



‘PAYMENT FOR ECOSYSTEM SERVICES (PES)’ APPROACH FOR RESTORATION OF CATCHMENTS IN MEGHALAYA

Inception Report

**Center of Excellence
for
Natural Resource Management & Sustainable Livelihoods**

**Meghalaya Basin Development Authority (MBDA)
Government of Meghalaya
Shillong**



**Centre of Excellence
for NRM and
Sustainable Livelihood**



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Abbreviations

ANR	Assisted Natural Regeneration
BAU	Business as Usual
CAMPA	Compensatory Afforestation Fund Management and Planning Authority
CoE	Center of Excellence for Natural Resource Management & Sustainable Livelihoods
CSR	Corporate Social Responsibility
DC	Deputy Commissioner
DIA	Designated Implementation Agency
ES	Ecosystem Services
FYM	Farm Yard Manure
GoM	Government of Meghalaya
MBDA	Meghalaya Basin Development Authority
MEPRF	Meghalaya Environment Protection & Restoration Fund
MRV	Monitoring Reporting & Verification
NTFP	Non-Timber Forest Produce
PES	Payment for Ecosystem Services
PFA	PES Field Associates
PSP	PES Scheme Participant
SALT	Sloping Agricultural Land Technology
SWCD	Soil & Water Conservation Department
VPC	Village PES Committee
ZBNF	Zero Budget Natural Farming

Executive Summary

The core idea of PES is that external ecosystem service beneficiaries make direct, indirect (through government) contractual and conditional payments to local landholders and users in return for adopting practices that secure ecosystem conservation and restoration. It is considered an efficient mechanism for improving natural ecosystems under stress and at the same time helps communities by providing them remunerative incentives in lieu of following prescribed set of practices for the protection and sustainable management of ecosystems, leading to enhanced ecosystem services. As a highly adaptive management tool, PES is particularly suited for achieving equitable and flexible conservation outcomes.

Meghalaya has witnessed rapid changes in the land use and land cover in the last three decades. Urbanisation, mining activity, deforestation, plantations of areca nut and other cash crops have adversely altered the natural landscapes causing ecological problems such as drying of springs, soil erosion, water stress, biodiversity loss etc. Water scarcity in summer months is being faced by increasing number of villages and towns. In this situation, the concept of 'Payment of ecosystem Services' can be an effective strategy for motivating the community people to adopt sustainable land use practices for which they are provided monetary incentives based on their adherence to the land management prescriptions and performance-based ecosystem improvement works, which are verified. The inception report presents a framework for introducing PES approach in the State for addressing the environmental concerns like catchment area degradation by prevention of jhumming, forest conservation, reforestation of degraded forest areas, soil and water conservation measures etc.

Salient features of the proposed PES framework for the State

- PES in the context of restoration of water catchments in the State has been explained including the concept of additionality, avoidance of leakage and economic theory justifying the PES
- In the first phase, five activities are proposed to be covered under the PES scheme
 - (i) Transition from 'Jhum' to improved agriculture practices
 - (ii) Conservation of existing natural forest
 - (iii) Reforestation
 - (iv) Afforestation
 - (v) Soil & Water Conservation Measures
- Operational details like, area of operation, eligibility of persons to avail PES, eligible activities, measurement, reporting and verification (MRV) and implementation process has been outlined
- Implementation framework includes identifying a 'Designated Implementing Agency (DIA), selection of PES Field Associates (PFA) from the youths from the Communities, training of community persons participating in the PES scheme designated as PES Scheme Participant (PSP), a draft format of the agreement between the DIA and PSP.
- indicators for verification of the prescribed sustainable management practices by the PSP and confirm additionality have been listed
- an indicative remuneration norm for the payments after the verification of the prescribed management practices has also been proposed
- based on the above a work-flow for implementation of the PES scheme has been presented

The inception report also presents a brief account of stakeholder consultations.

A brief description of the proposed pilot project to be implemented in the selected 20 villages of Ganol Catchment for ecological restoration has been given. Learning and the feedback from the pilot project would help in further fine tuning the framework.

Under the scheme, every year new set of PES participants would be added and new areas would be covered in addition to the areas previously committed. The scheme therefore will entail cumulative cost. Cost for State-wide implementation of the PES scheme for a cycle of 10 years has been estimated.

1. Introduction

Well-functioning ecosystems provide valuable ecosystem services like reliable and clean flows of water, productive soil, biodiversity, relatively predictable weather, and many other services essential for human well-being. Today, however, many ecosystems and the services they provide are under increasing pressure. In the comprehensive study Millennium Ecosystem Assessment (2005)¹, scientists concluded that more than 60% of the world's ecosystems are being used in ways that cannot be sustained. As wilderness and natural habitats shrink, environmental services (ES) which were previously abundant and provided free by Mother Nature are becoming increasingly threatened. This emerging scarcity makes them potentially subject to trade. The core idea of PES is that external ES beneficiaries make direct or indirect (through Government), contractual and conditional payments to local landholders and users in return for adopting practices that secure ecosystem conservation and restoration. Payment for ecosystem services (PES) as an approach for improving ecosystems has gained recognition in many parts of the world. It is considered an efficient mechanism for improving natural systems under stress and at the same time helps communities by providing them remunerative incentives in lieu of following prescribed set of practices for the protection and sustainable management of ecosystems, leading to enhanced ecosystem services. As a highly adaptive management tool, PES is particularly suited for achieving equitable and flexible conservation outcomes.

Meghalaya has witnessed rapid changes in the land use and land cover in the last three decades. Urbanisation, mining activity, deforestation, plantations of areca nut and other cash crops have adversely altered the natural landscapes causing ecological problems such as drying of springs, soil erosion, water stress, biodiversity loss etc. With the growing population, the cycle of jhum cultivation has reduced, which has its own implications in deterioration of the soil and water regime on the slopes. Climate change is already causing stress on the natural systems, which in turn impacts livelihood of more than three fourth population of the State living in the rural areas. People in the urban areas are also facing scarcity of water, the water problem is turning out to be quite severe. Degradation of ecosystem acts as a vicious cycle with adverse impacts increasing in compounding manner. If the cycle of degradation is not checked by mitigating the drivers of degradation in to a virtuous cycle by different interventions including use of PES approach, as illustrated in the Fig 1, it has potential to cause serious economic losses and sufferings to the people due to continued ecological degradation and its multiplier chain of adverse impacts.

People in the rural areas live in close proximity of the ecosystems. Their socio-cultural and economic lives closely depend on the health of the natural environment around them. If degradation of environment happens, it directly impacts their livelihood and living conditions while also causing adverse impacts to society at large at distant places, in so many ways. On the other hand, the village people are the best guardians of the ecosystems because of their proximity, ownership and deep association with the natural resources around them. Living in a symbiotic relationship with the nature since ages, they develop rich traditional knowledge about the natural resource management and their livelihood activities. Efforts for improving or restoring ecosystems therefore essentially depend on the level of involvement and motivation of the communities in natural resource management. In Meghalaya, the lands are largely owned by the indigenous communities, clans and individuals under different land tenure systems in different parts of the State. Community organisations are generally strong and exercise effective control for managing natural resources. Therefore, strengthening community based natural resource management is the right strategy for improving ecosystems and ecosystem services in the State and ensure sustainable development. Different Government Departments who

