HOW CAN PAYMENTS HELP MANAGE WATERSHEDS SUSTAINABLY AND FAIRLY?

PHASE 3 WORKPLAN
FOR AN ACTION LEARNING PROCESS IN SOUTH AFRICA
2005 – 2006

Prepared by:
Environmentek-CSIR, Pretoria
IIED, London

March 2005

Enquiries to:

Ms N King	**or**	**Ivan Bond**
Tel: +27 – (0)12 – 841 - 2842,		**Tel: +44 – (0)20 7388 2117**
Fax: +27 – (0)12 – 841 – 2689		**Fax: +44 – (0)20 7388 2826**
Email: NAKing@csir.co.za		**Email: Ivan.bond@iied.org**

CSIR – Environmentek
P. O. Box 395, Pretoria, 0001

EXECUTIVE SUMMARY

Payments for environmental services are effectively mechanisms used to facilitate payments by a demander of a particular environmental service to a provider for supplying the service. These payments may be direct or indirect. Typical environmental services include: carbon sequestration, biodiversity conservation, disaster prevention, or watershed protection through reduced sedimentation and hydrological benefits protection. In the case of watershed services these payments are typically made between users downstream that demand certain changes in water quality or supply to providers of these services upstream. Payments for watershed services have the potential to set up systems that result in payments flowing directly to the poor and thereby addressing quality of life, while at the same time addressing issues around improving the natural resource base.

This workplan is the third phase of an ongoing partnership between CSIR and IIED. A diagnostic study (March 2003 to December 2003) reviewed the overall potential for payments for watershed services in South Africa. The second phase, in 2004, conducted feasibility studies in six selected catchments.

The goal of this project is to promote the maintenance of watershed services that improve local livelihoods in South Africa. Its purpose is to increase the understanding of the potential for market-based approaches to address the provision of watershed protection services and to improve livelihoods by designing and employing such instruments where and when appropriate. The specific outputs of this phase, phase 3, are the following:

- Best practice for watershed services established, documented and disseminated to key stakeholders in South Africa.
- Baseline information, key constraints and opportunities for the development of payments for watershed services identified, analyzed and documented.
- Pro-poor payments for watershed services tested in two selected pilot sites.
- Effective project management established and maintained.

The timeframe for the South Africa component of the project is from April 2005 to September 2006 with a budget allocation of £189 406.00 GBP. The project relies on the identification and participation of site level partners to implement pilot activities in at least two pilot sites namely the Olifants River catchment and the Sabie River catchment.

Similar projects will also be piloted by IIED in four other countries namely India, Indonesia and two countries in the Caribbean in order to support cross-country learning.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

1. PROJECT BACKGOUND AND CONTEXT

1.1. Outline of the global project

Until recently Governments, in both developed and developing countries, have relied on legal instruments to control landuse by farmers. In both classes of country, the results of centralized legal approaches to land management have been mixed. In recent years, governments mainly in developed countries have begun exploring the opportunities to create markets for environmental services. These markets seek to create incentives for farmers to adopt better land management practices. A further advantage of these market or market-based mechanisms is that they are seen as being more economically efficient and more sustainable than other approaches. In developing countries the opportunities for markets for environmental services are just starting to be explored.

Markets or payments for watershed services represent both an opportunity and a threat to the livelihoods of people living catchments. As an opportunity, payments for watershed services might represent a direct contribution to the livelihood strategies. Conversely there is a fear that changes in land management, upon which regular contingent payments depend, will exacerbate or marginalize the poorest inhabitants in a catchment.

The Project "Developing Markets for Watershed Protection Services and Improved Livelihoods" is a three-year project funded by DFID and coordinated by the International Institute for Environment and Development (IIED). The project started in September 2003 and ends in August 2006. The Goal of the project is "to promote the maintenance of watershed services for improving livelihoods in developing countries." The project's purpose is to "increase understanding of the potential role of market mechanisms in promoting the provision of watershed services for improving livelihoods in developing countries." The project has three outputs, these are:

- **Output One**: Action learning processes for the development of equitable market mechanisms for watershed services supported in four countries.

- **Output Two**: Diagnostics, plans and preparedness established in two further countries wishing to adopt market mechanisms for watershed protection.

- **Output Three**: Knowledge of market mechanisms improved through networking, development of guidance and dissemination with other countries and institutions.

A previous phase (March 2003 to October 2004) of the project reviewed the potential for markets or payments for watershed services in five countries, including South Africa. The current phase of the project is based around the concept of "action-learning." This means that partner organizations will use facilitate payments for watershed services in selected or pilot sites. However a crucial aspect of the approach is that the partners and key stakeholders regularly take time out from implementation / facilitation to reflect on the progress made and share these experiences with a wider pool of interested persons and organizations. The project is currently developing payments mechanisms for watershed services in five countries. These are: India, Indonesia, Jamaica, St. Lucia (the Caribbean) and South Africa. The diagnostics, plans and preparedness are currently been undertaken by the Fundacion Natura in Bolivia and the Center for Humanities and Development (COHD) in China.

A critical element of the project is that the lessons that can be learned from the experiences of the different participating country level partners. The alternative is that the project

develops a set of interesting, yet unlinked case studies. A project advisory team (PAT) has been formed. The PAT consists of the key contact persons from each partner agency as well as two external scientists. The PAT is the project level mechanism that will allow country partners to meet regularly, reflect on the progress and document the lessons learned.

1.2 South African context

Emerging from its first decade as a young democracy, South Africa is grappling with the demands of economic growth, improving the quality of life of its citizens and creating opportunities for the integration of an informal or rural economy into the mainstream economic system. Key challenges remain, the most obvious being the capacity and ability to implement progressive environmental management policies in the face of high levels of poverty, inequality and varied accessibility to water and land resources. Poor or limited access to both water and land resources threaten the productivity and development of the South African economy. Three critical areas of concern are water scarcity, land use and management and livelihoods and rural poverty.

