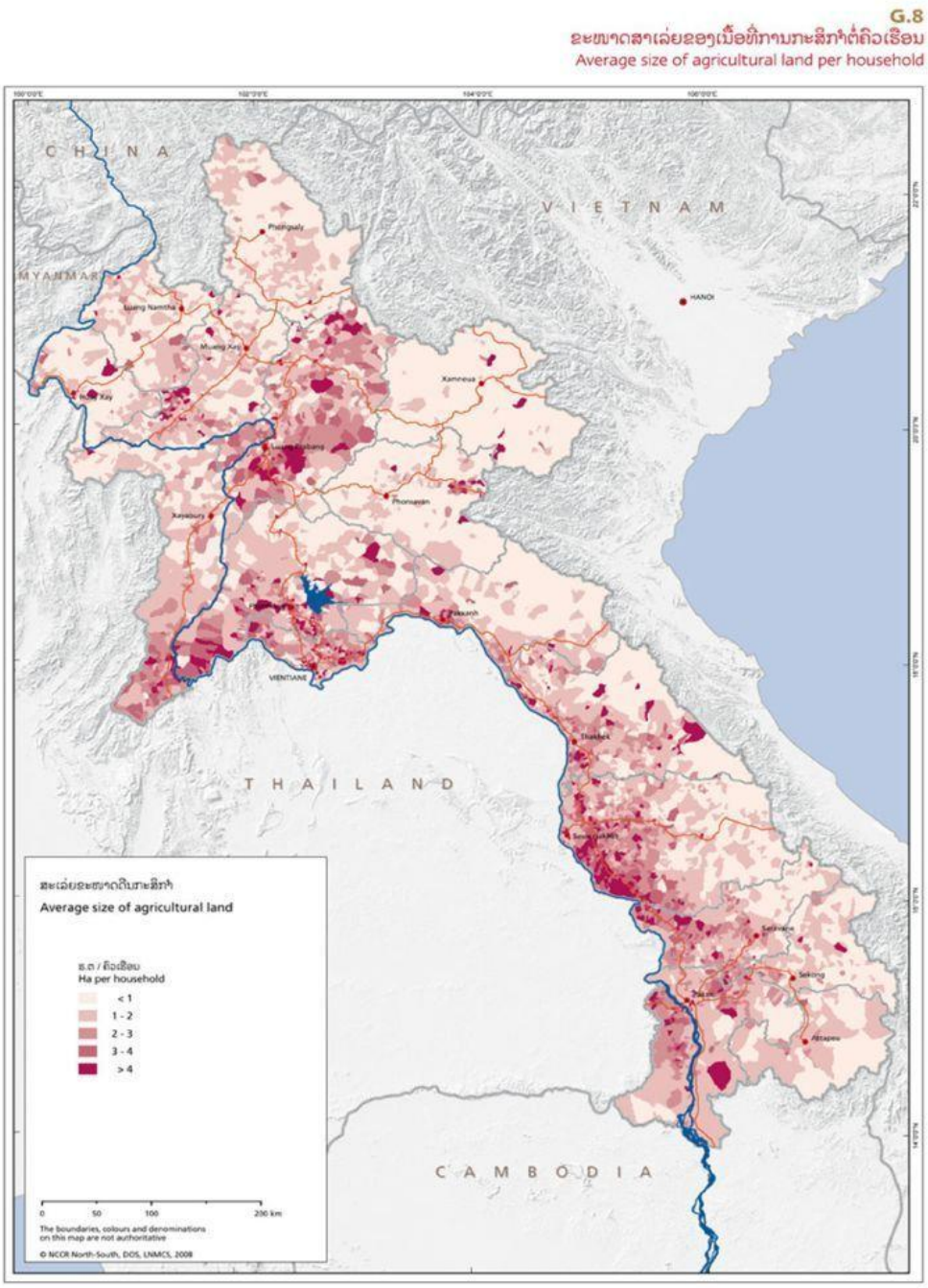
B. Training on Pilot Activities

As mentioned above, Lao PDR has a low capacity to manage climate risk at the local, community level. This is associated with the acceleration of environmental degradation due to poverty problems, and limited capacity to effectively use climate information in managing current and future climate risks due to ineffective climate information system.

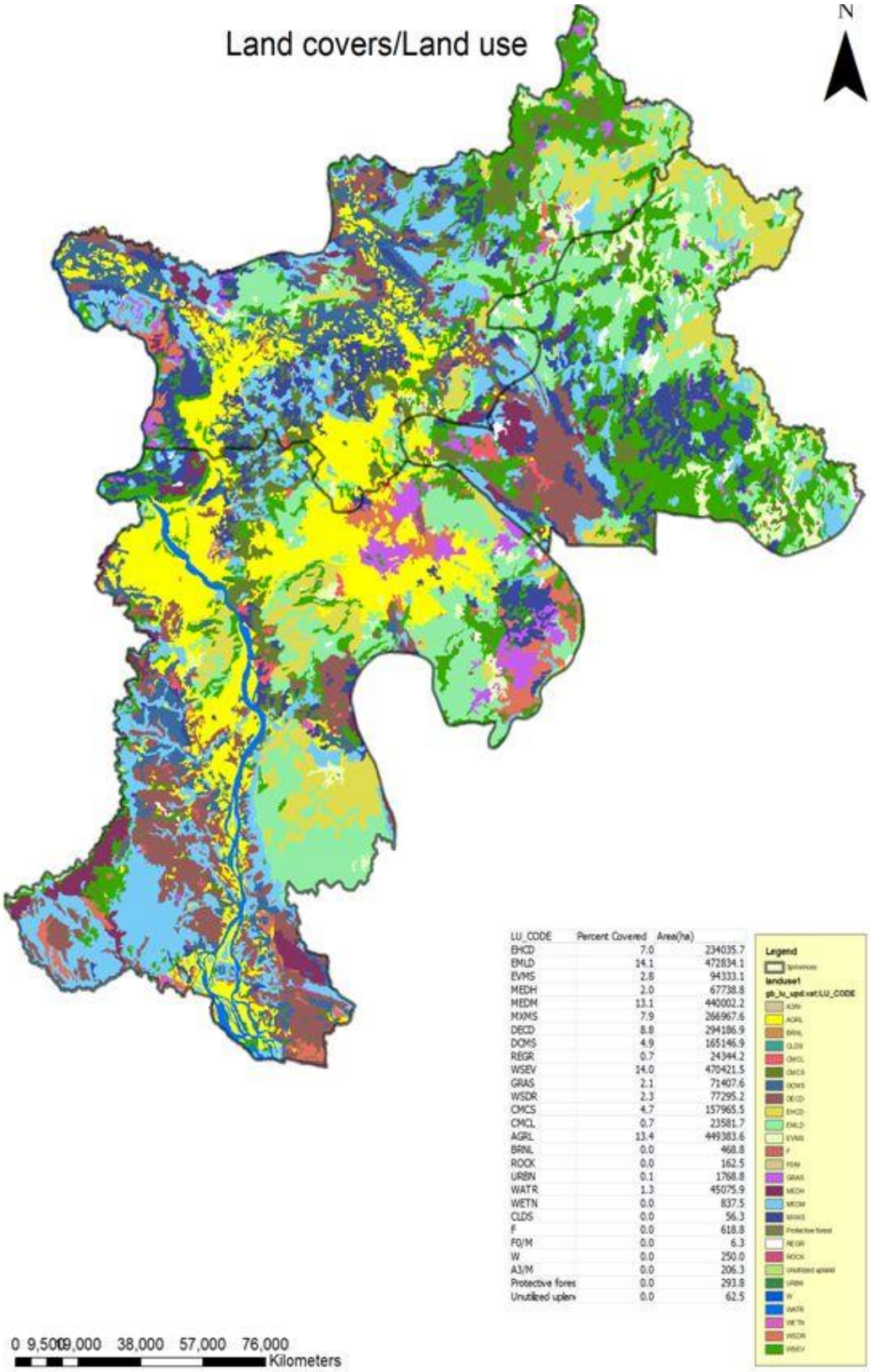
To address these problems the project will implement a number of pilots with the involvement of local communities, local governments and other local stakeholders. Pilot activities can be considered as part of capacity building process. The pilot activities will consists of a set of interventions which include climate change technology intervention accompanied by human resource development and financing/institutional strengthening activities and infrastructure adaptation. The involvement of local communities and local government and other local stakeholders in developing the pilots will help to ensure that the pilots are in line with community needs and properly address the climate risk in a way that is supported by the local governments. This process is expected to increase understanding of local governments in managing climate risk and to assist in designing climate change adaptation policy and programs for rural development. Lessons learned from the pilots will later be used as inputs for revising or improving climate change adaptation policies for national and local governments and also replicate for other projects.

Annex 5: Maps

Average size of agricultural land per household Lao PDR

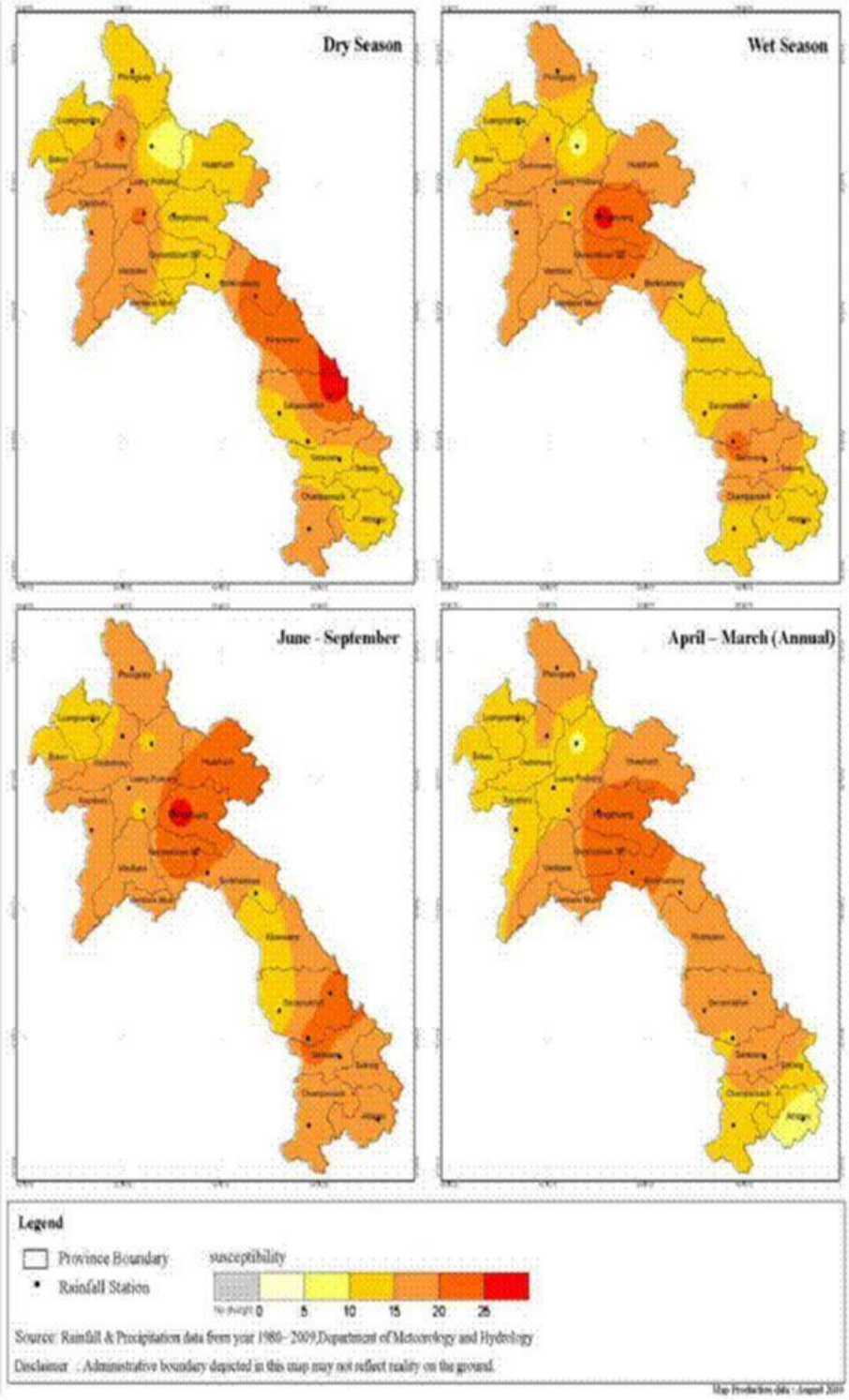


Land cover and land use of Lao PDR

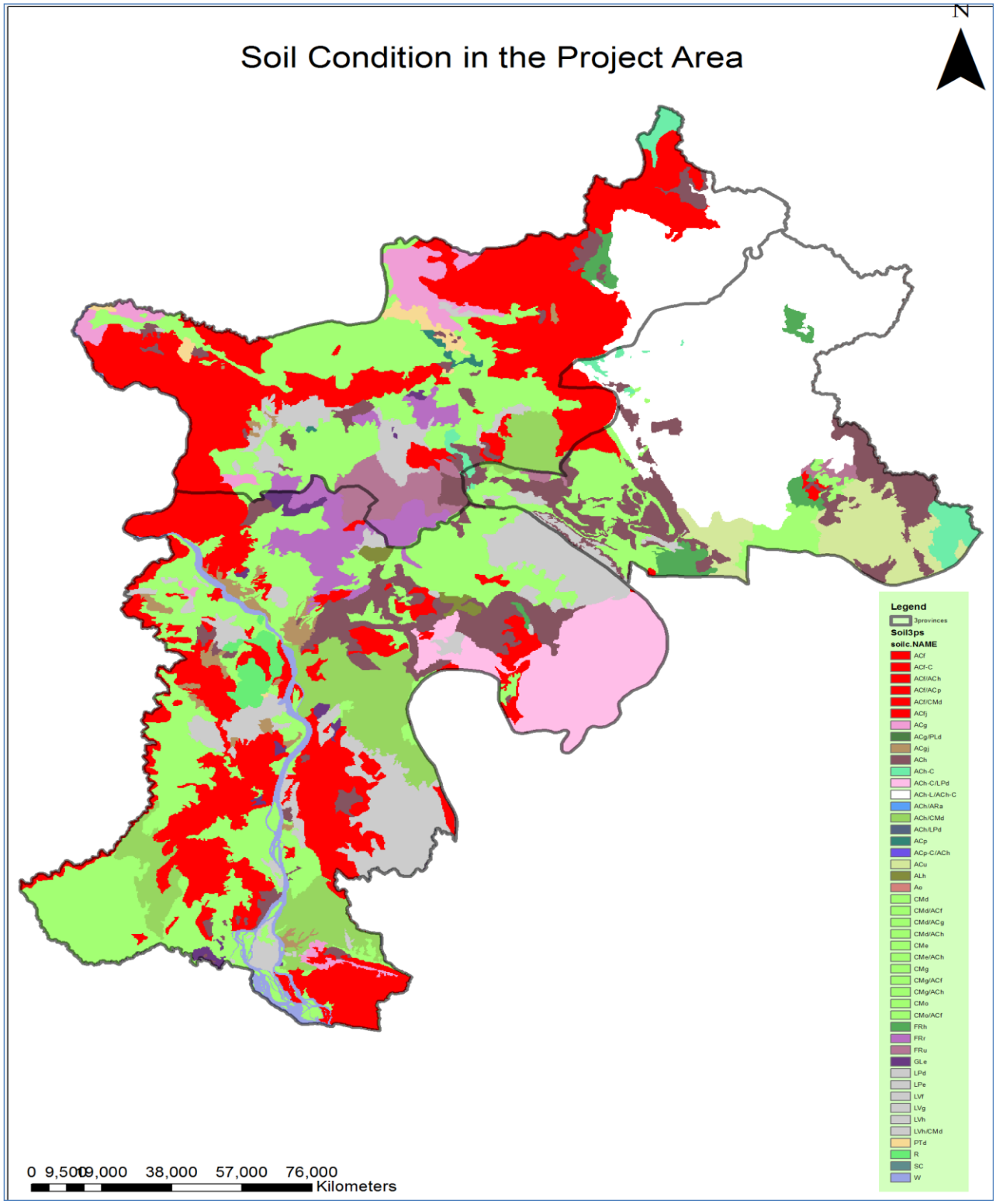


LU_CODE	Percent Covered	Area(ha)
EHCD	7.0	234035.7
EMLD	14.1	472834.1
EVMS	2.8	94333.1
MEDH	2.0	67738.8
MEDM	13.1	440002.2
MIXMS	7.9	266967.6
DECD	8.8	294186.9
DCMS	4.9	165146.9
REGR	0.7	24344.2
WSEV	14.0	470421.5
GRAS	2.1	71407.6
WSDR	2.3	77295.2
CMCS	4.7	157965.5
CMCL	0.7	23581.7
AGRL	13.4	449383.6
BRNL	0.0	468.8
ROCK	0.0	162.5
URBN	0.1	1768.8
WATR	1.3	45075.9
WETN	0.0	837.5
CLDS	0.0	56.3
F	0.0	618.8
F0/M	0.0	6.3
W	0.0	250.0
A3/M	0.0	206.3
Protective fores	0.0	293.8
Unutilized uplan	0.0	62.5

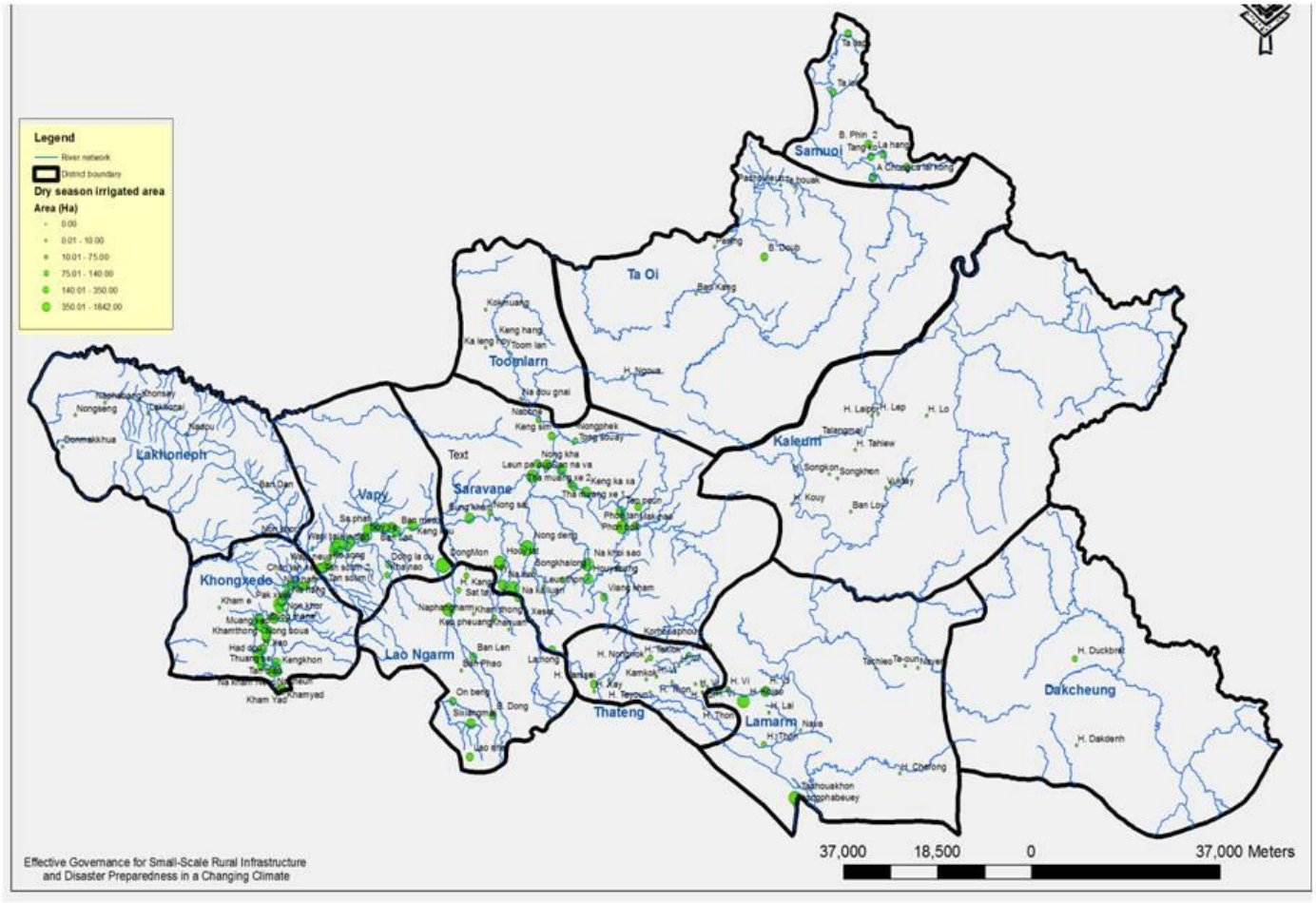
Susceptibility to moderate to extreme droughts in Lao PDR



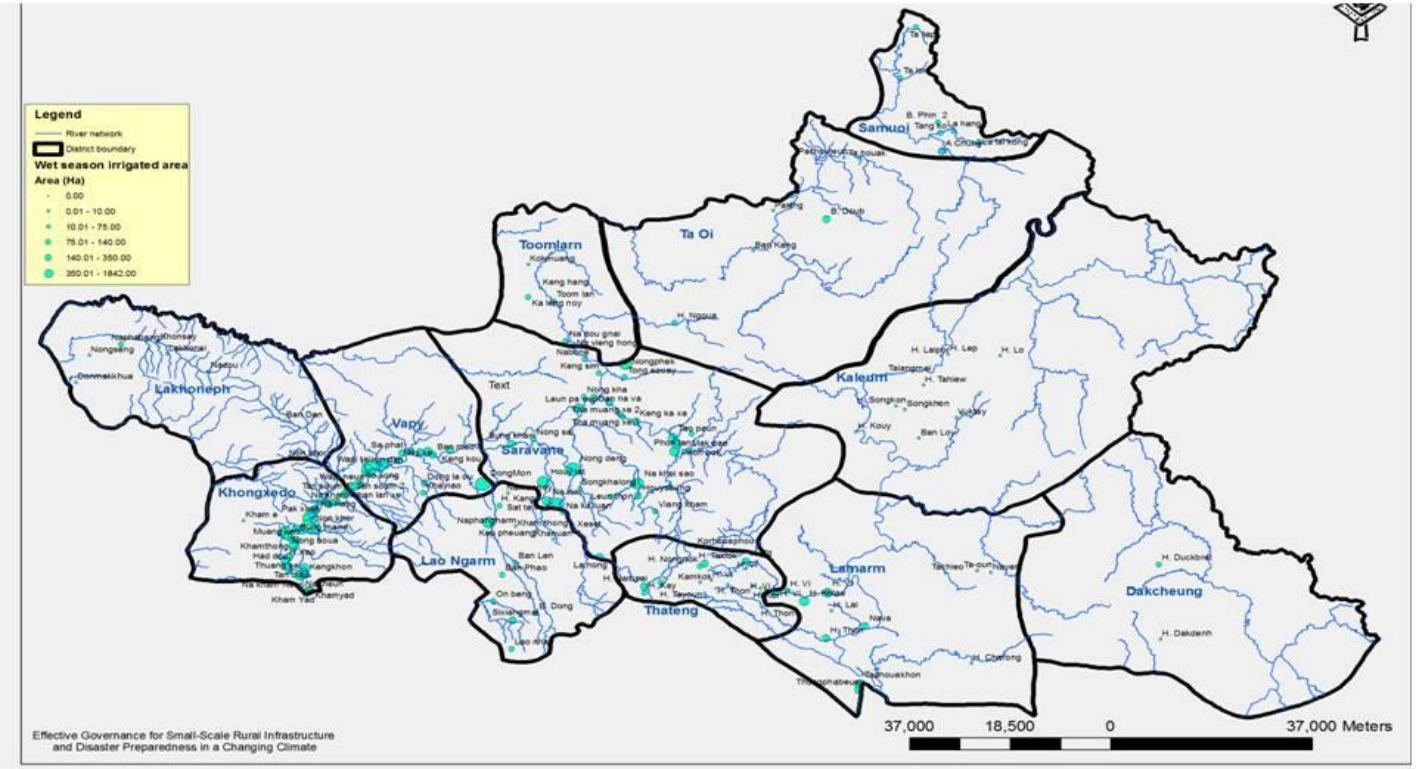
Soil condition in the project area



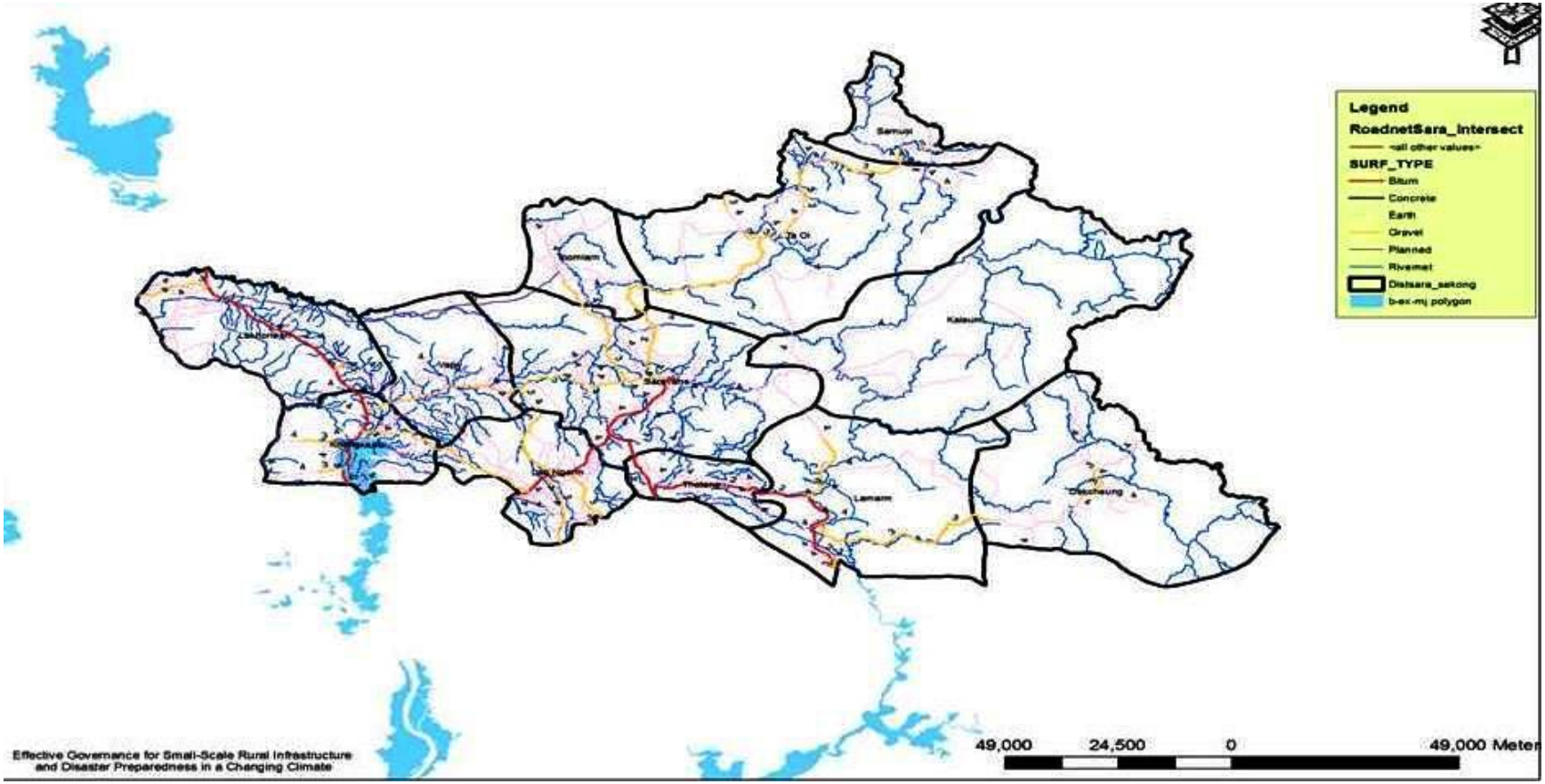
Existing dry season irrigation projects in Saravane and Sekong provinces funded by the government of Lao PDR



