Expression of Interest (EOI) Document

Hiring of Consultancy Agency for Impact evaluation assignment for Rejuvenating Watersheds for Agricultural Resilience through Innovative Development Program (REWARD PROGRAM), Govt of Odisha

Director,
Directorate of Soil Conservation and Watershed Development Odisha, Bhubaneswar
Krushi Bhawan, Keshari Nagar
Bhubaneswar-751001
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https://www.soilodisha.nic.in

EOINo.01/REWARD,DSC&WD(O)/Dt. 20.01.2022

REQUEST FOR EXPRESSION OF INTEREST (REOI)

1) Directorate of Soil Conservation and Watershed Development Odisha (DSC&WD), Bhubaneswar on behalf of **Rejuvenating Watersheds for Agricultural Resilience through Innovative Development Program (REWARD PROGRAM)** invites Expressions of Interest **(EOI**) from Consultancy agencies desirous of and having proven track record of experience.

2) Interested Consultancy agencies who meet the criteria may furnish their Expression of Interest with all the necessary documents in a sealed cover along with the covering letter, duly signed by an authorized signatory

3. InterestedConsultancyfirmsmustprovidethefollowinginformationindicatingthattheyarequalifiedtoperform the service:

4) EOI short listing criteria

- The agency/organization should have proven experience (either directly implemented or responsible for supervision of sub-contractors) of successfully completing data collection for at least 3 multi-topic household surveys combined with high quality qualitative research (implemented in rural areas in at least one state);
- The agency/organization should have proven experience with handling large data sets (minimum 4000 households) and carrying out econometric analysis in the field of agriculture/ rural development/watershed management (at least 3 projects).
- Agency with evaluation experience in experimental and quasi-experimental will be preferred
- The agency/organization should have a cumulative turnover of Rs. 15 Crores (Rs. 150 Million) in past five years.(2016-17.2017-18,2018-19,2019-20,2020-21)(Government and aided agencies exempted from this condition)

5) Detailed information can be obtained at the address below during office hours i.e. 10.00 to 17.30 hours and the detailed draft ToR can be downloaded from DSC& WD website

https://www.soilodisha.nic.in/s

6) Documents to be submitted

- Profile of the Agency.
- Proof of necessary documents/supporting/evidence substantiating the EOI short listing criteria mentioned above.
- Proof of Relevant experience mentioned in the short listing criteria. (copies of work order/appointment order etc)
- Audited Financial Statements for proof of Turnover of FY 2016-17, 2017-18, 2018-19,2019-20. And 2020-21.
- GST registration Certificate.
- Copy of PAN.
- Manpower strength to execute the assignment
- Any other document if any as described for evaluation purpose.

7) In case of any Addendum/Clarification/Corrigendum/Extension regarding this REOI, the same will be published in the above website only.

8) The shortlisted agency (if required) may be asked to make a presentation of their available facilities, manpower, capabilities, past experiences, etc.

9) After scrutiny of the Expressions of Interest (EoI), DSC & WD will come up with a detailed RFP which will be issued to shortlisted agencies inviting their Technical & Financial proposals.

10) RFP will be issued to shortlisted agencies only.
The agency will be selected under Quality & Cost Based Selection (QCBS) procedures in a full Technical Proposal (FTP) & Financial Proposal (FP) format to be described in the RFP.

11)The Expression of Interest in a sealed cover must be submitted on or be for February 21, 2022 by 5 P.M. either through Speed Post/registered Post or courier at the following address with the heading on the Envelop “REOI for hiring Consultancy Agency for Impact Evaluation Assignment (REWARD)”:
Director, Directorate of Soil Conservation and Watershed Development Odisha, Bhubaneswar
Krushi Bhawan, Keshari Nagar, Bhubaneswar. 751001
Contact No:0674-2391840

12)The EOI submitted by telegram/fax/e-mail, etc. shall not been entertained.

13) DSC& WD shall not be responsible for any postal delay or non-receipt/ non-delivery of the documents. No further correspondence on the subject will be entertained.

14) Consultancy firms are requested regularly to visit the web site https://www.soilodisha.nic.in for any updates.

15) Authority reserves the right to accept or reject any EOI and to cancel the procurement process at any time prior to the award of contract, without assigning any reason thereof.

16) Submission of EOI in response to this notice shall be deemed to have been done after careful study and examination of this document with full understanding of its terms, conditions and implications.

Sl. No.	**Information**	**Details**
1.	EOI No. and Date	01/REWARD,DSC&WD(O) Dt. 20.01.2022
2.	Last Date and Time for submission of EOI	5 PM, 21 February 2022
3.	Address at which EOI to be submitted	Director, Directorate of Soil Conservation and watershed Development, Odisha, Bhubaneswar Krushi Bhawan, Keshari Nagar, Bhubaneswar, 751001 Contact No- 0674-2391840

17) The Consultancy firm are responsible for all costs incurred in connection with participation in this process, including cost incurred in preparation of EOI, participation in meetings/discussion. The DSC& WD is in no case will be responsible or liable for these costs, regardless of the conduct or outcome of the EOI process

18) The EOI does not commit DSC& WD to award a contract or to engage in negotiation. Further no reimbursable cost may be incurred in anticipation of award or for preparing this EOI.

19) All materials submitted by the consultants/firm will become the property of DSC&WD.

20) The Consultant shall not subcontract the whole of the Services.