1.2.1. Water scarcity

South Africa is currently classified by the International Water Management Institute as approaching a situation of *absolute water scarcity,* with an average annual precipitation of about 500 mm, dispersed variably both spatially and temporally throughout the country. The government estimates that the country will reach the limits of economically usable, land-based fresh water resources in the first half of this century. Despite the country's extensive infrastructure developments and technological efforts, it is becoming increasingly costly and less viable to access exploitable water resources and new 'creative' approaches to meeting water demands are required. Watershed management institutions ranging from high level government bodies through to community groups have to a large extent a good understanding of the types of behaviour and management practices that are detrimental to watershed functioning. Threatening the supply and quality of watershed services and more importantly the water resource itself. As such their management actions are largely focused on eradicating, controlling and modifying these practices. Issues of concern are the following:

- Overgrazing and soil erosion especially on communal land;
- Subsistence farming practices that result in soil erosion and river sedimentation;
- Poor access to sanitation facilities in many rural and peri-urban areas leading to increased nutrient levels in watersheds and water-diseases;
- Increased application of fertilisers in agriculture leading to increased incidence of water pollution;
- Planting along riparian zones and the arrival of alien invasive plant species that are highly water dependent.

1.2.2 Land use

Some of the most important water users in South Africa are also land managers. The agriculture sector alone accounts for about 60 percent of total water use. The forestry sector is also critical, accounting for an estimated 8 percent of available water. In addition to using significant volumes of water, land managers have impacts on water quality. Under the previous apartheid regime, apart from the introduction of controls on afforestation in 1972, the links between water use and land management were rarely considered in planning water service delivery. Since1994, there has been a growing emphasis on the links between land use and water management resulting in legislation that addresses activities such as stream flow reduction, compulsory licencing, setting reserve requirements for water, and the redistribution of land to marginalized groups, sensitivities amongst land owners and managers have emerged. As a result policies and actions to address behavioural changes have remained largely regulatory and the debate around payment mechanisms between

owners and users has remained largely dormant. However, as the Water Act moves towards decentralised management opportunities for payments mechanisms for watershed management may become more viable.

1.2.3 Livelihoods and rural poverty

A particular goal of the South African constitution and many of the related Act's is the improvement of quality of life through poverty reduction. South Africa is characterised by a formal and an informal economy, matched with largely disparate incomes between the wealthy and the poor. Due to historical policies large communities of people now also reside on marginal lands with poor or no access to basic resources such as energy, water, sanitation and productive land. This has lead to a further degradation of these areas through the cutting down of trees for fuelwood, overgrazing, poor farming activities or the planting of soil depleting crops. Many of these communities were further marginalised from the watershed management debates as decision-making tended to remain with the hands of the economically powerful. Today systems and structures are available to allow for participatory decision-making, however issues related to poor access and the lack of property rights for watershed management services still have the potential to exclude the poor from engaging effectively in these debates.

1.2.4 Payments for environmental services

Payments for environmental services are effectively mechanisms used to facilitate reward by a demander of a particular service to a provider for supplying the service. These payments may be directly made between demander and supplier, or they may be indirectly made through an intermediary. Typical environmental services include: carbon sequestration, biodiversity conservation, disaster prevention, or watershed protection through reduced sedimentation and hydrological benefits protection. In the case of watershed services these payments are typically made between users downstream that demand certain changes in water quality or supply to providers of these services upstream. Payments for watershed services have the potential to set up systems that result in payments flowing directly to the poor and thereby addressing quality of life, while at the same time addressing issues around improving the natural resource base.

The potential for watershed protection services and related markets to address the water scarcity gap and improve livelihoods under the umbrella of demand management tools, requires a shared understanding of best practices in different catchments. Including clarity on catchment management goals and strategies across the country. These need to be established and effectively communicated to all water users. The development of economic mechanisms to manage water resources is already provided for in the new Water Act including pricing and markets. Understanding the true value of water to the economy and the nature of consumer responsiveness to price changes will enable water managers to set water prices at their most efficient and effective levels in order to drive the correct behaviour. Such a mechanism however does not actively allow the poor to participate in the broader water demand debate, as their survival will to a large extent be dependant on subsidization and free access to water for basic human needs. Markets do however, to some extent, provide the framework for broader participation, but markets as they currently exist in South Africa represent informal water trades amongst like uses such as irrigation agriculture farmers, most of which have established property rights, infrastructure and accessibility, relatively low associated transaction costs and clearly defined demanders or sellers with which to trade. By nature then, these trades do not at this stage create space for the participation of emerging traders or subsistence farmers. Payments for watershed services however, provide a mechanism that enables the shortfalls in the existing systems to be addressed as it allows for development of markets around the provision of the "right" kind of services without focusing specifically on the ownership of a defined water right. Critical to understanding and pursuing this kind of mechanism is the task of designing payments that

can internalise the link between land management and water service provision for the benefit of the poor.

1.3 Linkages to previous project activities

This workplan is the third phase of an ongoing partnership between CSIR and IIED. A diagnostic study (March 2003 to December 2003) reviewed the overall potential for payments for watershed services in South Africa. The second phase, in 2004, conducted feasibility studies in six selected catchments.

Phase 1: The Diagnostic
The diagnostic provided a broad review of opportunities and initiatives within South Africa for the development of payments for environmental services. It aimed specifically to understand issues related to land-water linked activities, institutional arrangements and the policy environment for land, water, and various economic activities such as forestry or irrigation agriculture, including how these impacted the development of rural livelihoods. Both the biophysical and the socio-economic status of watershed management at the national level were reviewed and potential action-learning opportunities were identified. Table 1 (Appendix 1) outlines these proposed sites. Table 2 (Appendix 2) outlines associated initiatives within South Africa.

Phase 2: Feasibility assessments of six sites
The second phase reviewed the potential feasibility for developing payments for watershed services for six pre-selected sites. The key constraints and opportunities for the development of these mechanisms for watershed services were identified, analysed and documented for six selected sites, namely, the Olifants catchment, the Sabie-Sand catchment, the Luvuvhu/Letaba catchment, the Mhlatuze catchment, the Klip river and St Lucia. Using the selection criteria defined in the diagnostic, the project steering committee selected the Olifants and the Sabie-Sand catchments for further work under Phase Three.