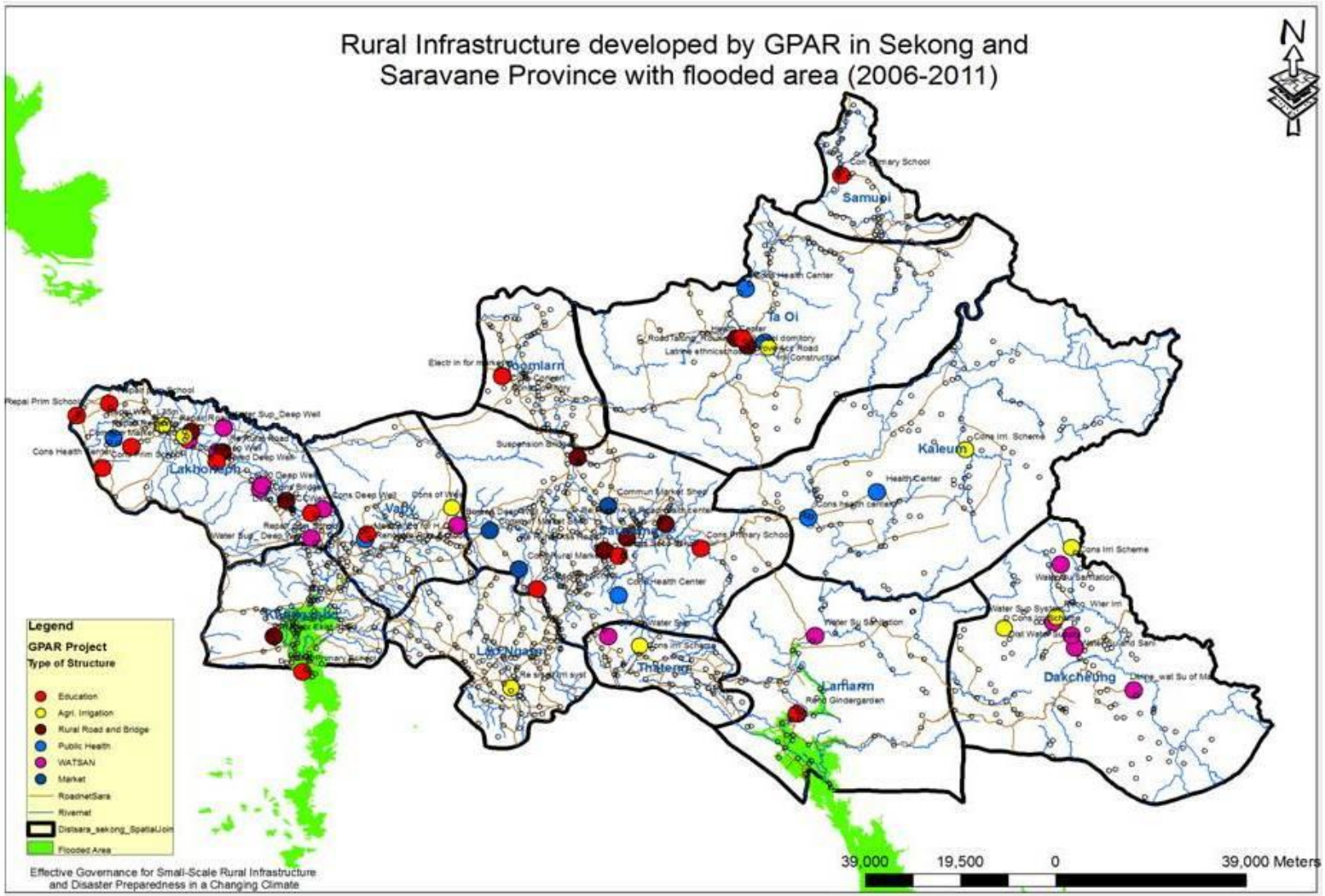
Existing wet season irrigation projects in Saravane and Sekong provinces funded by the government of Lao PDR



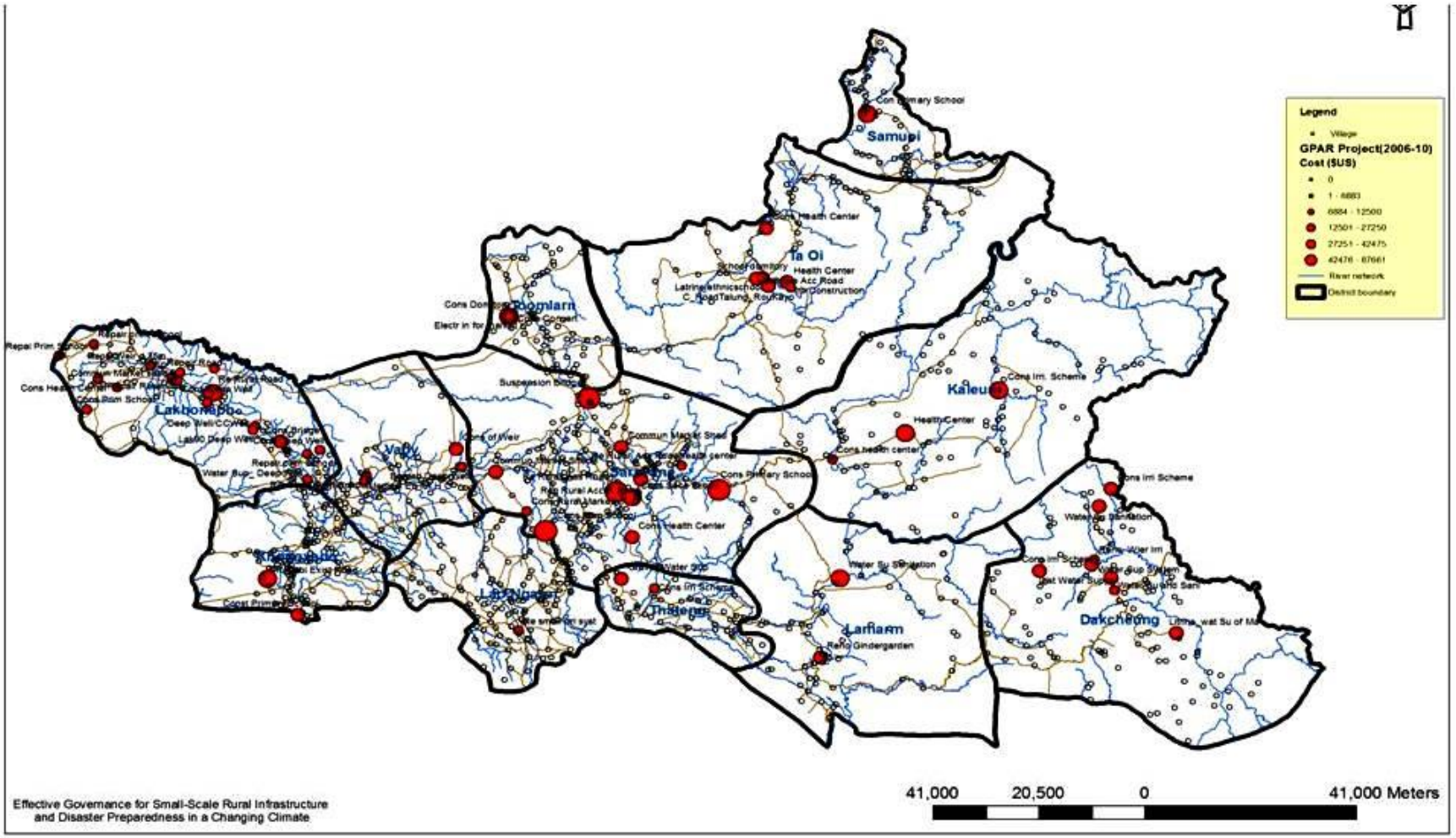
Road network in Sekong and Saravane provinces



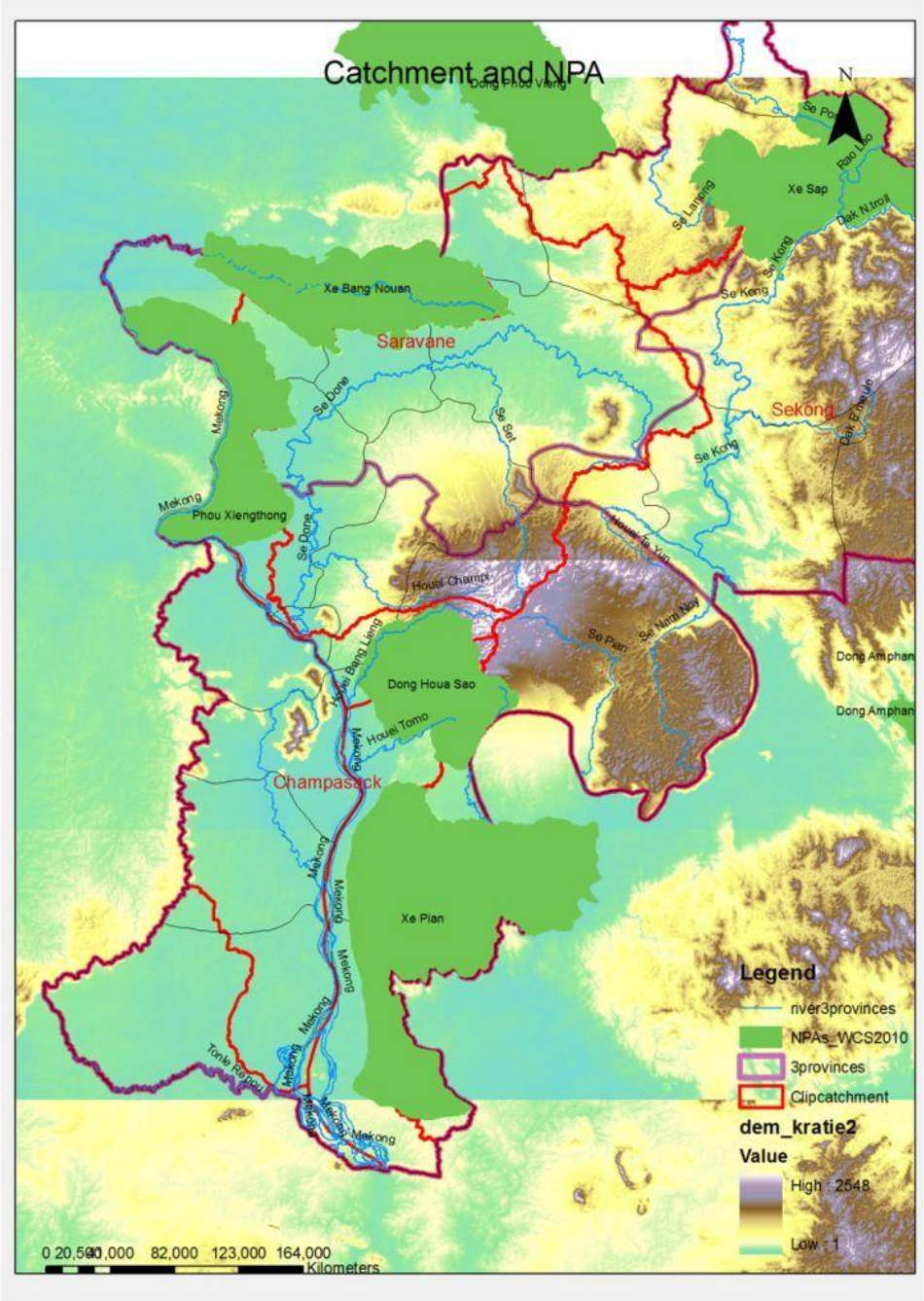
Rural Infrastructure developed by GPAR in Sekong and Saravane provinces with flooded area (2006-2011)



Rural infrastructure developed by GPAR in Sekong and Saravane provinces (2006-2011)



Catchment and National Protected Areas



Annex 6: Tables

List of existing operational irrigation schemes including head works, main canal and branches in Sekong province

No	Name of Project	Location		Type of Project	Supply Area		Main canal System						Branching Canal					
		Village	River		Wet Season	Dry Season	Concrete	Rock lining	Brick lining	Earth	Conveyance	Pipe	Concrete	Rock lining	Brick lining	Earth	Conveyance	Pipe
					(ha)	(ha)	m	m	m	m	m	m	m	m	m	m	m	m
I	**Lamarm District**				708	780	3,975	-	800	14,940	120	1,945	2,280	-	2,580	9,850	135	635
1	Huay Vi Project	Ban Phon	Huay Vi	Intake Gate	217	217	2,600	-	-	2,400	50	-	-	-	700	3,100	40	-
2	Huay Vi Project	Ban Tiu	Huay Vi	Intake Gate	30	11	-	-	400	1,500	-	-	-	-	700	650	-	-
3	Reservoir Project	Ban Phon	Huay Khiao	Reservoir	180	185	810	-	-	4,090	70	15	1,730	-	380	2,000	95	-
4	Huay Thon Project	Ban Mo	Huay Thon	Intake Pipe	32	15	-	-	-	800	-	1,500	-	-	-	-	-	600
5	Tat Hoakhon Project	Dan-Donchanh	Xe Noy	Intake Gate	154	310	550	-	400	550	-	-	550	-	800	1,600	-	35
6	Huay Kung	Ban Beng	Hyay Kung	Community	15	10	-	-	-	1,50	-	-	-	-	-	800	-	-

	Project									0								
7	Huay Kro Project	Ban Tiu	Huay Kro	Weir	30	11	-	-	-	600	-	215	-	-	-	300	-	-
8	Hong Lai Project	Hong Lai	Hong Lai	Reservoir	10	2	15	-	-	1,200	-	215	-	-	-	300	-	-
9	Huay Chalong Project	Kaxangkang	Huay Chalong	Weir	4	2	-	-	-	600	-	-	-	-	-	300	-	-
10	Naveu-Kaynggeng Project	Ban Na Veu	Huay Bet	Community	20	10	-	-	-	800	-	-	-	-	-	200	-	-
11	Ta Oun Project	Ban Ta Oun	Huay Ta Oun	Community	10	5	-	-	-	600	-	-	-	-	-	250	-	-
12	Ta Cheo Project	Ban Ta Cheo	Huay Ta Cheo	Community	6	2	-	-	-	300	-	-	-	-	-	350	-	-
II	**Thateng District**				**1,267**	**275**	**1,430**	**-**	**400**	**20,870**	**110**	**-**	**50**	**-**	**-**	**9,540**	**-**	**-**
1	Huay Nam Sai Project	Ban Thateng	Huay Nam Sai	Weir	50	8.00	-	-	-	1,200	-	-	-	-	-	400	-	-
2	Huay Tit Proje	Ban Yokthong	Huay Tit	Weir	10	23.00	350	-	-	1,800	-	-	-	-	-	800	-	-

	ct																	
3	Huay Lakang 1 Project	Ban Hua Xe	Huay Lakang1	Weir	11	8.00	-	-	-	600	-	-	-	-	-	400	-	-
4	Huay Lakang 2 Project	Ban Nong Nok	Huay Lakang2	Weir	12	5.00	450	-	-	600	-	-	-	-	-	300	-	-
5	Huay Ta Yeun Project	Thateng Neua	Huay Ta Yeun	Weir	9	3.00	-	-	-	800	-	-	-	-	-	500	-	-
6	Huay Xai 1 Project	Palengneua	Huay Xai	Weir	14	10.00	-	-	-	1,400	-	-	-	-	-	200	-	-
7	Huay Thon Project	Ban Chunla	Huay Thon	Weir	15	5.00	30	-	-	800	-	-	-	-	-	400	-	-
8	Huay Vi Project	Ban Pa Lai	Huay Vi	Weir	10	5.00	-	-	-	400	-	-	-	-	-	400	-	-
9	Huay Xai 2 Project	Palengneua	Huay Xai	Weir	50	10.00	-	-	-	1,200	-	-	-	-	-	400	-	-
10	Huay Tapout Proje	Ban Kafe	Huay Tapout	Weir	10	8.00	50	-	-	800	-	-	-	-	-	600	-	-

	ct																	
11	Huay Yahoung Project	Paleng Tai	Huay Yahoung	Weir	18	8.00	-	-	-	400	-	-	-	-	-	200	-	-
12	Huay La Muang Project	Ban Nong Lao	Huay La Muang	Weir	20	8.00	200	-	-	100	-	-	-	-	-	150	-	-
13	Huay Tok Lok Project	Ban Kandon	Huay Tok Lok	Reservoir	31	10.00	350	-	400	1,200	50	-	-	-	-	800	-	-
14	Huay Lamphanh	Ban Thongyao	Huay Lamphanh	Weir	20	8.00	-	-	-	1,200	60	-	50	-	-	600	-	-
15	Huay Nong Nok Project	Ban Lik	Huay Nong Nok	Reservoir	30	3.00	-	-	-	600	-	-	-	-	-	400	-	-
16	Huay Nam Sai Project	Ban Kong	Huay Nam Sai	Intake Gate	25	8.00	-	-	-	400	-	-	-	-	-	600	-	-
17	Huay Vi Project	Ban Chakam Yai	Hyuay Vi	Intake Gate	10	3.00	-	-	-	500	-	-	-	-	-	400	-	-
18	Huay Nam	Ban Sen Neua	Huay Nam Sai	Weir	30	5.00	-	-	-	600	-	-	-	-	-	200	-	-

	Sai Project																	
19	Huay Lakang Project	Ban Hua Xe	Huay Lakang	Weir	10	5.00	-	-	-	300	-	-	-	-	-	300	-	-
20	Huay Nam Sai Project	Ban Meun	Huay Nam Sai	Weir	80	5.00	-	-	-	400	-	-	-	-	-	100	-	-
21	Huay Tit Project	Ban Ka Peu	Huay Tit	Weir	10	3.00	-	-	-	550	-	-	-	-	-	150	-	-
22	Huay Vi Project	Ban Sa Theu	Huay Vi	Weir	18	5.00	-	-	-	800	-	-	-	-	-	200	-	-
23	Huay Nam Sai Project	Thateng Tai	Huay Nam Sai	Weir	25	5.00	-	-	-	920	-	-	-	-	-	100	-	-
24	Huay Lakang Project	Ban Sen Neua	Huay Lakang	Weir	30	5.00	-	-	-	600	-	-	-	-	-	100	-	-
25	Huay Dam Project	Ban Don Xa	Huay Dam	Weir	30	4.00	-	-	-	400	-	-	-	-	-	120	-	-
26	Huay	Thateng	Huay Nam	Weir	20	8.00	-	-	-	200	-	-	-	-	-	150	-	-

	Nam Sai Project	Neua	Sai															
27	Huay Thon Project	Ban Thon Noi	Huay Thon	Weir	30	5.00	-	-	-	600	-	-	-	-	-	120	-	-
28	Huay Se Don Project	Ban Pa Lai	Huay Se Don	Weir	40	30.00	-	-	-	500	-	-	-	-	-	140	-	-
29	Huay Tit Project	Chalam Kao	Huay Tit	Weir	20	7.00	-	-	-	600	-	-	-	-	-	180	-	-
30	Huay Pa Lai Project	Ban Kamkok	Huay Pa Lai	Weir	20	5.00	-	-	-	400	-	-	-	-	-	130	-	-
31	Traditional/Community weirs: 24 schemese				559	50.00												
III	**Dak Chung District**				**643**	**278**	**-**	**-**	**-**	**5,560**	**-**	**4,965**	**-**	**-**	**-**	**2,359**	**-**	1,468
1	Huay Bung Project	Ngon Don	Huay Bung	Weir	10	10.00	-	-	-	400	-	-	-	-	-	120	-	-
2	Huay Heui Proje	Dak Oeui	Huay Heui	Weir	6	5.92	-	-	-	-	-	400	-	-	-	80	-	100

	ct																	
3	Huay Bung 2 Project	Dak Chak	Huay Bung2	Weir	7	6.70	-	-	-	-	-	600	-	-	-	60	-	45
4	Huay Bed 1 Project	Dak Den	Huay Bed 1	Weir	32	32.00	-	-	-	950	-	180	-	-	-	120	-	60
5	Huay Vi Project	Tang Ta Lang	Huay Vi	Gabion Weir	20	19.60	-	-	-	60	-	320	-	-	-	60	-	32
6	Huay Bed 2 Project	Dak Den	Huay Bed2	Gabion Weir	4	4.00	-	-	-	200	-	120	-	-	-	50	-	25
7	Huay Bed 3 project	Dak Den	Huay Bed 3	Gabion Weir	8	7.50	-	-	-	50	-	120	-	-	-	50	-	60
8	Huay Yeung Project	Dak Do	Huay Yeung	Gabion Weir	5	4.75	-	-	-	45	-	200	-	-	-	40	-	80
9	Huay Nong Project	Dak Do	Huay Nong	Gabion Weir	4	4.00	-	-	-	35	-	110	-	-	-	34	-	20
10	Huay Yri	Dak Do	Huay Yri	Gabion Weir	5	5.00	-	-	-	65	-	45	-	-	-	45	-	80

	Project																	
11	Huay Beung1 Project	Dak Chak	Huay Beung 1	Gabion Weir	11	11.00	-	-	-	120	-	220	-	-	-	50	-	45
12	Huay Beung Project	Dak Kai	Huay Beung	Gabion Weir	1	1.20	-	-	-	50	-	120	-	-	-	-	-	-
13	Huay Ko	Dak Vai	Huay Ko	Gabion Weir	5	5.00	-	-	-	230	-	115	-	-	-	80	-	45
14	Huay Pat	Dak Yang	Huay Pat	Gabion Weir	1	1.30	-	-	-	45	-	80	-	-	-	50	-	40
15	Huay Dang	Dak O	Huay Dang	Gabion Weir	3	2.70	-	-	-	80	-	60	-	-	-	40	-	34
16	Huay Lin Project	Dak O	Huay Lin	Gabion Weir	2	2.00	-	-	-	180	-	65	-	-	-	55	-	32
17	Hauy Mi Project	Dak Xieng	Huay Mi	Gabion Weir	4	3.50	-	-	-	350	-	120	-	-	-	65	-	80
18	Huay Hok Project	Haot	Huay Hok	Gabion Weir	4	4.30	-	-	-	380	-	320	-	-	-	200	-	120
19	Huay Brok Project	Dak Dung	Huay Brok	Gabion Weir	7	7.00	-	-	-	420	-	120	-	-	-	200	-	55

20	Huay To Project	Dak Lan	Huay To	Gabion Weir	6	6.00	-	-	-	400	-	320	-	-	-	70	-	35
21	Huay Beung Project	Dak Xeng	Huay Beung	Gabion Weir	8	8.00	-	-	-	180	-	50	-	-	-	40	-	120
22	Huay Ka Nat Project	Tang Lou	Huay Ka Nat	Gabion Weir	22	22.00	-	-	-	550	-	220	-	-	-	220	-	-
23	Huay Bong Project	Dak Pong	Huay Pong	Gabion Weir	5	5.00	-	-	-	120	-	280	-	-	-	210	-	-
24	Traditional/Community weirs: 68 schemese				464	100.00	-	-	-	650	-	780	-	-	-	420	-	360
IV	**Ka Leum District**				**141**	**67**	**-**	**-**	**-**	**9,508**	**-**	**7,695**	**-**	**-**	**-**	**3,997**	**-**	**4,242**
A	**Weir**				41	18	-	-	-	6,203	-	3,705	-	-	-	2,560	-	2,264
1	Tat Chieu Project	B. Songkhon	Huay Chieu	Weir	2	1.00	-	-	-	415	-	400	-	-	-	60	-	140
2	Tat Buay Project	B. Songkhon	Huay Buay	Weir	10	1.00	-	-	-	600	-	160	-	-	-	320	-	80

3	Tat Cha Ngeu Project	B. Songkhon	Huay Cha Ngeu	Weir	6	3.00	-	-	-	450	-	200	-	-	-	180	-	200
4	Huay Nak I Project	B. Vak Neua	Huay Nak 1	Weir	2	1.00	-	-	-	200	-	315	-	-	-	150	-	60
5	Huay Luan project	B. Vak Neua	Huay Luan	Weir	2	1.00	-	-	-	200	-	120	-	-	-	210	-	120
6	Huay Seun Project	B. Vak Neua	Huay Seun	Weir	1	1.00	-	-	-	550	-	110	-	-	-	180	-	32
7	Huay Pray	B. Loei	Huay Pray	Weir	2	1.50	-	-	-	200	-	80	-	-	-	200	-	80
8	Huay Nak2 Project	B. Vak Neua	Huay Nake2	Weir	2	1.00	-	-	-	300	-	120	-	-	-	300	-	320
9	Huay Peung 2 Project	B. Vak Neua	Huay Peung	Weir	3	1.00	-	-	-	400	-	220	-	-	-	80	-	180
10	Huay Krai Project	B. Chrae	Huay Krai	Weir	1	0.50	-	-	-	600	-	160	-	-	-	50	-	32
11	Huay Prang Proje	B. Chrae	Huay Prang	Weir	2	0.50	-	-	-	430	-	400	-	-	-	60	-	140

	ct																	
12	Huay Kian Project	B. Keng Kian	Huay Kian	Weir	1	0.30	-	-	-	300	-	320	-	-	-	80	-	115
13	Huay chrae Project	B. Chrae	Huay Chrae	Weir	2	0.70	-	-	-	400	-	220	-	-	-	200	-	220
14	Huay Cha Keum Project	B. Chrae	Huay Cha Keum	Weir	1	0.60	-	-	-	313	-	320	-	-	-	200	-	215
15	Huay Deng Project	B Tham Deng	Huay Deng	Weir	2	1.00	-	-	-	300	-	190	-	-	-	180	-	200
16	Huay Chreae Project	B. Chrae	Huay Chrae	Weir	2	2.00	-	-	-	200	-	120	-	-	-	60	-	50
17	Huay Tri Project	B.Chrae	Huay Tri	Weir	2	0.70	-	-	-	345	-	250	-	-	-	50	-	80
¢	**Gabion Weir**				**100**	**49**	**-**	**-**	**-**	**3,305**	**-**	**3,990**	**-**	**-**	**-**	**1,437**	**-**	**1,978**
1	Huay Trai Project	B.Chrae	Huay Trai	Gabion Weir	2	0.80	-	-	-	415	-	400	-	-	-	60	-	140

2	Huay Ta Keu Project	B.Chrae	Huay Ta Keu	Gabion Weir	1	0.75	-	-	-	220	-	120	-	-	-	200	-	300
3	Huay Kalong Project	B . Chrae	Huay Kalong	Gabion Weir	1	0.50	-	-	-	120	-	500	-	-	-	50	-	32
4	Huay Lung Project	B. Loi	Huay Lung	Gabion Weir	1	1.00	-	-	-	180	-	160	-	-	-	40	-	120
5	Huay T KokProject	B. Loi	Huay Ta Kok	Gabion Weir	1	0.50	-	-	-	100	-	160	-	-	-	40	-	120
6	Huay Prok Project	B. Loi	Huay Prok	Gabion Weir	1	1.00	-	-	-	80	-	160	-	-	-	45	-	48
7	Huay Duan Project	B. Vak Neua	Huay Duan	Gabion Weir	2	1.50	-	-	-	80	-	135	-	-	-	55	-	120
8	Huay Ta Hai Project	B. Vak Neua	Huay Ta Hai	Gabion Weir	1	1.00	-	-	-	50	-	130	-	-	-	80	-	200
9	Huay Duan Project	B. Vak Neua	Huay Duan	Gabion Weir	1	1.40	-	-	-	120	-	220	-	-	-	120	-	25

10	Huay La Bong Project	B. Chrae	Huay Labong	Gabion Weir	0	0.40	-	-	-	140	-	320	-	-	-	45	-	32
11	Huay Ai Project	B. Yon	Huay Ai	Gabion Weir	1	0.20	-	-	-	160	-	150	-	-	-	50	-	180
12	Huay Yu Yai Project	B. Tham Deng	Huay Yu Yai	Gabion Weir	2	1.00	-	-	-	280	-	320	-	-	-	40	-	120
13	Huay Yu Noi Project	B. Tham Deng	Huay Yu Noi	Gabion Weir	1	0.50	-	-	-	320	-	220	-	-	-	40	-	46
14	Huay Ling Project	B Ling	Huay Ling	Gabion Weir	2	0.50	-	-	-	180	-	300	-	-	-	80	-	120
15	Huay Ta Yung	B. Vak Neua	Huay Ta Yung	Gabion Weir	0	0.40	-	-	-	220	-	145	-	-	-	80	-	60
16	Traditional/Community weirs: 47 schemese				84	37.78	-	-	-	640	-	550	-	-	-	412	-	315
	Total				2,759	1,401	5,405	-	1,200	50,878	230	######	2,330	-	2,580	25,746	135	6,345

List of existing and usable irrigation schemes including head works, main canal and branches in Sekong Province

List of Existing and Usable Irrigation Including Head Work, Main Canal, Branches in Sekong Province

2011-12

No	Name of Project	Location		Type of Project	Size	Supply Area		Main canal System						Branching Canal					
		Village	River		of Project	Wet Season	Dry Season	Concrete	Rock lining	Brick lining	Earth	Conveyance	Pipe	Concrete	Rock lining	Brick lining	Earth	Conveyance	Pipe
						(ha)	(ha)	m	m	m	m	m	m	m	m	m	m	m	m
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
I	Lamarm District					708	780	3,975	-	800	14,940	120	1,945	2,280	-	2,580	9,850	135	635
1	Huay Vi Project	Ban Phon	Huay Vi	Intake Gate		217	217	2,600			2,400	50				700	3,100	40	
2	Huay Vi Project	Ban Tiu	Huay Vi	Intake Gate		30	11			400	1,500					700	650		
3	Reservoir Project	Ban Phon	Huay Khiao	Reservoir		180	185	810			4,090	70	15	1,730		380	2,000	95	
4	Huay Thon Project	Ban Mo	Huay Thon	Intake Pipe		32	15				800		1,500						600
5	Tat Hoakhon Project	Dan-Donchanh	Xe Noy	Intake Gate		154	310	550		400	550			550		800	1,600		35
6	Huay Kung Project	Ban Beng	Hyay Kung	Community		15	10				1,500						800		
7	Huay Kro Project	Ban Tiu	Huay Kro	Weir		30	11				600		215				300		
8	Hong Lai Project	Hong Lai	Hong Lai	Reservoir		10	2	15			1,200		215				300		
9	Huay Chalong Project	Kaxangkang	Huay Chalong	Weir		4	2				600						300		
10	Naveu-Kayngeng Project	Ban Na Veu	Huay Bet	Community		20	10				800						200		
11	Ta Oun Project	Ban Ta Oun	Huay Ta Oun	Community		10	5				600						250		
12	Ta Cheo Project	Ban Ta Cheo	Huay Ta Cheo	Community		6	2				300						350		
II	Thateng District					1,267	275	1,430		400	20,870	110		50			9,540		
1	Huay Nam Sai Project	Ban Thateng	Huay Nam Sai	Weir		50	8.00				1,200						400		
2	Huay Tit Project	Ban Yokthong	Huay Tit	Weir		10	23.00	350			1,800						800		
3	Huay Lakang 1 Project	Ban Hua Xe	Huay Lakang1	Weir		11	8.00				600						400		