21) The authority may at its sole discretion and at any time during the evaluation of the EOI disqualify any applicant if the applicant as:

i. Made misleading or false representations in the forms, statements and attachments submitted in proof of the eligibility requirements

ii. Exhibited a record of poor performance such as abandoning works, not properly completing the contractual obligations, inordinately delaying completion or financial failures in any of the previous undertakings by the concerned bidder.
iii. Declared as ineligible by GoI / State for corrupt, fraudulent practices or has been blacklisted.

iv. An EOI may be rejected if it is determined that the applicant has engaged in corrupt, fraudulent or unfair trade practices.

v. An EOI which does not satisfy each and every condition laid down in REOI will be liable for rejection.

vi. Does not submit the EOI before the stipulated time line to the inviting authority

vii. Does not attach the required documents along with the EOI.

22) Further DSC& WD reserves the right to modify/amend the contents of REOI before the last date of submission or any clarification and query contact Sri Satchidananda Swain (Mob No- 9437197396) and Sri Binaya Bhusan Tripathy (Mob No- 9937340392)

Director,
Directorate of Soil Conservation and Watershed Development Odisha,
Krushi Bhawan, Keshari Nagar
Bhubaneswar-751001

Rejuvenating Watersheds for Agricultural Resilience through Innovative Development (REWARD)

Impact Evaluation Assignment

Terms of Reference

Title of the Project : Impact evaluation assignment for Rejuvenating Watersheds for Agricultural Resilience through Innovative Development Program (REWARD PROGRAM)

The ToR solicits proposals from qualified agency (or consortium of agencies with one lead applicant) to undertake data collection for the Impact evaluation, which consist of (i) conducting a listing and data collection for (ii) baseline, (iii) mid-term and (iv) endline household surveys, and descriptive and econometric data analysis under guidance of the World Bank. The consulting agency is not responsible for the design of the Impact Evaluation.

1. Background and context

Effective management of drylands is essential globally to achieve global goals of adapting to climate change, enhancing resilience, reducing poverty, and lowering conflict potential. About half of India's 140 mn. ha or net sown area is rainfed areas (defined as receiving less than 750 mm of annual rainfall and having less than one third of area under irrigation) which are home to 86% of the country's poor and 85% of its degraded land. This renders effective use of dryland resources of great importance for poverty reduction, mitigating the risks of climate change, and stopping further land degradation.

Integrated watershed management provides the national framework for a resilient food system in rainfed areas and programs to achieve it have been well-resourced. Factors including top-down implementation, lack of clear technical criteria, absence of long-term planning and convergence between institutions and programs together with the danger of decisions being guided by political considerations are, however, often perceived as having reduced effectiveness and sustainability (Bouma et al. 2007) and hardly any economic evaluations have been conducted (Gray and Srinidhi 2013). An evaluation based on satellite imagery fails to find any impact of watershed development programs completed in 2007-2010 on vegetative cover in treated Micro-Watersheds (MWSs) as proxied by the Normalized Difference Vegetation Index (NDVI) compared to either the same MWS pre-treatment or to neighboring MWSs (Bhalla et al. 2013).[1]

Improving outcomes will require a more science-based and data-driven approach, shorter project cycles, stronger institutional capacities, and greater attention to farmers' needs. The redesign of national watershed guidelines provides a unique opportunity for doing so and incorporates lessons from several World Bank interventions (including in Karnataka Watershed Development Projects/Sujala-III),[2] aimed to implement a more synergistic approach in two respects.

[1] The analysis in Bhalla et al. (2013) uses MODIS data with a spatial resolution of 250 m and is limited to comparing aggregate statistics (mean, minimum and maximum) of pre- and post-treatment situation as defined by images composites for 23 April, 29 August, and 19 December of 2006 (pre-treatment) and 2011 (post-treatment), respectively at MWS level. As will be discussed below, use of Sentinel imagery that is available from 2015 with higher spatial (10 m) and temporal (revisit frequency of 5 days) resolution allows to conduct analysis with spatial disaggregation to the parcel level (a 1 hectare plot will comprise 100 pixels) as well as greater temporal frequency.

[2] The basis for doing so was laid in 2002 to 2009 under the award-winning Karnataka Watershed Development Project-I that was implemented in 1350 villages, covering some 4 lakh households on about 5.2 lakh ha. Development plans were formulated with high levels of community participation, utilizing remotely sensed imagery and GIS. The Karnataka Watershed Development Project-II (Sujala-III), a US$ 40 mn project implemented in 2013-2019, builds on and expands this approach by involving a consortium of 14 scientific and other institutions who helped to develop a land resource inventory in 2534 rainfed micro watersheds covering some 1.4 million ha. On the basis of these pilot watersheds development projects were taken up in 89 micro watersheds under saturation mode.

First, conservation interventions are based on a comprehensive science-based inventory of resources available locally through a comprehensive 'Land Resource Inventory' (LRI) and hydrology data that, together with technical parameters identifies a menu of intervention options to illustrate relevant trade-offs. Out of these, an area-wide set of treatments for the entire watershed is then identified in a participatory fashion, an approach referred to as 'saturation mode', ideally converging with other schemes such as MGNREGS.