1 F-462Cvr_Txt(wri).indd (millenniumassessment.org), 2005

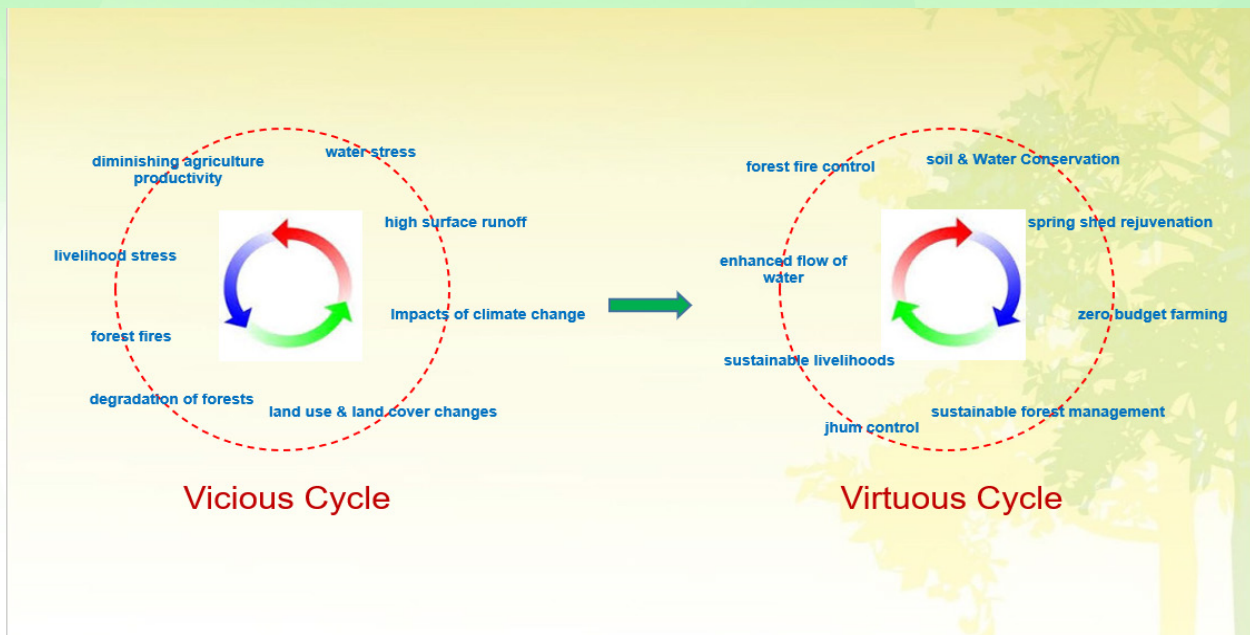


Fig 1

are mandated with the natural resource management are implementing various schemes and programmes for conservation and restoration of ecosystems. But the results on the ground are still far from the desired impacts due to various reasons. Moreover, whatever positive impacts are created due to the departmental actions, they are out paced by the different drivers of degradation. In this scenario, it is important that the community members who largely own the lands in the State are incentivised to adopt ecologically sound land management practices for agriculture, conservation of forests and other livelihood activities and develop strong ownership with them. This would happen only if there is strong motivation in them to do so. It is neither practical nor fair to expect that they would do so out of their environmental consciousness alone. They have to ensure meeting basic needs of their families and meet natural aspirations of their lives, first. In the pursuit of meeting their immediate needs, they mostly utilize their lands with a short term perspective with the limited resources which they have. It is not justifiable and is against the principles of equity to put the onus of enhancing ecosystem services needed by the whole society on the poor people in villages only just because they are in possession of the lands and are living in proximity to the natural resources. In this situation, the concept of 'Payment for Ecosystem Services' can be an effective strategy for motivating the people to adopt sustainable land use practices as desired by the society at large for which they are provided monetary incentives based on their adherence to the land management prescriptions and performance-based ecosystem improvement works, which are duly verified. The quantum of incentives under PES system should take into consideration the opportunity costs of land and other inputs including labour of the people. The economists have convincingly argued that the cost of inaction is much higher than the cost of action in respect of checking ecological degradation². It is high time that the ecological benefits which is provided by the ecologically sound land management activities which include forest conservation, soil & water conservation measures, control of forest fires, afforestation & reforestation are recognized as much needed ecosystem services for which people living in the villages are motivated and incentivized in the form of PES. There are successfully working models of PES related to water, soil, forest and biodiversity in several countries of the world. There is a need to develop a framework for performance-based incentives for the ecosystem improvement activities performed by the communities in the State. A well-structured Payment for ecosystem services (PES) model

2 Nkonya E. et al. (2016) Global Cost of Land Degradation. In: Nkonya E., Mirzabaev A., von Braun J. (eds) Economics of Land Degradation and Improvement – A Global Assessment for Sustainable Development. Springer, Cham. https://doi.org/10.1007/978-3-319-19168-3_6



Fig 2

specifically suited to the socio-economic conditions, culture and land holding system prevalent in the State may lead to the desired ecosystem development on sustainable basis and also provide an income generating opportunity to the poor people in the villages. It may prove to be a win-win situation for the people living in the villages, those living in the cities and for the Government. This brief note makes an attempt to draw an outline for starting a PES model in the State.

1.1 Economic Theory Justifying PES

In economic theory, degradation of ecosystems involves a market failure. The market generally does not value naturally occurring resources in the production process. Nature's capital and ecosystem services are not assigned a value by the market. As a consequence, they are regarded as free public goods.

Destruction of forested areas, wetlands, grasslands and bodies of water arises because of the difference between the discount rate of the individual and the society as a whole. Poor people, living in the villages because of their pressing current needs for fuel, fodder, water and land for cultivation, assign a higher discount rate to these resources than does society as a whole. High discount rates indicate a strong time preference for the present. The private interests of poor people and the social interests of the broader society diverge. The interest of poor, local people in using these lands and water resources is intense, immediate and focused for food, fuel, fodder, crop land, and irrigation water. They will (often unknowingly) incur almost any social cost to permit the immediate exploitation of these environmental resources to sustain their livelihood. Payments for ecosystem services can help in bridging this gap in discount rate assigned by the villagers on the lands in the catchment areas for their immediate livelihood needs (high discount rate) and the one desired by the society at large for the environmental benefits from the catchments (low discount rate). This may influence the choices of the poor local people in managing the lands under their control in sustainable and ecologically sound manner. Fig 2 illustrates the economic theory justifying the PES. The success of any such measures and programs will be dependent on their design and administration.

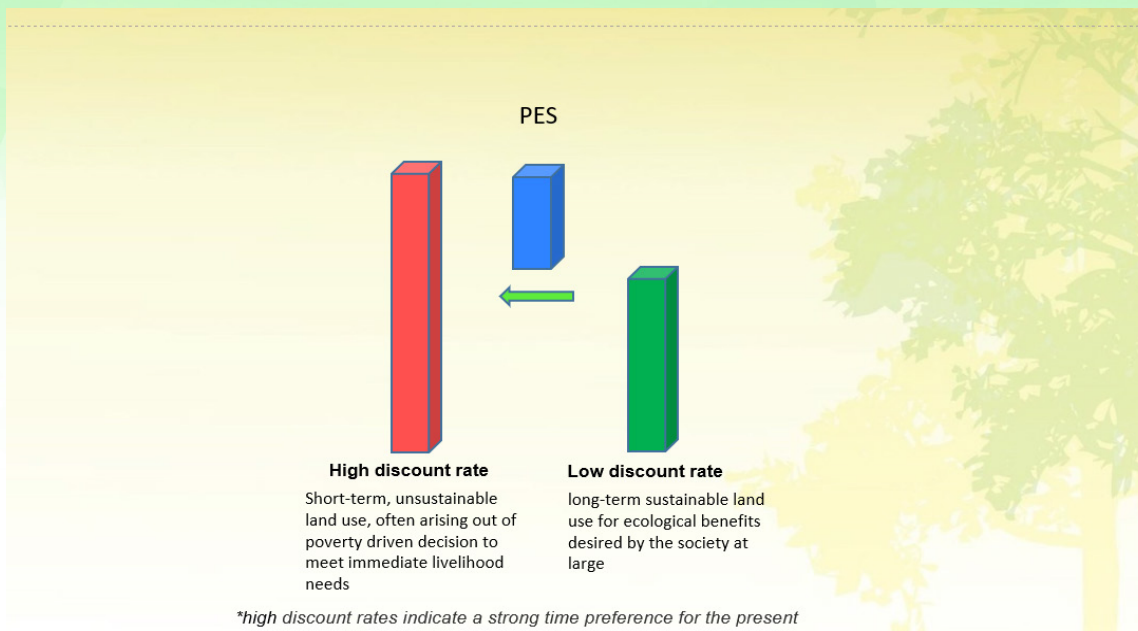


Fig 3

1.2 A Perspective of PES in the Context of Catchment Area Protection in Meghalaya

The agricultural practices, state of forest conservation and changes in the land use and land cover in the highlands have direct bearing on the soil and water regime in the lower regions of the mountainous landscapes. Siltation of water reservoirs and capacity of water supply schemes to meet the requirement of water in the towns depend on the land use and land cover in the upstream areas. On one hand, over-all population and urbanization is rapidly increasing in the State, implying rising demand of water in the cities and villages, while the ecosystem services emanating from the upstream areas particularly water, shows declining trend, as evident from the reduced flow and drying of streams and water springs in the State. The situation calls for urgent remedial measures. PES can be an effective tool for restoring balance in the ecosystems. In the context of PES, the population in the State may be considered in the two broad groups, one, the people living in the villages in the uphill areas and the other, those living in the downstream areas. As discussed earlier, the former group largely acts as a provider of ecosystem services, whereas, the second group is largely the user of ecosystem services. Using the concept of PES, through remunerative incentives/compensation, the former group may be motivated to adopt practices which lead to improved conservation and enhanced flow of ecosystem services. A PES works on the basis of negotiated agreement between the providers and the users of the ecosystem services. However, given the complexity of the organization of the two groups and mechanism of connect between them on an issue like PES and also the complexity of mobilization of payments, the State Government may act as a proxy for the second group.

2. Principles and Elements of PES

According to the widely accepted definition of PES,³ “A PES scheme is a transparent system for the additional provision of environmental services through conditional payments to voluntary providers.” (Tacconi 2012)

An operational PES scheme should meet the following conditions:

- should be need based
- should be compatible to the socio-economic-cultural conditions of the people for whom the scheme has been designed
- should generate enough interest and motivation for the people (providers of ES) to voluntarily participate in the scheme
- should lead to the definite, verifiable and additional ecosystem services

The PES scheme generally aims at the following objectives:

- (i) improving ecosystem services (mainly water flow in the streams and springs, check soil erosion and conservation of forests & biodiversity)
- (ii) offer remuneration to the people in lieu of their efforts and adherence to the prescribed land management practices for improving ecosystems, after measurement and verification
- (iii) create awareness about the ecosystems and ecosystem services and introduce the concept of PES as a tool of ecological restoration
- (iv) Build capacity in the implementing agency and the communities for effective implementation

A PES scheme is sustainable and successful in meeting the envisaged objectives, only if it adheres to the following principles.