List of GPAR projects in Sekong and Saravane

Province	Name of District	Village Name	Project Name	Project Type	Quantity	Unit	Cost(USD)	Year_cons.	Donors	Household	POPUL
SR	Vapy	NASAN	Construction of Weir	Agr Irrigation	1	Scheme	18406	2009_10	GPAR	313	2042
SK	Kaleum	AR-LOTE	Construction Irrigation Scheme	Agr. Irriga	1	Scheme	29800	2010_11	DDF	14	111
SK	Thateng	SAEN NEUA	Construction Irrigation Scheme	Agr. Irrigation	2	Scheme	11879	2010-11	DDF	30	147
SK	Dakcheung	TANGLOU	Construction of Irrigation Scheme	Agr.Irrigation	1	Scheme	17625	2010_11	DDF	26	163
SK	Dakcheung	TANGTALANG	Construction Irrigation Scheme	Agr.Irrigation	1	Scheme	21134	2010_11	DDF	22	123
SK	Dakcheung	DAK-EUY	Renovation Weir Irrigation	Agri Irri	1	Scheme	2749	2009_10	DDF	175	1023
SR	Lakhoneph	DAN NOY	Cons Bridge	Bridge	1	Unit	22030	2007_08	GPAR	79	486
SR	Saravane	VIENGKAM	Construction Health Center	Health	1	Unit	17609	2009_10	GPAR	26	167
SR	Vapy	KHONSAI	Supply Medical Eq for HC	Health	1	Unit	3480	2009_10	GPAR	39	263
SK	Kaleum	THETSABAN	Construction health center	Health	1	Unit	4242	2008_10	DDF	14	78
SK	Kaleum	SONGKHORN	Health Center	Health	1	Unit	29625	2009_10	DDF	15	59
SR	Lakhoneph	NONGSAENG	Construction Health Center	Health	1	Unit	5851	2006_07	GPAR	12	72
SR	Ta Oi	KATEUN	Health Center	Health	1	Unit	21681	2008_09	GPAR	12	64
SR	Ta Oi	Telabane	Latrine ethnic school	Health	1	Unit	7610	2008_09	GPAR	40	229

SR	Ta Oi	TOUMLETHONG	Cons Health Center	Health	1	Unit	21194	2007_08	GPAR	23	133
SR	Saravane	PHAKKHAYAI	Health center	Health	1	Unit	9709	2006_07	GPAR	139	912
SR	Lao Ngarm	LA NONG NOI	Repair small Irri system	Irrigation	1	Scheme	6068	2006_07	GPAR	7	54
SR	Lakhoneph	LAKHONSIKANG	Repair Reservoir	Irrigation	1	Scheme	6883	2006_07	GPAR	101	755
SR	Ta Oi	PATEM	Construction Irrigation Scheme	Irrigation	20	Scheme	8440	2008_09	GPAR	54	367
SR	Lakhoneph	Khonsay	Repai Weir_L35m	Irrigation	1	Scheme	8875	2009_10	GPAR		
SR	Toomlan	Samakhisay	Installation electricity for market	Maket	1	Unit	875	2008_09	GPAR	21	201
SR	Saravane	NASAI	Construction Rural Market	Market	1	Unit	10922	2006_07	GPAR	173	1037
SR	Saravane	BEUNGKHAMM	Community Market Sheding	Market	1	Unit	23736	2007_08	GPAR	45	237
SR	Saravane	KA SA YAI	Community Market Sheding	Market	1	Unit	23736	2007_08	GPAR	44	264
SR	Saravane	Lakhonsy	Community Market sheding	Market	1	Unit	18750	2007_08	GPAR	18	120
SR	Saravane	SANGLAVE	Repair Rural Access Road	Re Road	13	Km	87661	200_09	GPAR	88	515
SR	Saravane	PHAKKHAYAI	Rehabilitation Rural Access Road	Re Road	3	Km	12500	2008_09	GPAR	27	197
SR	Lakhoneph	NADOUMAI	Rehabilitation Rural Access Road	Road	8	Km	31750	2008_09	GPAR	120	964
SR	Lakhoneph	LAKHONPHENGNOY	Repair Road	Road	2	Km	4645	2006_07	GPAR	122	708

SR	Ta Oi	ROUKAYO	Construction Road from Talung_RouKayo	Road	3	Km	16285	2009_10	GPAR	63	321
SR	Ta Oi	TA LUNG LA LAO	Improvement Access Road	Road	2	Km	16441	2008_09	GPAR	81	535
SR	Saravane	NONGSAKEUNG	Rehabilitation Rural Access Road	Road	5	Km	24296	2009_10	GPAR	19	126
SR	Saravane	KENGSIM NEUA	Suspension Bridge	Road/Bridge	1	Site	58301	2009_10	GPAR	36	196
SR	Khongxedo	NANONG	Rehabilitation of Existing Rural Road	Rural Road	14	Km	39224	2008_09	GPAR	31	178
SK	Lamarm	VATLUANG	Renovation Kindergarten	School	1	Unit	19740	2010_11	DDF	34	172
SR	Khongxedo	DONEKEO	Construction of Primary School	School	1	Unit	27250	2008_09	GPAR	18	92
SR	Saravane	SOU TA VA LY	Construction Primary School	School	1	Unit	55444	2006_07	GPAR	18	86
SR	Saravane	NA KHOI SAO	Construction Secondary School	School	1	Unit	42475	2006_07	GPAR	33	251
SR	Saravane	NONGBOUA	Construction Primary School	School	1	Unit	60186	2007_08	GPAR	115	645
SR	Vapy	BANG KHA KO	Renovate Primary School	School	1	Unit	6391	2009_10	GPAR	36	273
SR	Lakhoneph	NONG IEN	Repair primary School	School	1	Unit	8025	2007_08	GPAR	28	193
SR	Lakhoneph	PHONE SAVAN H	Construction Primary School	School	1	Unit	4819	2006_07	GPAR	73	448

SR	Lakhoneph	NADOU KAO	Construction of Kindergarden	School	1	Unit	6500	2008_09	GPAR	80	458
SR	Lakhoneph	NAKALA	Construction Primary School (2 CRs)	School	1	Unit	7929	2007_09	PGAR	77	472
SR	Lakhoneph	PAKTAPHAN	Repair Primary School	School	1	Unit	5719	2006_07	GPAR	21	141
SR	Lakhoneph	NONGSANO	Repair Primary School	School	1	Unit	4638	2007_8	GPAR	42	218
SR	Samuoi	TALOUNG	Con Primary School	School	1	Unit	42110	2007_09	GPAR	86	448
SR	Tommlarn	Samakhisay	Construction Domitory	School	1	Unit	25000	2007_09	GPAR	67	341
SR	Ta Oi	Telabane	School domitory	School	1	Unit	21632	2007_08	GPAR	17	152
SR	Toomlarn	KALAENG GNAI	Construction of Convert	Water sanitation	25	Unit	31250	2008_09	GPAR	40	261
SK	Dakcheung	DAKCHEUNG	Construct District Water Supply	Water Supply	1	Unit	5530	2008_09	DDF	52	419
SK	Dakcheung	DAKDEUY	Water Supply System	Water Supply	2	Unit	18030	2008_09	DDF	57	389
SR	Lakhoneph	NONGKHITOM	Bored Deep Well	Water Supply	1	Unit	1220	2006_07	GPAR	69	516
SR	Vapy	NA HONG KHAM	Bored Deep Well	Water Supply	1	Unit	4164	2009_10	GPAR	63	455
SR	Lakhoneph	NONGTE	Construction Deep Well	Water Supply	1	Unit	1875	2008_09	GPAR	65	451
SR	Lakhoneph	LAK 90	Lak90 Deep Well	Water Supply	1	Unit	1220	2006_07	GPAR		
SR	Lakhoneph	LAKHONSITAI	Construction of Deep Well	Water supply	2	Unit	3750	2008_09	GPAR		
SR	Lakhoneph	NA SENE PHANH	Construction Deep Well	Water Supply	1	Unit	1220	2006_07	GPAR		
SR	Lakhoneph	Pheng Noi	Bored Deep Well	Water Supply	1	Unit	1973	2007_08	GPAR		

SR	Lakhoneph	Vang Kaet	Deep Well/CC Weir	Water Supply	1	Unit	1973	2007_08/09_10	GPAR		
SK	Dakcheung	MANGHA NOI	Litrine and water Suply of Mangha	WATSAN	3	Unit	18673	2008_09	DDF		
SK	Thateng	TAKYO	Gravity Water Supply	WATSAN	1	Unit	19375	2010_11	DDF		
SK	Lamarm	TANUEM	Water Supply Sanitation	WATSAN	1	Unit	35832	2009_10	DDF		
SK	Dakcheung	DAKPAM	Water Supply and Sanitation	WATSAN	1	Unit	20000	2009_10	DDF		
SK	Dakcheung	TANGPEUANG	Water Supply Sanitation	WATSAN	2	Unit	18773	2009_10	DDF		
							116728				

SK Sekong province

SR Saravane Province

Cost Converted from Lao Kip tp US dollar with conversion rate 8000kip/1$

Possible Programme/Project and Stakeholder Cooperation

In addition to the baseline initiatives in the stakeholder involvement plan and the baseline projects of each outcome the PPG team has identified the following initiatives that the project could collaborate with. An overview is provided in the table below.

Outcome 1:

Apart from NGPAR including DDF the LDCF resources will be closely linked to initiatives active in the areas of local governance and planning.

The Poverty Reduction Fund (PRF, funded by WB and SDC) provides direct access to budgets for small-scale rural infrastructures. On the planning level the implementation follows guidelines, which yet do not integrate climate change adaptation aspects. The proposed project will inform the PRF about climate resilient planning and investment procedures. The most important cooperation issue is to create synergies in districts where the PRF the DDF, other funds for ecosystem management and the new project are implemented. The holistic planning approach of the new project will support districts defining which funds should be used for which district priorities. By doing so it will be avoided to use CCA fund for baseline development issues. The presence of different funding sources in one district can also lead to co-financing arrangements in the case when investment costs of a development priority that meet climate change additionality criteria, are too high for only one of the mentioned funding sources.

The National Integrated Water Resources Management Support Program (WB, ADB) supports planning procedures and data collection in the area of IWRM. Although DRM aspects are already covered, CCA is not yet dealt with in this initiative. The LDCF project will inform the IWRM initiative about CCA issues relevant for IWRM. Further the IWRM initiative does research on groundwater availability and run-off regimes in the sub-catchments of the proposed project. This data is very important for the catchment approach of the new project.

The Capacity Enhancement for Coping with Climate Change Project (ADB) has intervened at the national level by forming CC related working groups, including on water, agriculture and infrastructure. A series of awareness raising and traininbg events has been conducted to improve planning skills in those sectors related to CC. The project intends to implement a initial investment project in the field of CCA in the water sector and as possible project sites Sekong or Saravane provinces were mentioned. There will be close exchange between the project activities implemented with LDCF resources and the initial investment project, in case it is going to be implemented. Its is yet unclear if a second phase of the ADB project will be carried out after October 2012. If so a close link between their central level CCA planning approach and the subnational CCA planning approach of the LDCF project will be established.

The Land Management – Rural Economic Development Project (GIZ) currently works on revising the national guidelines for district planning under the MPI. Obviously, although they do not intervene in Sekong and Saravane, this is extremely important for the proposed project and LDCF resources can ad concrete on the ground CCA experiences in the water sector to inform that revision process. On the methodological level, the PPG team suggest to use the GIZ projects simplified Quantum GIS tool. As part of the revision process this tool is going to be nationally mainstreamed regarding data analysis and management at district level. An explicit goal of the project is also to include climate change aspects into the district planning process. Again, the proposed project can offer first hand experiences to the GIZ driven revision process of district planning guidelines.

The World Wildlife Fund (WWF) has been assigned by the Worldbank to conduct research regarding a national Ecosystem-based Adaptation framework[2]. Field work will be done in

[2] The project is in its fact-finding phase. Therefore a concrete project title, or basic project information is not yet available.

Southern Laos, including the target provinces. Implementation of EbA type activities is not an objective of the project. The LDCF project will inform the framework development process with concrete implementation experiences, since it is the first project in Laos, which includes EbA as a guiding principle.

The first Lao NAPA "Enhancing Agriculture Resilience" Project enables informed decision-making in the agriculture sector by enhancing the the existing knowledge base on climate change and impacts in Lao PDR, especially in relation to agricultural production, food security and vulnerability. The capacities of sectoral planners at national, provincial, district kumban levels will be strengthened. A close collaboration between the two projects regarding capacity development activities is envisaged in Sekong province, which is one of the target provinces of the NAPA 1 project. In general the NAPA 1 can inform the NAPA 2 project on climate resilient agroforestry and small-scale irrigation practices. The other way round NAPA 2 ill inform NAPA 1 about its experiences gathered in those sectors. Especially the climate resilient construction standards for small-scale irrigation should be taken into consideration by NAPA 1.

River Basin Committee Support projects, such as UNDP PEMSEA, IUCNs 3S project and components of WB/ADB IWRM project do not yet take into account CCA considerations. The proposed project will inform those initiatives on how to include into IWRM. When the RBCs will be fully operational during the project period of NAPA 2, the members of these committees are considered to be an important target group for awareness raising and capacity development measures carried out with LDCF resources.

Outcome 2:

The PPG team has identified the most important players in the area of small-scale rural infrastructure development in all MDG relevant sectors, which do not yet take climate change considerations into account. The project can collaborate with those projects on cc resilient infrastructure development.

Table 1: Baseline projects outcome 1

Sector	**Type of small infrastructure**	**Donor**	**Project Area**
Agriculture /Small scale irrigation	Small irrigation system: Weir, reservoir, canal, water intake, diversion, pumping	ADB, Poverty reduction programme (WB,SDC), GPAR	Sekong and Saravane
Water Supply and Sanitation	Spring water intake, piping system, water storage tank for village, school, hospital, toilet	ADB, Poverty reduction programme (WB,SDC), GPAR, UNICEF, RED CROSS, CFCAA, SIDA, CARE, World Concerns, JICA	Upper and middle catchment of river basin in the two provinces
	Ground water deep well (Hand shake and small electric pump), storage tank	JICA, UNICEF, SIDA, CARE, GPAR	Middle and lower catchment of river basin in the two provinces
Public health	Village health center, clean water supply, equipment and facilities	JICA, GPAR, UNICEP, ADB, WHO, Poverty reduction programme (WB,SDC)	All districts in the two provinces
Education	School building, dormitory for ethnic	JICA, ADB, GPAR, UNICEP, Poverty	All districts in the two provinces

	minority student, water supply for school and dormitory, kindergarten, teaching materials	reduction programme (WB,SDC)	
Public works and Transport	Small rural road, community road, small bridge	ABD, JICA, Poverty reduction Programme (WB, SDC), KFW, GPAR	All districts in the two provinces

Outcome 3

The following table summarises the main forest conservation programs in the target area and the kind and amount of past and donor support and ongoing donor support. As the table shows past programs mainly focussed on NPAs, while current programs do take into account also other forest types outside the NPAs. This corresponds with the fact that major deforestation and forest degradation rates are nowadays found outside the NPAs. As a reaction to this, current REDD projects, such as in Xe Sap NPA and its neighbouring forest corridors or such as the SUFORD project, which focuses on so-called production forests in the four most important timber-producing provinces in Laos (Khammouane, Savannakhet, Saravane and Champasak) follow a landscape approach of forest management and include also non conservation type forests in their programs. Outside the project areas of this new program type of forest management current management practices for smaller ecosystems such as spring forests or upper catchments forests, that provide supply schemes with water or that protect all kinds of small scale rural infrastructures from increasing climate threats, are either poorly implemented or do not exist.

Table 2. Forest Conservation in Saravane and Sekong Provinces

Name of NPA/ Landscape issue	Donor Support		Budget	Description	Management Objective	Key Activities/Target area
	Past	Current				
Se Sap NPA	Funded by WB from 1996-1999 with a total buget of US$X	Funded by KfW through WWF Laos from 2011-2015	897,500 Euro	The area was established in 1996 by Prime Ministerial Decree, with a toal area of 133,500 ha covering Saravane and Sekong provinces	Carbon sink and biodiversity conservation	Conservation education, law enforcement, Land use planning and livelihood improvement and biological Monitoring. Saravane and Sekong provinces including To Oy and Kaleum District authorities
Se Ban Nouane	Funded by SIDA from 1990-1995 with a total budget of US$X	None	Funded by government with uncertain budget	The area was established in 1993 by Prime Ministerial Decree, with a toal area of 108,413 ha covering Saravane and Savannakhet	Biodiversity conservation	Opportunistic patrol based on the report. For Saravane side, the NPA is managed by Vapy and lakhonpheng Districts
Phou Xiengthong	Funded by German Agriculture from 1997-1998, with a total budget of US$X	None	Funded by government with uncertain budget	The area was established in 1993 by Prime Ministerial Decree, with a toal area of 120,000 ha covering Saravane and Champasack	Biodiversity conservation	Opportunistic patrol based on the report. For Saravane side, the NPA is managed by Khongsedone and lakhonpheng Districts

Xe Sap NPA and Natural Forest Corridors		REDD Funded by Federal Ministry for the Environment, Nature Conservation and Nuclear Safety Germany, KfW, WWF Germany 2011 - 2014	7 Million Euro trough International Climate Initiative (BMU) and 1,2 Million Euro WWF Germany	The area was established in 1996 by Prime Ministerial Decree, with a toal area of 133,500 ha covering Saravane and Sekong provinces	Carbon sink and biodiversity conservation	Improving protected area management, reducing illegal logging and control of transboundary timber trade, natural forest restoration in the degraded forest corridors in Quang Nam and Thua Thien Hue provinces, trans-boundary REDD pilot. Saravane and Sekong provinces including To Oy and Kaleum District authorities
Production Forest Areas (PFAs) in the four most important timber-producing provinces in Laos - Khammouane, Savannakhet, Salavan, and Champasak		Government of Lao PDR, Worldbank, Government of Finland 2009 - 2011	IDA Credit 9 Million USD and 8 Million EUR for SUFORD-project by Government of Finland		Carbon sink and biodiversity conservation	Improve the policie, legal and incentive framework enabling the expansion of participatory sustainable forest management (PSFM) throughout the country, bring the countries prioritie natural production forests under PSFM, improve villager's well-being and livelihoods through benefits from sustainable forestry, community development and development of viable livelihood systems. Khammouane, Savannakhet, Salavan, and Champasak

Table 3: Most important baseline activities all outcomes overview

No.	Programme/ Project/ Brief Description	Donors/ Stakeholders	Target Provinces	Agreements made/ cooperation issues which have happened	Potential Collaboration with LDCF2
1	The Poverty Reduction Fund (PRF) (2006): financially autonomous organization (WB, SDC). Finance small-scale infrastructure and services to strengthen local capacity	WB, SDC	All provinces in the country and specific focus on 49 poorest districts	- sustaining growth through improved investment climate and competiveness; - improving social outcomes by improving the quality of the public finance management framework and service delivery mechanism in the health and education sectors	- Upgrading existing small rural infrastructure built by PRF (Districts and Communities). - Applying existing guidelines and update with new knowledge on climate proofing of infrastructure, strengthening management of infrastructure maintenance etc.
2	The Environmental Protection Fund (EPF) (GoL 2005): autonomous organization (WB, ADB): strengthen environmental protection, sustainable NRM, biodiversity conservation and community development (now under MONRE)	WB, ADB, UNDP	North and Central Provinces	Northern Rural Infrastructure Development Sector Project (RRP LAO 42203) Environmental Assessment and Review Framework	- Cooperation in the field maintenance of ecosystems and national biodiversity, - district and community development. - Bottom up planning and implementation methodology - Include climate change adaptation and climate resilient infrastructure issued in community development,

					including knowledge on design, maintenance and management
3	The Forestry and Forest Resource Development Fund (FRDF) (MAF 2005): management of Protected Forest Areas and National Biodiversity Conservation Forests	WB	All provinces hosting National Protected Areas	Management of Protected Forest Areas and National Biodiversity Conservation Forests	- Collaboration in ecosystem planning and management. - Land use planning (LUPLA and PLUP)
4	Programme-based approach projects in agriculture, conservation and poverty reduction	The Agro-Biodiversity Initiative (TABI) (GoL, SDC 2009-2011)	Luang Prabang and Xiengkhuang Provinces with possible extension to other provinces, Lao People's Democratic Republic	Data on biodiversity resources	- Cooperation in the area maintenance of ecosystems and national biodiversity - district and community development - Bottom up planning and implementation methodology - Include climate change adaptation and climate resilient infrastructure issued in community development, including knowledge on design, maintenance and management
5	Projects to improve agricultural productivity (sustainable use of NR) and build the capacity of Government	The Asian Development Fund (ADF) (2010-2017)	Savannakhet and Sayabouly province	Sample of Pilot Projects and Capacity building plans	- Capacity building in the water and agriculture sector - extend knowledge on climate change adaptation in terms of

					planning, design, construction, maintenance and management to PAFO, DAFO, Communities and Water user groups
6	Capacity Enhancement for Coping with Climate Change	The Asian Development Bank (ADB) (2010-2013)		The project will choose a watershed in Sekong as demonstration site for adaptation in the water sector. Harmonization and knowledge exchange required	Applying lesson learnt from this project and collaboration in training on climate change adaptation
7	Improving the Resilience of the Agriculture Sector in Lao PDR to Climate Change Impacts (2010-2014)	Least Developed Countries Fund (LDCF)		Sharing lessons learnt on the improvement of small-scale irrigation infrastructure	Use most information from this project for comparison and cooperate in term infrastructure planning, management, training.
8	LM-RED project	GIZ	Houaphan, Attapeu	Possibility to work closer with MIP, where the project is institutionally located	- Share data and tools on sub-national planning - collaboration in training on climate change adaptation
9	Sustainable Natural Resources Management And Productivity Enhancement	ABD, MAP	Sekong, Saravane, Champasack, Savannakhet	The project is emphasized on small agriculture production and small irrigation scheme by local in poor districts	- use most information from this project for comparison and cooperate in term infrastructure planning, management, training, consultation to avoid overlapping of activities and conflict of interest.
10	National Integrated Water Resources Management Support Program	ADB (Implementing by WDR-MONRE)	The project is implemented by WOR, MONRE	Possible to implement pilot project in Se Done and Sekong River Basin	- use information of the Ground water component for selecting site of deep well, open

					well and construction of the well for local villagers - collaboration with component 1 on river basin planning, sharing of the catchment data such available of water resources, land cover, soil characteristics, crops, climatic data, and. - collaboration with Component 1 of the programme for capacity building and human resources development
11	Integrated Water Management/ Sedone River Profiles	ABD_(PEMSEA)	Saravane and Champasack and Small Part of Sekong	Sharing report and information of the profiles	- use information on natural resources, including base line climatic data, demand and water use and existing infrastructure in the basin.
12	Framework for EbA in Laos	WWF (Worldbank)	Southern Laos	WWF will provide updates on the framework development process and ask for inputs	- The framework is not based on real projects. The LDCF project will provide on the ground truth for developing the framework - WWF uses a number of relevant tools to analyse climate impacts, e.g. on groundwater, that the LDCF project could also benefit from

Training materials to be developed under outcome 1

The PSU with support from subcontractors will develop training materials dealing with the following topics necessary to understand for local planners and decision makers to be able to integrate CC in their daily work.

- Analysis of existing CC datasets for the subnational level:

Regarding this activity, we need to distinguish on the one hand between physical climate change data and socio-economic data required for climate change planning and on the other hand between how the activity can fill in data gaps in both fields. As said, the physical climate data on rainfall, temperature etc. is currently mainly available for the national level, e.g. through the NAPA findings. It is expected that the second national communication, which is currently under preparation will provide physical climate information downscaled to the province and district levels.

Other geophysical data areas that need to be taken into account are: soil data, hydrology and land cover. In order to achieve a proxy understanding of water retention capacities and run off regimes in catchments zones of the target area, these data sets need to be linked with climate data.

With regards to socioeconomic data, the different datasets of the Lao National Statistics Office need to be reanalysed with regards to climate threats on different livelihood sectors. There is also a wealth of case studies deriving from different projects or from government level dealing with livelihood and socio-economic issues.

This task details the findings from the V&A analysis of the Prodoc and will update the tool with findings from ongoing and future research. Useful data analysis frameworks that look at an integrated approach of data analysis and how to get from data analysis to policy responses, which should be applied are so-called “Driving Forcers, Pressure, State, Impact, Response – Frameworks (DPSIR frameworks)” (see chapter 1.3) or the adaptation policy toolkit of UNDP.

- Filling data gaps through V&A and CRVA analysis

Data gaps in both fields can partly be filled with findings from the V&A analysis of the Prodoc at the catchment zone level and with more detailed findings about the physical environment at a project site and the socio-economic circumstances of different social groups prevailing at that site deriving from CRVA analysis (see 1.3.1).

- Data translation and visualisation

What is currently required is to translate the different datasets (climate information, other geophysical data and socioeconomic data) into awareness-raising and training materials that are easy to understand for sub-national Lao decision makers. Apart from providing materials in Lao and local languages, visualised data to be developed in the form of maps, graphs and tables is the right entry point for the different target audiences, which range from villagers to provincial decision makers and planners. Visualised data makes it easier to understand how climate and major development trends currently impact infrastructure sectors, water retention capacities, flow regimes and livelihood systems.

List of involved stakeholders and organizations

No	Stakeholder/Organization	Cooperation and data provided
1	Environmental Division of MRCS	Climate change report and research project in the LMB, capacity building, Mekong Basin Development Plan and River Basin Sub Area Profiles

2	ADPC, Representative to Lao PDR	Capacity building, national disaster profile, research
3	Department of Irrigation, MAF	Irrigation project data, design standard and codes, location of the irrigation site and associated data
4	Department of Public Planning, MPI	National Plan for 2011-2015
5	Department of Water Resources, MONRE	Capacity building, climate change scenarios, river basin organization, Profile of river basin
6	Department of Pollution Management and Climate Change, MONRE	Project management, climate change data and pilot project
7	Lao National Mekong Committee	Capacity building, BDP Sub Area Profile, Climate change data
8	Technical Division and Environment, Department of Road, MPWT	Data of road network, project, manual and codes for road design in Lao PDR
9	Department of Meteo-Hydrology	Hydrological data and climate change data
10	UNHABITAT	Data on water supply rehabilitation project
11	WCS	Data on biodiversity
12	WWF	Data on biodiversity, protected areas
13	WATSAN Institute, MPH	Small rural water supply project
14	PAFO of Sekong and Saravane Province	Data on irrigation project, structure, forest cover, development plan, strategy and etc.
15	Department of Labor and Social Welfare of Sekong and Saravane Province	Disaster Impact data, hazards, mitigation and recovery plan, strategy
16	Cabinet Office of Sekong Province	Data of GPAR projects
17	PONRE of Sekong and Saravane Province	Climate data, coordination fro project implementation
18	Department of Public Health of Sekong Province	Data on WATSAN project , Health center
19	Department of Public Works and Transports of Sekong Province	Existing road and bridge infrastructure, plans, strategy
20	Representative officer of the Districts in Sekong and Saravane province	Information on infrastructure and eco-system in the district

Soil property

No.	Major Soil type	Key characteristic	Climate threat	Impact

1	Acrisols	Acrisols are strongly weathered acid soils with subsurface accumulation of low activity clays and low base saturation. This soil type normally provides insufficient nutrient for plant growth due to toxicity level of aluminum content. In addition, this type of soil is highly sensitive to erosion but most of the subsistence farming is made upon this type of soil.	Rainfall/Water flow	High sensitivity to erosion
2	Alisols	Alisol comprises of strongly acid soils with high accumulation of active clays in the subsoil. They normally occur in humid and sub-tropical warm regions. Alisols are unproductive soils for cropping due to low levels of plant nutrients except for Mg2+ exchange in some cases. Alisols are traditionally used in shifting cultivation and for low volume production crops.	Water flow	Low volume production crops
3	Cambisols	Cambisol is a weakly to moderate developed soil of alluvial and colluvial deposition process and lacking of original rock structure. Formation of silicate clay and precipitation of iron hydroxides therefore is not good for farming but suitable for plantation and grazing purposes.	Rain fall/ Water flow	
4	Ferralsols	Ferralsol is represent highly weathered of red or yellow soils of the humid tropics. Ferralsol are known as Oxisols (Soil Taxonomy, USDA) and have good physical properties but are poor chemical properties. Liming and full fertilization are needed for sustainable farming.	Rain fall/Water flow	Erosion
5	Gleysols	Gleysol is saturated with groundwater for long periods having gleyic properties within 50 cm from the soil surface. Wetness is the main limitation of Gleysol and these are covered with natural swamp vegetation. In the tropics and sub-tropics are widely planted to wetland rice.		