Second, implementing biophysical interventions in bulk rather than a piecemeal fashion is expected to leverage economies of scope that would allow to shift towards more sustainable patterns of production. To do so, the program combines biophysical interventions with technical support to help farmers diversify into crops with higher value added, invest in Farmer Producer Organizations (FPOs) to create the forward- and backward- linkages to allow bulk marketing of output and acquisition of inputs to help reduce costs, increase efficiency, and increase local value addition and labor demand on and off the farm (e.g. in agro-processing) that would also benefit vulnerable and landless groups. The economic benefits generated in this way will, it is expected, ensure maintenance of structures which have often plagued other approaches.

The 'Rejuvenating Watersheds for Agricultural Resilience through Innovative Development' (REWARD) project will build on the achievements made in Karnataka while also expanding the geographical scope to Odisha (OD). Recognizing the promising results and strong local interest to carefully document the benefits of this approach,[3] a rigorous impact evaluation of REWARD's interventions in the states is required to provide the basis for scaling up to the whole country.

Such an impact evaluation is also critical to (i) analyze the intervention logic and the contribution by different elements; (ii) explore heterogeneity of impacts by endowments with natural and human resources as well as socio-economic characteristics; (iii) inform the progress monitoring under REWARD and make cross-linkages to further enhance the program's effectiveness in the course of implementation; (iv) sharing the learnings with other states participating in REWARD and (v) inform policy for scaling up at the national level.

While the World Bank's Development Research Group is responsible for impact evaluation design and data quality analysis, a qualified research institute is needed to take the lead on data collection and contribute to analysis. This TOR provides the basis for the activities to be carried out by this institution.

2. REWARD: Program characteristics and objective

With an IBRD support of USD 115 million., the REWARD project activities are part of the USD 243.25 million WDC-PMKSY program over the 2021-2026 period. It is implemented as a 'Program for Results' (PforR), implying that activities are implemented using state's own institutions and processes and disbursement of funds is directly linked to the achievement of specific program results. REWARD will directly contribute to the watershed programs of KA and OD and, in light of the advances that have already been made in KA, the KA Watershed Development Department (WDD) will participate as a 'light house partner' for other states.

[3] The ICR for Sujala I indicates that cropping intensity increased from 129 to 144%, Crop yield increase by 24%, shift from agriculture to agro-horticulture / agro-forestry by 22%, average increase in the ground water level by 66 ft and yield(discharge) by 21%. The number of employment generated was 16,000 to 21,000 man days per micro watershed reducing the out migration by 70%. There was an increase in the household income by 30% and milk yield by 22% at the end of the project. About 10.43 million ton of biomass build-up was estimated after the intervention with sequestration of 5.21 million ton of carbon. Sujala-III systematized this by creating infrastructure in associated State Agriculture and Horticulture Universities for carrying out soil and water analysis and digitize the same information using GIS. The rich data generated by these universities is not only used by Watershed Development Department and other line departments.

2.1. **Program objective and components**:

REWARD's objective is to strengthen capacities of national and state institutions to adopt improved watershed management for increasing farmers' resilience and support value chains in selected watersheds of participating states. Indicators for achieveing it are;

- Percentage of Watershed Committees and Gram Panchayats undertaking operation and maintenance of watershed assets.
- Number of farmers who adopt climate resilient agriculture technologies.
- Area (hectares) on which science-based watershed development has been implemented partnering with national or state technical institutions.
- Number of farmers reached with value-chain development services.
- Number of state and district level functionaries trained by the Centre of Excellence established on science-based watershed management.

To achieve these, REWARD project will support the next phase of the WDC-PMKSY program in two areas. One area is to strengthen institutions and ensure a supportive policy for watershed development by;

- Enhancing capacity for watershed management in national institutions;
- Leveraging agriculture extension systems;
- Enhancing community institutions' and local government bodies' management capacity and systems for watershed development;
- Establishing a center of excellence on science-based watershed management;
- Strengthening monitoring and evaluation systems:
- Improving operational guidelines on science based planning of watersheds:
- Creating of a Multi Stakeholder Platform (MSP) for policy advocacy for management of rainfed areas and watersheds:

A second area is to improve science based watershed management and livelihoods through:

- Development and dissemination of scientific information for watershed planning:
- Planning and implementation of watershed development interventions in select sub-watersheds in a saturation[4] mode;
- Provision of weather-based agro-advisories for farmers;
- Implementation of value-chain development interventions for longer term COVID-19 recovery:
- Livelihood protection and enhancement support for poor and land-less households for medium term COVID-19 recovery:

2.2 Implementation arrangements and program stakeholders

At the national level, DoLR will establish a PMU; establish a Secretary level national steering committee to improve convergence between agriculture, watershed, ground water and other related departments; establish a national technical committee headed by the National Rainfed Area Authority (NRAA) to develop, test and standardize scientific protocols and DSS tools and strengthen the national digital library and develop/refine national guidelines for watershed projects; distil lessons from REWARD and mainstream them in revised national guidelines.

[4] Saturation mode refers to treatment of all micro-watersheds within the selected sub-watershed, as well as treatment of the micro-watersheds through implementation of all the required interventions, as identified in the DPR.