- (a) **Additionality** – The PES scheme should result in additional flow of ecosystem services beyond the business-as-usual level. In other words, if the ecosystem service production in the BAU scenario was ‘x’ then after the PES scheme it should be ‘x+p’, where ‘p’ is the additionality
- (b) **Transparency** – There should be complete transparency in the processes, records and transactions
- (c) **Avoidance of Leakage** – The PES scheme being implemented at one place should not result in the negative environmental impact or loss of the ES outside the boundary of the PES scheme.
- (d) **Verifiability** – The ES should be verifiable either by direct measurement or by proxy land use/assessment of the dimensions of the intervention

In addition to the above essential principles, the PES scheme should also ensure social and environmental safe guards. The rules and procedures for implementing the PES scheme should be simple and entail low transaction (operational) cost so that the scheme is smoothly implementable and remain cost efficient.

3. Operational Framework

Keeping in view the above principles and elements of a PES scheme, an operational framework for the State has been conceptualised and presented in the following sections. The PES being a

³ Redefining Payments for Environmental Services, January 2012, Ecological Economics 73(1):29-36, DOI: [10.1016/j.ecolecon.2011.09.028](https://doi.org/10.1016/j.ecolecon.2011.09.028)

new concept, It is proposed to roll it out in a phased manner, starting with a simplistic framework and a few activities and as the involved officials and other stakeholders gain experience and the scheme finds acceptance in the people, the same may be extended to cover more activities for addressing other drivers of environmental degradation.

3.1 Area of Operation

- 3.1.1 In the first phase, the proposed PES scheme would be applicable in the 'Critical Catchments' identified under the Meghalaya Catchment Area Protection Act, 1990 or otherwise any catchment or micro-catchment declared so by an executive order of the Government.
- 3.1.2 The notified 'critical' catchment area should have a well-defined boundary available in shape file.

3.2 Persons Eligible to avail PES

- 3.2.1 Individuals, clans and communities owning forests, agricultural or other lands in the 'Area of Operation' as defined in section 2.1 will be eligible to avail PES.
- 3.2.2 In case of clans and communities, the 'head' recognized under the traditional institutions will avail the PES on behalf of the clan or community under the benefit sharing mechanism agreed by the clan or community members.

3.3 Activities Eligible for PES

In the first phase, the following five activities may be identified as eligible activities for PES

- 3.3.1 **Transition from 'Jhum' to improved agriculture practices** - Follow environmentally sound agriculture practices as per the prescriptions. The prescriptions may include the following conditions
- no slash-and-burn (jhum) practice
 - Zero budget natural farming (ZBNF)
 - no use of chemical fertilizer, (only bio-fertilizers, FYM and vermi-compost to be used)
 - use of bio-pesticides only
 - no burning of agriculture residues
 - SALT technology
 - no use of pumping sets for lifting ground water for irrigation

3.3.2 Conservation of existing natural forest

Follow the approved forest management plan which may include the following

- no illicit/unauthorised felling of trees
- closure from grazing
- protection from forest fires
- no felling of trees or branches for fuel wood (only fallen trees, twigs and branches may be allowed for fuel wood purposes in a regulated manner)
- no NTFP collection for commercial trade
- complete protection of wildlife
- enrichment of forest by

- assisted natural regeneration
- gap planting by native species

3.3.3 Reforestation

- Reforestation of degraded forests or scrub (canopy density < 10%)
 - by native species
 - plantation, ANR
 - protection of area to induce regeneration in root stocks
 - fire protection
 - protection from grazing

3.3.4 Afforestation

- on available culturable waste lands / vacant lands
- species to be selected from the approved list based on the people's preference
- maintenance
- fire protection
- protection from grazing

3.3.5 Soil & Water Conservation Measures

- contour trenches on slopes
- Gabian structure
- small ponds, reservoirs for water conservation/ground water recharge
- other nature based solutions from the approved list
- may be done on jhum lands/abandoned jhum lands/ abandoned mining areas/agriculture lands/ degraded forests/scrubs or other vacant lands facing soil erosion

3.4 Measurement, Reporting & Verification (MRV)

Measurement, reporting and verification (MRV) of the PES activities is an important step in its implementation. MRV is done to confirm whether improvement in the ecosystem has taken place or not and if so, then what is the quantum of improvement. Measurement of ecosystem service may not always be possible or it may be costly to measure it. In such situations, the additionality may be assessed by the proxy land use and its change or the biophysical parameters correlated with the ES. The quantum of incentive is also determined based on the MRV. It therefore requires well defined rules for measurement and verification of indicators which in fact give proxy assessment of the ecosystem services. For each of the eligible activities a separate set of indicators, MRV rules and procedures are used. It is always desirable to formulate simple methodologies, and procedures for MRV.

3.4.1 Parameters/Indicators for Ecosystem Services

Direct measurements of ecosystem services often involve advanced methodologies, tools and techniques, which have cost implications apart from the constraints of availability of technical manpower. Alternatively, proxy parameters/indicators can be used for assessment and verification of ecosystem services in a consistent manner. The following table shows the possible indicators for each of the above five PES activity. The selected indicators should necessarily have a strong correlation with the ES but they should also be simple in technique and methodology so that MRV is smoothly done with the help of locally available manpower

after imparting training to them, without involving high transaction cost.

Sl No	PES Activity	Verifiable Parameter/Indicator	Remarks
1	Transition from Jhum to Improved Agriculture Practices	<ul style="list-style-type: none"> -Area (in ha) based on GPS -score based on periodic transect observations to verify adherence to prescribed practices - observation based on high resolution satellite data/ drone image - soil organic carbon 	A methodology of the transect observations and scoring would be separately given and PFAs will be trained in the methodologies.
2	Conservation of existing natural forests	<ul style="list-style-type: none"> -forest area (in ha) based on GPS - change in Basal Area /ha - change in canopy density as assessed with the help of satellite image/ drone image - change in number of forest fire incidences -area affected by forest fire - number of trees felled (if any) - score based on transect observations 	<p>Change in basal area will be assessed using measurement data from the sample plots</p> <p>Methodology for the measurements and observations will be separately given.</p>
3	Reforestation (this activity will have two sub components, Creation and Maintenance, the later will be operational from the second year after creation)	<p>Reforestation</p> <ul style="list-style-type: none"> - area reforested - change in stocking (number of trees/ ha) in annual cycle based on sample plots <p>Transect observations on</p> <ul style="list-style-type: none"> - forest fire incidences - effectiveness in controlling grazing -survival percentage of enrichment planting - regeneration 	Methodology for the measurements and observations will be separately given
4	Afforestation (this activity will have two sub components, Creation and Maintenance, the later will be operational from the second year after creation)	<ul style="list-style-type: none"> - number of seedlings planted - survival % after six months in the first year -area brought under afforestation (in ha) <p>Maintenance (to be assessed through transect observations)</p> <ul style="list-style-type: none"> -survival% after 1st yr -survival% after 2ndyr -survival% after 3rdyr - intensity of weeds - transect observations for forest fires grazing weed growth 	<p>Quantum of payment for afforestation will be determined based on survival percentage and score based on other transect observations</p> <p>Methodology for the measurements and observations will be separately given</p>

5	Soil & Water Conservation Measures	Contour Trenches Length/ Area of contour trenches - creation - maintenance Area of water conservation pond or reservoir -creation -maintenance physical dimensions of structures	Quantum of incentive will be determined based on the physical dimensions of structures/works created and maintained. Scores will be assigned based on the physical inspection of works by PFAs. Methodology for the measurements and observations will be separately developed.
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3.4.2 Verification

It is proposed to have two-stage verification for confirming the additionality and determining the quantum of PES

- by the village level institution/committee (VPC/VEC/VNRMC/Traditional institution)
- DIA

Rules framed for MRV will cover details such as the methodology, format of reporting, tools and equipments to be used. An App for this purpose will also be developed

3.5 Performance based PES Incentive – quantum of remuneration

The quantum of incentive for each activity will be finalised by the Working Group constituted for the purpose with the following guiding principles

- opportunity cost of the land and other inputs including labour should be compensated
- the incentive should be in proportion to the work performed, resources put to use for generation of the additional ecosystem service
- the incentive should be adequate to generate interest of the village people
- the incentive should be comparable to the cost norms being followed by other Government Departments for the similar works

Table 3.6 showing Indicative PES Incentive in INR

Sl No	PES Activity	Incentive (in INR) per year
1	Transition from Jhum to Improved Agriculture Practices	16000 per ha
2	Conservation of existing natural forest	12000 per ha

3	Reforestation	This activity will have two sub components Creation – 12000 per 1000 seedlings Maintenance – Rs 4000 per ha, if survival is above 40%, 6000 per ha if above 60%, 8000 per ha if above 80%
4	Afforestation (this activity will have two sub components, Creation and Maintenance, the later will be operational from the second year after creation)	Creation – 30000 per ha for 2000 plants per ha Maintenance – 8000 per ha for over 80% survival for three years
5	Soil & Water Conservation Measures	Creation – 8000 per ha (average on lump sum basis, actual amount will depend on the type of structure)

3.6 Mode of Incentive

The quantum of payment due to the PES Scheme Participant (PSP) would be determined in accordance of the schedule and verification score. The amount will be paid as per the benefit-sharing arrangement decided by the Village PES Committee (VPC). There may be an activity wherein the land may belong to the traditional head of the village but allotted to a person under tenure. If such a person is a PSP then the PES amount may be shared between the VPC headed by the traditional head and the individual (allotted of the land). The percentage of sharing between the two would be specified in the Agreement document.