6	Leptosols	Leptosols are very shallow soils over various hard rock or highly calcareous material, but also deeper soils that are extremely gravelly and /or stony. Leptosol are unattractive soils for arable cropping, due to limited potential for tree and crop production. Leptosol is suitable for forest rehabilitation or afforestation.	Dry weather	Dry soil
7	Luvisols	Fluvisols are young soils in alluvial deposits.	Water flow	Erosion
8	Plinthosols	Plinthosols are wet soils with an irreversibly hardening mixture of iron, clay and quartz in the subsoil.	Wter Flow	

Water user groups in Saravane

District	**Water user group**
Saravane district	21
Laongam	6
Vapi	18
Khongsedone	30
Ta Oi	13
Sa moi	11

Irrigation in Sekong and Saravane provinces

No.	PROJECT NAME	HW_TYPE	RIV. NAME	AC_WET (Ha)	AC_DRY (Ha)	COMP_YRS	PROJ COST (*.1000$)	DONORS	District Name	Province CODE
1	DongMon	Weir	DongMon	1600.00	1200.00	1987-2000	2162.7	Lao Government	Vapy	SR
2	Dong la ou	Weir	Dong la ou	40.00	20.00	1996-97	0	Farmer	Vapy	SR
3	Kha nao	Weir	Kha nao	30.00	15.00	1996-97	6	Farmer	Vapy	SR
4	Nong ngonh	Dam	Nong ngonh	5.00	5.00	2003	48.8		Vapy	SR
5	Non khor	Dam	Non khor	5.00	5.00	2003	400.5		Lakhoneph	SR
6	Nong pheuang	Dam	Nong pheuang	20.00	4.00	1997-98	6.4	Farmer	Lakhoneph	SR
7	Tan soum 1	Electric Pump	Tan soum 1_Xe Don	100.00	100.00	1996-97	23.02	Lao Government	Vapy	SR
8	Ban Lan	Electric Pump	Ban Lan_Xe Don	80.00	80.00	1996-97	26.03	Lao Government	Vapy	SR
9	Noy xe	Electric Pump	Noy xe_Xe Don	80.00	80.00	1996-97	21.8	Lao Government	Vapy	SR
10	Houy khon	Electric Pump	Houy khon_Xe Don	200.00	90.00	1996-97	56.88	Lao Government	Vapy	SR
11	Wapi tai	Electric Pump	Wapi tai_Xe Don	200.00	89.00	1997-98	85.73	Lao Government	Vapy	SR
12	Wapi neua	Electric Pump	Wapi neua_Xe Don	300.00	150.00	1998-99	337.98	Lao Government	Vapy	SR
13	Bang kha name	Electric Pump	Bang kha name_Xe Don	250.00	100.00	1997-98	86.94	Lao Government	Vapy	SR
14	Tan soum 2	Electric Pump	Tan soum 2_Xe Don	150.00	120.00	1997-98	74.3	Lao Government	Vapy	SR
15	Sa phat	Electric Pump	Sa phat_Xe Don	100.00	87.00	1997-98	58.5	Lao Government	Vapy	SR
16	B. Mouang	Electric Pump	B. Mouang_Xe Don	100.00	89.00	1998-99	229.64	Lao Government	Vapy	SR
17	Keng sou thi	Electric Pump	Keng sou thi_Xe Don	150.00	78.00	1997-98	86.75	Lao Government	Vapy	SR

18	Keng kou	Electric Pump	Keng kou_Xe Don	80.00	80.00	1998-99	135.96	Lao Government	Vapy	SR
19	Non nong boua	Electric Pump	Non nong boua_Xe Don	80.00	75.00	1998-99	91.75	Lao Government	Vapy	SR
20	Ko song	Electric Pump	Ko song_Xe Don	85.00	67.00	1998-99	98.2	Lao Government	Vapy	SR
21	Keng phao	Electric Pump	Keng phao_Xe Don	85.00	69.00	1998-99	85.77	Lao Government	Vapy	SR
22	Hin dan	Electric Pump	Hin dan_Xe Don	70.00	70.00	1998-99	86.02	Lao Government	Vapy	SR
23	Ban med	Electric Pump	Ban med_Xe Don	100.00	82.00	1998-99	136.93	Lao Government	Vapy	SR
24	Nong deng	Weir	Xe Set	2200.00	1842.00	1984-2000	2913.3	Lao Government	Saravane	SR
25	Na khoi sao	Weir	Na khoi sao	250.00	160.00	1968-70	30.73	Lao Government	Saravane	SR
26	Sat ta va li	Weir	Xe Set	250.00	215.00	1991-92	5	Lao Government	Saravane	SR
27	Houysoung	Weir	Houysoung	100.00	85.00	1993-94	12.7	Lao Government	Saravane	SR
28	Viang kham	Weir	Viang kham	55.00	55.00	1987-88	0	Farmer	Saravane	SR
29	Houy lat	Weir	Houy lat	350.00	350.00	1996-98	795.9	Lao Government	Saravane	SR
30	Nongphek	Weir	Nongphek	250.00	10.00	1996	140		Saravane	SR
31	La nong	Weir	La nong	80.00	70.00	1993-95	30	Farmer	Saravane	SR
32	Na xay nhay	Weir	Na xay nhay	40.00	20.00	1992-93	0	Farmer	Saravane	SR
33	Na tum	Weir	Na tum	150.00	85.00	1998-2000	550	Lao Government	Saravane	SR
34	Songkhalong	Weir	Songkhalong	10.00	10.00	0	0		Saravane	SR
35	Leun thon	Dam	Xe Set	0.00	0.00	2002	500	Lao Government	Saravane	SR
36	Bung kham	Diesel Pump	Xe Set	80.00	80.00	1996-97	53.09	Lao Government	Saravane	SR
37	Keng muang lao	Electric Pump	Keng muang lao_Xe Don	80.00	80.00	1997-98	46.53	Lao Government	Saravane	SR
38	Keng ka xa	Electric Pump	Keng ka xa_Xe	100.00	100.00	1997-98	45.16	Lao	Saravane	SR

			Don					Government		
39	Keng sim	Electric Pump	Keng sim_Xe Don	60.00	60.00	1997-98	44.69	Lao Government	Saravane	SR
40	Tha muang xe 1	Electric Pump	Tha muang xe 1_Xe Don	60.00	60.00	1997-98	80.52	Lao Government	Saravane	SR
41	Mak nao	Electric Pump	Mak nao_Xe Don	60.00	60.00	1997-98	65.57	Lao Government	Saravane	SR
42	Khok khao	Diesel Pump	Khok khao	50.00	50.00	1997-98	34.08	Lao Government	Saravane	SR
43	Tong souay	Diesel Pump	Tong souay	30.00	30.00	1997-98	8.64	Lao Government	Saravane	SR
44	Leun pa oup	Electric Pump	Leun pa oup_Xe Don	150.00	150.00	1998-99	216.75	Lao Government	Saravane	SR
45	Nabone	Diesel Pump	Nabone	30.00	30.00	1998-99	60.64	Lao Government	Saravane	SR
46	Nong kha	Electric Pump	Nong kha_Xe Don	60.00	60.00	1998-99	134.3	Lao Government	Saravane	SR
47	Na pha nhee	Diesel Pump	Na pha nhee	30.00	30.00	1998-99	81.09	Lao Government	Saravane	SR
48	Dan na va	Electric Pump	Dan na va_Xe Don	100.00	100.00	1998-99	167.91	Lao Government	Saravane	SR
49	Tha muang xe 2	Electric Pump	Tha muang xe 2_Xe Don	60.00	60.00	1998-99	96.62	Lao Government	Saravane	SR
50	Tao poun	Electric Pump	Tao poun_Xe Don	150.00	100.00	1996-97	69.45	Lao Government	Saravane	SR
51	Phon bok	Electric Pump	Phon bok_Xe Don	150.00	30.00	1998-99	211.52	Lao Government	Saravane	SR
52	Phon tan	Electric Pump	Phon tan_Xe Don	150.00	150.00	1996-97	284.25	Lao Government	Saravane	SR
53	Nong sai	Electric Pump	Xe Set	40.00	40.00	1997-98	11.14	Lao Government	Saravane	SR
54	Ban Len	Weir	Ban Len	55.00	55.00	1993-94	0	Farmer	Lao Ngarm	SR
55	Na ka luan	Weir	Xe Set	50.00	50.00	1996-97	0	Farmer	Lao Ngarm	SR
56	Kham thong	Weir	Kham thong	22.00	22.00	1992-93	0	Farmer	Lao Ngarm	SR
57	Kep pheuang	Weir	Kep pheuang	300.00	250.00	1998-99	1000	Lao Government	Lao Ngarm	SR

58	Sixiangmai	Weir	Sixiangmai	100.00	100.00	2000	1000	Lao Government	Lao Ngarm	SR
59	H. Kang	Weir	H. Kang	30.00	30.00	1993-94	0	Farmer	Lao Ngarm	SR
60	Nameenoy	Weir	Nameenoy	25.00	20.00	1993-94	0	Farmer	Lao Ngarm	SR
61	Khanuan	Weir	Khanuan	12.00	12.00	1993-94	0	Farmer	Lao Ngarm	SR
62	Naphangharm	Weir	Naphangharm	20.00	10.00	1993-94	0	Farmer	Lao Ngarm	SR
63	Xeset	Dam	Xe Set	0.00	0.00	2001	4126	Lao Government	Saravane	SR
64	B. Dong	Diesel Pump	B. Dong	60.00	60.00	1998-99	269.39	Lao Government	Lao Ngarm	SR
65	On beng	Diesel Pump	On beng	50.00	50.00	1998-99	197.56	Lao Government	Lao Ngarm	SR
66	Lao nha	Diesel Pump	Lao nha	60.00	60.00	1998-99	391.51	Lao Government	Lao Ngarm	SR
67	Ban Phao	Electric Pump	Ban Phao	40.00	0.00	1998-99	315.47	Lao Government	Lao Ngarm	SR
68	B. Doub	Weir	B. Doub	70.00	60.00	2000	4318	Lao Government	Ta Oi	SR
69	Ta houak	Weir	Ta houak	25.00	5.00	1995-96	12	Lao Government	Ta Oi	SR
70	Pasing	Weir	Pasing	6.00	6.00	0	0		Ta Oi	SR
71	Tounleuthong	Weir	Tounleuthong	10.00	10.00	0	0		Ta Oi	SR
72	Pachouleun	Weir	Pachouleun	8.00	8.00	0	0		Ta Oi	SR
73	Ban Kang	Weir	Ban Kang	5.00	5.00	0	0		Ta Oi	SR
74	H. Ngoua	Diesel Pump	H. Ngoua	30.00	10.00	1998-99	58.5	Lao Government	Ta Oi	SR
75	Naphabang	Dam	H. Laho	30.00	10.00	1994-95	0	Farmer	Lakhoneph	SR
76	Lakhonsi	Dam	Lakhonsi	15.00	5.00	1985-86	0	Farmer	Lakhoneph	SR
77	Ban Dan	Dam	Ban Dan	10.00	5.00	1994-95	0	Farmer	Lakhoneph	SR
78	Khonsay	Dam	Khonsay	10.00	5.00	1980-81	0	Farmer	Lakhoneph	SR
79	Nongseng	Dam	Nongseng	15.00	5.00	1993-94	0	Farmer	Lakhoneph	SR
80	Nadou	Dam	Nadou	15.00	5.00	1996-97	0	Farmer	Lakhoneph	SR
81	Donmakkhua	Dam	Donmakkhua	10.00	5.00	1997-98	0	Farmer	Lakhoneph	SR
82	B. Phin 2	Weir	B. Phin 2	55.00	55.00	1992-94	6.7	Lao	Samuoi	SR

								Government		
83	Tang ko	Weir	Tang ko	51.00	51.00	1989-90	0	Farmer	Samuoi	SR
84	La lai kong	Weir	La lai kong	49.00	49.00	1987-88	0	Farmer	Samuoi	SR
85	La hang	Weir	La hang	50.00	50.00	1992-93	0	Farmer	Samuoi	SR
86	Ta liap	Weir	Ta liap	51.00	51.00	1988-89	0	Farmer	Samuoi	SR
87	A Chung	Weir	A Chung	53.00	53.00	0	0		Samuoi	SR
88	Ta lor	Weir	Ta lor	50.00	50.00	2000	53.164		Samuoi	SR
89	Kham e	Dam	Kham e	20.00	5.00	1990-91	16	Lao Government	Khongxedo	SR
90	Fang than noy	Electric Pump	Fang than noy_Xe Don	80.00	0.00	1996-97	23.05	Lao Government	Khongxedo	SR
91	Keng ta vang	Electric Pump	Keng ta vang_Xe Don	80.00	0.00	1996-97	27.15	Lao Government	Khongxedo	SR
92	Tan piao 2	Electric Pump	Tan piao 2_Xe Don	100.00	50.00	1992-94	106.81	Lao Government	Khongxedo	SR
93	Meun pou 1	Electric Pump	Meun pou 1_Xe Don	100.00	60.00	1996-97	20.19	Lao Government	Khongxedo	SR
94	Na hang	Electric Pump	Na hang_Xe Don	65.00	65.00	1998	350	Lao Government	Khongxedo	SR
95	Boua la pha	Electric Pump	Boua la pha_Xe Don	150.00	120.00	1996-97	61.13	Lao Government	Khongxedo	SR
96	Non khor	Electric Pump	Non khor_Xe Don	160.00	85.00	1998-99	175.35	Lao Government	Khongxedo	SR
97	Khong gnai	Electric Pump	Khong gnai_Xe Don	150.00	85.00	1996-97	85.69	Lao Government	Khongxedo	SR
98	Khong noy	Electric Pump	Khong noy_Xe Don	100.00	100.00	1998-99	267.55	Lao Government	Khongxedo	SR
99	Bung kang	Electric Pump	Bung kang_Xe Don	150.00	87.00	1992-94	67.6	Lao Government	Khongxedo	SR
100	Hin siew 2	Electric Pump	Hin siew_Xe Don	160.00	86.00	1998-99	201.12	Lao Government	Khongxedo	SR
101	Hin siew 1	Electric Pump	Hin siew_Xe Don	120.00	85.00	1997-98	110.56	Lao Government	Khongxedo	SR
102	Done muang	Electric Pump	Done muang_Xe Don	150.00	140.00	1996-97	97	Lao Government	Khongxedo	SR

103	Khamthong	Electric Pump	Khamthong_Xe Don	120.00	90.00	1992-94	79.84	Lao Government	Khongxedo	SR
104	Fang than gnai	Electric Pump	Fang than gnai_Xe Don	180.00	95.00	1996-98	260.7	Lao Government	Khongxedo	SR
105	Nong boua	Electric Pump	Nong boua_Xe Don	80.00	80.00	1997-98	0	Lao Government	Khongxedo	SR
106	Muang kao	Electric Pump	Muang kao_Xe Don	200.00	80.00	1997-98	521.6	Lao Government	Khongxedo	SR
107	Tha meuang	Electric Pump	Tha meuang_Xe Don	66.00	66.00	1997	0		Khongxedo	SR
108	Nong khou lou	Electric Pump	Nong khou lou_Xe Don	120.00	56.00	1998-99	335.44	Lao Government	Khongxedo	SR
109	O kad ngai	Electric Pump	O kad ngai_Xe Don	150.00	105.00	1998-99	181.2	Lao Government	Khongxedo	SR
110	O kat noy	Electric Pump	O kat noy_Xe Don	80.00	80.00	1998-99	331.76	Lao Government	Khongxedo	SR
111	H.Xao	Electric Pump	H.Xao_Xe Don	100.00	85.00	1997-98	77.95	Lao Government	Khongxedo	SR
112	Had dou	Electric Pump	Had dou_Xe Don	120.00	89.00	1998-99	324.95	Lao Government	Khongxedo	SR
113	Keng houad	Electric Pump	Keng houad_Xe Don	120.00	90.00	1996-97	63.15	Lao Government	Khongxedo	SR
114	Na theun	Electric Pump	Na theun_Xe Don	150.00	85.00	1998-99	213.87	Lao Government	Khongxedo	SR
115	Tan diao	Electric Pump	Tan diao_Xe Don	100.00	68.00	1996-97	42.39	Lao Government	Khongxedo	SR
116	Thuang se	Electric Pump	Thuang se_Xe Don	150.00	104.00	1998-99	303.59	Lao Government	Khongxedo	SR
117	Kengkhon	Electric Pump	Kengkhon_Xe Don	100.00	90.00	1998-99	335.78	Lao Government	Khongxedo	SR
118	Kham khor	Electric Pump	Kham khor_Xe Don	80.00	0.00	1998-99	79.26	Lao Government	Khongxedo	SR
119	Na kham	Electric Pump	Na kham_Xe Don	60.00	0.00	1998-99	72.72	Lao Government	Khongxedo	SR
120	Chan lan xe	Electric Pump	Chan lan xe_Xe Don	100.00	0.00	1998-99	64.18	Lao Government	Khongxedo	SR

121	Tan piao1	Electric Pump	Tan piao1_Xe Don	100.00	50.00	1993-94	13.5	Lao Government	Khongxedo	SR
122	Meun pou 2	Electric Pump	Meun pou 2_Xe Don	100.00	0.00	1998-99	121.97	Lao Government	Khongxedo	SR
123	Pak xuak	Electric Pump	Pak xuak_Xe Don	66.00	66.00	1996-97	20.19	Lao Government	Khongxedo	SR
124	Kham thao	Electric Pump	Kham thao_Xe Don	85.00	0.00	1998-99	93.18	Lao Government	Khongxedo	SR
125	Bung mane	Electric Pump	Bung mane_Xe Don	100.00	0.00	1998-99	157.92	Lao Government	Khongxedo	SR
126	Kokmuang	Dam	Kokmuang	10.00	5.00	1996-97	8.4	Farmer	Toomlarn	SR
127	Na vieng hong	Diesel Pump	Na vieng hong	30.00	0.00	1998-99	74.24	Lao Government	Saravane	SR
128	Keng hang	Diesel Pump	Keng hang	25.00	0.00	1998-99	69.39	Lao Government	Toomlarn	SR
129	Toom lan	Diesel Pump	Toom lan	35.00	0.00	1998-99	79	Lao Government	Toomlarn	SR
130	Ka leng noy	Diesel Pump	Ka leng noy	30.00	0.00	1998-99	81.53	Lao Government	Toomlarn	SR
131	Na dou gnai	Diesel Pump	Na dou gnai	35.00	0.00	1998-99	70.17	Lao Government	Toomlarn	SR
132	H. Vi	Weir	H. Vi	46.00	15.00	1995-96	13.76	Lao Government	Lamarm	SK
133	H. Vi	Weir	H. Vi	40.00	25.00	0	0		Lamarm	SK
134	H. Koung	Weir	H. Koung	15.00	10.00	0	0		Lamarm	SK
135	H. Kor	Weir	H. Kor	11.00	8.00	0	0		Thateng	SK
136	H. Charong	Weir	H. Charong	12.00	3.00	0	0		Lamarm	SK
137	H. Lai	Dam	H. Lai	20.00	1.00	1996-97	530.96	Lao Government	Lamarm	SK
138	H. Khiao	Dam	H. Khiao	166.00	165.00	1998	628.71	Lao Government	Lamarm	SK
139	H. Vi	Intake	H. Vi	45.00	0.00	1998-99	117.02	Lao Government	Lamarm	SK
140	H. Vi	Intake	H. Vi	178.00	128.00	1991-97	1671.88	Lao Government	Lamarm	SK
141	H. Thon	Intake	H. Thon	75.00	16.00	1998-99	369.39	Lao	Lamarm	SK

								Government		
142	Tadhouakhon	Intake	Tadhouakhon	200.00	200.00	1998-99	69.99	Lao Government	Lamarm	SK
143	Thongphabeuey	Diesel Pump	Thongphabeuey	100.00	0.00	1998-99	49.18	Lao Government	Lamarm	SK
144	Nava	Electric Pump	Xe kong	100.00	0.00	1998	225.63	Lao Government	Lamarm	SK
145	Naver	Traditional Weir	Naver	11.00	11.00	0	0		Lamarm	SK
146	Ta-oun	Traditional Weir	Ta-oun	12.00	12.00	0	0		Lamarm	SK
147	Tachieo	Traditional Weir	Tachieo	8.00	8.00	0	0		Lamarm	SK
148	H. Namsai	Weir	H. Namsai	80.00	50.00	1992-94	857	Lao Government	Thateng	SK
149	H. Tit	Weir	H. Tit	100.00	30.00	1995-97	104.49	Lao Government	Thateng	SK
150	H. Lakang 1	Weir	H. Lakang	30.00	6.00	1994	0		Thateng	SK
151	H. Lakang 2	Weir	H. Lakang	10.00	6.00	1993	0		Thateng	SK
152	H. Palengkhang	Weir	H. Palengkhang	20.00	4.00	1996	0		Thateng	SK
153	H. Tayoun	Weir	H. Tayoun	11.00	5.00	0	0		Thateng	SK
154	H. Thon	Weir	H. Thon	10.00	5.00	0	0		Thateng	SK
155	H. Xay	Weir	H. Xay	50.00	4.00	0	0		Thateng	SK
156	H. Vi	Weir	H. Vi	10.00	0.00	0	0		Thateng	SK
157	H. Koung	Weir	H. Koung	20.00	10.00	0	0		Thateng	SK
158	H. Tapood	Weir	H. Tapood	3.00	2.00	1997-99	86.95	Lao Government	Thateng	SK
159	H. Paleng neua	Weir	H. Paleng neua	10.00	8.00	0	0		Thateng	SK
160	H. Taklok	Dam	H. Taklok	100.00	25.00	1996-98	88.72	Lao Government	Thateng	SK
161	H. Nongnok	Dam	H. Nongnok	30.00	0.00	0	0		Thateng	SK
162	H. Thon	Traditional Weir	H. Thon	3.00	3.00	0	0		Thateng	SK
163	H. Vi	Traditional Weir	H. Vi	2.00	2.00	0	0		Thateng	SK

164	Korhouaphou	Traditional Weir	Korhouaphou	2.00	1.00	0	0		Thateng	SK
165	Kamkok	Traditional Weir	Kamkok	2.00	1.00	0	0		Thateng	SK
166	H. Dakdenh	Weir	H. Dakdenh	10.00	0.00	0	0		Dakcheung	SK
167	H. Duckbret	Weir	H. Duckbret	32.00	30.00	0	0		Dakcheung	SK
168	H. Songkon	Weir	H. Songkon	2.31	2.23	0	0		Kaleum	SK
169	H. Kouy	Weir	H. Kouy	1.00	1.00	0	0		Kaleum	SK
170	H. Laipor	Weir	H. Laipor	0.84	0.80	0	0		Kaleum	SK
171	H. Lo	Weir	H. Lo	10.00	10.00	0	0		Kaleum	SK
172	H. Charok	Gabian Weir	H. Charok	1.42	1.38	0	0		Kaleum	SK
173	H. Tahiew	Gabian Weir	H. Tahiew	0.84	0.80	0	0		Kaleum	SK
174	Vukneua	Traditional Weir	Vukneua	2.00	0.90	0	0		Kaleum	SK
175	Vuktay	Traditional Weir	Vuktay	1.50	0.50	0	0		Kaleum	SK
176	H. Lep	Traditional Weir	H. Lep	1.30	0.08	0	0		Kaleum	SK
177	Songkhon	Traditional Weir	Songkhon	4.50	0.50	0	0		Kaleum	SK
178	Talangmai	Traditional Weir	Talangmai	1.50	0.80	0	0		Kaleum	SK
179	Ban Loy	Traditional Weir	Ban Loy	2.20	0.28	0	0		Kaleum	SK

Irrigation systems damaged during Ketsana 2009 and drought prevention

Irrigation Projects Damaged During Ketsana 2009 and Drought Prevention								
No,	District/Project	Designed Supply Area		Actual Supply Area		Rehabilitation Actitvity	Cost (kip)	
		Wet Season	Dry Season	Wet Season	Dry Season		Headwork	Canal
1	2	3	4	5	6	7	8	9
I	Ketsana Storm fund	7,763	6,800	6,425	5,690		3,692,880,574	11,938,502,839
A	Rehabilitation Phase 1	4450	4170	4075	3770		2,917,880,574	9,140,917,969
a	Saravane	3000	2900	2700	2500			1,215,041,829
1	Nong Deng irrigation	3000	2900	2700	2500	14 canal, 2500m		1,215,041,829
b	Vapy	680	620	675	620		50,000,000	1,922,488,956
1	Vapy Neua Irrigation	230	220	225	220	canal, 545m	25,000,000	991,350,278
2	Vapy Tai Irrigation	210	200	210	200	canal, 880 m	25,000,000	217,245,000
3	Tan Soum 2	120	100	120	100	canal, 350 m		365,717,400
4	Ban Muang	120	100	120	100	Canal, 405 m		348,176,278
c	Lao Ngam	100	80	100	80			324,000,000
1	Ban Kalon Project	100	80	100	80	Canal, 708 m		324,000,000
d	Khong Se Done	670	570	600	570		100,000,000	1,364,189,545
1	Ban Khong Ngai	160	120	130	120	canal, 372 m		310,000,000
2	Ban Meuang Khong kao	180	180	150	180	Canal 200 m	25,000,000	196,185,432

3	Ban Thuang Se	130	120	120	120	Canal 300 m	25,000,000	251,598,392
4	Ban Keng Huat	120	100	120	100	Canal 240 m	25,000,000	202,516,312
5	Ban Nong Boa	80	50	80	50	Electricity network	25,000,000	403,889,409
e	**Rehabilitation of Pumping**						150,000,000	
1	Ban Meuang Kao Pumping					Pumping station	25,000,000	
2	Ban Thuang Se Pumping					Pumping station	25,000,000	
3	Ban Hat Dou Pumping					Pumping station	25,000,000	
4	Ban Nong Boa Pumping					Pumping station	25,000,000	
5	Ban Va Yi Pumping					Pumping station	25,000,000	
6	Ban Va Yi Tai Pumping					Pumping station	25,000,000	
f	**Purchasing Electric Pump**						1,200,000,000	
1	Ban Khong Ngai Project					1,KW Pump 75	300,000,000	
2	Ban Okat Noi Project					1,KW Pump 76	300,000,000	
3	Ban Muang Project					1,KW Pump 77	300,000,000	
4	Ban Tan Soum2 project					1,KW Pump 78	300,000,000	
g	**Repairing Canal**							
	Ta Oi	**159**	**136**	**159**	**136**			1557830000
1	Ban Dui Project	59	50	59	50	Wier and 300m pipe		231,104,690
2	Ban Cho Hai Project	20	18	20	18	Wier and		426,636,710

						canal 250m		
3	Ban Pa Chu Cheun Project	20	18	20	18	Weir		399,594,200
4	Ban Katen I Project	30	25	30	25	Canal 150m		150,494,400
5	Purchasing materials for 10 Sites	30	25	30	25	Weir		350,000,000
h	**Sa Moi**	**434**	**325**	**389**	**350**		1,417,880,574	2,757,367,639
1	Ban Tango Project	85	80	85	75	Weir, Canal 622m	319,505,650	193,695,958
2	Ban Ta Lo Tai	30	25	30	25	Gate and pipe 950m	164,484,540	610,545,617
3	Ban Ka Leng 1,2	30	25	30	25	Weir, Canal 120m	402,281,514	83,202,885
4	Ban A Cheung Ngai	55	50	55	50	Weir, Canal 431m	76,172,310	337,225,850
5	Ban La Lai	57	55	57	50	Weir, Canal 1000m	148,700,920	245,744,749
6	Ban La Hang	52	50	52	50	Gate and pipe 1000m	127,282,640	176,218,533
7	Ban Huay Ta Liep	80	70	80	75	Weir, Canal 400m		419,910,843
8	Ban Pi Hai	45	40	45	40		179,453,000	690,823,204
B	**Rehabilitation Phase 2**	**3,313**	**2,630**	**2,350**	**1,920**		775,000,000	2,797,584,870
a	**Khong Se Done**	**380**	**330**	**200**	**130**		750,000,000	108,049,270
1	Ban Na Khok	200	180	100	80	Weir	750,000,000	
2	Ban Tha Meuang	180	150	100	50	Canal 75m		108,049,270
b	**Vapy**	**1650**	**1320**	**1320**	**1100**		25,000,000	1,074,878,600
1	Ban Dong Mone	1500	1200	1200	1000	Canl, 1692 m		387,500,000

2	Ban Saphat	150	120	120	100	Brick canal 575 m	25,000,000	687,378,600
c	**Saravane**	**700**	**510**	**420**	**340**			1,154,657,000
1	Ban Tao Pun	200	180	150	120	Canal 605m		926,000,000
2	Ban Huay Lat	300	150	120	100	Canal 500 m		95,307,000
3	Ban Stou Bali	200	180	150	120	Cleaning canal 1345m		133,350,000
ว	**Lao Ngam**	**583**	**470**	**410**	**350**		0	460,000,000
1	Ban Kham Thong	60	50	45	40	Repair weir		160,000,000
2	Ban Kap Pheung	450	350	300	250	Canal 520n		100,000,000
3	Ban Len	73	70	65	60	Weir, canal 100m		200,000,000
II	Repairing for							
	prevention drought	**1700**	**1350**	**1650**	**1493**		1,307,507,650	1,577,025,000
a	**Vapy**	1500	1200	1500	1380		0	1196532650
1	Ban Dong Mone	1500	1200	1500	1380	Piping 400		1,196,532,650
b	**Toum Lan**	200	150	150	113	Weir, Canal415m	1,307,507,650	380,492,350
2	ໂຄງການ ຊຸປຫ ເຊກະເຫດ	200	150	150	113	Installed pump65HP	1,307,507,650	380,492,350