At the state level, Directorate of Soil Conservation & Watershed Development (DSC &WD) will be the nodal agency of the REWARD Program, with responsibility to prepare the annual work plan and carrying out Program activities. At the state-level, there would be a strong dedicated Project Management Unit (PMU). The PMU will be staffed with a dedicated team of experienced personnel drawn from the cadre of Odisha Soil Conservation Service, Odisha Agriculture Service, Odisha Horticulture Service and Odisha Agricultural Engineering Service. The PMU will be supplemented with consultants so that the needed technical, safeguard, monitoring and evaluation (M&E), and fiduciary (procurement and financial management) capacity is available. States would have financial control and accountability to implement the majority of project activities in conjunction with state-level science and technical partners, as well as field-based organizations who would facilitate engagements and capacity building with communities and farmers.

At the district Level, Watershed Cell cum Data Centre (WCDC) headed by the Project Director, Watersheds cum Deputy Director, Soil Conservation will be responsible for overseeing the implementation in the district. The actual planning and implementation will be carried out by Project Implementation Agency (PIA) located at the cluster level. A PIA is a government unit under the administrative control of DSC &WD, with adequate expertise and capacity to implement watershed projects under IWMP / PMKSY: WD. The village level institutions involved in watershed development planning, implementation, monitoring and post-project sustainability include the Watershed Development Committee, User Groups, Self Help Groups and the Gram Panchayat.

A Planning and Management Unit (SPMU) will be set up to (i) educate communities on the science-based approach, form user groups and watershed committees, and actively engage them in the project cycle; (ii) engage stakeholders in developing DPRs for selected micro-/sub-watersheds using science-based site data, DSS tools, and with a saturation mode; (iii) support WC/GP in implementation, resolve any issues, and ensure record maintenance in the Management Information System (MIS) system. District authorities are to (i) coordinate with district level line department units for programmatic synergies; (ii) supervise and support the work of the project implementation agency; and (iii) maintain district level MIS data. Watershed level authorities are to form user groups and watershed committees with broad stakeholder representation, actively participate in preparing DPRs, implement plans in an effective manner; ensure effective O&M; maintain records, and resolve grievances.

2.3 Location:

REWARD is planned to develop 17 Green field sites to establish model watersheds on saturation. For this purpose, 152 micro watersheds have been identified in five pilot disticts for taking up intended interventions, covering a total geographical area of 1.15 lakh ha. Land Resources Inventory (LRI) activities will also be taken up in 4.11 lakh ha in seven districts (including five pilot districts) to provide comprehensive site- specific cadastral level information useful for appropriate Natural Resources Management (NRM) planning at farm level and integrated development of the area.

The districts have been selected considering several criteria such as situational contexts (Agro-climatic Zones, Aspirational districts, communication & accessibility, Non DMF / OMBADC operational areas), Socio-Economic Contexts (KBK region), watershed contexts (prioritisation of watersheds by Odisha Remote Application Centre, Left over untreated watersheds, drought vulnerability) and institutional contexts (capacity of the district watershed implementation team, performance of the ongoing watershed projects). The blocks within the districts are selected considering extent of rain fed areas, drought vulnerability, value chain opportunities, extent of ground water exploited etc. The details of the districts and areas for developing green field sites and Land Resource Inventory Activities are as detailed below:

District Wise Proposed Clusters of Micro Watersheds for Pilot

SL.NO	NAME OF DISTRICT	NAME OF BLOCK	NUMBER OF MICRO WATERSHEDS	GEOGRAPHIC AREA in hectares
1	SAMBALPUR	BAMRA	9	7210.84
		KUCHINDA	9	7670.87
		JAMANKIRA	9	7139.76
		RAIROKHOL	11	7611.42
		RENGALI	10	7186.03
		NAKTIDEUL	11	7234.92
		SUB TOTAL	59	44053.84
2	DHENKANAL	KANKADAHADA	13	6836.85
		HINDOL	10	6470.85
		SUB TOTAL	23	13307.7
3	NAYAGADA	ODAGAON	7	5847.79
		DASPALLA	10	7029.3
		SUB TOTAL	17	12877.09
4	DEOGARH	BARKOTE	8	6111.94
		REAMAL	8	6626.91
		SUB TOTAL	16	12738.85
5	KORAPUT	BORIGUMA	8	6680.54
		JAYPORE	6	6798.38
		KORAPUT	9	6439.21
		LAMTAPUT	8	6884.66
		BOIPARIGUDA	6	5603.22
		SUB TOTAL	37	32406.01
TOTAL			**152**	**115383.49**

District Wise Proposed Clusters of Micro Watersheds for Land Resource Inventory

SL.NO	NAME OF DISTRICT	NAME OF BLOCK	NUMBER OF MICRO WATERSHEDS	GEOGRAPHIC AREA in hectares
1	SAMBALPUR	KUCHINDA	29	19516.87
		RAIROKHOL	67	49621.06
		JUJUMURA	25	22604.38
		SUB TOTAL	121	91742.31
2	DHENKANAL	KANKADAHADA	37	21912.4
		HINDOL	30	19653.08
		SUB TOTAL	67	41565.48
3	NAYAGADA	RANAPUR	18	11147.5

		ODAGAON	9	5431.42
		DASPALLA	28	19656.98
		SUB TOTAL	55	36235.9
4	DEOGARH	BARKOTE	28	19276.54
		REAMAL	38	27873.12
		SUB TOTAL	66	47149.66
5	KORAPUT	BORIGUMA	19	14401.85
		JAEPORE	24	18572.94
		BOIPARIGUDA	17	15137.83
		SUB TOTAL	60	48112.62
6	NABARANGPUR	RAIGHAR	29	30151.82
		UMARKOTE	10	8884.49
		SUB TOTAL	39	39036.31
7	SUNDERGARH	LEFRIPADA	46	35490.86
		SUNDERGARH	28	22194.25
		BALISANKARA	30	24191.41
		BARGAON	18	11634.85
		KUANARMUNDA	23	13958.21
		SUB TOTAL	145	107469.58
TOTAL			553	411311.86