The Olifants Catchment: The Olifants River flows through the Gauteng and the Limpopo Provinces of South Africa in a northeasterly direction. The Department of Water Affairs and Forestry (DWAF) divides the Olifants Catchment into four sub-areas, namely the Upper Olifants, Middle Olifants, Steelpoort and Lower Olifants (refer to Figure 2.2). The Olifants Catchment actually forms part of the greater Limpopo Basin; this is significant for water resources management as it is a shared basin between South Africa, Botswana, Zimbabwe and Mozambique. Before the Olifants River flows into Mozambique the Letaba River joins it. Due to the wide area covered by this river, the landscape, vegetation, soils and climate characteristics differ widely. Both water quality and water supply are critical issues in the Olifants Catchment. Supply is limited especially during periods of low flow with the potential to impact the productivity of industry, mining and irrigation agriculture in the catchment. Proposals to reclassify the lower section of the Olifants River from perennial to seasonal have also been made further indicating the extreme stress the catchment is under in terms of water provision. Water quality impacts are due mainly to mining and agricultural pollutants as well as domestic sewerage as a result of poor sanitation facilities on large tracts of communal land. An interesting opportunity for market-based mechanisms was identified in the Lower Olifants where water quality is affected by upstream sedimentation further impacting the storage capacity of the Phalaborwa barrage and the aquatic habitat in the Kruger National Park downstream.

> The Phalaborwa Barrage is located in the Lower Olifants sub-area and is managed by the Lepelle Water Board. Users downstream from the Barrage such as the Phalaborwa Mining Company, FOSKOR and the Ba-Phalaborwa Municipality are reliant on water from the Barrage for their activities.

> Downstream from the Barrage, the mining companies and the municipality lies the Kruger National Park. Beyond the Kruger National Park, the Olifants River leaves the South African national boundary and continues its journey into Mozambique. The South African National Parks (SANParks) are concerned about the quality of the water flowing in the river from the Barrage onwards, as well as the declining levels of water available in the river to meet the reserve requirements. Water quality deteriorates especially when the Barrage is scoured in order to increase its capacity. SANParks reports ecological damage in the Kruger section of the Olifants due to this activity and is also concerned about water lost in the process of scouring the barrage. However, the Lepelle Water Board reports extreme problems due to the siltation of the Barrage. At present, the Barrage has a capacity of only 10% due to siltation[1]. The only truly effective way of increasing the capacity of the Barrage seems to be a large-scale natural flood, such as the flood of 2000*ibid*. After 2000, the Barrage had a capacity of 60% but, due to sediment originating from upstream areas, this capacity dwindled to where it is at present (10%). Land tenure and ownership, the livelihoods of poor and marginalized groups in the Olifants Catchment as well as historical realities, all contribute to the current sedimentation problems experienced in the Lower Olifants Sub-Area.

The problem identified through poor storage capacity of the barrage provides a clear opportunity for payments to be made to communities upstream as a pilot of potential watershed management activities that could at a later stage be up scaled as a means to improve the functioning of the rivers in the whole catchment.

The Sabie-Sand catchment: The Sabie-sand sub-area is found in the Inkomati water management area, which is situated in the northeastern part of South Africa. The Sabie River, of which the Sand River is a tributary, is the main river in the Sabie sub-area. It flows through the Kruger National Park into the Corumuna Dam in Mozambique, just downstream of the border with South Africa. The Sabie River in this sub-area is regarded as one of the most ecologically important rivers in South Africa. Upstream the Sabie-Sand catchment is characterised by commercial forestry, and irrigation agriculture, downstream lies private game reserves and the Kruger National Park. Between these two are large areas of unstable soils and degraded land on which many communities are dependent for their livelihoods. This results in sedimentation of the Sand River, impacting the ecology of the river and the ability for the reserve requirements to reach the Kruger National Park. The Sabie River is however one of the most ecologically sound rivers in South Africa and water quality concerns are limited, this river is faced with meeting the water demands of large scale commercial agriculture, the conservation areas and the Kruger National Park, a commitment that is difficult to achieve during periods of low flow. The Sand River in particular provides an opportunity for payments to be made by commercial agriculture and conservation managers to communities with the potential to implement land management practices that reduce sedimentation. Opportunities in the Sabie River are however limited to water supply issues at this time.

Another core component of phase 2 was an analysis the governance related aspects of watershed management and the associated opportunities for payments for watershed protection services. Two key realisations drive the payments for watershed services debate and these relate to stream flow reduction activities and the reserve. Certain mitigation options such as the planting of trees are regarded as activities that reduce the instream water flow and hence the availability of water in a catchment, the Water Act prohibits such activities. The Act also makes provision for a water reserve that will meet the basic needs of people and the ecological requirements of a river. Activities that are designed to enhance or

[1] Interview with Mr Piet Grobler; Lepelle Water Board – Phalaborwa; 27 October 2004.

protect this reserve cannot be charged for, as the legislation states that downstream users have a right to ensure that this minimum level of water provision is maintained in the rivers.

Under the Water Act watershed management will be decentralised. This process is still being piloted in several key catchments. The Act and the provision for devolution do create the opportunities for 'innovative' management solutions.

Figure 1 below depicts some of the key initiatives underway, payments for environmental services can play a role in addressing supporting the provision of the reserve through water quality and quantity improvements, assisting in meeting the demands of a catchment vision as well as strategic catchment planning, aiding in ensuring resource quality objectives are managed, and monitoring and evaluating the resource.