National protected areas in the focus area

National Protected Area	Size	Location
Xebannouane	150,000 ha	Saravane and Savannakhet
Phouxiengthong	120,000 ha	Saravne and Champsack
Xesap	133,500 ha	Saravane and Xekong
Dong Houa Sao	110,000 ha	Champasack
Xepian	240,000 ha	Champasack and Attapeu

Mammals in the focus area

Common Name	**Scientific Name**	**National Priority**	**Global Threat Category**	**Lao Risk Status**
Sunda Pangolin	*Manis javanica*	HNP	GNT	ARL
Large loris species	*Species not identified*	-	-	-
Pig-tailed Macaque	*Macaca nemestrina*	-	VU	PARL
Long-tailed Macaque	*Macaca fascicularis*	-	GNT	PARL
White-cheeked Crested Gibbon	*Hylobates leucogenys*	HNP	DD	PARL
Yellow-cheeked Crested Gibbon	*Hylobates gabriellae*	INP	DD	LKL
Tiger	*Panthera tigris*	ANP	EN	ARL
Big cat species	*Species not identified*	-	-	-
Asian Elephant	*Elephas maximus*	HNP	EN	ARL
Pig species	*Species not identified*	-	-	-
Sambar	*Cervus unicolor*	-	0	PARL
Banteng	*Bos javanicus*	ANP	EN	ARL
Southern Serow	*Naemorhedus sumatraensis*	-	VU	PARL
Black Giant Squirrel	*Ratufa bicolor*	-	0	PARL
Small flying squirrel sp.	*Species not identified*	-	-	-
East Asian Porcupine	*Hystrix brachyura*	-	VU	0
Golden Jackal	*Canis aureus*	-	O	LKL
Dhole	*Cuon alpines*	HNP	VU	ARL
Sun Bear	*Ursus malayanus*	HNP	DD	ARL

Asiatic Black Bear	*Ursus thibetanus*	ANP	VU	ARL
Large-antlered Muntjac	*Muntiacus vuquangensis*	-	N/A	PARL
Southern Serow	*Naemorhedus sumatraensis*	-	VU	PARL
Smooth-coated Otter	*Lutrogale perspicillata*	HNP	VU	ARL
Large-spotted Civet	*Viverra megaspila*	INP	0	PARL
Asian Golden Cat	*Catopuma temminckii*	INP	GNT	LKL
Silvered Langur	*Semnopithecus cristatus*	INP	GNT	ARL
Irrawaddy Dolphin	*Orcaella brevirostris*	ANP	DD	ARL
Gaur	*Bos gaurus*	HNP	VU	ARL

Birds in the focus area

Common Name	**Scientific Name**	**National Priority**	**Global Threat Category**	**Lao Risk Status**
Siamese Fireback	*Lophura diardi*	-	VU	PARL
Green Peafowl	*Pavo muticus*	HNP	VU	ARL
Red-collared Woodpecker	*Picus rabieri*	-	VU	0
Green Imperial Pigeon	*Ducula aenea*	-	0	ARL
Small Pranticole	*Glareola lacteal*	-	0	PARL
Rufous-winged Buzzard	*Butastur liventer*	-	GNT	0
Grey Heron	*Ardea cinerea*	-	0	PARL
Bar-bellied Pitta	*Pitta eliotii*	-	GNT	PARL
Swinhoe's Minivet	*Pericrocotus cantonesis*	-	GNT	0
Wire-tailed Swallow	*Hirundo smithii*	-	0	PARL
Grey-faced Tit Babbler	*Macronous kelleyi*	-	GNT	0
White-Winged Duck	*Cairina scutulata*	ANP	EN	ARL
Cotton Pygmy-goose	*Nettapus coromandelianus*	-	O	ARL
Streak-throated Woodpecker	*Picus xanthopygaeus*	-	O	PARL
White-bellied Woodpecker	*Dryocopus javensis*	-	O	PARL
Great Hornbill	*Buceros bicomis*	HNP	O	ARL
Wreathed Hornbill	*Aceros undulate*	-	O	ARL

Pied Kingfisher	*Ceryle rudis*	HNP	O	ARL
Alexandrine Parakeet	*Psittacula eupatria*	HNP	O	ARL
Blossom-headed Parakeet	*Psittacula roseata*	-	0	PARL
Fish owl species	*Species not identified*	-	-	-
Orange-breasted Green Pigeon	*Treron bicincta*	-	0	PARL
Yellow-footed Green Pigeon	*Treron phoenicoptera*	-	0	ARL
Sarus Crane	*Grus antigone*	ANP	GNT	ARL
Masked Finfoot	*Heliopais personata*	HNP	VU	ARL
Watercock	*Gallicrex cinerea*	INP	0	ARL
Purple Swamphen	*Porphyrio porphyrio*	INP	0	ARL
Eurasian Thick-knee	*Burhinus oedicnemus*	-	0	LKL
River Lapwing	*Vanellus duvaucelii*	INP	0	ARL
Grey-headed Lapwing	*Vanellus cinereus*	-	GNT	PARL
River Tern	*Sterna aurantia*	HNP	0	ARL
Lesser Fish Eagle	*Ichthyophaga humilis*	INP	GNT	ARL
Grey-headed Fish Eagle	*Ichthyophaga ichthyaetus*	INP	GNT	ARL
White-rumped Vulture	*Gyps bengalensis*	ANP	GNT	ARL
Long-billed Vulture	*Gyps indicus*	ANP	GNT	ARL
Red-headed Vulture	*Sarcogyps calvus*	ANP	GNT	ARL
White-rumped Falcon	*Polihierax insignis*	-	GNT	PARL
Darter	*Anhinga melanogaster*	-	GNT	ARL
Black-crowned Night Heron	*Nycticorax nycticorax*	-	0	PARL
Von Schrenck's Bittern	*Ixobrychus eurythmus*	-	GNT	LKL
Great Bittern	*Botaurus stellaris*	-	0	ARL
Black Ibis	*Pseudibis papillosa*	ANP	EN	ARL
Giant Ibis	*Pseudibis gigantea*	ANP	CR	ARL
Woolly-necked Stork	*Ciconia episcopus*	HNP	0	ARL
Lesser Adjutant	*Leptoptilos javanicus*	HNP	VU	ARL
Blue-rumped Pitta	*Pitta soror*	-	GNT	PARL
Bar-bellied Pitta	*Pitta elliotii*	-	GNT	PARL
Indochinese Green Magpie	*Cissa hypoleuca*	-	GNT	PARL
Swinhoe's Minivet	*Pericrocotus cantonensis*	-	GNT	0

Golden-crested Myna	*Ampeliceps coronatus*	-	0	PARL
Plain Martin	*Riparia paludicola*	-	0	ARL
Wire-tailed Swallow	*Hirundo smithii*	-	0	PARL
Grey-faced Tit Babbler	*Macronous kelleyi*	-	GNT	0
Baya Weaver	*Ploceus philippinus*	-	0	PARL
Purple Heron	*Ardea purpurea*	-	0	PARL
Black-crowned Night Heron	*Nycticorax nycticorax*	-	0	PARL
Von Schrenck's Bittern	*Ixobrychus eurythmus*	-	GNT	LKL
Great Bittern	*Botaurus stellaris*	-	0	ARL
Black Ibis	*Pseudibis papillosa*	ANP	EN	ARL
Giant Ibis	*Pseudibis gigantea*	ANP	CR	ARL
Woolly-necked Stork	*Ciconia episcopus*	HNP	0	ARL
Lesser Adjutant	*Leptoptilos javanicus*	HNP	VU	ARL
Blue-rumped Pitta	*Pitta soror*	-	GNT	PARL
Bar-bellied Pitta	*Pitta elliotii*	-	GNT	PARL
Indochinese Green Magpie	*Cissa hypoleuca*	-	GNT	PARL
Swinhoe's Minivet	*Pericrocotus cantonensis*	-	GNT	0
Golden-crested Myna	*Ampeliceps coronatus*	-	0	PARL
Plain Martin	*Riparia paludicola*	-	0	ARL
Wire-tailed Swallow	*Hirundo smithii*	-	0	PARL
Baya Weaver	*Ploceus philippinus*	-	0	PARL
Blyth’s Kingfisher	*Alcedo Hercules*	-	VU	PARL
Brown Fish Owl	*Ketupa zeylonensis*	-	0	PARL
Indochinese Green Magpie	*Cissa hypoleuca*	-	GNT	PARL
Green Cochoa	*Cochoa viridis*	-	GNT	0
Yellow-footed Green Pigeon	*Treron phoenicoptera*	-	0	ARL

Main farming systems in the focus area

Farming System	Characteristics	Livelihood Problems
Lowland rainfed farming system	Single cropping of traditional glutinous rice varieties (80%), 2-4 varieties of different maturation. Yield 2.3-3 tons/ha (official estimates). Buffalo and cattle for draft, cash income and occasional meat, free ranging during the dry season, confined in the rainy season. Pigs, poultry, fish and NTFPs important for food and cash income.	Rice shortage of 1-4 months a year and low household income
Lowland irrigated farming system	Double cropping of traditional photoperiod sensitive rice varieties, with higher use of improved varieties, and fertilizers, etc. for the second crop, which is mainly for cash. Wet season yields 1-3 tons/ha, dry season 2-4 tons/ha. Dry season vegetables grown in the area near urban centers. Relatively few livestock due to the shortage of grazing land, buffalos are used for ploughing, small stock for meat and cash income	Better off than unirrigated farms but lack cash, especially for investment
Upland rainfed farming system	Shifting cultivation for rice with yields of 1.4-1.5 tons/ha intercropped with cucumber, chillies, taro, sesame, etc. on sloping land with fallow periods of 8-10 years. Maize for livestock is the second most important crop. Other crops: sweet potatoes,	Rice shortage of 3-4 months a year, low income, poor health, high infant mortality, low life expectancy, lack of access to roads, communication, education and social services.

	gingers, cassavas, groundnuts, soybean, cotton and sugarcane, papaya, coconut, mangoes, tamarind, bananas, and citrus (more fruit species at lower altitudes). Melons and water melons are grown as dry season crops in some areas. Pigs, cattle and poultry are the principle livestock. High dependence on NTFPs for income to purchase rice, etc. Adoption of paddy cultivation is progressing rapidly where possible.	
Plateau farming system	Coffee, tea, and cardamom, have largely replaced shifting cultivation. Supplemented by fruit trees, and vegetables in home gardens. Poor cash crop quality and yield due to poor management, use of poor varieties, lack of fertilizers and shade, weed problems, poor harvesting and drying techniques. Cattle are important as a savings enterprise. Pigs and poultry are also kept.	Households have adopted a commercial strategy and have no problems with food security. However, household incomes is still moderate.

Natural system profile and status in the target area

Catchment Zone	Assets	Function	Status
Upper Catchment zone in north	Primary forest (Ever green forest, pine forest and mixed deciduous forest)	Reduce run offs and control soil erosion and landslide	Se Sap NPA is part of the catchment. In northeast part of the area is mainly encroached by local and Vietnamese

	Rivers: Se Lanong and Se Pone	Rivers carry water and nutrient to area all around the earth, provide excellent habitat and food for many of the earth's organism, many rare plants and animals grow, people use for transportation, river valleys and plain provide fertile soils for agriculture and local people use as energy	people to cut down trees, hunt wildlife and do shifting. Low management capacity due to limited technical and financial resources
Upper Catchment zone in south	Primary forest (Ever green forest, and mixed deciduous forest)	Reduce run offs and control soil erosion and landslide	The catchment covers Dong Houa Sao NPA. The area is encroached by coffee and rubber plantation. Chemical fertilizer used for plantation cause river pollution. Shifting cultivation, tree cutting, logging and wildlife hunting and fishing are the major threats to biodiversity. Low management capacity due to limited technical and financial resources
	Rivers: Se Set, Houei Ta Yun, Houei Champi Se Pian, Houei Bang Lieng and the Mekong river	Rivers carry water and nutrient to area all around the earth, provide excellent habitat and food for many of the earth's organism, many rare plants and animals grow, people use for transportation, river valleys and plain provide fertile soils for agriculture and local people use as energy	
Mid-Catchment	Primary mixed with secondary forest (Semi-evergreen and deciduous forest)	Reduce run offs and control soil erosion and landslide	The area is encroached by coffee and rubber plantations. Chemical fertilizer are used for plantation causing

	Rivers: Se Lanong, Some parts of Se Set and Houei Tomo	Rivers carry water and nutrient to area all around the earth, provide excellent habitat and food for many of the earth's organism, many rare plants and animals grow, people use for transportation, river valleys and plain provide fertile soils for agriculture and local people use as energy	river pollution. Tree cutting, hunting and fishing are the major threats to biodiversity. Low management capacity due to limited technical and financial resources
Lower Catchment	Degraded forest (Dry diperocarp, dry deciduous forest, bamboo and grassland)	Reduce run offs and control soil erosion	The catchment covers Se Bang Nouane, Phou Xiengthong and Se pian NPAs and four important wetlands. The catchment is encroached by rubber plantation, shifting cultivation and converting forest land into other purposes. Forest fire, logging and over hunting and fishing are the major threats. Soil excavation in the wetland is a major threat. Low management capacity due to limited technical and financial resources

	The Beung Kiat Ngong, Beung Ay, Nong Ta O and Kouat Lamphong wetlands	The Beung Kiat Ngong, Beung Ay, Nong Ta O and Kouat Lamphong wetlands provide good and services essential for survival of humans such as carbon and other nutrient stores or sink, flood and storm control, ground water recharge and discharge, pollution control, organic matter of sediment export, routes for animal and plant migration, landscape and waterscape connectivity and recreational services. The all contribute to human health and wellbeing	

District Development Plan of Vapi District Saravane Province

District Development Plan of Vapi district, Saravane Province							USD	LAK
No.	**Sector/ Programme**	**Project**	**Budget(USD)**	**Year**	**Source of Fund**		1	8000
1	**Governance and Law Dissemination**	**2 Projects**	**53.125,00**	**2011-14**				
1.1		Enforcement of Governance	46875	2011-14				
1.2		Law dissemination	6250	2011-14				
2	**Integrated Agriculture Development**	**13 projects**	**7.931.250,00**	**2011-14**				
2.1		Replace diesel pump with electricity pump in two villages	112500	2011-14				
2.2		Construction of small reservoir in 11 villages	431250	2011-14				
2.3		Repair electricity water pumps, 16 sites	90000	2011-14				
2.4		Concrete lining of irrigation canal, 16 sites	125000	Do				
2.5		Construction of reservoir at Kengxane	3125000	Do				
2.6		Forest and land allocation	16250	Do				
2.7		Increase rice production capacity	125000	Do				
2.8		Cash Crop production	1250000	Do				
2.9		Construction of agriculture service center	125000	Do				
2.10		Feeding animal	1125000	Do				
2.11		Agriculture education training	125000	Do				
2.12		Eradication of animal	31250	Do				

		deceases						
2.13		Rice production for goods	1250000	Do				
3	**Forest management and Forest Industry**	**3 Projects**	**836.250,00**	2011-14				
3.1		Industrial trees plantation	750000	Do				
3.2		Forest protection and management	42500	Do				
3.3		Grass Plantation	43750	Do				
4	**Tourism promotion and Transit**	**1 Project**	**375.000,00**	2011-14				
4.1		Development Keng Ku tourism park	375000	2011-14				
5	**Poverty Reduction and Stop Slash and Burn**	**1 Project**	**86.250,00**	2011-14				
5.1		Poverty reduction and establishment village fund	86250	2011-14				
6	**Regional Economic Linkage and Investment Promotion**	**1 Project**	**3.125,00**	2011-14				
6.1		Management of domestic and external investment	3125	2011-14				
7	**Public Works and Transport**	**50 Projects**	**27.059.000,00**	2011-14				

7.1		Improvement of road network in district town	750000	Do				
7.2		Construction of Huay Khitom bridge	115875	Do				
7.3		Construction and maintenance road Kengku-Pakset	125000	Do				
7.4		Construction road to Ban Korxong	3250000	Do				
7.5		Construction road to Ban Kongleu Yai	7000000	Do				
7.6		Construction Road No.5.6908	63750	Do				
7.7		Construction district water supply	3000000	Do		WS		
7.8		Construction bitumen road in district town	500000	Do				
7.9		Construction bitumen road No.3.6907	4125000	Do				
7.10		Construction bitumen road No.5.6906	2125000	Do				
7.11		Construction bitumen road No.5.7252	250000	Do				
7.12		Construction road (Vapi-Natansoum)	125000	Do				
7.13		Construction bus station	375000	Do				
7.14		Construction district Market	250000	Do		Market		
7.15		Construction development community Market	125000	Do		Market		
7.16		Cont. Construction office of Industry and Trade	28125	Do		DDP		

7.17		Construction office of Land authority	125000	Do		DDP		
7.18		Construction water level and rainfall station	125000	Do		WR		
7.19		Renovation office of Planning &Investment	93750	Do		DDP		
7.20		Cont. Construction office of Finance	125000	Do		DDP		
7.21		Construction of kindergartens	125000	Do		ED		
7.22		Construction of Secondary school (Nahongkham)	375000	Do		ED		
7.23		Construction of Secondary school (Huaykhon)	125000	Do		ED		
7.24		Construction of Secondary school (Saphat)	125000	Do		ED		
7.25		Construction of Secondary school (Nalane)	68125	Do		ED		
7.26		Construction high water tank and Pump	124375	Do		WS		
7.27		Renovation district hospital	100000	Do		PH		
7.28		Construction Ground water well, hand shake 30sites	70000	Do		WS		
7.29		Construction od Health center (3 vaillages)	250000	Do		PH		
7.30		Construction of District Hospital	1000000	Do		PH		
7.31		Construction of Toilet and sanitation	125000	Do		PH		
7.32		Constructon health center at Ban Siat	47875	Do		PH		
7.33		Constructon eithnic culture hall	125000	Do		ED		
7.34		Construction of Emeron's buhdda's hall	93750	Do		ED		
7.35		Construction district	750000	Do		PW		

		warehouse						
7.36		Construction office of Labour and Social Welfare	125000	Do		DDP		
7.37		Construction of Communiity 1 office	21125	Do		DDP		
7.38		Construction of Communiity 2 office	21125	Do		DDP		
7.39		Construction of Communiity 3 office	46375	Do		DDP		
7.40		Construction of Communiity 4 office	43875	Do		DDP		
7.41		Construction of Communiity 5 office	12500	Do		DDP		
7.42		Construction of Communiity 6 office	35875	Do		DDP		
7.43		Construction of Huay Phai Bridge	2375	Do				
7.44		Construction of Huay Keung bridge	3375	Do				
7.45		Construction of Huay Leng bridge	2125	Do				
7.46		Install electricity for district office	33750	Do		DDP		
7.47		Construction fence and grading ground of district office	250000	Do		DDP		
7.48		Construction fence and upgrade red square	100000	Do		DDP		
7.49		Construction fence around Kaysone monument	80875	Do		DDP		
7.50		Construction of youth garden	100000	Do		DDP		
8	**Strengthen Economic Management**	**3 Projects**	**188.750,00**					

8.1		Generate income to national budget and training to finance officer at Village level	46875					
8.2		Survey, land allocation and land title	125000					
8.3		Goods lisence management and control	16875					
9	**Human Resources and Social Culture**	**20 Projects**	**733.125,00**					
9.1		Labour skills training for people who less opportunity	33750					
9.2		Management and control foreign and domestic labour	81250					
9.3		Collection data of disaster impacts	3125					
9.4		Collection data and register of retired officers	12500					
9.5		Promotion ethnic culture	2500					
9.6		Gender mainstreamimg training	3125					
9.7		Establishment of clean village	1250					
9.8		Protection of Heritage at Nondsonghong	81250					
9.9		Promotion culture villages	21875					
9.10		Promotion and development statistic data base at district and village level	25000					
9.11		Development and education for youth	9375					
9.12		Development and education for Trade Union	1875					
9.13		Human resources development	15625					

9.14		Upgrade community radio and boardcasting	50000					
9.15		Upgrade community handdicraft labour skills	125000					
9.16		Upgrade quality of teaching and studying	90625					
9.17		Prevention of deceases	125000					
9.18		Establishment Development Community	12500					
9.19		Establish Public health model's village	9375					
9.20		Technical support project	28125					
10	**Strengthening Management Capacity of the Public Sector**	**8 Projects**	**280.000,00**					
10.1		Strenghtening Leadership at district level	1250					
10.2		Improvement of the Lao Women Union in the district	625					
10.3		Traning on good governance to head and chef of the villages	6250					
10.4		Supply tools and materials for education	100000					
10.5		Evaluation and Auditing of leadership performance	3125					
10.6		Supply tools and office materials for district office	81250					
10.7		Supply tools and office materials for war veteran's office	37500					
10.8		Procurement of survey equipment	50000					

		Grand Total	**36.709.625,00**					

Percentage of GDP covered by sector for Vapi District Development

The district development of Vapi district in Saravane province projected for the period of 2011-2014	
With target achievement 330 Bn Lak in year 2014 (41250000$)	
Sector	**Percentage of GDP covered by sector**
Agriculture and Forestry	51,26%
Industry	15,24%
Service	33,50%

Covered percentage of total budget of Vapi Five-Year-District-Development Plan

Vapi District Five-Year-Development plan (2010-2014) 10 programmes including 160 projects		
covered by	**percentage of total budget**	**total budget (USD)**
National Budget	22,44%	**$36.709.625,00**
External Donors	72,82%	
Private	4,73%	

Summary of Vapi Five-Year-District- Development Saravane Province

	DDP (2011-14) in US$					
Sectors	**Total Budget**	**National Contribution**	**External Donors**	**Private Sector**	**Existing GPAR (US$)**	**Other donors**
Road and Bridge	18812500	4221525	13699263	889831		
Water Supply	3194375	716818	2326144	151094	4163	JICA, SIDA, UNICEF
Public health	1522875	341733	1108958	72032	3480	JICA, SIDA, UNICEF
Market	375000	84150	273075	17738		
District Facility (office and)	1992375	447089	1450847	94239		
Education	1036875	232675	755052	49044	6406	UNICEF, JICA, EU
Water Resources	125000	28050	91025	5913		
Governance and Law	53125	11921	38686	2513		

dissemination						
Integrated Agriculture Development	7931250	1779773	5775536	375148	18406	ADB, WB, UNDCF, EU
Forest management and forest industry	836250	187655	608957	39555		ADB, SIDA, FINIDA
Tourism promotion and Transit	375000	84150	273075	17738		
Poverty reduction and stop slash and burn	86250	19355	62807	4080		WB
Regional economic linkage and investment promotion	3125	701	2276	148		
Strengthen Economic management	188750	42356	137448	8928		
Human Resources and Social Culture	733125	164513	533862	34677		
Strengthening management capacity of the public sector	280000	62832	203896	13244		

Minimum Conditions (MCs)

Minimum Condition	Rule or regulation	Means of verification	Remarks
Year one (2012) Assessment for FY 2012/13			
1. The District has prepared an annual Investment Plan and Budget following the instructions provided by NGPAR-SCSD with inclusion of identified projects funded by DDF.	Planning guidelines issued by NGPAR-SCSD on the DDF	Review whether the plans have been adopted and approved by the required authorities	The guidelines will be up-dated, hence until new ones are issues, the NGPAR-SBSD- for DDF should be applied. In the first FY 2012, some of the processes will be delayed.
2. District should open a Bank Account for the BBG and one for the OEBG	As per the financial regulations of the NGPAR-DDF	Review evidence for establishment of the bank accounts	The guidelines for the GPAR-SBSD will be up-dated, but these guidelines will be applied until revised ones under SCSD are issued. Naturally, if districts are only receiving funds from one facility (BBG or OEBG) only one bank account should be opened.
Year 2 (Second Fiscal Year after enrollment of districts)			
In addition to the MCs above:			
3. Districts have accounted for DDF funds for the previous FY	Implementation and financial management guidelines for DDF	Review whether the quarterly and financial reports have been submitted	Depending on the timing of the assessments, only 3 quarterly reports may be available.
4. Evidence that DDF funds are used in accordance with the prescribed allowed expenditures areas	Implementation guidelines for DDF	Review of the quarterly and fiscal reports from last FY.	The following items **cannot be** funded out of DDF-BBG allocations: • administrative buildings and equipment (e.g. government offices, sector department offices, staff housing, vehicles, office computers, generators, etc.); • religious buildings (e.g. churches, temples); • salaries and other recurrent costs (such as travel allowances, supplies and sundries), other than those related to Technical Support Services (see above);

Minimum Condition	Rule or regulation	Means of verification	Remarks
			• any costs related to involuntary resettlement; • communications facilities (e.g. radio stations, telephone systems); • sports infrastructure (e.g. football stadiums or grounds); • investments that would normally be made by individuals or the private sector (e.g. consumable medical supplies, agricultural inputs such as seeds and fertilizer, grain mills, tractors, etc.); • credit programmes and revolving funds; • livestock re-stocking schemes. Investments that would normally be considered to be "central" government responsibilities (e.g. paved roads, university facilities). As it is a Fund for investment, equipment can be considered but should not be supplies. Equipment will last for several years and price per unit is high, like tables and chairs for a school, but not notebooks and pencils, or medical Xray and other medical devices but not medicines. Districts are permitted to use a **maximum** of 7% of their annual BBG allocation to finance technical support services (TSS) required for planning, the design and costing of investment projects, and for supervising their implementation. The 7% is to be calculated on the basis of the actual amounts set aside for capital expenditure projects, funded by the DDF. For OEBG grants the OEBG grant guidelines have to be complied with.
5. No major audit irregularities from the	Financial management	Review of the audit	This should not only deal with the DDF funds, but should also

Minimum Condition	Rule or regulation	Means of verification	Remarks
previous FYs, which have not been settled/resolved	regulations	reports	review if there are other non-settled major irregularities.

6.1 Performance Measures

Performance Area and Measure	Performance Measure/Indicators Rule or regulation	Score	Means of verification	Remarks
A. PLANNING		**Maximum score on Planning: 40 POINTS**		
A1. The District Development Support Committee[3] is constituted as per the Planning Guidelines and has regular meetings	***Planning guidelines:*** "A District Development Support Committee (DDSC) shall be established in each District with (minimum) the following representatives: • Deputy Head of District (Chair); • Head of District Cabinet • Head of District Home Affairs • Head of District Finance Department; • Heads of the main sector departments (Education, Health, Agriculture and Transport); • District Planning and Investment Department Head (resource person) • The PRF coordinator (in districts where these are present) • Head of the District Lao Women's Union (LWU); • 3 representatives from each Kum Ban: - Kum Ban head - 1 Village Chief - 1 Women village representative The DDPC is functional and meets twice a year minimum, once to approve the Annual Investment Plan and Budget, and once to review the annual report on the Plan implementation at the end of the fiscal year.	5 Points: Established and fully operational and active. or 2 Points: Only established not yet fully operational as per guidelines.	The letter instruction of the District head nominating members in DDSC The invitation letters to DDSC members for meetings	(merger of two previous MCs). Other sectors can be incorporated in the DDSC as well, if the district decides.
A 2. The	***Planning guidelines:***	5 Points:	Instruction	Previously

[3] This was previously called the District Planning Committee (DPC).

Performance Area and Measure	Performance Measure/Indicators Rule or regulation	Score	Means of verification	Remarks
District Development Support Team[4] is constituted and operational as per the District Planning Guidelines	A District Development Support Team (DDST) shall be established in each District to ensure facilitation of and technical input into the District Investment Planning Process. This is purely technical team and is therefore composed uniquely of government technical staff. • District Planning & Investment Department Head (Team leader); • DPI staff; • Sector technicians (but not the sector Heads) from the main sector departments (Education, Health, Agriculture and Transport). • PRF coordinator when if represented in this district There are no limits to the number of members of the DDST, and each district will need to evaluate their own needs depending on the size of each district. The District Head will nominate members of the DDST. Evidence that it has actively supported the planning process:	Established and active. Or 3 Points: Established only, but not yet fully operational as per guidelines.	of the District Head to constitute the District Development Support Team, attendance list to meetings	a MC
A.3. Rules on quorum and representatives in DDSC on plan/budget approval adhered with.	The District Annual Investment Plan and Budget was approved/recommended in a DDSC meeting in which a quorum of 2/3 of Kum ban level representatives were present ***Planning guidelines:*** "The DDSC can only make final recommendations to the District Head on the District Annual Investment Plan and Budget if at least two-thirds of its Kum Ban members are present at the annual DDSC meeting. In the event that this quorum is not attained, final recommendations cannot be forwarded to the District Head for approval; the DDSC will then need to organize another meeting in order to attain a quorum".	5 points: Done and per guidelines.	Minutes of the meeting with attendance list: verification of attendance of 2/3 of kumban representatives. There should be 3 members per kumban in DDSC	Previously a MC. DDSC is not an extended DDST. DDSC is the representation of local level for the DDF and therefore the participation of kum ban representatives is mandatory.
A.4. Community	***Planning guidelines:*** Consultations made in the identification of	5 points: Done.	Dates and minutes of	Previously a MC.