Impact evaluation design:

To evaluate the impact of the science-based approach to watershed development and draw lessons that can inform efforts to scale it up effectively, the impact evaluation (IE) will conduct a listing, baseline, mid-term and endline household surveys. To assess the impacts of different treatments individually or jointly, four groups of micro-watersheds will be selected, each receiving different interventions. These are: (i) conservation and livelihood; (ii) only conservation; (iii) only livelihood; and (iv) neither of the above.

2.4 Evaluation design:

REWARD is planned to develop 17 sub-watershed (SWS) of about 5,000 ha, comprising roughly 10 MWSs to establish model watersheds on saturation during 2021-22 to 2025-26. For this purpose, 152 micro watersheds have been identified in five pilot disticts for taking up intended interventions, covering a total geographical area of 1.15 lakh ha. Land Resources Inventory (LRI) activities will also be taken up in 5.26 lakh ha in seven districts (including five pilot districts) to provide comprehensive site- specific cadastral level information useful for appropriate Natural Resources Management (NRM) planning at farm level and integrated development of the area.

The impact evaluation will investigate the impact of biophysical investment on public and private land as well as farmer level interventions including LRI training, complementary interventions in the form of value chain development via farmer producer collectives (FPCs) and livelihood protection investments via SHGs. To disentangle the impact of the components of the REWARD project, a 2X2 impact evaluation (IE) design will be used comprising 38 MWSs each (i.e. a total of 152 MWSs) in four groups, namely (i) 38 MWSs that will receive REWARD saturation treatment in 2023; (ii) 38 MWSs that will receive REWARD saturation treatment in 2025; (iii) 38 MWSs that will receive PMSKY saturation treatment in 2025; and (iv) a control group of 38 MWSs where neither PMSKY nor REWARD interventions will be undertaken before 2026. In addition, the project will work with GP level extension workers to provide individual farmers in each of the groups with access to information on the benefits they could derive from integration into value chains, adoption of mosture-conserving production patterns, and regular use of information on climatic and other conditions.

The agency to be hired is expected to conduct a complete listing of all hosueholds in these 152 MWSs that is then used as a sample frame for a sample of 4,000 households to be covered by a detailed baseline, midline and endline survey as discussed below.

2.5 Expected impacts:

The impact evaluation will focus on two broad areas. First, we expect conservation investment based on LRI data to affect biophysical parameters. Indicators include

- Higher soil water retention measured by indicators (e.g. LSWI) from satellite imagery and a lower amplitude of peak downstream water flows in response to heavy rains
- Higher levels of vegetative cover (NDVI) measured by satellite imagery
- Reduced soil erosion and nutrient run-off and siltation of downstream waterbodies measured by field measuring devices place in treatment and control MWSs
- Increased land sales and rental values measured via household surveys and official records of land transactions

Second, we expect improvements in local residents' livelihoods as a result of higher productive potential and better access to information and link to value chains, input and output markets. These effecs, all of which will be measured via household surveys.

- Higher levels of crop production and productivity and associated income of land owners due to more intensive land use and shift towards higher value crops
- Higher labor demand and wages for the landless due to cultivation of more labor-intensive crops and agro-processing.
- More intensive use of public land for income generation activities (e.g. grazing of livestock and dairy production) by landless and women.

The agency is expected to undertake impact assessment to establish the net impact of the programme in terms of the identified indicators at different time frame. The data to be collected with respect to the indicators specified would be finalized in consultation with the DSCWD and M&E team of the World Bank.

2.5.1 Impact of conservation intervention on biophysical parameters:

Science-based conservation measures are based on the LRI that is established for each micro-watershed (MWS) in a participatory way. The LRI generates and makes available publicly data on landform, soil type, climate (rain and temperature/evapotranspiration). Using technical coefficients and models to compute expected runoff, LRI and hydrology data helps identify water conservation investments (bunds, hedgerows, ditches, check dams, ponds) and their placement that will reduce run-off and erosion below a desired level for any set of climate data.

Together with cost coefficients from the LRI manual, this creates a set of feasible 'saturation treatments' and associated cost. Treatments will affect retention of soil moisture and access to supplemental water, e.g. via supplemental irrigation from ponds constructed by the project. Thus, once a set of treatments has been decided, it will change expected water content for each pixel in the watershed in a way that can be translated into changes in vegetative cover on public land (or yield/crop type on private land) in ways affecting remotely sensed vegetation indices. It will also affect amount and nature (turbidity, siltation) of run-off at key discharge points. Placement of measuring stations in treatment and control areas will be closely coordinated with project implementation agencies to be able to establish a valid counterfactual and benefit from the continuous availability of data through these devices.