The PSP may also express his/her interest in receiving the PES benefit amount in the form of a livelihood assets like Cows for dairy, Piggery, Poultry, fishery etc. In such cases, DIA with the help of the concerned Departments will facilitate to provide the livelihood option preferred by the PSP.

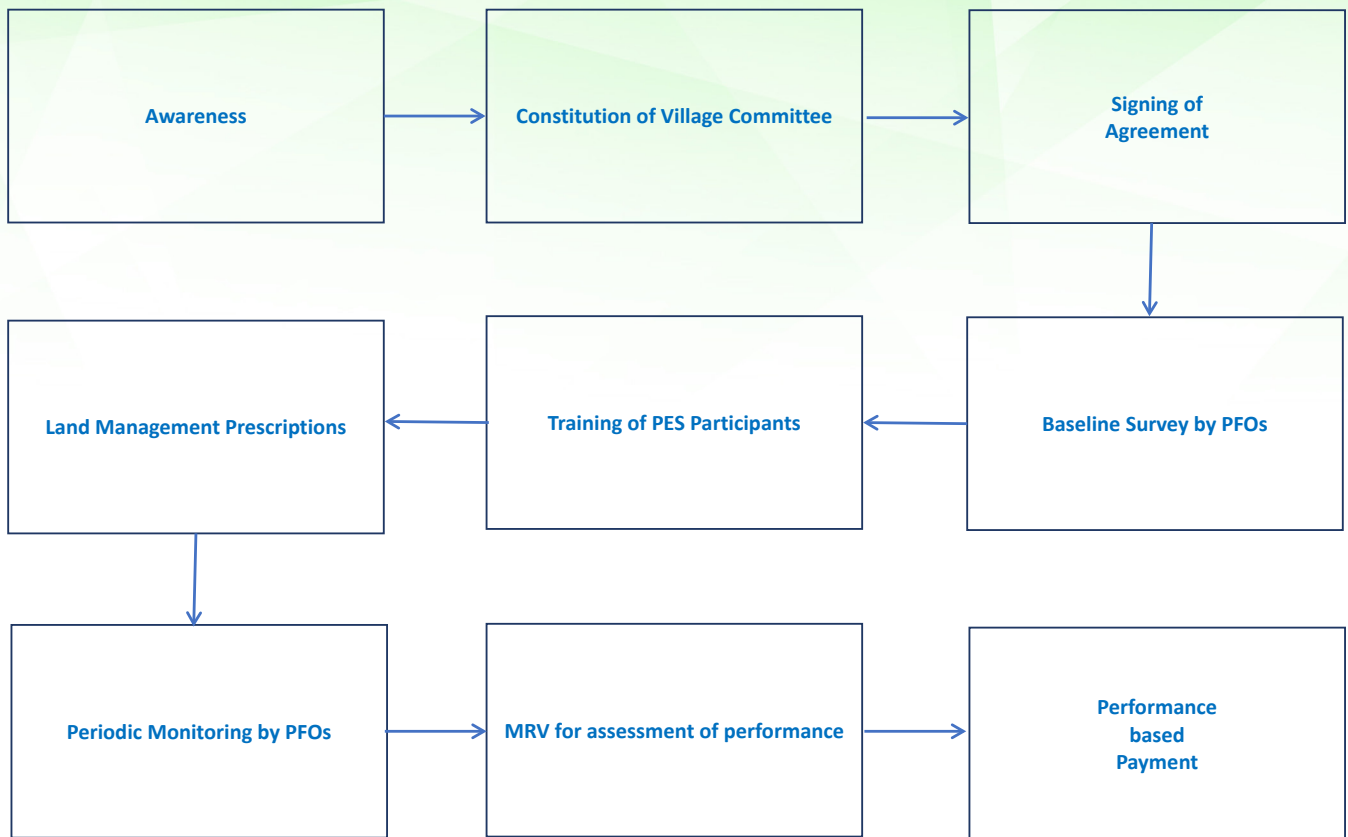
3.7 How the PES Scheme will work

- A Department/ Agency will be notified as the Designated Implementing Agency (DIA)
- Concurrently pilot scheme would be launched
- Notification of the scheme will be done and awareness about the same will be launched
- A Working Group will be constituted for finalising
 - o Rules for each of the above elements of the PES scheme
 - o Incentive structure (quantum of remuneration) for each eligible activity
 - o Measurement, Verification and Reporting protocol
- Capacity building in the DIA will be created
- State PES Fund (SPF) will be created
 - o MEPRF (in the catchments affected by coal-mining)
 - o Other sources, including State Plan/EAPs/CSR/Eco-cess/CAMPA (for conservation of forests, reforestation and reforestation)
- Once the scheme is operational
 - o Awareness about the PES scheme would be launched. Meetings will be held in each village to explain the concept and different provisions of the scheme.
 - o A village PES committee (VPC) will be constituted under the chairmanship of the traditional head of the community/Nokma. A separate guideline detailing

constitution of the VPC will be issued.

- A village community as a whole through VPC or any individual owning land from the eligible area may express his/her willingness to participate in the PES scheme by registering with the DIA. PFA will facilitate in getting an application form filled up for the purpose
 - A well-defined boundary, where PES activity is proposed to be carried out will be captured using GPS and the shape file of the same would be made available/uploaded through App on the spatial database maintained by the DIA
 - PES Field Associate (PFA) will verify the details and certify the application
 - The willing VPC or the person ready to participate in the scheme will be referred as PES Scheme Participant (PSP)
 - The PSP will sign an agreement with the DIA
 - PSP will attend one-day training programme conducted by DIA
 - Management Plan/Prescriptions for the sustainable Land/Forest Management will be given to the PSP after the training
 - Technical assistance to PSPs for NRM, if required, will be provided by the Line Departments through DIA
 - Field inspection of the registered PES activities will be done by the PFAs at least once in a quarter
 - After the MRV cycle, which may be one year (or lesser), the participant will submit a claim for PES in a form/hard copy
 - Claim will be verified at three stages
 - by the village level institution (VEC/VRMC/Traditional institution)
 - third party (empaneled NGOs)
 - DIA
 - Once verification is completed, a PES Certificate detailing the payment due for the ecosystem service will be issued by DIA and the participant will receive the payment in his account through DBT.
- Other operational details
- The DIA will have a strong geo-spatial capability for making use of web-GIS, drone based monitoring, RS-GIS based MRV
 - A cadre of PES Field Associates (PFAs) will be created from the selected VCFs/ educated youths from the rural areas by the DIA
 - PES Field Associates (PFAs)
 - will be imparted intensive training on PES Rules, procedures, MRV Protocol
 - they will receive higher monthly remuneration and travel allowance, in addition they will also get fee for each task of field validation/inspection
 - DIA will maintain a geo-spatial database on the PES Activity in the State
 - Regular training and awareness programme would be conducted by the DIA

3.8 Work Flow



4 Stakeholder Consultation

A series of consultations were held after preparing the concept note for introducing the PES approach for restoration of catchments in the State. A brief account of these consultations is presented in this section. More such consultations are proposed to be held in future.

4.1 Consultative Meeting with the NRM Experts and practitioners held in Shillong on 24th Jan, 2022

After preparing a concept note for operationalizing the PES scheme for Catchment Area Restoration in the State, a consultative meeting was held in Shillong on 24th Jan, 2022 with the experts in the field of NRM, Autonomous District Council Officials, journalists and MBDA officials, wherein the concept of PES and how it can be operationalised in the context of restoration of catchment areas in the State was discussed in detail. All the participants welcomed this new approach while mentioning that they were listening about this concept since past several years.

The following suggestions came out during the consultative meeting:

- the design of the scheme should lead to actual enhancement in the ecosystem services
- willingness of the people is essential for which FPIC (free prior and informed consent) process should be followed
- while deciding about the incentive structures, it should be ensured that all the opportunity costs foregone by the villagers for implementing PES scheme should be well compensated
- livelihood concerns of the people should be addressed in the PES scheme
- the methods and procedures for implementing the scheme should be simple to the extent it is possible
- all aspects for making the PES sustainable should be well examined before starting the scheme

4.2 Meeting with the Deputy Commissioner, West Garo Hills on 15th Feb 2022

After explaining the concept, framework and functional aspects of the PES approach for restoration of Ganol catchment, wider discussion on the problems in the dealing with the catchment restoration took place. While welcoming the new PES approach, Shri Ram Singh, DC West Garo Hills shared his numerous field experiences highlighting the issues of catchment area degradation. He particularly mentioned about the spread of Areca nut and other horticulture plantations at a fast pace causing ecological stress in many areas. He also mentioned about the recent order passed by him under the relevant section of CrPC banning certain undesirable activities in the buffer of 50 meters on both sides of the streams in WGH but he also admitted that enforcement of the same would be a challenge. It was discussed that the order can be used for passing resolution by the Nokmas/villages for mobilising people in preventing the banned activities. PES can also play a role in incentivising people for not practising the ecologically adverse activities. Regarding incentives, the DC was of the view that instead of cash, the villagers can be incentivized by providing them sustainable livelihoods like dairy, piggery, poultry, agro-forestry etc.