[4] This was previously called the District Planning Team (DPT).

Performance Area and Measure	Performance Measure/Indicators Rule or regulation	Score	Means of verification	Remarks
consultations during the preparation of the District Annual Investment Plan and Budget	priorities for during village meetings, selection of priorities for the development plan and for the Annual Plan in Kum ban meetings with representatives of villages, confirmation of priorities every year of the priorities in the development planning.		village meetings for year 1 of DDF Dates and minutes of kumban meetings for year every year.	It is advised to at least check dates and minutes of all kumban meetings and as many as possible of villages meetings, Since the number of villages is very important, it is advisable to proceed by sampling some 2 kumban at least and verifying if all village meetings took place and have minutes, and verify briefly for other kumban if there are dates of village meetings. This will be complemented during the field visit by asking to citizens if village and Kum Ban meetings took place.

Performance Area and Measure	Performance Measure/Indicators Rule or regulation	Score	Means of verification	Remarks
				It is very important also to verify that village and kumban meetings have taken place in the kumban, which did not have any projects selected for DAIPB.
A 5. Comprehensive and coordinated planning process	The district plan and budget process has captured all funds with due consideration to funding from PRF, and other sources and made use of synergies between these to avoid overlapping investments.	2 Points: if the plan and budget process has all funding available for local investments reflected to avoid overlapping investments	Review all planning processes in the district area and ascertain that the district has considered these and incorporated their results in the district planning and budgeting process	New
A. 6. The value of local contribution to each sub-projects follows the rules in the DDF guidelines and district contribution to projects	The following rules guide the community contribution. ***Planning guidelines:*** "In order to maximise the sense of local ownership of all investments, all BBG-funded projects will also include a local contribution. This contribution can either be in kind (labour, materials, etc.) or in cash. However, under no circumstances will the **monetised** value of any local contribution to any individual investment project exceed 15% of the total monetary value of that project".	Maximum 5 points: 3 points: If the monetized contribution if the contribution is between 1 – 15 % and contribution is promoted (i.e. cannot	Verification of the % in the approved Plan and Budget. Amount of Local contribution / total amount of the sub-project (local contribution + DDF	Previously a MC. Local contribution is good for ownership and suitability, but it is important that the communities are not

Performance Area and Measure	Performance Measure/Indicators Rule or regulation	Score	Means of verification	Remarks
	In addition it is promoted that districts ensure co-funding from own sources and other available funding sources.	be below 1 % and not above 15 %). Additional 2 points: If districts have mobilized more than 5 % from other sources of funding, e.g. district source funding, sector funding, NGOs, etc. [5]	investment)	exploited. The local contribution is usually in kind (materials or unskilled labor). The equivalent in cash is calculated during the preparation of the Plan. The local contribution included in the Plan is only for investment purpose (not for meeting costs or other operational expenditures). However, in-kind voluntary contribution can be increased above 15 % during implementation, but should not be included in the contract or in the plans/priori

[5] Note that in this case, there are two sub-indicators, one may provide 3 points another 2 points, i.e. a maximum of 5 points can be provided on this PM.

Performance Area and Measure	Performance Measure/Indicators Rule or regulation	Score	Means of verification	Remarks
				ties. Contractors will know that they have to cater for minimum 85 % of the costs.
A. 7. The District Investment Plan and Budget is consistent with DDF regulations concerning the breakdown between district level (<30%) and Kum Ban level (>70%)	***Planning guidelines:*** Of the total allocation made to a District: (i) 30% or less will be used for financing District level expenditure responsibilities; (ii) 70% or more will be used for financing Sub-District (or Kum Ban) level expenditure responsibilities. A Kum Ban level investment is defined as an investment that is small-scale, generally only impacts on one or a few Kum Bans and their inhabitants, and can usually be operated and maintained by Kum Ban. A District level investment, on the other hand, is a larger investment, which usually benefits more than three Kum Bans and their inhabitants, and which usually requires that the District ensure operations and maintenance.	4 points: Full compliance	Verification of the approved Annual Plan/Budget: distribution of projects for district level and Kumban level and respective amounts required for DDF investment	Previously a MC.
A. 8. Operational and Maintenance plan	The district has an operational and maintenance plan, with specific budget allocated for required projects.	3 Points: Plan exist	Check the plans and budgets (sample 2-3 larger projects and check if there has been any planning and agreements on the maintenance and operational cost implications)	New This should not only cover the DDF investments.
A. 9. Data base of districts	The district has established a data base of the districts with data on poverty, MDG targets and status, overview of the service delivery and gender aggregations of	3 Point: Data profile established with all	Check the annual plans and budgets +	New

Performance Area and Measure	Performance Measure/Indicators Rule or regulation	Score	Means of verification	Remarks
	provision and coverage.	information in a database or 2 points: Data profile only on poverty mapping, i.e. not comprehensive	evidence of data base.	
A. 10. MDG, gender and poverty planning	The district has Annually carried out an exercise of poverty profiling, a listing of poverty struck households and/or social /economic mapping, gender mapping, health (e.g. maternity issues) etc. and **used this in the actual** planning and budgeting process, i.e. linkages between the profile and the targeting of investments/services.	3 Point: Profiling and analysis used in the actual planning process and reflected in the plans	Check the data profiles, analysis and ascertain whether there are links with the planning priorities.	New
B. FINANCIAL MANAGEMENT AND PROCUREMENT		**MAXIMUM POINTS 20**		
B 1. Quarterly financial report and supporting documentation submitted on a timely basis	***Financial Management guidelines:*** "At the end of each quarter the DFO will prepare a quarterly summary of receipts and expenditures, using the Accounts Journal including: • Payment Journal; • Summary of contract payments for this quarter; • Summary of total contract payments to date; • Summary of expenditures for this quarter; • Summary of total expenditures to date; • Reconciliation format; • Advance statement (advances still	6 Points: Done in a timely manner	Quarterly financial report is filed at DFO and District Head's Office and has been sent to provincial Finance Department, included all elements stated	Previously a MC.

<table>
<tr><th>Performance Area and Measure</th><th>Performance Measure/Indicators
Rule or regulation</th><th>Score</th><th>Means of verification</th><th>Remarks</th></tr>
<tr><td></td><td>outstanding);
• Bank statement.
• All supporting documents including original receipts and invoices
The Quarterly summary report will be prepared in six copies, to be distributed as follows:
- the Provincial Financial Department;
- the Provincial Department of Planning and Investment;
- the District Head;
- the DFO’s files.
- District Development Support Team -DDST (district planning office)
- published on the District notice board (only Summary expenditures)”</td><td></td><td></td><td></td></tr>
<tr><td>B. 2. Books of accounts up-to-date</td><td>Books of accounts and bank reconciliations up-to-date, i.e. cannot be more than 1 month behind schedule.</td><td>Points 6: Done and fully up to date.</td><td>Check the books of accounts and the bank notes from BBG and OEBG</td><td>New</td></tr>
<tr><td>B. 3 Procurement methods used by the district for implementation of BBG funded projects were in accordance with financial thresholds</td><td>Procurement Manual for District level:
<table>
<tr><td>Type of Procurement</td><td>Up to 3 million</td><td>Above 3 million – 50 million</td><td>Above 50 million – 500 million</td><td>Above 500 million – 1 billion</td></tr>
<tr><td>Goods</td><td>Direct Purchase</td><td>Simple Price Comparison</td><td>Request for Quotations</td><td>Public Bidding</td></tr>
<tr><td>Works and Maintenance</td><td>Direct Contracting</td><td colspan="2">Community Contracting Limited Bidding</td><td>Public Bidding</td></tr>
<tr><td>Consultant Services</td><td colspan="2">Selection Based on Consultant’s Qualifications</td><td>Not applicable</td><td></td></tr>
</table></td><td>Points 8: Full compliance.</td><td>Verification in tender documents:
Initial cost estimates of the sub-projects, tender documents, minutes of the meeting of District Tender Committee</td><td>Guidelines provided in Procurement Manual.</td></tr>
<tr><td>C.</td><td></td><td>MAXIMUM</td><td></td><td></td></tr>
</table>

Performance Area and Measure	Performance Measure/Indicators Rule or regulation	Score	Means of verification	Remarks
IMPLEMENTA-TION/EXECUTION - SERVICE DELIVERY		**POINTS 22**		
C.1. A Project Oversight Committee (POC) consisting of kumban representatives was established for each investment project	***Procurement Manual for district level and financial management guidelines:*** "An Oversight committee formed by representatives of the community and village will be responsible to oversee the project execution on site".	5 Points: Done in all cases 4 points: more than 80 % 3 points: more than 70% 2 points: more than 60 % 1 point: more than 50 %	Instruction for the assignment of the POC Minutes of visits and meetings by POC Reports of POC in project notebook	Previously MC. The team should meet the POC when visit the project site and also inquire among citizen and with the contractor if the POC is active.
C. 2. Number of beneficiaries in DDF projects	Number of beneficiaries in each DDF funded project is above 100 people and the total number of beneficiaries from the BBG is above 5% of the number of inhabitants in the district.	6 Points if done in all projects 3 points if more than 50 people benefiting in all projects.	Check the DDF project implementation reports. Points on this require that the data is available at the district level.	New. If no evidence, then score 0.
C. 3 Project implementation performance	% of DDF projects implemented on time of the total number of projects implemented by the districts according to its annual plan and work-plans.	4 points: All DDF projects implemented on time 3 points: 90 % 2 points: 80 % 1 points 70 %	Check the DDF project implementation records against the plans	New.
C. 4. Budget	Average budget variance (variation (+/-)	5 Points: If	Check the	New

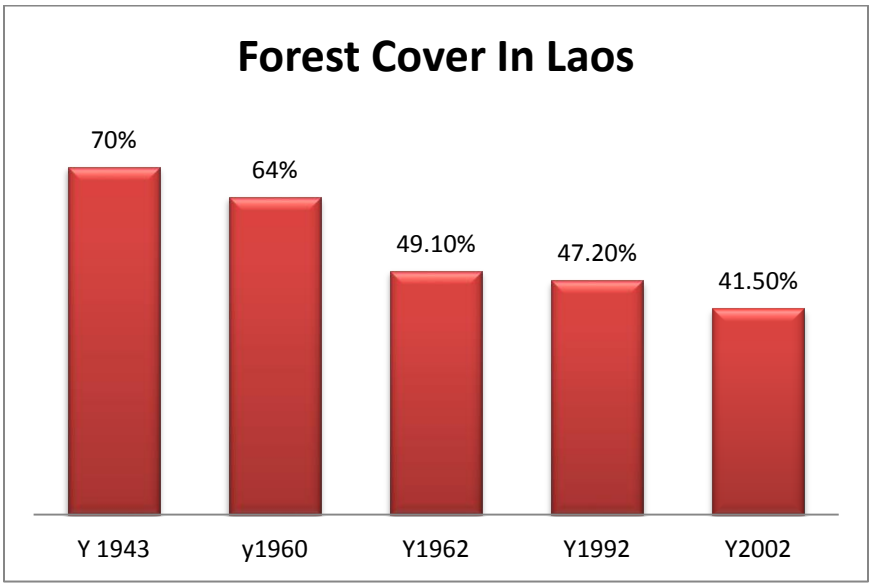
Performance Area and Measure	Performance Measure/Indicators Rule or regulation	Score	Means of verification	Remarks
variance	between budget and budget execution) is less than 10 % as an average of the four core sectors (Education, Health, Agriculture and Public Works).	less than 5 % 4 points of less than 10 % 3 points if less than 15 % 2 points of less than 20 % 1 point if less than 25 %	budget against the actual execution (financial reports). This should not only cover the DDF part of the budget, but the entire district budget.	
C.5. One stop service shop	Districts have established a one stop service shop whereby citizens can contact the district on all issues, and be referred to the relevant official for further support and initiative	2 Points: Done	Review the organization of the tasks in the district and ascertain that this is functioning	New
D. ACCOUNTABILITY AND TRANSPARENCY		**Maximum Score: 18 POINTS**		
D.1. The Annual Financial Report presented to the District Development Support Committee	***Financial Management guidelines:*** "In addition, quarterly and annual financial reports will be presented by the DFO and discussed at regular quarterly meetings of the District Development Support Committee (DDSC)". The report should cover all the financial transactions and not only the DDF.	5 Points: Done and timely and comprehensively. Or 2 Points: Done, but sometimes delayed and /or only covering the DDF expenditures.	In Minutes of the DDSC meeting, verify if the reports have been presented to DDSC	For the present fiscal year, the annual financial report might not be available yet at the time of MC /PM assessment and therefore the DDSC will not have been able to review it in a meeting. In this

Performance Area and Measure	Performance Measure/Indicators Rule or regulation	Score	Means of verification	Remarks
				case, previous year should be considered as well as quarterly financial reports.
D. 2. Information on notice boards	The district published information about its: i) Annual grant allocations, ii) Annual Investment Plan and Budget iii) financial information on use of DDF funds and iv) citizens charter (service delivery goals and targets) on the public notice boards ***Planning guidelines:*** "Information about the annual DDF allocation will be kept on file in the District Administration office and will be made available to local citizens at their request". ***Financial Management guidelines:*** "Quarterly and annual financial reports for the District's DDF will be made publicly available by being posted on the District notice board. In addition, annual financial reports will also be sent to KBs, where they will be posted on the KB notice board"	8 points: all "i, ii, iii and iv)" complied with. 6 points: three of i-iv. 4 points: only two of i-iv. 2 points: only done one of i-iv.	Verification if it is posted on the District notice Board. (the indicator is focusing on the districts) Verification with citizens if they have seen the notice on the Board	Previously partly covered by MCs. The current PM considers only the quarterly financial reports. The Annual financial report – at the end of fiscal year- might not be available at the date of the MC assessment (typically in October). Maximum scores can only be provided where the DDF has been operating at least one year.
D. 3 Publication of the results from the annual performance	The district has published the results from the annual performance assessments in the newspapers, or on notice boards etc.	Points 5: Done	Evidence of the publication of the results.	New.

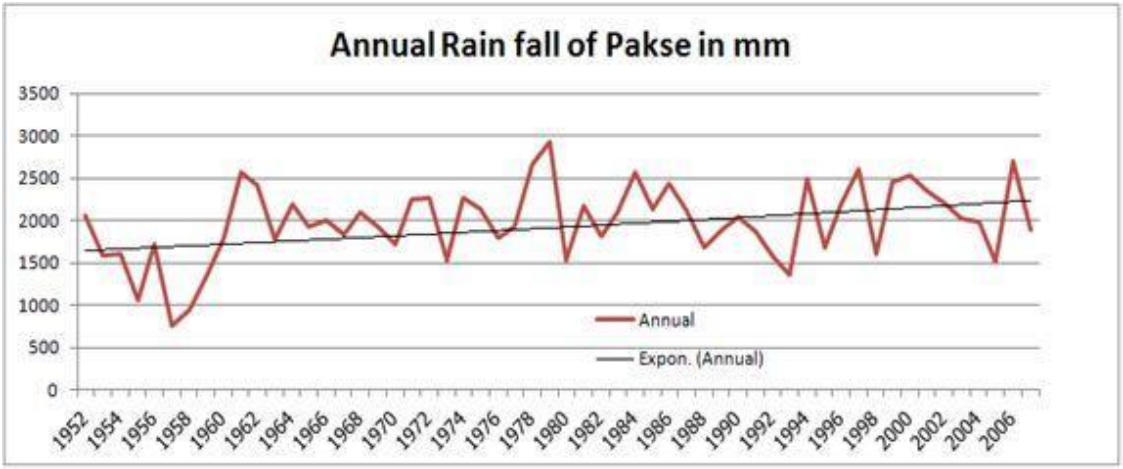
Performance Area and Measure	Performance Measure/Indicators Rule or regulation	Score	Means of verification	Remarks
assessments				

Annex 7: Graphs and Figures

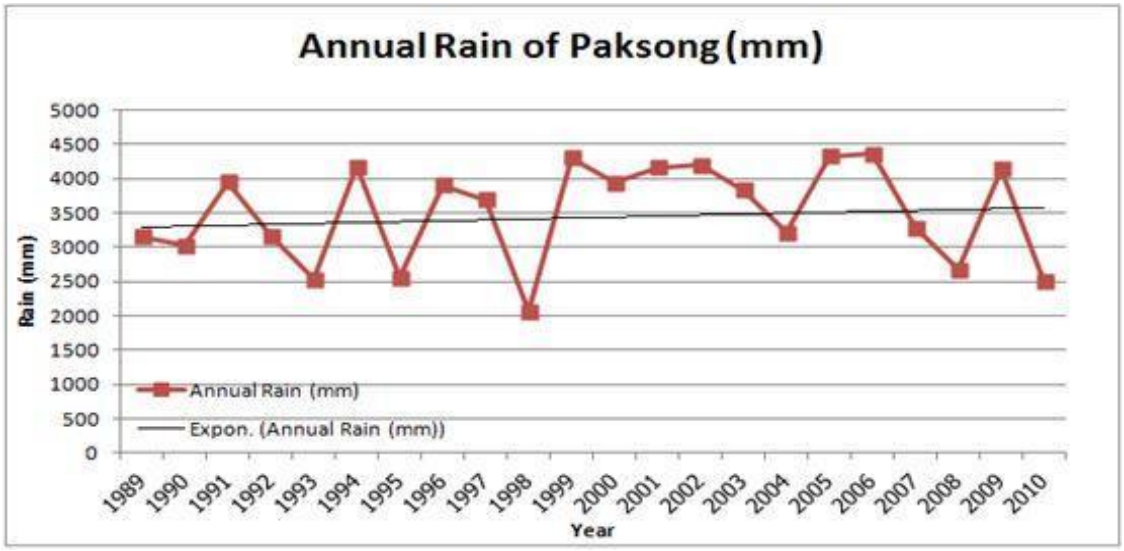
Forest Cover in Lao PDR



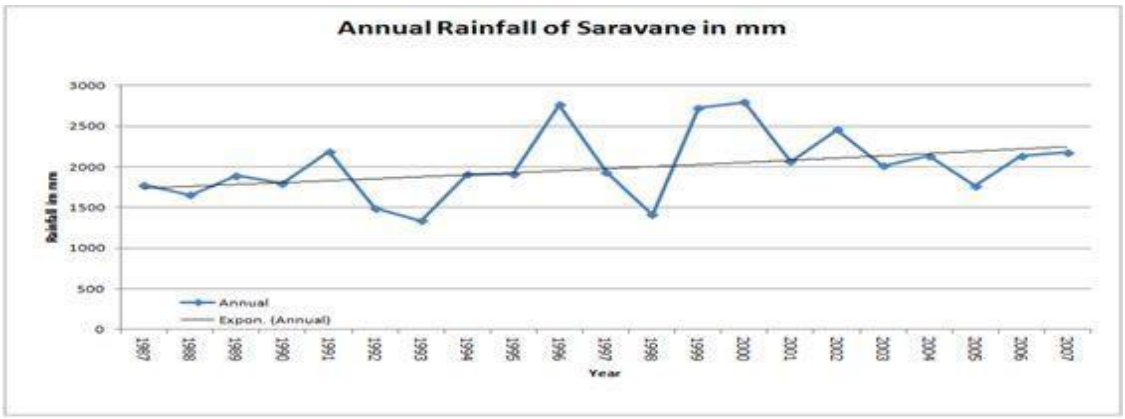
Annual rainfall of Pakse in mm



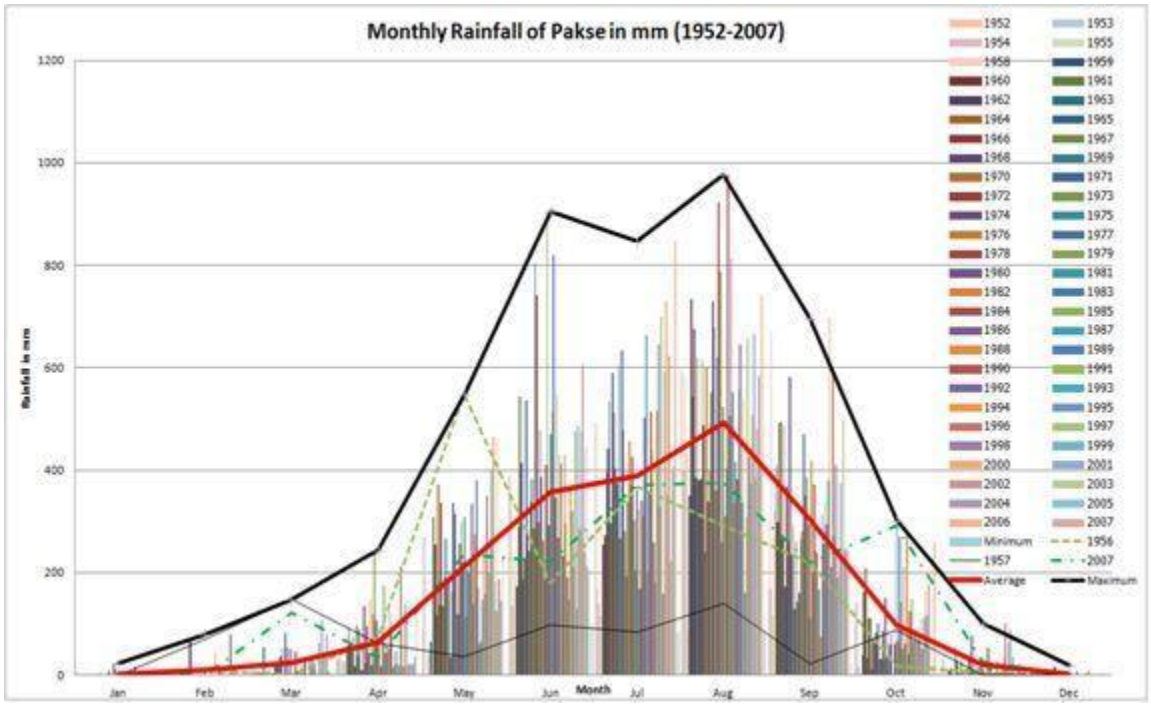
Annual rainfall of Paksong in mm



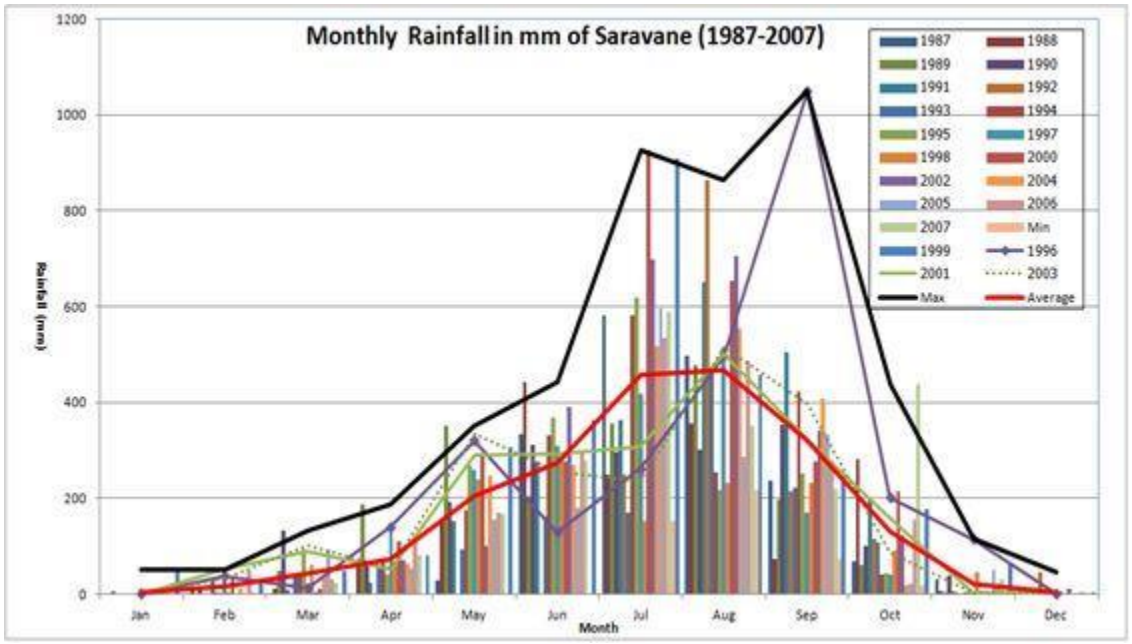
Annual rainfall of Saravane in mm



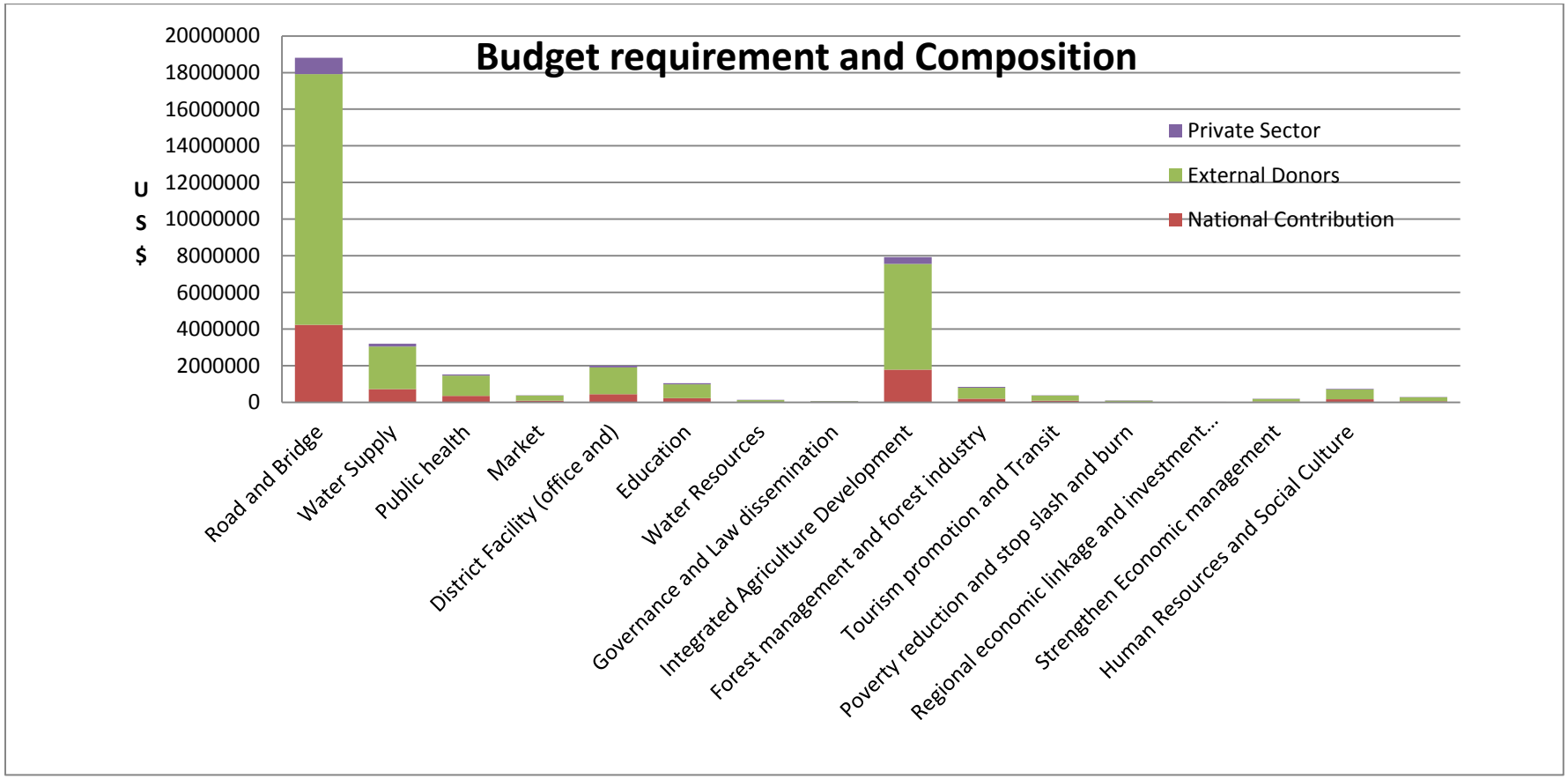
Monthly rainfall of Pakse in mm (1952-2007)



Monthly rainfall of Saravane in mm (1987-2007)



Budget Requirement and Composition of Vapi Five-Year-District- Development Saravane Province



Annex 8: V&A analysis

Available as a separate document

Annex 9: The Role of Women within the Ethnic Minorites of Sekong and Saravane

Lao PDR is populated by 49 officially recognized ethnicities. Within the two provinces Saravane and Sekong the main ethnic minorities are Mon-Khmer and Lao Thai. The table below lists the main and sub ethnic groups. Among the group of the Mon-Khmer 54% of the population are ranked as poor compared to 25% among the Lao-Tai. In addition poverty increases from lowland to upland areas, where predominantly ethnic minorities are located. Thus ethnicity is a reason for poverty (Chamberlain 2007, page 14). While the group of Lao-Tai mostly inhabits the valleys and traditionally practices paddy rice cultivation, the group of Mon-Khmer is predominantly settled in the upland areas. A main course for poverty is a "(…) lack of land for cultivation due to relocation and this has been exacerbated by natural disasters." (Chamberlain 2007, page 43). Out of 65 Mon-Khmer villages only 19 villages are cultivating more than an average of 1 ha per household. This means that the poverty of ethnic minorities is inferred from access to land.