Imagery from European Space Agency (ESA)'s sentinel constellation captured at 10 m resolution every 5 days and freely available since 2015 will be used to assess the impact of these interventions at pixel level. The imagery will be used to compute indices of vegetation density and photosynthetic activity (NDVI, LAI, FAPAR) as well as soil moisture (LSWI) using a difference in differences design to identify program effects and their evolution or sustainability over time. The viability of this approach has been demonstrated for Ethiopia (Ali *et al.* 2020). Moreover, for agricultural areas, such indices are strongly correlated with variation in yield (Deininger *et al.* 2020).

To independently measure impact of conservation interventions, continuously measuring devices will be placed in all treatment and control MWSs at points that are chosen strategically in collaboration with the project's hydrology partner in early 2022 before any of the project activities will commence. The information generated by these devices will be available for impact evaluation. Although other indices to be assessed are identical to those used in earlier literature, the approach chosen promises to make advances in several respects. First, availability of cadastral maps will allow to distinguish effects on public and private land and, for the latter, explore heterogeneity across landowners (e.g. by holding size). Second, if biophysical interventions increase productivity and thus implicit land values, welfare impacts will depend on whether such increases are passed on to renters in terms of higher rents or even lead owners to resume self-cultivation and the ability to distinguish impacts between owners and renters allows us to take this into account. Finally, access to cost information for structures allows us to conduct cost-effectiveness analysis.

2.5.2 Livelihood-focused interventions:

Farmers will benefit directly from improved access to information in the form of access to and interpretation of LRI data and complementary climatic and market information through a range of channels that will allow farmers to improve water and nutrient management as well as crop choice on existing plots not affected by conservation activities to maximize revenue. The second relates to adjustments in crops or cropping patterns (e.g. moving towards double cropping) due to enhanced water availability on plots affected by biophysical interventions. Distinguishing the impact of these two categories is possible if farm-fixed effects are used and analysis focuses on farmers who have plots that are and that are not affected by biophysical interventions. The sample design will have to accommodate this by possibly oversampling this group.

To encourage farmers to diversify into higher value crops, marketing channels including where needed cold storage or processing facilities are needed (Bhanot *et al.* 2021). Farmer Producer Organizations (FPOs) have emerged as a private-sector driven way of providing such services and strengthening farmers' bargaining position in input and output markets through bulk marketing (Bikkina *et al.* 2018). In addition to strengthening (women) farmers' risk-coping ability through promotion of self-help groups (SHGs), the project thus aims to lower the barriers to adoption of high value crops and integration of modern value chains by building FPOs' capacity and making capital grants, e.g. for provision of marketing or storage facilities, to select ones in the project area. Farmers' ability to benefit from such

actions is contingent on their membership in FPOs or SHGs. A listing to identify farmers who are FPO (SHG) members will thus need to be undertaken to assess potential equity effects of giving grants to such institutions without changes in membership composition.

These changes are expected to reduce intensity of input use or cost of purchased inputs; increase demand for (family or hired) labor; and boost expected value (and possibly variance) of farm revenue. Their impact will be evaluated through an agricultural production survey. To capture the interaction between biophysical and other interventions (and allow within-household analysis), information will need to be collected at parcel level. We expect these changes to vary with farmers' levels of pre-existing technical capacity as well as resource endowments and risk tolerance in addition to gender and caste.

3. Scope of the assignment

The Agency for the impact evaluation is needed to support design and implementation of IE data collection instruments (listing, baseline, mid-term and endline) and descriptive and econometric data analysis. Panel household- and individual-level data from a sample of 4,000 households will be key for econometric analysis to support evaluation of socio-economic impacts of REWARD. The survey will be complemented with administrative information, ad-hoc data collection efforts (e.g. vis SMS), and remotely sensed data (to assess impacts on biophysical parameters). These data will be collected via computer-assisted personal interviewing (CAPI) using tablets. The agency is expected to support all aspects of listing as well as baseline, mid-line and endline data collection and descriptive and econometric analysis as described below.

3.1 Household listing design and data collection

To provide a frame that would allow stratifying the panel IE survey sample (e.g. to include a sufficiently large number of households who are FPO/SHG members or who have plots that will and will not be directly affected by REWARD conservation investment) a listing of all households in the MWSs selected for IE will be undertaken and includes 40,000 households. The listing is also essential to link land users to landowners and inquire about modalities of land access, thus allowing identification of potential program effects on renters. The listing, which also can help improve robustness of inferences on distributional impacts more generally, will be administered using tablets via CAPI. Cadastral and registry data on land ownership will be used to pre-populate the questionnaire on the tablet to allow that any errors in administrative records can be identified and as much as possible fixed on the spot.

The Agency is expected to;

(i) Program the listing questionnaire (including pre-population with administrative data and maps to be provided by WDT) in coordination with the DEC team of World Bank using Computer Assisted Personal Interviewing (CAPI) software (e.g., Survey Solutions provided by the World Bank);
(ii) Conduct pre-test and enumerator training as well as an assessment of the survey instruments, performance of enumerators and the interviewing process;
(iii) Implement the main listing together with ongoing quality controls and report summary descriptive on a regular basis for 40,000 households;
(iv) Jointly with the DEC team process data and select a sample of 4,000 household (plus replacements as needed) for the panel household sample;
(v) Conduct descriptive analysis of listing data and produce a survey report that is shared and discussed with the SPMU as well as relevant stakeholders.
(vi) Closely liaise with the project implementation team as well as the agency responsible for process monitoring to provide advice on optimum placement of hydrological measurement stations and design of MIS.