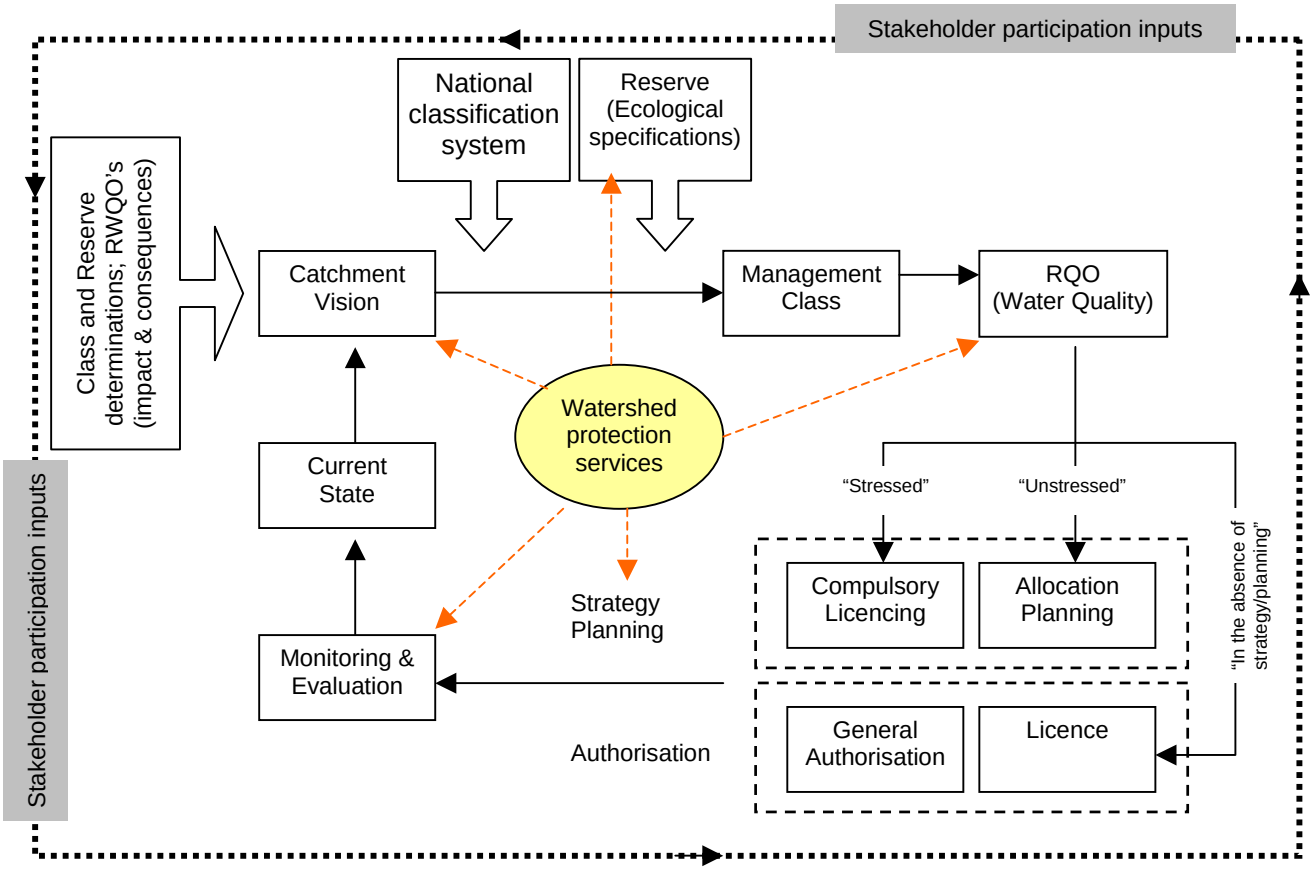

Figure 1: Representation of a hypothetical decision-making framework within DWAF

2. OBJECTIVE AND OUTPUTS

Phase Three of the project will run from April 2005 until the end of June 2006 (15 months). The total budget for the third phase is slightly over SAR2 million.

2.1. Implementation strategy

There are three important strategies that underpin the project's activities, these are; the selection of pilot sites within larger catchments, the use of partners and a rigorous internal project monitoring mechanism.

The Oliphants and Sabie-Sand catchments are approximately 54,550 Km^2 and 6,320 Km^2 respectively. A project of this scale is unable to work effectively at this scale. Within each

catchment, areas will be selected where there is potential for the development of payments for watershed services. Within these areas, pilot study sites will be identified. The project will work to facilitate payments for environmental services between the potential buyers and farmers in these sites. Should successful arrangements evolve these will need to be scaled up to sub-catchment or catchment scale. During this process the pilot sites will serve as models of best practice.

CSIR will be IIED's partner in the implementation of the third phase of the project. While CSIR has strong applied research capacity it does not have a local presence in either of the lead two catchments. Consequently, CSIR will work with two "facilitating partners" who will be locally resident. The local partner will be responsible for facilitating many of the project's activities as well as coordinating much of the baseline research at the pilot sites. CSIR will also use the consultants where appropriate to support its own activities, especially within Output Two, applied research.

. A project advisory (monitoring) team will monitor the overall progress of the project on a quarterly basis. The advisory team will include representatives of the facilitating partners who should attend all the meetings of advisory team. The project coordinator will develop full terms of reference for internal CSIR staff and for external consultants. The project coordinator and the project administrator will work together to ensure that all grantees, internal and external specialists deliver agreed products within specified time frames

2.2 The Project Goal

The ***goal*** of this project is to promote the maintenance of watershed services that improve local livelihoods in South Africa

2.3 The Project Purpose

Its ***purpose*** is to increase the understanding of the potential for market-based approaches to address the provision of watershed protection services and to improve livelihoods by designing and employing such instruments where and when appropriate.

2.4 The Project Outputs

The project has four outputs, these are:

- Best practice for watershed services established, documented and disseminated to key stakeholders in South Africa.
- Baseline information, key constraints and opportunities for the development of payments for watershed services identified, analyzed and documented.
- Pro-poor payments for watershed services tested in two selected pilot sites.
- Effective project management established and maintained.

Output 1: Best practice for pro-poor payments for watershed services established, documented and communicated to key stakeholders in South Africa.

Payments for watershed services have been identified as a means of addressing critical and complex issues around the management of watersheds, and in particular watershed protection services. The potential for these payments has been highlighted in the National Water Act, but as yet remains relatively unexplored in terms of the nature of such payments, the implications for the implementation of the National Water Act and an understanding of what DWAF needs to do in preparation for such payments.

1.1 National learning group and network established and informed

A critical component of the broader project is to critically evaluate the debate around payment for watershed services within South Africa and draw on lessons learnt thereby providing recommendations on successes and opportunities. In order to drive this debate effectively, a national learning group and network will be established. The learning network will consist of a wide variety of stakeholders interested in payment for watershed services. The learning group will comprise a smaller sub-set of the learning network (typically 20 to 25 people), and will be drawn from DWAF, research organisations and other relevant bodies. The learning group will have the opportunity to participate in two workshops, providing an opportunity to share and discuss project learning with a wider community of practice.

The **deliverables** include:

- An email database containing the contact details of both the learning group and network;
- Proceedings of workshops held with the learning group; and
- Email communications distributed to the learning network.

1.2 Communications plan developed

In order to ensure effective communication of project learning, a communications plan will be drawn up. The purpose of the communication plan is to ensure that the correct target audience is reached through project communication, and that the means of communication is the most appropriate for the relevant audience.