- **Table 1: Main Ethnic and Sub Groups in Saravane and Sekong**

Province	Mon-Khmer	Lao-Tai
Saravane	Katuic	Lao Tai-Thay
Sekong	Katuic Bahnaric Khmer	

Overall the area of Southeast Asia is traditionally an area of complementary. But complementary is vulnerable and depends on social and economic circumstances. Klein-Hutheesing (1995) observes, that fair treatment of sexes in upland societies of Southeast Asia relies on customary rights and property (Klein-Hutheesing 1995). As soon as economical changes due to more patriarchal forces these rights are in danger (Chamberlain 2007, page 24). There is a division of labor between women and men. Table 2 below shows the division of labor per type of work field. It outlines that women usually operate labor, which is longer and consistly while men do heavier work. For Instance in the area of swidden agriculture men are responsible for cutting the trees, while women plant the rice seed and weed the swidden. Women usually work longer per day than men. Most of women's work and therefore their role and status within the livelihood are closely related to the ecosystem through the participation in food production and gathering (Chamberlain 2006a, page 57f). That means that a women and their power are negatively impacted when ecosystems are damaged. As an example, women are responsible for weeding, if the soil quality decreases, women's labor increases (Chamberlain 2007, page 58). In one case, outlined by Chamberlain (2006, page 75), one ha swidden land used to produced two tons of rice and the weeding took 5 days. Through land allocation the fellow cycles were shortened and "(…) destroyed the ecological balance (…)" (Chamberlain 2006, page 75). One ha swidden land now produced only 700-800 kg rice and the weeding now took

two weeks, which means an increase in labor of 600%. But because the provision of food is an essential source of women's power and status, they are "(…) willing to pay in order to maintain their symbolic, spiritual, and very real roles as providers and sustainers in the family and society" (Chamberlain, 2006, page 75). In other words, the power of women and their status depends on the role as provider of food and is therefore a result of access to land. In the past the government handed over land to industries for rubber plantation and the decrease of swidden agricultural land of 60% in some areas through the implementation of the lao government's forest-allocation scheme exacerbated a lack of land. Due to this processes ethnic minorities within the project area loose access to land and as outlined before it affects the status of women (Chamberlain 2006a, page 24). Chamberlain (2007) mentions that "rather research shows clearly that they are victims of poorly implemented policies that have produced poverty" (Chamberlain 2007, page 55).

Table 2: Division of labor between men and women per area (adapted from Chamberlain 2006, page 60)

Type	Women's Responsibility	Men's Responsibility
Housework	Gather firewood, cook, wash dishes, clean the house, wash clothes, fetch water, pound rice, sew, care for children	Chop firewood, cut trees for construction, build house, saw lumber, repair the house, take the children to school, take the children to clinic, drive the tractor, look after electrical or mechanical equipment
Paddy	Plant seedlings, transplant rice, winnow the rice, transport rice to rice barn	Adjust water levels for paddy, make paddy dykes, weed the dykes, plow, harvest, winnow, construct the rice barn
Swidden	Clear small trees and vegetation, clear remains after burning, plant the rice seed, weed the swidden, harvest, winnow, transport rice to rice barn, select rice seed for next season	Select site for swidden plot, cut large trees, burn the swidden, divot the swidden, harvest, winnow, transport rice, build rice barn
Garden	Clear the vegetation plant, weed, water, pick the produce for eating or sale, select the seed to be planted next time	Clear vegetation, build fences
Livestock	Pick vegetables for the pigs, feed the pigs and chickens	Watch over the cows, buffaloes, goats
Handicrafts	Weave, sew/make clothing	Forge machetes and knives, weave rice baskets, shoulder baskets, and all other baskets
Trading and selling	Sell produce, sell forest products, sell chickens, eggs, etc.	Sell dammar resin, buffaloes, cows, goats, pigs, scrap metal, and other forest products

Hire out labor	Hire out labor to transplant, weed and harvest	Hire out labor to saw lumber and dig ponds
Social roles	LWU, student, teacher, fortune teller, spirit healer, health volunteer	Study, village elder, shaman, village chief, Neo Hom, militia, teacher, driver, fortune teller, spirit healer, health volunteer

Beside their work on and their control over agricultural land women are also responsible to gather NTFP's from forests. Among the Mon-Khmer bilaterism exists in a social structure and environment related. They see theirself as part of the environment (Chamberlain 2006, page 60). Women are the group who is most strongly connected to the environment through their labors (see table 2). Any environmental change leads to a change in the role and position of women within their livelihood. Women are the most negatively impacted group when ecosystem changes or is damaged. That means that for instance the implementation of an agro forestry management could affect women's access to forest resources and therefore the situation of bilaterism. The complementary of gender are vulnerable when new meanings are acquired from cities or outside, because they will be most likely overtaken by men (Chamberlain 2007, page 15).

Table 2 also shows that women are responsible for water supply. Any change in water infrastructure, which affects the availability of water will have an impact on women. If the water supply is improved, women save time and could use this to do other work and strengthen complementary of gender (Chamberlain 2006, page 74).

Conclusion

The main ethnicities within Sekong and Saravane are Mon Khmer (divided in Kathuic and Bahnaric) and Lao-Tai (divided in Lao and Thai-Tay). Complementary of gender is common within these ethnic groups. The power of women and their role within the livelihood results from labor and their important economic role for the family. Women decide which part of food production is needed for the own household and which part can be sold. Complementary of gender is in danger when women loose land access and labor. Any external change affects the role of women. A change in land-use or management has to make sure that women don't lose labor or access to maintain and enhance complementary. Thus there is dialectic between bilaterism and ecological change.

References

Chamberlain, J. R. (2006): Study of Gender Inequality in Women's Access to Land, Forests, Water. Asian Development Bank TA No. 4339. Vientiane.

Chamberlain, James R.; National Statistics Centre Asian Development Bank; editors (2007): Participatory Poverty Assessment II: Lao People's Democratic Republic. Vientiane.

Klein-Hutheesing, Otome. 1995. Gender at the margins of Southeast Asia. In 'Male' and 'Female' in Developing Southeast Asia, ed. Wazir Jahan Karim. Oxford: Berg.

Annex 10: Climate Change Adaptation Training Modules, training stakeholder involvement plan and suggested training agenda

The following list gives an overview of capacities to be included in the future capacity development plan.

Module 1: Understand and apply climate and climate related planning information (including V&A analysis tool of the Prodoc for each sector)

Module 2: Understand and apply the CRVA tool (receive on the job guidance)

Module 3: Understand and apply climate resilient construction standards (receive on the job guidance)

Module 4: Understand and apply standards of climate resilient ecosystem management

Module 5: Visualise findings of step 1-3 for designing a combined small-scale ecosystem and infrastructure climate change adaptation project

Module 6: Design and budget the project

Module 7: Integrate all projects in a climate resilient district plan (receive on the job coaching)

Module 8: M&E of CCA projects (receive on the job coaching)

Module 9: Establish and run CCA databank (receive on the job guidance)

Module 10: Integrate all data gathered regularly in the CCA databank (receive on the job guidance)

Module 11: Regularly exchange about climate change planning

The PPG team suggests that, following the participatory approach of the District Development Support Committees and based on consolidated mandates of involved line agencies, in the near future the committees should appoint which agency is best placed to fulfil the outlined tasks and should be subject to associated capacity development. Based on this decision, the project support team will design a 4 year capacity development plan for the District Development Support Committees.

Table: Suggestion on Capacity development modules, targeted stakeholders and number of participants

• Module	• Stakeholder	• No province officials	• No district officials	• No total
• Module 1: Understand and apply climate and climate related planning information (awareness raising) •	• MONRE, MOHA, MAF, MOE, MOH, MCTPC, MPI	• 18	• 84	• 102
• Module 2: Understand and apply the CRVA tool (technical)	• MONRE, MOHA, MAF, MOE, MOH, MCTPC, MPI	• 4	• 24	• 28
• Module 3: Understand and apply climate resilient construction standards (technical)	• MONRE, MOHA, MAF, MOE, MOH, MCTPC	• 8	• 48	• 56
• Module 4: Understand and apply standards of climate resilient ecosystem management (technical) •	• MONRE, MOHA, MAF, MOE, MOH, MCTPC, MPI	• 4	• 24	• 28
• Module 5: Visualise findings of step 1-3 for designing a combined small-scale ecosystem and infrastructure climate change adaptation project (technical)	• Appointed data management and mapping officers	• 2	• 12	• 14
• Module 6: Design and budget the project (technical)	• MONRE, MOHA, MAF, MOE, MOH, MCTPC, MPI	• 18	• 84	• 102

•				
• Module 7: Integrate all projects in a climate resilient district plan (technical)	• MONRE, MAF, MOE, MOH, MCTPC, MPI	• 18	• 84	• 102
• Module 8: M&E of CCA projects (technical)	• MOHA, MONRE, MAF, MOE, MOH, MCTPC, MPI	• 18	• 84	• 102
• Module 9: Establish and run CCA databank (technical and awareness raising)	• Appointed data management and mapping officers	• 2	• 12	• 14
• Module 10: Integrate all data gathered regularly in the CCA databank (technical) •	• Appointed data management and mapping officers	• 2	• 12	• 14
• Module 11: Regularly exchange about climate change planning (awareness raising) •	• MONRE, MOHA, MAF, MOE, MOH, MCTPC, MPI	• 18	• 84	• 102
• MONRE: Ministry of Natural Resources and Environment; MOHA, Ministry of Home Affairs, MAF: Ministry of Agriculture and Forestry; MOE: Ministry of Education, MOH: Ministry of Health; MCTPC: Ministry of Communication, Transport, Post and Construction, MPI: Ministry of Planning and Investment				

Suggested CCA Training Agenda

Day 1:

- Module 1: Understand and apply climate and climate related planning information (awareness raising)
- Module 2: Understand and apply the CRVA tool (technical)
- Module 3: Understand and apply climate resilient construction standards (technical)
- Module 4: Understand and apply standards of climate resilient ecosystem management (technical)

Day 2:

- Module 6: Design and budget the project
- Module 7: Integrate all projects in a climate resilient district plan (receive on the job coaching)
- Module 8: M&E of CCA projects (receive on the job coaching)
- Module 9: Establish and run CCA databank (awareness raising part)
-

Day 3: Parallel sessions

Site visit to projects (all participants except data managers)	Technical trainings on data analysis and databank issues (data managers)
• Module 11: Regularly exchange about climate change planning (awareness raising)	• Module 5: Visualise findings of modules 1-4 for designing a combined small-scale ecosystem and infrastructure climate change adaptation project (technical) • Module 9: Establish and run CCA databank (technical and awareness raising) • Module 10: Integrate all data gathered regularly in the CCA databank (technical)

Annex 11: Overview and examples of macro- and micro-level climate risk assessment tools

The Vulnerability and Adaptation Assessment tool: Principles, Approach & Matrix

The V&A tool and matrix determines the vulnerability of an asset to make known the impact of the climate threats. Knowing the level of impacts, the PPG Team is able to assess the adaptive capacity of the assets and systems to the threats. This process is the determination of vulnerability of the assets and systems of the prevailing threats.

Scientific information of climate is currently limited and uncertain in remote Laos PDR districts thus, the PPG Team could only build on available information through interviews and the emphasizes on expert judgment and stakeholder experience and opinion was the most prudent approach to use in gathering climate information . The PPG Team decided to work at a number of levels for the project geographic focus: (a) a relatively small area of the province for the rural infrastructure assessment (i.e. an area which has strategic rural infrastructure); (b) for the social assessment, the areas where most vulnerable people live; and (c) for the environmental / natural systems assessment, a larger "catchment area" was opted to take into account catchment management issues, landslides and erosion, irrigation systems protection and environmental quality issues affecting the provinces.

The assessment for vulnerability of assets and systems to climate change threats and adaptation options were conducted based on the baseline assessment and field visits to the target area to physically observes the status quo. During the baseline assessment, the PPG Team gathered important information derived from systematic observations and assessments of climatic and non-climatic variables. The major climate variables measured include temperature, rainfall, drought, storms, flooding, etc., which are carried out by the Laos Meteorological Services (LMS), the Natural Disasters Management Department and others in the region, e.g. the Asian Disaster Preparedness Centre.

The non-climatic information includes agriculture and natural systems, and prevailing socio-economic conditions that have been researched and documented. The baseline assessment for strategically important rural infrastructure including rural roads and bridges, water supply, irrigation schemes, health centres and schools etc. was also conducted through a review of reports as well as carrying out a site survey to determine positions and conditions of the rural infrastructure assets. GIS analysis of data compiled and generated through the survey produced various maps that further exemplified the situation and trends.

The target project area was defined, and then zoned as described above for detailed assessment. Within each zone, the PPG Team identified the key assets of social, natural and built (rural infrastructure) systems, as well as those systems that have cross cutting influences, e.g. economic and institutional systems. The vulnerability of the assets to climate change threats was assessed. The outcomes of the vulnerability assessment were used to identify and develop potential adaptation options.

The methodology for vulnerability assessment and adaptation planning is based on a synthesis of the ICEM Climate Change Adaptation and Mitigation (CAM) methodology (Carew-Reid et al 2011). The approach was shaped by PPG Team and stakeholders to suit local conditions, and summarised in matrix tables as are the adaptation project options which are key outputs of this project. (See Matrix Tables Appendix 1, 2a & 2b).

Climate Risk, Vulnerability and Adaptation-assessment tool

Usually a CRVA contains the following sections:

- How do climate-related impacts affect a project area and local livelihoods
- How people cope with the impacts of these impacts
- Which livelihood resources are most affected by climate impacts and which ones are most important for coping
- How existing community projects affect access to or availability of these critical resources

Data gathering along those sections is structured into a series of subsequent steps. Under each step it is described which rapid social (such as direct observation, focus group discussions, individual interviews with key stakeholder or representatives of each social group, poverty rankings etc.) and environmental assessment tools (expert observations, local views on environmental assets and change) can be applied to gather the information. A typical village level CRVA assessment should take at least one to three days, depending on the complexity of the local context and the size of the village.

As an initial step existing CRVA tools such as from CARE (CARE CVA) or from IUCN/IIED (Community based Risk Screening Tool for Adaptation and Livelihoods, CRISTAL, see: http://www.iisd.org/cristaltool/) start with gathering baseline information of the project site on livelihood systems/ social groups, social structures and gender, key actors in the local context, description of the ecological context. A CRVA version adapted to the project context would need to detail the description of the ecological context much more in perspective of water availability and flow regimes at the project site during different seasons.

In a next step livelihood assets are assessed: natural resources, physical resources/ infrastructure, financial resources, human resources, social and political resources. After this, climate threats and climate impacts on those resources are described as well as current coping strategies. Finally alternative coping strategies are discussed, including the resources needed to introduce and maintain these strategies with regards to the design of adaptation options..

As said before, this information is complementary to the V&A analysis, since project site particularities differ too widely between different locations. The adapted version of a CRVA tool will be developed by the PSU with additional support through short term TAs. Part of this activity is to develop a user manual and awareness raising material in English and the main local languages which are Lao and Mon-Khmer.

Annex 12: Annual Workplan Year One (2013/14) – to be amended

Annex 13: Economic Analysis of CCA Projects in Sekong and Saravane Provinces Lao PDR

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Contents

I. Context of the Proposed CCA Projects

A total of 35 climate change adaptation (CCA) projects have been identified for implementation in southern Lao PDR, divided about equally between two Provinces, Saravane and Sekong. Virtually all projects are designed to strengthen either irrigation or water supply and storage, against the threats of climate-induced drought and/or flash flood. (A proposed road upgrading and a bridge reconstruction project in Saravane Province are not included in the analysis, as discussed below).

Saravane and Sekong are among the poorest Provinces in Lao PDR. Within Saravane, 5 of the 6 project districts (Khongsedone, Lakhonpheng, Saravane, TA Oi, and Vapi) contain villages that are extremely impoverished and highly vulnerable to climate change[6]; within Sekong, 2 of the 4 project districts (Dak Chung and Kaleum) contain villages in this category. The economies of both Provinces are based mainly on subsistence agriculture. Cash employment in the form of cash cropping and wage employment, while present, is relatively limited. Rice supplies some 80% of human sustenance, grown mainly on small, family-sized plots (1-2 ha). Due to climate change, the monsoon season in both Provinces is getting shorter with rainfall events becoming more intense, with both prolonged drought periods and flash floods becoming more frequent. The more intense rainfall events combined with upper catchment deforestation lead to increasing erosion, destruction of natural vegetation, loss of moisture retention by soil, and exacerbation of flash flooding, in turn leading to accelerated erosion and loss of infrastructure, including that vital for subsistence farming (i.e., water storage and irrigation facilities). All of these climate-induced factors threaten the capacity of the region to support subsistence livelihoods. In both Provinces, loss of food security is the primary threat posed by climate change.

In both Provinces, the population is largely self-reliant, as (especially in the eastern mountainous regions) access to social services and markets is limited. With relatively large household sizes (above 6.0 in Saravane and about 6.5 in Sekong[7]), the dependency ratio (the number of people under 15 years of age or over 65 years of age dependent for support on working-age people) is far above the national average. Infant and maternal mortality in both Provinces are high compared to the national average, due largely to lack of access to public health care. Educational attainment among the population and out migration from the two Provinces are both relatively low, the latter probably due to a lack of skills for employment outside the region.

The proposed CCA projects are designed to (i) improve upper catchment vegetation cover, improve moisture retention by soils, and thus reduce runoff affecting downstream areas; (ii) strengthen downstream canals and irrigation works to make them more resilient to flash flooding; and (iii) improve and expand both natural and artificial water storage works to protect against droughts. The outcomes of these projects will be protection of subsistence livelihoods and food productive capacity of the region, and to maintain the habitability of the Provinces for the communities that live in them. All three of the above components contribute to these outcomes in an integrated way. For this reason, the proposed CCA projects in each Province cannot be considered 'stand-alone' but rather depend for their effectiveness on at least district- or catchment-wide implementation of multiple integrated projects. In the analysis below, CCA projects are considered at the district level (in terms of impact on the affected populations) and at the Province level (in terms of overall effectiveness of the projects to deliver increased resilience to climate change).

II. Proposed CCA Projects (summary)

[6] Much of the discussion on socio-economic aspects of the Provinces in this Annex is based on two documents: (i) Messerli P, Heinimann A, Epprecht M, Phonesaly S, Thiraka C, Minot N, editors. 2008: *Socio-Economic Atlas of the Lao PDR – an Analysis based on the 2005 Population and Housing Census*; and (ii) Epprecht M., Minot N., Dewina R., Messerli P., Heinimann A., 2008. *The Geography of Poverty and Inequality in the Lao PDR*. Both documents are published by the Swiss National Center of Competence in Research (NCCR) North-South, University of Bern, and the International Food Policy Research Institute (IFPRI), Bern: Geographica Bernensia.

[7] Lao Statistics Bureau, Population Census 2005
http://nsc.gov.la/index.php?option=com_content&view=article&id=18&Itemid=19&lang=en&limitstart=2

In Sekong Province, a total of 17 CCA projects, including upper catchment projects, are proposed, of which nine are related directly to strengthening irrigation and eight are for expanding or strengthening water storage. Ten of the 17 projects are located in areas of extreme poverty, affecting a population of 2,896. The total population affected by the 17 projects in Sekong Province is 30,586. The total estimated cost of the 17 projects, including materials, installation, and professional services (tendering, supervision, etc., as required) is approximately US$1.5 million.

In Saravane Province, a total of 16 irrigation and water supply CCA projects, including upper catchment projects, are proposed, of which nine are related directly to strengthening irrigation and seven are for expanding or strengthening water storage. Eleven of the 16 projects are located in areas of extreme poverty, affecting a population of 9,534. The total population affected by the 16 projects in Sekong Province is 13,039 (thus the extremely poor are a much higher proportion of the beneficiaries in Saravane than in Sekong). The total estimated cost of the 16 projects, including materials, installation, and professional services, as in the Sekong Province, is approximately US$1.5 million.

(Also in Saravane Province, a project to raise the level of a road in the Khongsedone District to above flood level, and another project to replace a damaged bridge in the Vapi District, have been proposed. However, these projects have not been included in the present analysis, as it appears that both could be justified as standard transport rehabilitation projects to cope with the existing monsoon seasonality. Climate change considerations do not appear to significantly affect the need for these two projects.)

The irrigation and water supply CCA projects in Sekong and Saravane Provinces are summarised in detail in the tables presented in Appendix 1A and 1B respectively.

III. Expected Impact of Climate Change in the Two Provinces

As discussed above, climate change is expected to erode the capacity of the two Provinces to support subsistence livelihoods, both through the expected rising frequency of prolonged droughts and through destruction of infrastructure by more frequent, and more intense, flash flooding. The proposed irrigation and water supply CCA projects in both Provinces address these threats through direct strengthening of water storage and irrigation infrastructure in the lower elevations combined with reforestation in the upper catchments (to reduce runoff and downstream flash flooding).

Without the CCA projects (i.e., without adaptation), the declining capacity of the region to support subsistence livelihoods under climate change in practice would be met in a variety of ways. As food insecurity intensifies, results may well include increasing morbidity through malnutrition, increased infant and maternal mortality, shortened lifespan and increased adult mortality, and increasing rates of forced out-migration (by 'climate refugees'). The economic costs of such responses by the local population are difficult to quantify, but indisputably they are "very high" as they equate to extreme dislocation and mass misery. Alternatively, by way of response to such crises, the government could sponsor an emergency food-aid program to counter the effects of climate change, by importing rice into the region to meet the population's growing nutritional deficit[8]. Economically speaking, such a response would be 'least cost' and thus would represent the minimum economic cost of the disruptions in the region – from the point of view of the country as a whole -- occasioned by climate change.

In the analysis below, the economic cost of climate change as it occurs in the Sekong and Saravane Provinces is estimated as the economic cost of importing rice into the region to offset a growing nutritional deficit brought about by the climate change. Investment in and maintenance of adaptation will be effective in avoiding such costs, to a degree to be estimated in each case. These avoided costs are the benefits of the adaptation. As mentioned, the actual costs to the region of climate change, in the forms they may take in

[8] It is recognised that in the event of actual food importation to meet a hunger crisis, other food items may be imported as well to meet balanced nutritional needs. In the present analysis, these are accounted for in terms of 'tonnes of imported rice equivalent'.

increasing morbidity, mortality, and forced migration, will in practice be far higher than such an estimate would indicate; thus the benefits ascribed to climate change adaptation in the analysis below are conservative.

IV. Methodology

The economic analysis compares a 'without-adaptation' scenario with a 'with-adaptation' scenario for the region, both under climate change, projected 20 years into the future. The 'without-adaptation' scenario requires an assumption about the rate in which climate change reduces the region's ability to support subsistence, based on the project team's estimates of the rate in which climate change is occurring in the region and the impact on livelihoods that this will have. These estimates are of course subject to some uncertainty and, inevitably, some revision as climate change proceeds. An assumption is also required about the extent to which the identified and proposed CCA projects will be effective in countering the impact of climate change.

The 'with-adaptation' scenario assesses the estimated initial and operations and maintenance costs of the proposed CCA options. These costs, together with the assumed effectiveness of the options to counter the effects of climate change, form the basis of the economic analysis, which compares the costs to the benefits and calculates the economic internal rate of return (EIRR), the net present value (NPV), and the Benefit/Cost (B/C) Ratio of the proposed CCA projects.

Normally, in the economic analysis of infrastructure investment projects, a 'least cost analysis' is performed to ensure that the proposed projects over their life cycle deliver the services expected of them at the least cost in comparison to available alternative projects, comparing the initial cost and the operations and maintenance costs of the proposed project(s) with those of all alternative projects. In the present case, alternative projects that might be implemented in place of the proposed CCA projects have not been identified or costed, so a formal least cost analysis cannot be performed. It is, rather, assumed that the project survey teams have considered possible alternatives on a project-by-project basis and have recommended the proposed projects as the least cost available projects that would achieve the desired benefits of countering the effects of climate change.

V. Assumptions

The CCA projects in the Sekong and Saravane Provinces are analysed separately (by Province) but are based on the same or similar assumptions, detailed below. The unit costs that underpin costs and benefit streams are assumed to remain constant in real terms over the 20-year planning period (i.e., a projection of monetary inflation is not applied). Sources on which the assumptions are based are indicated in footnotes.

1. 'Very poor' districts in each Province are highly vulnerable to food insecurity and indeed are suffering insufficient subsistence due to droughts and flash flooding in the *present* climate, and the nutritional deficit is expected to become more severe as climate change proceeds[9]. It is assumed that in 'very poor' districts, only 80% of daily nutritional needs are currently being met and that, under climate change without adaptation, this declines further at the rate of 1% per year.
2. Districts that are not 'very poor' in the two Provinces are assumed to be able to meet their nutritional needs in the present climate, but this ability is increasingly compromised as climate change proceeds. It is assumed that in districts other than the 'very poor', 100% of daily nutritional needs are currently being met but that, under climate change without adaptation, this declines at the rate of 1% per year.

[9] UN World Food Programme, *Food Security Atlas*, http://www.foodsecurityatlas.org/lao/country/utilization/food-consumption

3. The *average* per capita requirement for food intake per day is assumed to be 2,100 calories (this will vary by person depending on age, gender, and normal level of physical activity)[10].
4. The nutritional content of 1 kg of raw rice (measured after cooking) is 3,700 calories[11], implying (with the above assumption) that the daily per capita nutritional intake is equivalent to 0.57 (= 2,100/3,700) kg of rice per day.
5. The wholesale price of rice, FOB Vientiane, is currently US$0.58/kg[12]. The estimate is based on the price of rice in China, and for the purposes of analysis is assumed not to change in real terms.
6. Food (in units of rice equivalent) is imported into the two-Province region from Vientiane, in response to hunger crises (which steadily increase under the influence of climate change). The cost of transporting rice (1 tonne transported 1 km by river and/or road) into the region is US$2.50/tonne/km[13]. The average distance of such transport per shipment is 1,000 km.
7. The average annual rate of population growth in Sekong Province is 2.9%, and in Saravane Province is 2.5%, based on the respective historical patterns (1995-2005)[14]. Local population growth will, of course, increase the requirement for imported food as nutritional deficits occur.
8. The overall effectiveness of the proposed CCA projects in the two-Province region to counter the effects of climate change (i.e., to reduce the volume of imported rice equivalent needed to resolve hunger crises) is 30%, reflecting the implicit assumptions that "full" food security in the region (which in some districts doesn't exist presently or in the recent past) may not be obtainable, and that an increase in food security will require additional CCA projects to be identified and implemented in subsequent phases. The proposed CCA projects discussed in this Annex are immediate-priority projects.
9. The economic discount rate, sometimes called the 'economic opportunity cost of capital', used in this analysis is 12%. This is the rate at which future costs and benefits are discounted each year before summing them up to calculate the present value of a stream of costs or benefits. The discount rate chosen for analysis of this type can be controversial and, especially for adaptation projects where human survival is at stake, a rate lower than 12% (which would increase the present value of a given stream) could well be justified[15]. However, it is recommended that 12% be used for analysis of first-phase CCA projects (as in the present case), as it will clearly identify the high-return and thus top-priority projects for immediate implementation. In subsequent surveys of CCA options in the same region, a lower discount rate may be adopted to capture next-phase priorities.
10. The initial cost of CCA projects are as estimated by the project team, based on estimated materials costs, implementation costs (including labour and fuel), and professional services required for tendering, supervision, etc. The projects' annual operations and maintenance costs (likewise estimated by the project team) are assumed to be equivalent to 5% of their initial costs in the early years of operations,

[10] Ibid., and http://www.ehow.com/facts_6871295_caloric-needs-adults.html and http://www.ehow.com/facts_5748394_caloric-needs-children.html

[11] http://calorielab.com/foods/rice/21

[12] Index Mundi, http://www.indexmundi.com/commodities/?commodity=rice. This is an average of monthly prices recorded from November 2011 to May 2012.

[13] Project team estimate

[14] Lao Statistics Bureau, http://nsc.gov.la/index.php?option=com_content&view=article&id=37%3Apopulation&catid=6&Itemid=38&lang=en

[15] Rates as low as 3% have been used for this type of analysis.

gradually rising to 15% of initial costs by the end of the project period, as projects near the end of their useful life.

Based on the above assumptions, it is estimated that the requirement for rice-equivalent food imports into the Sekong Province to counter hunger crises induced by climate change rises from 250 tonnes per annum in 2014 to 2,244 tonnes per annum by 2033 (the end of the 20-year planning period). As shown in the table in Appendix 2A, the annual economic cost of this impact rises from about US$0.77 million in 2014 to $6.91 million in 2033. This comprises the total cost of the impact of climate change on Sekong's capacity to sustain subsistence livelihoods, as estimated in this analysis. As the proposed CCA projects are assumed to be effective at avoiding 30% of these costs (assumption 8 above), the CCA projects in Sekong will provide a stream of economic benefits starting at about US$0.23 million per annum in 2014, rising to $2.07 million by 2033.

In Saravane Province, where there is presently a smaller population but a greater proportion of 'very poor' districts in the selected project areas than is the case in Sekong Province, the requirement for rice-equivalent food imports to counter hunger crises induced by climate change rises from 438 tonnes per annum in 2014 to 1,047 tonnes per annum by 2033. As shown in the table in Appendix 2B, the annual economic cost of this impact in Saravane Province rises from about US$1.34 million in 2014 to $3.22 million in 2033. The CCA projects in Saravane Province will provide a stream of economic benefits starting at about US$0.41 million per annum in 2014, rising to $0.97 million by 2033.