(vii) Link with the project team to ensure timely availability of LRI, hydrological, and MIS data to feed into program evaluation and design of follow-up questionnaires based on the listing.

3.2 Baseline, mid-line and end-line instrument design and data collection

The baseline survey is expected to be implemented in early 2022. Building on household survey instruments that have been implemented successfully in the Indian context and which will integrate insights from thematic studies and listing, the Agency, under the guidance of the World Bank team, will:

(i) Develop and pre-test a household instrument (including obtaining gender-sensitive information from women as needed) for the baseline survey with the elements needed to support rigorous socio-economic impact evaluation;
(ii) Once approved by the Bank, conduct descriptive analysis pre-test and train enumerators sub-contracted by the Agency and develop tools to check data quality on a routine basis as data is uploaded from enumerators' tablets;
(iii) Implement data collection including implementation of quality controls and routine reporting of summary descriptives on a regular basis;
(iv) Jointly with the World Bank Impact Evaluation team process data, conduct descriptive analysis of baseline data;
(v) Take the lead in producing a survey report, to be made available to and discussed with SPMU and key stakeholders.
(vi) Produce at least one analytical paper jointly with the World Bank impact evaluation team. This paper on the base line will be shared with DSCWD for comments and presented at at least one workshop.

It is expected that the midline will be conducted in 2023/24 and the endline in 2025/26 (or as decided by DSCWD) using essentially the same questionnaire with additions to reflect exposure to project activities as appropriate. For each of these two surveys, the Agency will perform the same functions as described above for the baseline survey (see step i to vi). Assuming that the same data collection firm will be sub-contracted for all three surveys, there will be less of a need to provide input on questionnaire design for the mid-line and end-line and enumerator training program.

4. Support and resources provided to the agency:

The M & E Cell at DSCWD will be the main interlocutor for any project related issues including establishing contact with key stakeholders and making logistical arrangements for field visits, survey implementation and presentations of any outputs to project stakeholders (see also annex 1 for more detail).

On all methodological/substantive issues, the agency will work under guidance of and interact closely with the World Bank Monitoring & Evaluation team that will clear deliverables for technical quality prior to them being submitted by the Agency to the M & E Cell for formal acceptance and payment.

5. Deliverables, qualifications and team composition:

5.1 Reporting arrangements and deliverables

A list of deliverables and timeline is given in table 1 below;

Table 1: Suggested deliverables and timeline

Output	Timing	Value %
Contract signing		10
Listing survey	Month 7	10
Design, pre-test & enumerator training		
Data collection, delivery & baseline survey sample design		
Descriptive report		
Baseline survey	Month 12	25
Design, pre-test & enumerator training		
Data collection & delivery		
Descriptive and econometric analysis report		
Analytical paper		
Midterm survey	Month 30	25
Design, pre-test & enumerator training		
Data collection & delivery		
Descriptive and econometric analysis report		
Analytical paper		
Endline survey	Month 60	30
Design, pre-test & enumerator training		
Data collection & delivery		
Descriptive and econometric analysis report		
2 analytical papers		

Note: Time is in terms of months after contract signature

5.2 Agency expertise, team composition and qualifications:

The Agency will need to demonstrate (i) successful implementation (either directly or through oversight of sub-contractors) of at least 3 multi-topic household surveys in Odisha (ii) ability to manage complex projects requiring close interaction and consultation with a wide range of stakeholders in Government as well as civil society (at least 3 completed contracts with scope of work comparable to this assignment); (iii) experience with conducting high quality qualitative research in rural India and communicating results to policy makers at all levels through a variety of channels; and (iv) ability to mobilize diverse skills in the subject matter areas of concern (see table 2 below).

Table 2: Minimum team composition and qualifications

Key Expert	Qualification	Experience (see also details below)
Team leader	Minimum Master degree or equivalent qualification with field experience	At least 10 years of work experience in IEs/hh surveys, and proven publication record.
GIS expert	At least Master degree	Minimum 5 years
Econometrician/Statistician	At least Master degree	Minimum 5 years
Impact evaluation specialist	Minimum PG in relevant field or equivalent qualification with experience in quantitative impact evaluations preferably in watersheds or rural development projects	Minimum of 8 years; Completed at last 3 projects as lead impact specialist
### Research Associates	Minimum PG in Statistics/ Economics/ Mathematics or equivalent qualification	Minimum of 4 years

The proposed ***team leader*** will need to have (i) a track record of policy-relevant research and publications in Indian and international journals; (ii) excellent team leadership and communication skills as demonstrated by having led at least three projects of similar complexity to the one described; and (iii) overseen successful implementation of at least two surveys of similar complexity and magnitude to the one proposed.

The proposed ***econometrician/statistician*** will need to have (i) familiarity with key impact evaluation techniques and proven ability to apply these in the Indian context in at least 3 instances; (ii) ability to clearly formulate hypotheses and research findings as documented by at least 2 publications in international journals; and (iii) excellent ability to work in multi-disciplinary team.

The proposed ***GIS specialist*** will need to have (i) knowledge of standard GIS software and remote sensing tools; (ii) a track record of research and analysis in using GIS for rural natural resource management and improvement of rural livelihoods and understanding of relevant Government programs; (iii) excellent writing and communication skills as demonstrated by at least 2 publications in international or Indian journals).