4.3 Meeting with the Nokma Council, 16th February 2022

A meeting was held with the Council of Nokmas – an umbrella body of the Nokmas of the entire Garo Hills Region, to discuss the concept and implementation framework of the PES Pilot Project for Ganol Catchment. Top representatives from the Nokma Council were present along with the officials from CoE. The details of the proposed pilot project on PES were explained to the Council members by Dr. S. Ashutosh, Co-Chairman and Director of CoE. The Nokma Council welcomed the PES approach and expressed their optimism stating that such an approach is need of the hour in the Garo Hills Region for protection of forests and restoration of catchments.

Some of the main points that emerged during the discussion are as follows:

- It was apprised by the members of the council that many villages in Garo Hills have what is known as “Songacham” – or abandoned habitations/lands due to certain beliefs, which have converted in to forests over the years. Such forests can be conserved under the PES scheme.
- Apart from PES, the representatives of the Nokma Council were of the opinion that more stringent laws ought to be enacted and enforced for protection of the community forests in Garo Hills.
- Recent order issued by the Deputy Commissioner, prohibiting activities such as rampant felling of trees near water bodies, cultivation of commercial plantations such as arecanut, cashew, rubber etc in the catchment areas has been welcomed by the Nokma Council.
- The president of the Nokma Council, Shri Skylance Momin suggested that the agreement for the PES for ensuring the committed ecosystem restoration activities, jhum prevention etc and also for the benefit sharing should be signed with a committee from the village instead of Nokma alone. Nokma may be the President or Chairperson of the committee. This will help in wider participation and stability in implementing the scheme.
- However, it was informed that there are instances where villagers are not complying to the Nokma’s orders/ diktat on preserving their natural resources and have decided that they would come up with strategies to resolve such instances.
- They have indicated that it would be in the best interest to the communities that instead of cash, livelihood opportunities should be given to them. However, these livelihood opportunities should be provided according to the choice and willingness of the people and market linkages should be ensured.

4.4 Meeting with the communities of 3 villages, 17th February 2022

On 16th February 2022, a meeting with the villagers of Dura Khalakgre, Baladengre and Sasatgre villages was convened to consult with the communities on the PES and know about their views, problems and expectations from the PES concept and the proposals given in the draft framework.

The concept of PES was explained to the community members by Dr. S. Ashutosh, Co-Chairman and Director, CoE in detail, the various aspects of how the scheme is expected to work and be beneficial to them and also to the downstream villages. It was further explained that all the support and clarifications would be provided by the CoE. During the meeting representatives from the GHADC, Nokma Council, WGH DPMU and CoE were also present and shared their views.

Some of the important points of the feedback received from the communities are as follows:

- The first concern of the communities was food security – they explained that jhumming is one of the primary sources of livelihood for the villagers in most of the villages in the region; therefore any departure from this practice would result in food insecurity to them. However, it was explained to them that they may switch over to settled form of agriculture, agro-forestry or other terrace based improved agriculture practices, for which all the technical support would be provided by the CoE.
- It was pointed by the communities that the concept of giving cash to the communities will not be sustainable as the money would be soon exhausted, instead the project should explore providing the communities with sustainable livelihood opportunities.
- The communities asked for more time for discussing the terms & conditions mentioned in the draft agreement within themselves and give their suggestions.
- The villagers were in agreement with the suggestion made by the President of the Nokma Council that a Committee for PES may be constituted in the villages under the chairmanship of the Nokma. The Committee may be asked to pass a resolution that the concerned village will participate in the PES scheme and abide by the terms and conditions required for implementing the project.
- The communities expressed their concern about the sustainability of the initiative as the pilot project was of three years duration only. It was clarified by the Director, CoE that another larger project with similar objectives and approach with longer time horizon is also in the offing and even the State Government may also adopt the PES approach for the ecosystem restoration in the State.
- Few members of the communities mentioned that few civil structures such as check dams, reservoirs, retaining walls etc on strategic locations along the Ganol river would be helpful in channelizing the water in the desirable manner resulting in to enhanced water flow. The officials of CoE clarified that there is no provision for such works under the Pilot Project, however CoE will make efforts for the concerned Departments to undertake these works in convergence to the Pilot Project, if feasible.
- It was decided in the meeting that all the documents related to the pilot project should be translated in the Garo language.

5. Pilot Project

The Centre of Excellence (CoE) on NRM & Sustainable Livelihoods (MBDA) proposes to implement a Pilot Project on Payment for Ecosystem Services for restoration of catchment areas primarily for improving flow of water in the streams and springs. The pilot project would be implemented in the 20 villages of the Ganol catchment in the West Garo Hills district. The DPMU (CLLMP) in WGH, S&WC Department and GHADC would be closely involved in implementation of the pilot project. The pilot project aims at implementing the PES project under an operational framework for restoration of the Ganol Catchment and study its potential and effectiveness in evoking communities' participation in the sustainable management of forests, water resources, soil and biodiversity for enhancing ecosystem services. PES approach works on the principle of performance-based incentives to the individuals/communities for their efforts and land for conservation of forests, soil and water and generating additional ecosystem services. Learnings and results of the pilot project would be of immense value in further fine tuning the PES framework and apply the same for the larger application of the PES based models in restoration of other catchments and natural resource management in the State.

Conservation and restoration activities in these villages under the PES framework would include, Conservation of existing natural forests, restoration of degraded forests (reforestation), transition from Jhuming to Improved agriculture practices and soil & water conservation measures. The PES approach will be implemented with the voluntary participation of the communities and individuals. After deciding for their voluntary participation, an agreement with the community/individual would be signed between them and the implementor i.e. the CoE and following the agreed conservation and sustainable practices and using the measurement and verification protocol, quantum of remuneration would be determined and paid to the community/individual, periodically. The Pilot Project will be implemented in the 20 villages located in the 12 critical micro-watersheds over a period of three years to test all aspects of functioning of the PES scheme and its effectiveness in generating the additional ecosystem services and how it has benefitted the participating families in the villages in improving their socio-economic conditions. The pilot is expected to provide important inputs for further improving the design so that it can provide important inputs to the concurrent implementation of the PES scheme that may be launched in the State. Though the pilot is proposed to run for three years, the feedback from it will be available from the first year itself. Apart from the inputs, experience, and capacity building for its larger application, the pilot project is expected to restore 200 ha of ecosystems, generate income to the participating families and employment to 5 VCFs engaged as PES Field Associates (PFA) for three years.

Table 5.1 Financial Outlay for the PES Pilot Project in the 20 Villages located in 12 Micro-watersheds of Ganol

(in INR)

Sl. No.	Item/Particulars	Rate	Yr 1	Yr 2	Yr 3	Total
1	Awareness & Sensitization in the 20 villages of Pilot study, twice in each village	@ 10,000 per programme	4,00,000			4,00,000
2	Awareness Material	LS	1,00,000	50,000		1,50,000
3	Engaging PES Field Officers (PFOs) from the VCFs, 1 PFO for 4 villages, 5 PFOs	@Rs 8,000 pm	4,80,000	4,80,000	4,80,000	14,40,000
4	PES Fund, 10 ha per village,	average@12,000/ha	24,00,000	24,00,000	24,00,000	72,00,000
5	Verification, GIS Support etc.	LS	2,00,000	2,00,000	2,00,000	6,00,000
6	Administrative Expenses of DIA, including OE, Travel, IT Support etc.		8,00,000	8,00,000	8,00,000	24,00,000
	Total		43,80,000	39,30,000	38,80,000	1,21,90,000

Total INR 1,21,90,000/- over a period of three years for ecological restoration of 200 ha of Ganol catchment area.

6. Way Forward

This inception report seeks to make ‘payment for ecosystem services (PES)’ approach as a functional scheme for restoration of catchment areas and addressing other environmental issues being faced by the State including climate change, in a phased manner. Success and effectiveness of the scheme will depend first, on its design and secondly, on its effective implementation. Capacity development in the implementing Department, extensive awareness and dialogue with the communities and necessary funds are the key requisites for the effective implementation of PES scheme.

A basic framework for operationalizing the PES scheme in the State has been presented in the inception report. Implementation of a pilot project in the Ganol catchment has been proposed. The scheme being a new paradigm for restoration of ecosystems, it would be a prudent strategy to implement the scheme following adaptive management, which basically means - regular fine tuning of the implementation process based on the interim results and feedback.

Way forward for mainstreaming PES scheme in the State has been shown in the following block diagram.