As shown in the table in Appendix 2A, the irrigation and water supply CCA projects proposed for Sekong Province have an economic internal rate of return (EIRR) of 26.4% and a net present value (NPV) of US$2.9 million over the projects' 20-year life. The benefit/cost ratio of the proposed projects is 2.21 (i.e., the present value of the benefits of CCA is 2.2 times the present value of CCA's costs in the first phase). In Saravane Province (Appendix 2B), the irrigation and water supply CCA projects have an EIRR of 26.1% and a net present value (NPV) of US$6.2 million over the projects' 20-year life. The benefit/cost ratio of the proposed projects is 2.67.

VI. Summary and Conclusions

The CCA projects identified for the Sekong and Saravane Provinces are targeted at maintaining the capacity of the Provinces to sustain subsistence livelihoods in the face of climate change. Climate change threatens this capacity in two ways: (i) the expected increasing frequency of prolonged droughts shortens the growing season and limits the capacity of the region to grow food to meet human survival needs and (ii) the shorter, more intense monsoon season expected to result from climate change threatens to produce more frequent and intense flash flooding, resulting in destruction of irrigation and water storage infrastructure.

The impact of lost capacity to grow food locally is measured in terms of a requirement of rice imports to meet nutritional needs. On this basis and in the context of other conservative assumptions as outlined above, the CCA projects in both Provinces perform well economically, resulting in EIRRs exceeding 26%. However, it is emphasised that the CCA projects in each Province are highly integrated and must be implemented together, as catchments are interconnected and upper catchment adaptation (e.g., reforestation to reduce runoff) will directly affect the performance of downstream adaptation (e.g., strengthening or expansion of irrigation and water storage infrastructure). Once the first-phase CCA options have been implemented as proposed, further surveys of the region will be required, both to monitor the performance of the first-phase projects and to identify additional projects for subsequent implementation that will be required to maintain the subsistence capacity of the region at an acceptable level.

VII. Appendix 1A: Sekong Province: Proposed CCA Projects

											Estimated Costs (USD '000)			
District	**Village**	**River system**	**Catch-ment**	**Purpose**	**Popula-tion affected**	**Main livelihood**	**Extreme poverty?**	**Threat**	**Vulner-ability**	**Works, including forest protec-tion**	**Mat-erials**	**Fuel, labour**	**Consultant services***	**Total costs**
Dak Chung	Tang Ta Lang	Sekong	Upper	Irrigation	230	Subsistence farming	Yes	Flash flood and drought	Very high	Upgrade weir and canal	25.0	3.8	2.5	31.3
Dak Chung	Tang Lou	Sekong	Upper	Irrigation	100	Subsistence farming	Yes	Flash flood and drought	Very high	Upgrade weir and canal	25.0	3.8	2.5	31.3
Dak Chung	Dak Euy	Sekong	Upper	Irrigation	100	Subsistence farming	Yes	Flash flood and drought	Very high	Upgrade weir and canal	25.0	3.8	2.5	31.3
Dak Chung	Dak Ta Ok Noi	Sekong	Upper	Irrigation	180	Subsistence farming	Yes	Flash flood and drought	Very high	Upgrade weir and canal	40.0	6.0	4.0	50.0
Dak Chung	Dak Bong, Dak Treup, Dak Seng	Sekong	Upper	Water supply	1,200	Subsistence farming	Yes	Drought	Very high	Rebuild weir and canal; build storage	221.8	9.9	6.6	238.3

											Estimated Costs (USD '000)			
District	**Village**	**River system**	**Catch-ment**	**Purpose**	**Popula-tion affected**	**Main livelihood**	**Extreme poverty?**	**Threat**	**Vulner-ability**	**Works, including forest protec-tion**	**Mat-erials**	**Fuel, labour**	**Consultant services***	**Total costs**
Dak Chung	Dak Pam	Sekong	Upper	Water supply	300	Subsistence farming	Yes	Drought	Very high	Rebuild weir and canal; build storage	13.5	2.0	1.4	16.9
Totals, Dak Chung					2,110						350.3	29.2	19.4	398.9
Kaleum	Song-khone	Sekong	Upper	Irrigation	200	Subsistence farming	Yes	Flash flood and drought	Very high	Upgrade weir and canal	55.0	8.3	5.5	68.8
Kaleum	Ban Kalo	Sekong	Upper	Irrigation	200	Subsistence farming	Yes	Flash flood and drought	Very high	Upgrade weir and canal	188.0	28.2	18.8	235.0
Kaleum	Song-khone	Sekong	Upper	Water supply	200	Subsistence farming	Yes	Drought	Very high	New intake and rebuild weir and canal; rebuild	111.5	2.0	1.4	114.9

											Estimated Costs (USD '000)			
District	**Village**	**River system**	**Catch-ment**	**Purpose**	**Popula-tion affected**	**Main livelihood**	**Extreme poverty?**	**Threat**	**Vulner-ability**	**Works, including forest protec-tion**	**Mat-erials**	**Fuel, labour**	**Consultant services***	**Total costs**
										storage				
Kaleum	Ban Loi	Sekong	Upper	Water supply	186	Subsistence farming	Yes	Drought	Very high	Rebuild weir and canal; rebuild storage	13.5	2.0	1.4	16.9
Totals, Kaleum					786						368.0	40.5	27.0	435.5
Lamam	Ban Mo	Sekong	Lower	Irrigation	279	Subsistence farming; employment		Drought	High	Upgrade weir and canal	47.0	7.1	4.7	58.8
Lamam	Ban Lavy	Sekong	Lower	Irrigation	537	Subsistence farming; cash cropping		Flash flood and drought	High	Upgrade weir and canal	43.8	6.6	4.4	54.7

											Estimated Costs (USD '000)			
District	**Village**	**River system**	**Catch-ment**	**Purpose**	**Popula-tion affected**	**Main livelihood**	**Extreme poverty?**	**Threat**	**Vulner-ability**	**Works, including forest protec-tion**	**Mat-erials**	**Fuel, labour**	**Consultant services***	**Total costs**
Lamarm	Ban Mo	Sekong	Lower	Water supply	25,000	Subsistence farming; employment		Flash flood	Very high	Flood protection dike	120.0	18.0	12.0	150.0
Totals, Lamarm					25,816						210.8	31.6	21.1	263.4
Thateng	Ban Nong Lao	Sedone	Upper	Irrigation	587	Subsistence farming; cash cropping		Severe Drought	High	Upgrade weir and canal; increase storage	32.4	4.9	3.2	40.5
Thateng	Ban Nong Lao	Sedone	Upper	Water supply	587	Subsistence farming; cash cropping		Drought	Very high	Water storage	114.7	3.7	2.5	120.8
Thateng	Ban Hua Xe	Sedone	Upper	Water supply	400	Subsistence farming; cash		Drought	Very high	Water storage	207.3	2.0	1.3	210.6

											Estimated Costs (USD '000)			
District	**Village**	**River system**	**Catch-ment**	**Purpose**	**Popula-tion affected**	**Main livelihood**	**Extreme poverty?**	**Threat**	**Vulner-ability**	**Works, including forest protec-tion**	**Mat-erials**	**Fuel, labour**	**Consultant services***	**Total costs**
						cropping								
Thateng	Ban Kam Kok	Sekong	Upper	Water supply	300	Subsistence farming; cash cropping		Drought	Very high	Rebuild weir and canal; build storage	20.2	3.0	2.0	25.2
Totals, Thateng					1,874						374.5	13.6	9.1	397.1
Totals, Sekong Province					30,586						1,304	115	77	1,495
** for design, supervision, tendering, training, project coordination as required*														

VIII. Appendix 1B: Saravane Province: Proposed CCA Projects (irrigation and water supply)

											Estimated Costs (USD '000)			
District	**Village**	**River system**	**Catch-ment**	**Purpose**	**Popula-tion affected**	**Main livelihood**	**Extreme poverty?**	**Threat**	**Vulner-ability**	**Works, including forest protec-tion**	**Mat-erials**	**Fuel, labour**	**Consultant services***	**Total costs**
Khong-sedon	Ban Hang Heng	Sedone	Lower	Irrigation	800	Subsistence	Yes	Flash flood and droug	High	Electric pump, upgrad	42.0	6.3	4.2	52.5

											Estimated Costs (USD '000)			
District	**Village**	**River system**	**Catch-ment**	**Purpose**	**Popula-tion affected**	**Main livelihood**	**Extreme poverty?**	**Threat**	**Vulner-ability**	**Works, including forest protec-tion**	**Mat-erials**	**Fuel, labour**	**Consultant services***	**Total costs**
e						farming		ht		e canal, and distribution				
Khong-sedone	Ban Hang Heng	Sedone	Lower	Water supply	800	Subsistence farming	Yes	Drought	Very high	Wetland storage dam	119.0	5.3	3.5	127.8
Totals, Khongsedone					1,600						161.0	11.6	7.7	180.3
Lakhon-pheng	Ban Napra-bang Noi	Sedone	Lower	Water supply	223	Subsistence farming	Yes	Drought	Very high	Household water storage	25.0	3.8	2.5	31.3
Lakhon-pheng	Ban Napra-bang Yai	Sedone	Lower	Water supply	325	Subsistence farming	Yes	Drought	Very high	Household water storage	27.5	4.1	2.8	34.4
Lakhon-pheng	Ban Lakh-onsy	Mekong	Upper	Water supply	1,158	Subsistence farming, employment		Flash flood and drought	High	Upgrade canal and increase storage	22.0	3.3	2.2	27.5
Totals,					1,706						74.5	11.2	7.5	93.1

											Estimated Costs (USD '000)			
District	**Village**	**River system**	**Catch-ment**	**Purpose**	**Popula-tion affected**	**Main livelihood**	**Extreme poverty?**	**Threat**	**Vulner-ability**	**Works, including forest protec-tion**	**Mat-erials**	**Fuel, labour**	**Consultant services***	**Total costs**
Lakhonpheng														
Laongam	Ban Lao Nong Noi	Sedone	Middle	Irrigation	147	Subsistence farming, employment		Drought	High	Upgrade canal and increase storage	27.0	4.1	2.7	33.8
Totals, Laongam					147						27.0	4.1	2.7	33.8
Saravane	Nong Deng	Sedone	Middle	Irrigation	3,000	Subsistence farming	Yes	Flash flood and drought	Very high	Upgrade weir and canal	247.5	37.1	24.8	309.4
Saravane	Huay Lat	Sedone	Middle	Irrigation	1,000	Subsistence farming	Yes	Flash flood and drought	Very high	Upgrade weir, canal, and storage	123.8	18.6	12.4	154.7
Saravane	Nakhoisao	Sedone	Middle	Irrigation	1,000	Subsistence farming; cash cropping;		Flash flood and drought	Very high	Upgrade weir and canal	220.0	18.0	12.0	250.0

											Estimated Costs (USD '000)			
District	**Village**	**River system**	**Catch-ment**	**Purpose**	**Popula-tion affected**	**Main livelihood**	**Extreme poverty?**	**Threat**	**Vulner-ability**	**Works, including forest protec-tion**	**Mat-erials**	**Fuel, labour**	**Consultant services***	**Total costs**
						employment								
Saravane	Soutavaly	Sedone	Middle	Irrigation	700	Subsistence farming; cash cropping; employment		Flash flood and drought	Very high	Upgrade weir and canal	132.0	19.8	13.2	165.0
Totals, Saravane					5,700						723.3	93.5	62.3	879.1
Ta Oi	Pho Beui	Selaong	Upper	Water supply	400	Subsistence farming	Yes	Drought	Very high	Household water storage	25.6	3.8	2.6	32.0
Ta Oi	Thet-saban	Selaong	Upper	Water supply	500	Subsistence farming, employment		Drought	High	Upgrade storage	20.2	3.0	2.0	25.2

											Estimated Costs (USD '000)			
District	**Village**	**River system**	**Catch-ment**	**Purpose**	**Popula-tion affected**	**Main livelihood**	**Extreme poverty?**	**Threat**	**Vulner-ability**	**Works, including forest protec-tion**	**Mat-erials**	**Fuel, labour**	**Consultant services***	**Total costs**
Ta Oi	Pha Tem	Selanong	Upper	Irrigation	261	Subsistence farming	Yes	Flash flood and drought	Very high	Upgrade weir, canal, and storage	12.0	1.8	1.2	15.0
Totals, Ta Oi					1,161						57.8	8.7	5.8	72.2
Vapi	Ban Kha Nao	Sedone	Middle	Irrigation	625	Subsistence farming	Yes	Drought	Very high	Replace weir, canal, and storage	56.6	8.5	5.7	70.8
Vapi	Ban Sian	Sedone	Middle	Water supply	100	Subsistence farming	Yes	Drought	Very high	Household water storage	13.5	2.0	1.4	16.9
Vapi	Ban Na La Ong, Ban Tan Soum, Ban Alan Khok	Sedone	Middle	Irrigation	2,000	Subsistence farming	Yes	Drought	Very high	Wetland storage dam	125.0	6.3	4.2	135.5
Totals, Vapi					2,725						195.1	16.9	11.2	223.2
Totals, Saravane Province					13,039						1,238	145.	97.2	1,481

											Estimated Costs (USD '000)			
District	**Village**	**River system**	**Catch-ment**	**Purpose**	**Popula-tion affected**	**Main livelihood**	**Extreme poverty?**	**Threat**	**Vulner-ability**	**Works, including forest protec-tion**	**Mat-erials**	**Fuel, labour**	**Consultant services***	**Total costs**
											.6	8		.6
** for design, supervision, tendering, training, project coordination as required*														

IX. Appendix 2A: Sekong Province: Calculation Table for EIRR, NPV, and B/C Ratio of Proposed CCA Projects

	Without Climate Change Adaptation (CCA)							With CCA							
	Imported Food Required (Rice Equivalent, Tonnes)			Costs of Required Food Imports (total impact of climate change, US$'000)			Costs Avoided by Proposed CCA	Initial Costs, Projects in			O&M Costs, Projects in			Total Costs of CCA	Net Benefits of CCA
Year	Poor districts	Non-Poor districts	Total	Poor districts	Non-Poor districts	Total Costs		Poor districts	Non-Poor districts	Total	Poor districts	Non-Poor districts	Total		
2013								$ 834,422	$ 660,563	$ 1,494,985				$ 1,494,985	$ (1,494,985)
2014	130	121	250	$ 398,785	$ 371,915	$ 770,700	$ 231,210	$ -	$ -	$ -	$ 41,721	$ 33,028	$ 74,749	$ 74,749	$ 156,461
2015	135	185	320	$ 414,322	$ 571,004	$ 985,327	$ 295,598	$ -	$ -	$ -	$ 46,113	$ 36,505	$ 82,618	$ 82,618	$ 212,980
2016	140	253	393	$ 430,465	$ 779,267	$ 1,209,732	$ 362,920	$ -	$ -	$ -	$ 50,504	$ 39,981	$ 90,486	$ 90,486	$ 272,434
2017	145	324	469	$ 447,236	$ 997,030	$ 1,444,266	$ 433,280	$ -	$ -	$ -	$ 54,896	$ 43,458	$ 98,354	$ 98,354	$ 334,926
2018	151	398	549	$ 464,661	$ 1,224,631	$ 1,689,291	$ 506,787	$ -	$ -	$ -	$ 59,288	$ 46,935	$ 106,223	$ 106,223	$ 400,565
2019	157	475	632	$ 482,764	$ 1,462,417	$ 1,945,181	$ 583,554	$ -	$ -	$ -	$ 63,680	$ 50,411	$ 114,091	$ 114,091	$ 469,463
2020	163	556	719	$ 501,573	$ 1,710,748	$ 2,212,321	$ 663,696	$ -	$ -	$ -	$ 68,071	$ 53,888	$ 121,959	$ 121,959	$ 541,737
2021	169	640	809	$ 521,115	$ 1,969,995	$ 2,491,110	$ 747,333	$ -	$ -	$ -	$ 72,463	$ 57,365	$ 129,828	$ 129,828	$ 617,505
2022	176	728	904	$ 541,418	$ 2,240,540	$ 2,781,958	$ 834,588	$ -	$ -	$ -	$ 76,855	$ 60,841	$ 137,696	$ 137,696	$ 696,892
2023	183	819	1,002	$ 562,512	$ 2,522,779	$ 3,085,292	$ 925,588	$ -	$ -	$ -	$ 81,246	$ 64,318	$ 145,564	$ 145,564	$ 780,023
2024	190	915	1,105	$ 584,428	$ 2,817,120	$ 3,401,548	$ 1,020,464	$ -	$ -	$ -	$ 85,638	$ 67,795	$ 153,433	$ 153,433	$ 867,032
2025	197	1,015	1,212	$ 607,198	$ 3,123,982	$ 3,731,181	$ 1,119,354	$ -	$ -	$ -	$ 90,030	$ 71,271	$ 161,301	$ 161,301	$ 958,053
2026	205	1,119	1,323	$ 630,855	$ 3,443,801	$ 4,074,656	$ 1,222,397	$ -	$ -	$ -	$ 94,421	$ 74,748	$ 169,169	$ 169,169	$ 1,053,228
2027	213	1,227	1,440	$ 655,434	$ 3,777,024	$ 4,432,458	$ 1,329,737	$ -	$ -	$ -	$ 98,813	$ 78,225	$ 177,038	$ 177,038	$ 1,152,700
2028	221	1,339	1,561	$ 680,970	$ 4,124,113	$ 4,805,083	$ 1,441,525	$ -	$ -	$ -	$ 103,205	$ 81,701	$ 184,906	$ 184,906	$ 1,256,619
2029	230	1,457	1,687	$ 707,502	$ 4,485,545	$ 5,193,047	$ 1,557,914	$ -	$ -	$ -	$ 107,597	$ 85,178	$ 192,774	$ 192,774	$ 1,365,140
2030	239	1,579	1,818	$ 735,067	$ 4,861,813	$ 5,596,879	$ 1,679,064	$ -	$ -	$ -	$ 111,988	$ 88,654	$ 200,643	$ 200,643	$ 1,478,421
2031	248	1,706	1,954	$ 763,705	$ 5,253,423	$ 6,017,129	$ 1,805,139	$ -	$ -	$ -	$ 116,380	$ 92,131	$ 208,511	$ 208,511	$ 1,596,628
2032	258	1,839	2,096	$ 793,460	$ 5,660,900	$ 6,454,360	$ 1,936,308	$ -	$ -	$ -	$ 120,772	$ 95,608	$ 216,379	$ 216,379	$ 1,719,929
2033	268	1,976	2,244	$ 824,374	$ 6,084,783	$ 6,909,158	$ 2,072,747	$ -	$ -	$ -	$ 125,163	$ 99,084	$ 224,248	$ 224,248	$ 1,848,500
EIRR															26.4%
NPVs				$3,825,259	$13,939,337	$17,764,596	$5,329,379	$834,422	$660,563	$1,494,985	$509,117	$403,038	$912,155	$2,407,140	$2,922,239
Benefit/Cost Ratio															2.21

X. Appendix 2B: Saravane Province: Calculation Table for EIRR, NPV, and B/C Ratio of Proposed CCA Projects

	Without Climate Change Adaptation (CCA)							With CCA							
	Imported Food Required (Rice			Costs of Required Food Imports (total			Costs	Initial Costs, Projects in			O&M Costs, Projects in				
Year	Poor districts	Non-Poor districts	Total	Poor districts	Non-Poor districts	Total Costs	Avoided by Proposed	Poor districts	Non-Poor districts	Total	Poor districts	Non-Poor districts	Total	Total Costs of CCA	Net Benefits of CCA
2013								$ 980,119	$ 501,438	$ 1,481,557				$ 1,481,557	$ (1,481,557)
2014	423	15	438	$ 1,303,172	$ 46,730	$ 1,349,902	$ 404,971	$ -	$ -	$ -	$ 49,006	$ 25,072	$ 74,078	$ 74,078	$ 330,893
2015	438	23	461	$ 1,348,945	$ 71,480	$ 1,420,425	$ 426,127	$ -	$ -	$ -	$ 54,164	$ 27,711	$ 81,875	$ 81,875	$ 344,252
2016	454	32	485	$ 1,396,325	$ 97,191	$ 1,493,516	$ 448,055	$ -	$ -	$ -	$ 59,323	$ 30,350	$ 89,673	$ 89,673	$ 358,382
2017	469	40	510	$ 1,445,370	$ 123,891	$ 1,569,260	$ 470,778	$ -	$ -	$ -	$ 64,481	$ 32,989	$ 97,471	$ 97,471	$ 373,307
2018	486	49	535	$ 1,496,137	$ 151,610	$ 1,647,747	$ 494,324	$ -	$ -	$ -	$ 69,640	$ 35,628	$ 105,268	$ 105,268	$ 389,056
2019	503	59	562	$ 1,548,687	$ 180,380	$ 1,729,067	$ 518,720	$ -	$ -	$ -	$ 74,799	$ 38,268	$ 113,066	$ 113,066	$ 405,654
2020	521	68	589	$ 1,603,083	$ 210,231	$ 1,813,314	$ 543,994	$ -	$ -	$ -	$ 79,957	$ 40,907	$ 120,864	$ 120,864	$ 423,130
2021	539	78	617	$ 1,659,390	$ 241,195	$ 1,900,585	$ 570,176	$ -	$ -	$ -	$ 85,116	$ 43,546	$ 128,661	$ 128,661	$ 441,514
2022	558	89	647	$ 1,717,674	$ 273,306	$ 1,990,980	$ 597,294	$ -	$ -	$ -	$ 90,274	$ 46,185	$ 136,459	$ 136,459	$ 460,835
2023	577	100	677	$ 1,778,006	$ 306,598	$ 2,084,604	$ 625,381	$ -	$ -	$ -	$ 95,433	$ 48,824	$ 144,257	$ 144,257	$ 481,124
2024	598	111	709	$ 1,840,457	$ 341,105	$ 2,181,562	$ 654,469	$ -	$ -	$ -	$ 100,591	$ 51,463	$ 152,054	$ 152,054	$ 502,414
2025	619	122	741	$ 1,905,101	$ 376,864	$ 2,281,965	$ 684,589	$ -	$ -	$ -	$ 105,750	$ 54,103	$ 159,852	$ 159,852	$ 524,737
2026	640	134	775	$ 1,972,016	$ 413,911	$ 2,385,927	$ 715,778	$ -	$ -	$ -	$ 110,908	$ 56,742	$ 167,650	$ 167,650	$ 548,128
2027	663	147	810	$ 2,041,281	$ 452,285	$ 2,493,566	$ 748,070	$ -	$ -	$ -	$ 116,067	$ 59,381	$ 175,447	$ 175,447	$ 572,622
2028	686	160	846	$ 2,112,979	$ 492,024	$ 2,605,002	$ 781,501	$ -	$ -	$ -	$ 121,225	$ 62,020	$ 183,245	$ 183,245	$ 598,256
2029	710	173	884	$ 2,187,195	$ 533,168	$ 2,720,363	$ 816,109	$ -	$ -	$ -	$ 126,384	$ 64,659	$ 191,043	$ 191,043	$ 625,066
2030	735	187	922	$ 2,264,018	$ 575,758	$ 2,839,776	$ 851,933	$ -	$ -	$ -	$ 131,542	$ 67,298	$ 198,840	$ 198,840	$ 653,092
2031	761	201	962	$ 2,343,539	$ 619,837	$ 2,963,376	$ 889,013	$ -	$ -	$ -	$ 136,701	$ 69,937	$ 206,638	$ 206,638	$ 682,375
2032	788	216	1,004	$ 2,425,854	$ 665,447	$ 3,091,301	$ 927,390	$ -	$ -	$ -	$ 141,859	$ 72,577	$ 214,436	$ 214,436	$ 712,954
2033	816	231	1,047	$ 2,511,060	$ 712,634	$ 3,223,693	$ 967,108	$ -	$ -	$ -	$ 147,018	$ 75,216	$ 222,233	$ 222,233	$ 744,874
EIRR															26.1%
NPVs				$27,998,092	$4,933,178	$32,931,270	$9,879,381	$980,119	$501,438	$1,481,557	$1,464,212	$749,105	$2,213,316	$3,694,873	$6,184,508
Benefit/Cost Ratio															2.67

Annex 14: References

Asian Development Bank (2010): Capacity Enhancement for Coping with Climate Change " Training and Awareness Plan". Vientiane.

ADPC/ UNDP (2010): Developing a National Risk Profile of Lao PDR. Bangkok.

ADPC; MRC; IUCN (2005): Vulnerability Assessment of Climate Risk in Attapeu province. Vientiane.

AIT-UNEP RRC.AP (2010): Adaptation Strategies on Water and Agricultural Sector in Southeast Asia. Bangkok.

Asian Development Bank (2011): Vulnerability Assessment. Adaptation Options in Solomon Islands. Honiara.

Soulivanh, B.; Chanthalasy, A.; Suphida, P. and Florian Lintzmeyer (2004): Study on Land Allocation to Individual Households in Rural Areas of Lao PDR. Vientiane.

Chamberlain, James R.; National Statistics Centre Asian Development Bank; editors (2007): Participatory Poverty Assessment II: Lao People's Democratic Republic. Vientiane.

Government of Lao PDR (2011): Environmental Strategy of Lao PDR, Vientiane.

Government of Lao PDR; Inter Agency Standing Committee (IASC) (2009): Joint Assessment of Impact and Vulnerability form the September 2009 Ketsana Storm. Vientiane.

GRID (2005): Lao Gender Profile. Vientiane.

HM Government (2011): Climate Resilient Infrastructure: Preparing for a Changing Climate. United Kingdom.

JICA (2010): Lao People's Democratic Republic Study for Poverty Profiles of the Asian Region Final Report. Vientiane.

Lefroy, R.; Collet, L. and C. Grovermann (2010): Study on Potential Land Use in the Lao PDR. Report prepared for the Lao-German Land Management and Registration Project (LMRP), Deutsche Gesellschaft fuer Technische Zusammenarbeit (GTZ) GmbH. Vientiane.

Lestrelin, G. (2011): Rethinking State Ethnic Minority Relations in Laos: Internal Resettlement,Land-reform and Counter-territorialization. In: Political Geography 30, 311-319.

MAP-CBA (2010): Lao PDR Adaptation Program. Vientiane.

Mekong River Commission (2009): Adaptation to Climate Change in the Country of Lower Mekong Basin. Vientiane.

Mekong River Commission (2010): Review of Climate Change Adaptation Method and Tools (MRC, ISBN 1683-1489). Vientiane.

Messerli P.; Heinimann A.; Epprecht M.; Phonesaly S.; Thiraka C.; Minot N.; editors (2008): Socio-Economic Atlas of the Lao PDR – an Analysis based on the 2005 Population and Housing Census. Swiss National Center of Competence in Research (NCCR) North-South, University of Bern, Bern and Vientiane: Geographica Bernensia.

Ministry of Agriculture and Forestry of Lao PDR (2009): Sustainable Natural Resources Management and Product Enhancement Project (Project document). Vientiane.

Ministry of Agriculture and Forestry and Science Technology and Environment Agency (2004): Biodiversity Country Report. Vientiane.

Ministry of Home Affairs; UNDP Laos; UNCDF Laos (2012): Manual for the Assessment of Districts' Performance under the SCSD Program – District Development Fund (DDF). MoHA-SCDD Guideline No 07/2012. Vientiane.

Ministry of Planning and Investment of Lao PDR (MPI) (2011): The Seventh Five-Year National Socio-Economic Development Plan (2011-2015). Vientiane.

Ministry of Planning and Investment of Lao PDR (2003): National Poverty Eradication Programme. Vientiane.

National Land Authority/GTZ (2010): Report Land Concession Lease. Vientiane.

Poverty Environment Initiative Lao PDR (2010): Poverty-Environment Initiative (PEI) Lao PDR Issues Brief 08/2010: Economic, Social and Environmental Impacts of Investments in Mining. Vientiane.

Poverty Environment Initiative Lao PDR (2010): Poverty-Environment Initiative (PEI) Lao PDR Issues Brief 04/2010: Economic, Social and Environmental Impacts of Investments in Plantations. Vientiane.

START (2007): Climate Change Vulnerability and Adaptation in Developing Country Region.Washington DC.

UNDP; WREA (2010): National Adaptation Program of Action to Climate Change (NAPA).Vientiane.

UNDP Bureau of Development Policy (2010): A Toolkit for Designing Climate Change Adaptive Initiatives. New York.

UNDP Laos (2011): UNDAF Action Plan 2012-2015. Vientiane.

UN HABITAT (2010): Human Values-Based Water, Sanitation and Hygiene Education. Vientiane.

University of Oslo Department of Sociology and Human Geography (2007): Vulnerability and Adaptation to Climate Change: New challenge for poverty eradication. Oslo. Norway.

Warr, P. (2010): Roads and Poverty in Rural Laos: An Econometric Analysis. In: Pacific Economic Review, Volume 15, Issue 1, pages 152-169.

Water Resources and Environment Agency (2009): National Adaptation Programme of Action to Climate Change. Vientiane.

WB-GFDRR (2011): Climate Risk and Adaptation Country Profile. Vientiane.

WFP (2010): Post-Typhoon Ketsana storm rapid Assessment southern Laos. Vientiane.

World Food Program (2007): Lao PDR Comprehensive Food Security and Vulnerability Analysis. Vientiane.