The **deliverable** include:

- A communication plan.

1.3 Project logo, project flyer and CD label

Project branding is important to ensure the products of this project are recognisable, and form part of a series of products produced during the project lifespan. The project branding will remain constant throughout the project, and will be applied to all deliverables.

The **deliverables** include:

- A project logo;
- A project flyer;
- A working paper format, and
- The CD label to be used for the electronic distribution of project material.

1.4 Development of advocacy material

Wider stakeholder knowledge of the project can be greatly increased through the distribution of ‘promotional material’ explaining the purpose of the project. In order to reach a variety of stakeholders whose needs may vary greatly, it is necessary to develop more than one type of communication product. It is the initial intention of this project to develop advocacy material in the form of a booklet and a poster.

The **deliverables** for this activity include:

- A poster explaining the generic concept of payment for watershed services; and
- A booklet explaining the concept of payment for watershed services.

1.5 Review, printing and dissemination of project materials

Final peer acceptance of the work undertaken through this project depends largely on the technical standard of the working papers to be produced during the project. For this reason it is essential that all working papers are passed through a peer review mechanism before dissemination to the wider stakeholder audience.

The **deliverables** for this activity include:

- The peer review reports for each of the 14 working papers; and
- Fourteen working papers that have been distributed amongst stakeholders (both in printed and electronic format).

1.5 Website development and maintenance

Part of the ongoing communication to stakeholders will include the use of a project website. This website will house all working papers and reports produced during the project.

The **deliverable** is:

- A project website that is regularly maintained and updated.

1.6 Management and coordination

Management and coordination of the technical aspects of Output One is vital to the success of each activity. This task is ongoing throughout the project lifespan.

The **deliverable** is:

- Quarterly progress on communication (reported through the quarterly narrative summary, as described in Output 4).

Output 2: Baseline information, key constraints and opportunities for the development of payments for watershed services identified, analysed and documented.

The development of sustainable payments for watershed services depends on a robust understanding of current landuse, farmers' livelihood strategies as well as the underlying hydrology. Applied research activities under this output will provide this information. Additional activities, such as a review of the legal opportunities and constraints, will provide supplementary information for the development of an effective payment mechanism.

2.1 Context and supporting issues understood

A review of the contextual and legislative landscape will be undertaken to ensure that the technical concepts around payments for watershed services are aligned with the implementing environment. This includes the development of a national framework for payments for environmental services and a national review of associated initiatives.

The **deliverables** will include:

- Strategic project review group established and driving the debate and learning around payments for watershed services in South Africa;
- A Legal review of payments in each of the selected sites;
- Contextualisation of payments for watershed services within the broader water management debate;

- Framework for payments for watershed services;
- National review of related initiatives.

2.2 Baseline measurements established

In order for the development of payments for watershed services it is necessary to first understand what the options and critical issues are at a micro-level for each selected site. This includes a thorough baseline understanding of the livelihoods, land use and hydrology at each site. This task will develop a clear baseline that outlines land management options for addressing the improvement of the watersheds.

The **deliverables** will include:

- A livelihoods baseline review;
- A land use and hydrological review including the identification of mitigation options.

2.3 Cost Benefit Analysis

Once various mitigation options have been identified in the task above, the cost benefit analysis will be done to select the most appropriate and cost-effective option for the selected site.

The **deliverable** will include:

- A cost benefit analysis on pre-identified mitigation options for each of two sites.

2.4 Pricing Mechanism established

Fundamental to setting up a payment is an understanding of the appropriate mechanism for payments and how this mechanism should be structured. This task will review various options appropriate to the selected site and the nature of the institutional and governance arrangements within that site. Typical payment mechanisms used in similar types of payments include the following:

- Direct compensation (taxes, subsidies, payments)
- Voluntary donations (environmental fund establishment)
    - Tourism
    - Industries
    - Payment to central fund
- Education and awareness

The **deliverable** will include:

- Identification and evaluation of payment mechanism options;
- A framework and guidelines for the appropriately identified payment mechanism;
- Communication of this mechanism to the appropriate stakeholders.

2.5 Management and co-ordination

Each of the activities outlined in output 3 are dependent on the timely delivery of the actions in output 2. This task will ensure that each of the technical inputs are effectively communicated, that they are of the appropriate technical standard. It will ensure that all the linkages are made between the various deliverables.

The **deliverable** is:

- Quarterly progress on communication (reported through the quarterly narrative summary, as described in Output 4).

Output 3: Pro-poor payments for watershed services tested in two selected pilot sites.

Facilitating payments for watershed services is an essential component of the action-learning methodology. Two potential watersheds were selected by the feasibility studies conducted in Phase Two of the project. Severe erosion in densely settled areas of the catchments was identified as the core problem that will be addressed through payments for watershed services. Because CSIR does not have a local presence in either site, two partner organisations have been selected to facilitate payments. The partners will be Clean Stream Environmental Consulting in the Olifants catchment, while KNP People and Environment Center (KNP PEC) will be CSIR's partner in the Sabie Catchment. Indicative activities for the partners are listed below:

3.1 Community engagement: The facilitating partners will liaise with local government, representatives of government departments and traditional authorities to select two pilot sites to participate in project. Once the pilots have been identified the partners will work at community level to ensure that the objectives of the project are understood and meet the needs of farmers in the area.

The **deliverable** will include:

- A memorandum of understanding between a representative organisation (for example, a farmers group or traditional authority) and the project will be developed and signed as a commitment to the project.

3.2 Buyers engagement: Payments for environmental services can only work where there is a clear demand by downstream organisation that is bearing the costs of the current, inappropriate landuse. The facilitating partners will liase with potential buyers of services to develop an understanding of the project, its implications and potential to make payments to upstream land managers.

The **deliverable** will include:

- Either letters of support or a memorandum of understanding demonstrating will demonstrate the commitment of this group of stakeholders to the project.

3.3 Exchange visits: A series of exchange visits are planned between the potential buyers and sellers of environmental services. The purpose of these visits is to allow representatives of each group to observe each other's problems. The exchange visits will improve the understanding of the core problems faced by each group of stakeholders. The visits will also allow the stakeholders to develop a shared vision of the potential of payments for watershed services and the potential problems. The facilitating partners will consider other appropriate exchange visits during the project, for example between selected representatives of the pilot sites or between the CSIR/IIED project and other similar initiatives.