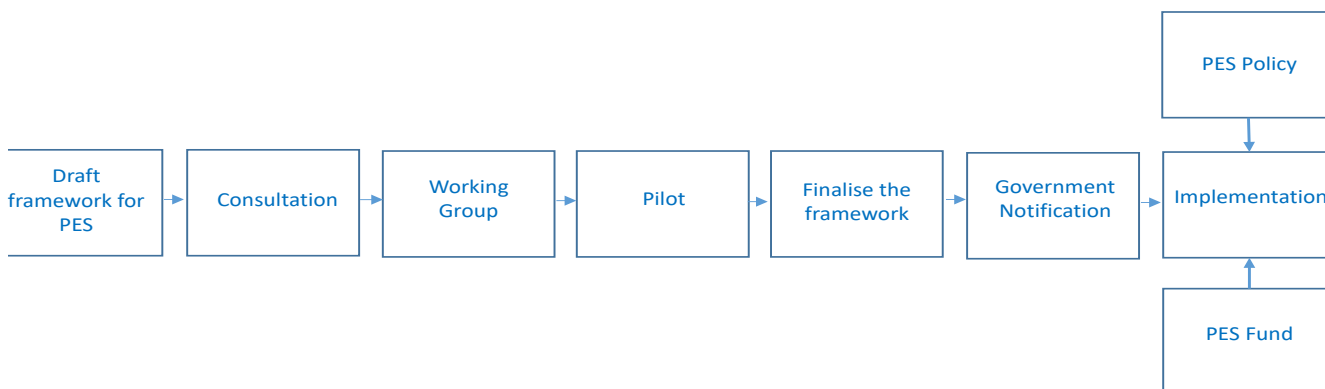


Fig 5

A working group may be constituted for finalizing MRV details (methodology, procedures etc) and norms for the remunerative incentive for each activity. A policy on PES is required for giving recognition, due emphasis and a long-term direction to the scheme. The policy will also lay direction for convergence of this new mechanism with other Departmental schemes and initiatives.

A PES Fund is proposed to be created for ensuring sustainable flow of incentives to the communities and individuals participating in the scheme. Every year new set of PES participants would be added and new areas would also be brought under the scheme but there would be commitment for paying remuneration to the PES participants who joined the scheme in previous years also. Thus, requirement of funds for paying PES remuneration would be of cumulative in nature. A practically viable way could be to follow a commitment cycle of 10 years, i.e to offer PES incentive to a particular participant up to 10 years during this period he would be capacitated for deriving sustainable income and continue the sustainable land management practices. Financial projection in the following section is based on this premise. Some suggestions for mobilizing financial resources for creating PES Fund are indicated as follows:

- Meghalaya Environment Protection and Restoration Fund (MEPRF) for the PES scheme in mining affected areas
- CAMPA funds can be leveraged for the PES activities related to forestry such as Conservation of forests, Reforestation and Afforestation
- Certain percentage of the outlay of the State Plan Schemes (say 40%) of the Departments implementing NRM activities may be utilized following PES approach
- Possibility of levying a small eco-cess on the industries/companies utilizing water and other natural resources may be explored
- CSR
- - National Adaptation Fund for Climate Change

7. Financial Projection

Projection of cost estimates for restoration of catchments in the State has been attempted based on the area figures of forests under different ownership cited in the literature. The following table gives forest bearing area under different ownerships in the State. However, availability of land for the catchment restoration activities would depend upon the willingness of people owning the lands. The total area which may be taken up for restoration activities will also depend upon the capacity of the implementing agency and availability of funds. Based on the area figures given in the Table 7.1, a reasonable target for ecological restoration under the PES scheme in the whole State has been presumed and the cost estimate has been worked out. Since the PES scheme will involve payments to the participating communities/individuals every year, the cost estimate for the annual target has been given for 5 years in the Table 7.2. A cumulative cost estimate for a period of 10 years has also been presented in the Table 7.3 to give an idea about the financial implication for sustaining the PES scheme over a cycle of 10 years.

Table 7.1 Classification of Forests based on Ownership in Meghalaya

(a)	Government Forests (including Reserved Forests, National Parks and Sanctuaries)	993.0 sq. km
(b)	Unclassed Forests	7,146.5 sq. km
(c)	Private Forests	384.0 sq. km
(d)	Protected Forests	179.0 sq. km
(e)	Village Forests	25.9 sq. km
(f)	Community (Raid) Forests	768.0 sq. km

Area under shifting cultivation in the State (annual average) ⁴ – 442 sq km

Table 7.2 Cost estimate for the annual targets envisaged for different activities under the PES Scheme* (for State-wide implementation)

SI No	PES Activity	Sub Activity/ category	Area to be covered in the next 10 years (ha)	Average Annual Target (ha)	Average PES (in INR per ha per year)	Total Cost per year (in lakh INR)					Remarks
						1st Year	2nd Yr	3rd yr	4th yr	5th Yr	
1	Transition from shifting cultivation to improved agriculture practice		20000	2000	16000	320	320	320	320	320	Area available will depend upon willingness of the Communities/ individual
2	Conservation of existing Natural Forests	Community Forests	30000	3000	12000	360	360	360	360	360	area to be taken from community and village forests
		Private Forests	10000	1000	6000	60	60	60	60	60	depending on the willingness of the individuals owning forests
3	Reforestation	Creation	20000	2000	12000	240	0	0	0	240	area to be taken from community and unclassified forests, PES for maintenance will be given for three years
		Maintenance	20000	2000	4000	0	80	80	80	0	
4	Afforestation	Creation	4000	400	30000	120	0	0	0	120	on culturable waste/vacant lands from unclassified forests
		Maintenance	4000	400	8000	0	32	32	32	0	payment will start from the 2nd year onwards,PES for maintenance will be given for three years
5	Soil & Water Conservation Measures		30000	3000	8000	240	240	240	240	240	area to be taken from unclassified forests, community forests
	Total		134000	13400		1340	1092	1092	1092	1340	

* it may be noted that under the PES there will be liability for payment for the area covered under the scheme every year for the commitment period

Under the scheme, every year new set of PES participants would be added and new areas would be covered in addition to the areas previously committed. The scheme therefore will entail cumulative financial liability. A projection of the cumulative cost for implementing the scheme presuming the cycle of 10 years is presented in the Table 7.3. The unit costs for the projection are based on the informed assumptions, however, the cost projection does not take in to account escalation due to inflation.

Table 7.3 Showing cumulative financial implication for sustaining the activities given under the Table 7.2 for a commitment period of ten years

(in crore INR)

Year	I	II	III	IV	V	VI	VII	VIII	IX	X
I	13.40	10.92	10.92	10.92	13.40	10.92	10.92	10.92	13.40	10.92
II		13.40	10.92	10.92	10.92	13.40	10.92	10.92	10.92	13.40
III			13.40	10.92	10.92	10.92	13.40	10.92	10.92	10.92
IV				13.40	10.92	10.92	10.92	13.40	10.92	10.92
V					13.40	10.92	10.92	10.92	13.40	10.92
VI						13.40	10.92	10.92	10.92	13.40
VII							13.40	10.92	10.92	10.92
VIII								13.40	10.92	10.92
IX									13.40	10.92
X										13.40
Total	13.40	24.32	35.24	46.16	59.56	70.48	81.40	92.32	105.72	116.64
Cost of Implementation @15%	2.01	3.65	5.29	6.92	8.93	10.57	12.21	13.85	15.86	17.50
Grand Total	15.41	27.97	40.53	53.08	68.49	81.05	93.61	106.17	121.58	134.14

* with the above expenditure, a total of 4,02,000 ha (4020 sq km) catchment area is expected to be covered under PES Scheme over a period of 10 years by different eco-restoration activities.

85% of the above amount will go to the communities/individuals as remunerative incentive under PES

8. Conclusion

The inception report outlines a framework for implementing a PES Scheme for restoration of catchment areas with a focus on improving water availability for the present as well as growing population of the State in future. PES is getting wider recognition as an adaptive tool for restoration of degraded ecosystems and enhancing ecosystem services in an efficient manner. The PES also brings the key role played by the communities in protecting the ecosystems to the centre stage and provides them monetary incentives for that. The PES approach also recognises eco-services as an income generating opportunity for the communities and individuals. The implementation of this new approach may gradually evolve to address different environmental problems being faced by the State.

The pilot project is expected to provide much needed inputs for fine tuning the implementation process and policy formulation. Capacity building at different levels in the implementing agency and also of the communities would be critical for successful implementation of this new concept. For funding the State-wide implementation of PES, different options like CAMPA funds, eco-cess, CSR, climate change adaptation fund, MEPRF etc may be explored. A policy on PES may also be formulated for the State which would provide a long-term direction to the initiative, leading to strengthening of ecosystems and resilience to climate change in the State.

Annexure I

Guide Lines for Constitution of Village PES Committee (VPC)

A Village PES Committee (VPC) will be constituted in every village which opts to participate in the Payment for Ecosystem Services (PES) scheme. VPC will be the nodal body for implementing the PES scheme in the village.

(i) Constitution of VPC will be as follows

a. General Body (GB)

- i. All the families of the village represented by the head of the family will be members of the General Body.
- ii. One male and one female member from each family will represent the family in the general body meetings.
- iii. Nokma (in Garo Hills)/Traditional Head of the Village Community will preside the General Body Meetings

b. Executive Committee (EC)

- i. There will be an Executive Committee responsible for day-to-day functioning of the PES scheme in the village
- ii. Executive Committee will comprise of eight members as follows
 1. Nokma (in Garo Hills)/Traditional Head of the Village Community – President
 2. Six families (from the village, selected by rotation for a term of one year) represented by the head of the family (or any other member of the family nominated by him/her)– members

(it will be ensured by the President that at least two members in the committee are ladies)
 3. PES Field Associate (PFA) – Member Secretary

(ii) Functions of VPC

- a. VPC will be the nodal body for implementation of PES Scheme at the Village level.
- b. VPC will facilitate participation of the community or individuals from the village in the PES scheme.
- c. VPC will create awareness and motivate the members for their voluntary and active participation in the PES scheme.