The **deliverables** will include:

- Trip reports on these exchange visits

3.4 Feedback from applied baseline research: Under output two, CSIR will coordinate a series of applied research activities. These activities will establish a baseline for livelihoods and landuse at the pilot sites. These studies will also provide the framework in which the options for improved landuse. There is however a danger that these activities can become extractive, the feedback will ensure that the information from these studies is returned to pilot sites in an appropriate format.

The **deliverable** will include:

- Appropriate feedback materials (for example simple posters, handout, summary reports)

3.5 Negotiation of payments: The applied research activities and the on-site facilitation activities are designed to provide a set of options that can form the basis for a series of negotiations between the land managers and the potential buyers of environmental services. At this point of the project it is anticipated that some form of joint forum will be established by the stakeholders with the assistance of the facilitating partners. This forum will be the mechanism through which the options can be assessed and decisions as to the form of the payments will be negotiated.
The **deliverable** will include

- Terms of reference for a joint farmer / buyer forum for catchment services
- Agreements for the payment of watershed services
- Monitoring system

3.6 Site level coordination: An important ongoing function of the facilitating partners will be to coordinate the baseline studies and other work over the duration of the project. To assist with the coordination, the facilitating partner will consult local stakeholders on the appointment of community-based facilitator. The facilitator will be a part-time role (10 days a month for 15 months). The facilitating partners will need to put in place appropriate measures to ensure effective communication between themselves and the CBF and the farmers at the pilot sites.

The **deliverables** will include:
- Community based facilitator employed in each of the pilot sites

3.7 Reporting and write up: One of the most challenging aspects of the project of this nature is to capture the processes that determine the performance at site level. The facilitating partners will submit a monthly narrative report to CSIR. The reports will outline the activities during the preceding month as well as short section reflecting on the processes at the pilot site. At the end of every quarter, with the assistance of CSIR's project coordinator, the partners will submit a quarterly report that will focus on the lessons learned rather than simply recording the activities that have been undertaken. In addition the partners will be encouraged to photographically record the pilot sites and the process initiated by the project.

The **deliverables** will include:
- Monthly narrative reports to the project co-ordinator at CSIR
- Quarterly reflections on progress within the pilot sites
- Photographic archive of sites

Output 4: Effective project management established and maintained.

The successful completion of this project depends on the timeous delivery of each activity, to the required specifications and standards, whilst ensuring that the overall project is conducted within the financial boundaries provided. CSIR will provide overall co-ordination and administration for the project. A project management team will provide guidance and support for the project.

4.1 Project planning
Project planning will be undertaken at project inception, and may be refined as the project progresses through time. Progress in specific project activities will need to be monitored carefully, allowing the project plan to be adjusted where necessary. Any amendments to the project plan will be discussed and agreed upon together with IIED before being made.

The **deliverables** will be:

- Log frame of project goal, purpose, outputs and itemised activities;
- Project proposal; and
- Grant agreement with IIED.

4.2 Financial management

Financial management will be reported on a quarterly basis throughout the project lifespan. Financial and administrative management of the project will be an ongoing activity that will run concurrently with all other activities.

The **deliverables** will be:

- Quarterly narrative statement of project progress, activities, highlights and potential problems; and
- Quarterly financial statement tracking financial expenditure on the project.

4.3 Project management team

The project management team (PMT) will provide guide and support the project. The PMT will meet on quarterly to review the progress of the project in the previous quarter and plans for the next quarter. The PMT will also ensure that documents disseminated by the project meet are of an appropriate standard. The PMT will consist of:

- Harrison Pienaar/ Ashwin Seetal (DWAF) (Chair)
- Pat Manders (CSIR, Environmentek)
- Tony Turton (Global Water Issues)
- Marius Claasen (Water Programme)
- Frits Bekker (Clean Stream Environmental Services)
- Another (Kruger National Park People and Environment Centre)
- Nicola King (Project Coordinator)
- Gavin Quibell (DWAF / DFID)
- James Blignaut (Academic)

4.4 The Project Advisory Team

The project advisory team will consist of project leaders from the five participating countries (India, Indonesia, South Africa and two in the Caribbean) and two external advisors. It will be managed by IIED and will aim specifically to:

- Capture and debate the lessons learned between country partners,
- Provide technical support between countries,
- Provide a multi-county level review panel.

3. PROJECT TEAM

The project team consists of the CSIR, Environmentek specialists, Working paper consultants, site implementation partners, and reviewers. The identified partners are outlined in table 1 below.

Table 1: Identified implementation partners

Partner	Partner Description	Partner Roles
CSIR, Environmentek	Parastatal	Project co-ordination in South Africa; hydrological, social and market analysis, provision of decision guidance, information dissemination
Cleanstream Environmental Services	Private Consultancy	Co-ordination of the Olifants River case study
KNP CEP	Government organisation	Sabie-Sand River case study partner
Jabenzi	Private consultancy	Development of a framework for PES
Green Growth Strategies	Private consultancy	Guidance on payment mechanisms
Department of water affairs and forestry (DWAF)	South African Government institution	Project oversight, hydrological and water governance advice
DFID-SA	International Donor Agency	Livelihoods and water governance advice

Core team membership may evolve as the project progresses, and changes will be communicated to IIED.

4. SCHEDULE OF ACTIVITIES

The Logframe (Appendix 1) outlines the four outputs for phase 3 and the associated activities for each of these phases. Due to the limited timeframe of 15 months for implementation the four outputs are scheduled to commence and run concurrently with certain carefully timed activities feeding into others. As a result the projects success is highly dependent on timeous delivery. These deliverables and deadlines are clearly outlined in the schedule of payments (section 5.2). Communication and information dissemination also form a core component of the development of the project and it is recognised that reliable and effective communication is critical to the development of partnerships, stakeholder relationships and the learning groups understanding of payments as well as project delivery.

5. BUDGET

5.1 Summary budget

The budget split between each of the four outputs indicates the amount of work required in each output. Output 1 comprises almost one quarter of the total budget, while Output 2 comprises over one third. Output 2 requires input from a number of specialists, thereby increasing the budget. Output 3 (sites A and B) comprises a further one-quarter of the budget (slightly less money is allocated to site B as it is assumed to be slightly less complicated). Output 4 receives a total of 15% of the budget; this is in line with CSIR guidelines on project management fees.

Table 2: Summary budget

Output	Description	ZAR Amount	GBP Amount	Percentage
1	Best practice for pro-poor payments for watershed services established, documented and communicated to key stakeholders in South Africa	R537, 626.00	£48, 875.00	26%
2	Baseline information, key constraints and opportunities for the development of payments for watershed services identified, analysed and documented	R673, 400.00	£61,218.00	32%
3a	Action learning: Pro poor payments for watershed services tested in two selected sites	R291, 100.00	£26, 463.00	14%
3b		R271, 300.00	£24, 663.00	13%
4	Effective project management established and maintained	R313, 040.00	£28,458.00	15%
	TOTALS	**R2 086 466.00**	**£189 677.00**	**100%**

5.2 Payment schedule

The schedule of payment is set out according to five-quarter periods between April 2005 and June 2006. These payments will be made against specific deliverables as outlined in table 3 below.

Table 3: Payment schedule with deliverables for invoices 02 to 06

Please Note:
All invoices will be supplied to IIED in ZAR.
This budget is based on the assumption that the exchange rate is GBP1 = ZAR11.
The budget will be revised on any exchange rate fluctuations greater than 10 percent.

5.3 Time allocations

Time allocations per output are outlined in table 4 below. The table identifies task leaders where applicable and task names where the work will be undertaken by a team of people.

Table 4: Time allocation for principle team members

6. PROJECT RISKS

The following risks to the success of this project have been identified:

1. The project is dependent on the continued support through buy-in and information sharing by the respective government departments, specifically the Department of Water Affairs and Forestry. In order to facilitate this process continued communication, information dissemination and face-to-face contact will be encouraged.

2. The policy environment in which market-based mechanisms are expected to function may prove inflexible or unsuitable for their implementation, it is expected that the project will continually align with the current policy environment in order to anticipate any changes that may impede progress. However, the project does not aim to impose solutions but rather to demonstrate possibilities and it is expected that with this in mind the research component will not be compromised.
3. The involvement or circumstances of project partners may change and it is expected that the lead partner will facilitate the management of any changes with prior communication to IIED. Where possible support will be given to ensure capacity to deliver by all.

APPENDICES

APPENDIX 1: OVERALL PROJECT LOGICAL FRAMEWORK

Project Goal	Promote the maintenance of watershed services that improve local livelihoods in South Africa
Project Purpose	By June 2006, payments for identified watershed services that support local livelihoods towards poverty eradication in SA are demonstrated and understood at selected sites
Project Outputs	
Output One	Best practice for pro-poor payments for watershed services established, documented and communicated to key stakeholders in South Africa.
Output Two	Baseline information, key constraints and opportunities for the development of payments for watershed services identified, analysed and documented.
Output Three	Pro-poor payments for watershed services tested in two selected pilot sites.
Output Four	Effective project management established and maintained

Tasks	Recommended responsible person	Timeline	Means of verification	Budget
Output One: Best practice for pro-poor payments for watershed services established, documented and communicated to key stakeholders in South Africa				
National learning established and informed	Nicola King	April 15, 2005 Provisional w/shop dates: Nov 05 & May 06 Seminar dates: Jan 06 & Apr 06	Email address database Workshop proceedings Seminar materials distributed	
Communications plan developed	Wilma Strydom	April 10, 2005	Communication plan	
Branding project, project flyer written, CD label	Estie	April 29, 2005	Project flyer CD label	
Development of advocacy material	Wilma Strydom / Estie	May 31, 2005	Poster Booklet	
Review, printing and dissemination of project materials		Ongoing	14 Project working papers[2]	
Website development and maintenance	Margot Damon	Ongoing	Project website Downloads	
Management and coordination	Nicola King	Ongoing		

[2] The working papers are to be produced as a series of communiqué's, branded and formatted according to a common template. These papers are to be distributed for project team learning, as well as for contributing to the international project network. The papers should also serve as a body of knowledge that reflects the learning of the project team. These papers could also be published as journal papers. Each working paper should contain similar sections, such as a 2 page précis that can act as a stand-alone handout for the document contents.

Tasks	Recommended responsible person	Timeline	Means of verification	Budget
Output Two: Baseline information, key constraints and opportunities for the development of payments for watershed services identified, analysed and documented.				
Context and supporting issues understood				
Legal review of PES	Gavin Quibell	Draft: June 30, 2005 Final: August 15, 2005	Working paper	
PES in context of water debate	Tony Turton	August 30, 2005	Working paper	
Framework for PES	James Blignaut	August 30, 2005	Working paper	
National review of PES	Nicola King	Draft: September 30, 2005 Final: December 31, 2005	Working paper Database	
Baseline measurements established				
Livelihoods baseline established – Site A	Alet Visser	September 30, 2005	Working paper	
Livelihoods baseline established – Site B	Alet Visser	September 30, 2005	Working paper	
Land use and Hydrology – Site A	Marius Claasen	September 30, 2005	Working paper	
Land use and Hydrology – Site B	Marius Claasen	September 30, 2005	Working paper	
Cost benefit analysis	Nicola King	November 30, 2005	Working paper	
Pricing mechanism developed	Nicola King	January 31, 2006	Working paper	
Management and coordination	Nicola King	Ongoing		

Tasks	Recommended responsible person	Timeline	Means of verification	Budget
Output Three A: Olifants Catchment Pro-poor payments for watershed services tested in two selected pilot sites.				
Community engagement	Fritz Bekker	Apr/May/Jun 2005	MOU with selected communities	
Buyers engagement	Fritz Bekker	May/Jun/Jul 2005	Letters of support from potential buyers	
Exchange visits	Fritz Bekker	Jun/Jul 2005	Trip report	
Feedback to applied research initiatives	Fritz Bekker	Jun 2005 to Jun 2006	Minutes of meetings Summary documents	
Negotiated payment	Fritz Bekker	Dec 05 – Ongoing	Joint forum	
Coordination	Fritz Bekker	Ongoing	Contract with local facilitator	
Reporting and write-up	Fritz Bekker	Ongoing	Monthly progress reports Quarterly lessons learnt Final report Final financial statement	
Management and coordination	Nicola King	Ongoing		