- d. VPC will maintain Register and Accounts about all the administrative and financial matters as per the guidelines issued by the Designated Implementing Agency (DIA) from time to time.
- e. VPC will take part in the measurement, reporting and verification (MRV) process for all the PES activities in the village as per the guidelines
- f. VPC will ensure that all the terms and conditions agreed by the community or individuals as given in the (signed) Agreement are fully observed. In case, the same are violated, the VPC will report about that to DIA.
- g. VPC will propose benefit-sharing arrangement for the PES scheme under implementation in the village. The same will be followed after approval of the DIA.
- h. VPC will facilitate all the training programmes organised by the DIA in connection with implementation of the PES Scheme.
- i. VPC will follow all the guidelines issued by the DIA from time to time

(iii) Others

- a. The General Body Meeting will be convened at least once in six months
- b. In GBM, awareness about the PES will be created, the members will be apprised about the developments with respect to PES in the village and views of the members will be elicited
- c. The Executive Committee will meet at least once every two months.
- d. Minutes of the every EC meeting, will be communicated to DIA
- e. VPC can be constituted by passing a resolution by the community members under the chairmanship of the Nokma/ Traditional Head and constituting the Executive Committee.
- f. After formation of the Executive Committee, a Bank Account of the VPC should be opened in any nationalised Bank.

Annexure II

Draft

Agreement between the PES Scheme Participant (PSP) and MBDA for Implementing the Payment for Ecosystem Services Scheme for Conservation of Existing Natural Forests

This agreement is signed on this.....day of2022, between Meghalaya Basin Development Authority (MBDA), represented by the Nodal Officer of the Centre of Excellence / District Project Manager of the District Project Management Unit of West Garo Hills District, herein after referred to as the **First Party** and Name.....
..., Village....., Block, District
(name and address of individual, representative of clan / Nokma / community / Village PES Committee as the case may be) hereafter referred to as **Second Party**.

- i. The Second Party has understood the concept and provisions of the Payment for Ecosystem Services Scheme and is willing to abide by the conditions mentioned in this agreement.
- ii. The Second Party should ensure that the land is free from encumbrances. Furthermore, he/she/they should get themselves involved and support community led interventions to restore and sustainably manage forests, land and water resources in the village.
- iii. The Second Party will not carry out any activity that is detrimental to the environment and natural resources.
- iv. The Second Party shall submit necessary documents pertaining to the project and should also have a valid bank account in his/her/their/Committee's name.
- v. The Second Party shall inform the village authorities namely, the *Nokma* on the intention of availing the PES scheme and obtain their consent / NOC of participation in the scheme.
- vi. The Second Party shall ensure free passage to the identified land for the PES Field Associate (PFA) or any other person or agency, who is identified and selected by the First Party as and when required without any hindrances. The PFA shall ensure that prior information is conveyed to the Second Party before inspection of the site(s). The PFO will have rights to the usage of modern technology including testing kits, GPS, etc. on the site(s) to inspect, monitor and verify the veracity of the claims of the Second Party for the PES.
- vii. The second party agrees to share knowledge on environmentally sound practices for conservation of existing Natural Forest and support implementation of different activities of Payment for Ecosystem Services (PES) in his/her/their land.
- viii. Conservation of existing natural forest - Follow the approved forest management plan will include the following:
 - No illegal/unauthorized felling of trees
 - Closure from grazing
 - Protection from forest fires
 - No felling of trees or branches for fuelwood (only fallen trees, twigs and branches may be allowed for fuelwood purposes in a regulated manner)
 - No NTFP collection for commercial trade
 - Complete protection of wildlife
 - Enrichment of forest
 - assisted natural regeneration (ANR)
 - gap planting by native species

- ix. The First Party will ensure that training(s) is/are organized for the benefit of the Second Party to enable him/her/them to efficiently implement the scheme in their respective land.
- x. The First Party would ensure that payment is released to the Second Party as per the guidelines after verification and measurements to confirm prescriptions given under the clause (viii) have been accomplished as per the guidelines and is satisfied that the Second Party has fulfilled the requirements.
- xi. Decision of the Officer-in-Charge, Designated Implementation Agency (DIA) will be final regarding the verification and quantum of payment to the Second Party in lieu of adherence to the prescribed practices.
- xii. If First Party finds that the Second Party is not abiding by the terms and conditions of this Agreement, then the First Party may after seeking explanation unilaterally cancel the Agreement/ PES Participation.
- xiii. If the Second Party is not satisfied with the decision of the Officer-in-Charge of DIA, on the implementation of this scheme, then he/she/they can appeal to the Appellate Authority.

IN WITNESS THEREOF, the aforesaid parties put their signatures and seal on the..... (date)
 (month) (year).

**Name, Signature and Seal of the
 First Party**

Represented by
 Nodal Officer/DPM

**Name, Signature and Seal of the
 Second Party**

Represented by
 1. Land Owner (individual, representative of
 clan, community, etc. as the case may be)

2. Nokma

Witnesses:

1

2

Agreement between the PES Scheme Participant (PSP) and MBDA for Implementing the Payment for Ecosystem Services Scheme for Afforestation & Reforestation

This agreement is signed on this.....day of2022, between Meghalaya Basin Development Authority (MBDA), represented by the Nodal Officer of the Centre of Excellence / District Project Manager of the District Project Management Unit (CLLMP) of West Garo Hills District, herein after referred to as the **First Party** and Name....., Village....., Block, District (name and address of individual, representative of clan/nokma, community, PES Village Committee as the case may be) hereafter referred to as **Second Party**.

- xiv. The Second Party has understood the concept and provisions of the Payment of Ecosystem Services Scheme and is willing to abide by the conditions mentioned in this agreement.
- xv. The Second Party should ensure that the land is free from encumbrances. Furthermore, he/she/they should get themselves involved and support community led interventions to restore and sustainably manage forests, land and water resources in the village.
- xvi. The Second Party will not carry out any activity that is detrimental to the environment and natural resources.
- xvii. The Second Party shall submit necessary documents pertaining to the project and should also have a valid bank account in his/her/their/committee's name.
- xviii. The Second Party shall inform the village authorities namely, the Nokma, on the intention of availing the PES scheme and obtain their consent/NOC of participation in the scheme.
- xix. The Second Party shall ensure free passage to the identified land for the PES Field Associate (PFA) or any other person or agency, who is identified and selected by the First Party as and when required without any hindrances. The PFA shall ensure that prior information is conveyed to the Second Party before inspection of the site(s). The PFA will have rights to the usage of modern technology including testing kits, GPS, etc. on the site(s) to inspect, monitor and verify the veracity of the claims of the Second Party for the PES.
- xx. The second party agrees to provide technical guidance in the form of environmentally sound practices for afforestation and reforestation and support for implementing of different activities of Payment of Ecosystem Services (PES) in his/her/their land.
- xxi. Afforestation and Reforestation will include the following:
 - Reforestation of degraded forests/scrub (canopy density <10%)
 - By native species
 - Plantation, ANR
 - Protection of area to induce root stock to regenerate
 - Fire protection
 - Afforestation
 - On available vacant lands/waste lands
 - Species to be selected from the approved list
 - Maintenance
 - Fire protection
- xxii. The First Party will ensure that training(s) is/are organized for the benefit of the Second Party to enable him/her/them to efficiently implement the scheme in their respective land.
- xxiii. The First Party would ensure that payment is released to the Second Party as per the guidelines after verification and measurements to confirm prescriptions given under the clause (viii) have been accomplished as per the guidelines and is satisfied that the Second Party has fulfilled the requirements.

- xxiv. Decision of the Officer-in-Charge, Designated Implementation Agency (DIA) will be final regarding the verification and quantum of payment to the Second Party in lieu of adherence to the prescribed practices.
- xxv. If First Party finds that the Second Party is not abiding by the terms and conditions of this Agreement, then the First Party may after seeking explanation unilaterally cancel the Agreement/ PES Participation.
- xxvi. If the Second Party is not satisfied with the decision of the Officer-in-Charge of DIA, then he/she/they can appeal to the Appellate Authority.

IN WITNESS THEREOF, the aforesaid parties put their signatures and seal on the..... (date) (month) (year).

**Name, Signature and Seal of the
First Party**

Represented by
Nodal Officer/DPM

**Name, Signature and Seal of the
Second Party**

Represented by
1. Land Owner (individual, representative of
clan, community, etc. as the case may be)

2. Nokma

Witnesses:

1

2

Agreement between the PES Scheme Participant (PSP) and MBDA for Implementing the Payment for Ecosystem Services Scheme for Transition from Jhum to Improved Agriculture Practices

This agreement is signed on this.....day of2022, between Meghalaya Basin Development Authority (MBDA), represented by the Nodal Officer of the Centre of Excellence / District Project Manager of the District Project Management Unit (CLLMP) of West Garo Hills District, herein after referred to as the **First Party** and Name....., Village....., Block, District (name and address of individual, representative of clan/nokma, community, PES Village Committee as the case may be) hereafter referred to as **Second Party**.