Tasks	Recommended responsible person	Timeline	Means of verification	Budget
Output Three B: Sabie Catchment Pro-poor payments for watershed services tested in two selected pilot sites.				
Community engagement	KNP CEP	Apr/May/Jun 2005	MOU with selected communities	
Buyers engagement	KNP CEP	May/Jun/Jul 2005	Letters of support from potential buyers	
Exchange visits	KNP CEP	Jun/Jul 2005	Trip report	
Feedback to applied research initiatives	KNP CEP	Jun 2005 to Jun 2006	Minutes of meetings Summary documents	
Negotiated payment	KNP CEP	Dec 05 – Ongoing	Joint forum	
Coordination	KNP CEP	Ongoing	Contract with local facilitator	
Reporting and write-up	KNP CEP	Ongoing	Monthly progress reports Quarterly lessons learnt Final report Final financial statement	
Management and coordination	Nicola King	Ongoing		

Tasks	Recommended responsible person	Timeline	Means of verification	Budget
Output Four: Effective project management established and maintained				
Project planning	Nicola King & Elizabeth Muller	March 16, 2005	Log Frame Proposal Grant agreement with IIED	
Financial & project management	Elizabeth Muller	Quarterly, Ongoing	Narrative summary[3] Financial statement	
Project management Team	Nicola King	Quarterly, ongoing	Minutes	

[3] To include a summary of Nicola King's networking activities per quarter.

APPENDIX 2: SUPPORTING INITIATIVES

Environmental service	Region / area	Project	Explanation	Funding agency	Donor funding	SA Government or local funding	Timeframe
Carbon sequestration	National	Africa Rural Initiative for Sustainable Environment (ARISE)	Land rehabilitation through planting indigenous plants and trees, including livelihoods support by managing sustainable harvesting and job creation.	USAID and DEAT-SA	World Bank	Deat: Poverty Alleviation and Environment	2004-2007
Water supply and quality	Global	IUCN water and nature initiative	Global initiative – not currently implemented in South Africa	IUCN	$39 million	-	2004-2009
Water supply	To be selected Mhlatuze, Other	Water Forestry and Support Programme (WFSP)	DFID support to DWAF through restructuring, research and implementation.	DFID/DWAF	$20million	None	2003-2007
Regulating river resource demand management via an ecosystem services framework.	To be selected	CSIR, Environmentek	Designing a tool using ecosystem services terminology to describe limits and opportunities for the use and management of river resources.	CSIR	None	R50, 000.00	2004-2007
Water supply	Luvhuvu	Catchment management for poverty alleviation (CAMP)	An international project investigating landuse change and its impact on water resources and livelihoods	DFID, CSIR, Newcastle University, Centre for Ecology and Hydrology-Natal Environment Research Council, University of Durham.	-	-	-
Water quality	National	Resource directed water quality management (RDWQM)	Understanding how resource directed water quality management principles can be incorporated into the licensing and allocations processes for water management in South Africa	DWAF	None	R3million	2 years
WRM Toolkit development	National	Water Forestry Support Programme	Identification of key tools that can be used to support water resources management.	DFID-SA	Unknown	None	-

APPENDIX 3: SITES SELECTED IN THE DIAGNOSTIC

Table 5: Proposed pilot catchments

Proposed pilot catchment	Reason and opportunities
Mhlatuze	Good collection of baseline data available, Good stakeholder processes established, Closely aligned with the DFID-SA WFSP.
Klip River	Good case study option due to clearly defined study boundaries, Clearly defined demanders and suppliers, Opportunity to investigate and establish baseline information.
Olifants catchment	Water scarce catchment, Catchment facing potential conflict around access to water and water availability, Opportunity to gather baseline data.
Luvhuvu	Good stakeholder processes established through CAMP, Fair baseline data collected in certain regions, No specific watershed service has been identified here yet.
Sabie Sands	Good collection of baseline data available, Good examples of emerging market potential

Source: CSIR, 2003

APPENDIX 4: CLEAN STREAM ENVIRONMENTAL SERVICES

Clean Stream Environmental Services is a staff owned environmental consultancy that was established in 1996 to provide a range of services in environmental management, bio monitoring and water pollution control. A team of former Department of Water Affairs and Forestry and Department of Environmental Affairs scientists renders the services from offices in Pretoria, Johannesburg and Witbank. In addition and where necessary, a multi-disciplinary team of specialists is utilized for projects that require additional specialist technical input.

Clean Stream offers specialist expertise in addressing environmental liabilities through detailed environmental investigations, sensible monitoring, reporting and consultation with relevant role-players. Monitoring and auditing services are rendered according to prescribed procedures to ensure compliance with the applicable environmental regulations and standards. Services offered include the following:

- Design and execution of detailed environmental monitoring programs that includes surface water, ground water, bio monitoring, dust and geobotanical monitoring (soil & vegetation).
- Design and compilation of all environmental reports as required by permit/licence conditions.
- Compilation of Environmental Management Programme (EMP's) for the mining industry.
- Mine closure application.
- Environmental Impact Assessments (EIA's).
- Geohydrological investigations.
- Water Use Licence Applications and supporting technical motivations in terms of the Water Act, 1998.
- Physical compliance monitoring including water, EMP execution, ISO 14001 and GN704 regulations.
- All data management and independent reporting to the authorities.
- Ecological studies and biological monitoring (vertebrates, invertebrates, habitat, vegetation, reptiles, amphibians, mammals).
- Soil, vegetation, animal life, water quality and hydrological studies.
- Engineering solutions for water management problems including water balances.
- Regulation GN 704 audits
- Regulatory negotiations, user surveys and public participation.
- Independent environmental compliance, EMP audits and specialist water management audits.
- Solid waste facility planning, design and licensing.

Clean Stream has access to modern, sophisticated and unique facilities, literature collections, equipment and expertise that can be employed to the benefit of the client.
A flexible practicable approach is followed, integrating new ideas, sound and tested techniques, and local knowledge to solve environmental problems cost effectively. Clean Stream supports the concept of integrated environmental management, with all role-players involved in environmental projects to obtain a sense of shared responsibility. Clean Stream's philosophy is based on personal service and close co-operation with its client. Clean Stream is committed to safety, confidentiality and quality and will apply these principles of management to ensure that it makes its full contribution to the successful, environmentally acceptable and cost effective completion of projects.