- xxvii. The Second Party has understood the concept and provisions of the Payment of Ecosystem Services Scheme and is willing to abide by the conditions mentioned in this agreement.
- xxviii. The Second Party should ensure that the land is free from encumbrances. Furthermore, he/she/they should get themselves involved and support community led interventions to restore and sustainably manage forests, land and water resources in the village.
- xxix. The Second Party will not carry out any activity that is detrimental to the environment and natural resources.
- xxx. The Second Party shall submit necessary documents pertaining to the project and should also have a valid bank account in his/her/their/committee's name.
- xxxi. The Second Party shall inform the village authorities namely, the Nokma, on the intention of availing the PES scheme and obtain their consent/NOC of participation in the scheme.
- xxxii. The Second Party shall ensure free passage to the identified land for the PES Field Associate (PFA) or any other person or agency, who is identified and selected by the First Party as and when required without any hindrances. The PFA shall ensure that prior information is conveyed to the Second Party before inspection of the site(s). The PFA will have rights to the usage of modern technology including testing kits, GPS, etc. on the site(s) to inspect, monitor and verify the veracity of the claims of the Second Party for the PES.
- xxxiii. The second party agrees to share knowledge on environmentally sound practices of improved agriculture practices, preservation of seeds and support implementation of different activities of Payment for Ecosystem Services (PES) in his/her/their land.
- xxxiv. Transition from Jhum to Improved Agriculture Practices - Follow environmentally sound agriculture practices as per the prescriptions will include the following conditions:
- no slash-and-burn (jhum) practice
 - no use of chemical fertilizer, (only bio-fertilizers, FYM and vermi-compost to be used)
 - use of bio-pesticides only
 - no burning of agriculture residues
 - no use of pumping sets for lifting ground water for irrigation
- xxxv. The First Party will ensure that training(s) is/are organized for the benefit of the Second Party to enable him/her/them to efficiently implement the scheme in their respective land.
- xxxvi. The First Party would ensure that payment is released to the Second Party as per the guidelines after verification and measurements to confirm prescriptions given under the clause (viii) have been accomplished as per the guidelines and is satisfied that the Second Party has fulfilled the requirements.
- xxxvii. Decision of the Officer-in-Charge, Designated Implementation Agency (DIA) will be

final regarding the verification and quantum of payment to the Second Party in lieu of adherence to the prescribed practices.

xxxviii. If First Party finds that the Second Party is not abiding by the terms and conditions of this Agreement, then the First Party may after seeking explanation unilaterally cancel the Agreement/ PES Participation.

xxxix. If the Second Party is not satisfied with the decision of the Officer-in-Charge of DIA, then he/she/they can appeal to the Appellate Authority.

IN WITNESS THEREOF, the aforesaid parties put their signatures and seal on the..... (date) (month) (year).

**Name, Signature and Seal of the
First Party**

Represented by
Nodal Officer/DPM

**Name, Signature and Seal of the
Second Party**

Represented by
1. Land Owner (individual, representative of
clan, community, etc. as the case may be)

2. Nokma

Witnesses:

1

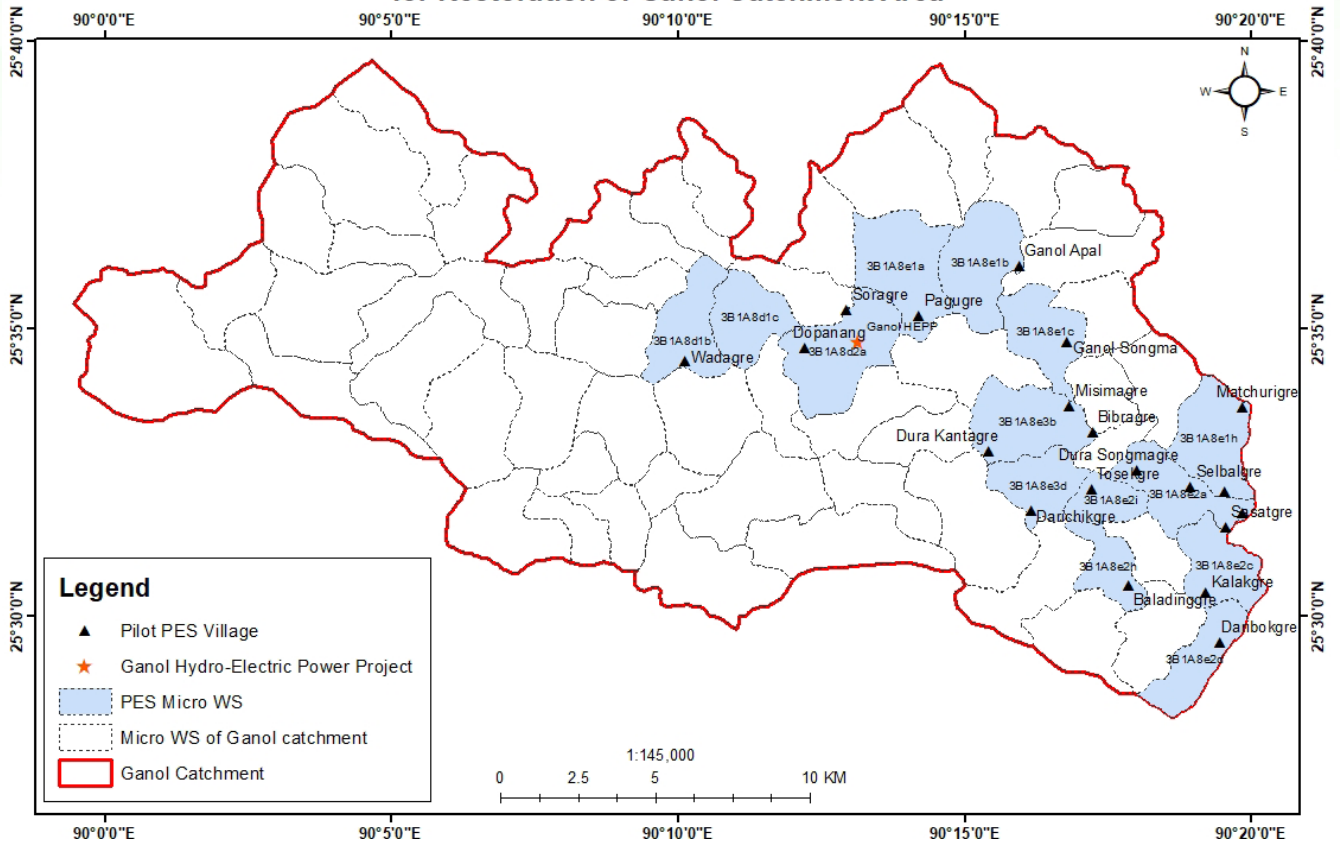
2

Annexure III

Villages Selected for the Pilot Project on “Payment for Eco-System Service (PES)” Approach for Restoration of Ganol Catchment Area

Sl. No.	Village	Latitude	Longitude	C&RD Block	Population ('11 Census)	Appox. HH	Micro Watershed
1	Baladinggre	25.508899	90.29767	Rongram	141	21	3B1A8e2h
2	Bibrage	25.553476	90.287157	Rongram	253	46	3B1A8e3b
3	Chandigre	25.536066	90.325655	Rongram	454	74	3B1A8e1h
4	Daribokgre	25.49233	90.324137	Samanda	125	19	3B1A8e2d
5	Darichikgre	25.530782	90.269224	Rongram	-	-	3B1A8e3d
6	Dopanang	25.577876	90.203481	Rongram	262	47	3B1A8d2a
7	Dura Kantagre	25.547759	90.256843	Rongram	-	-	3B1A8e3b
8	Dura Songmagre	25.542546	90.299875	Rongram	671	122	3B1A8e2a
9	GanolApal	25.601669	90.265984	Rongram	390	74	3B1A8e1b
10	GanolSongma	25.579713	90.279596	Rongram	339	63	3B1A8e1c
11	Kalakgre	25.506805	90.319973	Rongram	129	28	3B1A8e2c
12	Matchurigre	25.560696	90.330706	Rongram	83	15	3B1A8e1h
13	Misimagre	25.561102	90.28045	Rongram	262	48	3B1A8e3b
14	Pagugre	25.587216	90.236497	Rongram	203	39	3B1A8e1a
15	Sakalgre	25.53012	90.330855	Rongram	100	15	3B1A8e2a
16	Sasatgre	25.525716	90.32597	Rongram	362	63	3B1A8e2a
17	Selbalgre	25.537452	90.315686	Rongram	167	30	3B1A8e2a
18	Soragre	25.588778	90.215657	Rongram	280	53	3B1A8d2a
19	Tosekgre	25.53686	90.286729	Rongram	243	47	3B1A8e2i
20	Wadagre	25.574191	90.168685	Rongram	152	26	3B1A8d1b

Map Showing Villages Selected for Pilot Project on Payment of Eco-System Service (PES) Approach for Restoration of Ganol Catchment Area



Meeting with Members of Nokma Council at the Office of Nokma Council, Tura to discuss about the Pilot Project on “Payment for Eco-System Service” approach for restoration of Ganol Catchment



Meeting with Community Members at Kalakgre, West Garo Hills to discuss about the Pilot Project on “Payment for Eco-System Service” approach for restoration of Ganol Catchment





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Sustainable Livelihood



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Meghalaya Basin Development Authority
Shillong