The proposed ***impact evaluation specialist*** will need to have (i) familiarity with qualitative and quantitative evaluation techniques and design of systems to gather project implementation data in a systematic way; (ii) successful application ability to apply these in the Indian context in at least 3 instances; (ii) ability to clearly formulate hypotheses and research findings as documented by at least 2 publications in international or Indian journals; (iii) excellent ability to work in multi-disciplinary team.

Annex 1

IE-related responsibilities of different parties

The DEC team of World Bank will be responsible for:

- Impact evaluation design
- Design of instruments (with inputs from IE agency and other stakeholders)
- Ensuring quality of data collection through oversight/participation in pre-testing of instruments, enumerator training and regular review of data produced
- Econometric data analysis and preparation of baseline, midline and endline reports and academic papers based the results, jointly with WBT and IE agency as appropriate
- Mobilization of additional research funding to support research and analytical activities to better understand project impacts and draw policy and operationally relevant lessons
- Participating in relevant parts of WB supervision missions as appropriate
- Exploring options for using the insights gained in KA to inform progress and process monitoring as well as possibly impact evaluation in AP and OR.

The World Bank (WBT) team will be responsible for ;

- Regular communication with the DSCWD on all aspects of project implementation including IE related activities
- Ensuring inputs from the research team into WB supervision missions and incorporate IE outputs in mission AMs
- Brining to the research team's attention any implementation issues or changes that might be relevant or warrant closer attention
- Facilitate dissemination of IE-activity results to DoLR and other states to allow lessons to be used at national and state level

The Soil Conservation & Watershed Development (DSCWD) will be responsible for the following IE related tasks;

- Negotiating technical aspects of the contract
- Supervision of IE agency activities based on agreed activities and outputs
- Providing input into the TOR to help ensure IE-related activities provide answers to issues of relevance to project implementation
- Contract
- Maintain technical dialogue with the Agency and the WB team throughout
- Support logistical arrangements for the IE Agency/DEC/WBT during interaction with project stakeholders as well as conduct of data collection activities
- Review progress and process monitoring as well as IE results and solicit input from other stakeholders
- Use progress/process monitoring and IE results to adjust implementation as needed to achieve DLIs and communicate these results to stakeholders at all levels as needed
- Make MIS and other project related-data needed for program monitoring and IE available as needed

Annexure-I

RESULTS FRAMEWORK MATRIX

Results Framework

Rejuvenating Watersheds for Agricultural Resilience through Innovative Development

Program Development Objective(s):

Strengthen capacities of national and state institutions to adopt improved watershed management for increasing farmers' resilience and support value chains in selected watersheds of participating states.

Program Development Objective Indicators by Objectives/Outcomes:

Name	DLI	Baseline	End Target
Percentage of WCs and GPs which demonstrate satisfactory watershed management as measured through a performance rating system. (Percentage)	DLI 1	0	30.00
Percentage of women headed WCs and GPs which demonstrate satisfactory watershed management as measured through a performance rating system. (Percentage)		0	30.00
Land area treated with science-based watershed management technologies. (Hectare)	DLI 2	0	1,00,000.00
Number of farmers who adopt resilient agriculture technologies and practices. (Number)	DLI 3	0	16,200.00
Of which, female farmers. (Number)		0	4,860.00
Of which, SC and ST farmers. (Number)		0	3,240.00
Increase in climate-adjusted soil moisture in targeted watershed areas. (Percentage)		0	20.00
Number of Farmer Producer Organizations (FPOs) with 25% increase in annual business turnover relative to baseline. (Number)	DLI 4	0	15.00
Direct Program Beneficiaries. (Number)		0	1,18,000.00
Of which, female beneficiaries. (Number)		0	35,400.00
Of which, SC and ST beneficiaries. (Number)		0	23,600.00

Intermediate Results Indicator by Results Areas:

Indicator Name	DLI	Baseline	End Target
Results area 1: Strengthened Institutions and Supportive Policy for Watershed Development			
Adoption of strengthened watershed O&M policy by number of states. (Number)		0	1.00
Results from pilots on science-based fertilizer application captured and disseminated. (Number)		0	1.00
Results area 2: Science-based Watershed Development for Climate Resilience and Enhanced Livelihoods			
Land area for which watershed plans are available and approved. (Hectare)		0	3,00,000.00
Farmers accessing agro-advisory information. (Number)		0	43,200.00
Of which, female farmers. (Number)		0	12,960.00
Of which, SC and ST farmers. (Number)		0	8,640.00
Increase in farmers adopting value chain services of targeted Farmer Producer Organizations. (Percentage)		0	25.00

Monitoring & Evaluation Plan: PDO Indicators					
Indicator Name	Definition/Description	Frequency	Data source	Methodology for Data Collection	Responsibility for Data Collection
Percentage of WCs and GPs which demonstrate satisfactory watershed management as measured through a performance rating system	This indicator measures the percentage of Watershed Committees and/or Gram Panchayats (WCs and/or GPs) in the REWARD Program's science-based micro-watersheds, covering 0.10 million hectares areas, that achieve a score above 50% (considered as satisfactory) on the 'Performance Assessment Tool' that is developed specifically for the purpose. The Performance Assessment Tool (PAT) will contain indicators covering each phase of the watershed sub-project (preparatory phase, execution phase, and O&M phase). All participating states shall develop an appropriate PAT with key performance indicators for all three stages and a rating system and reflect the same in the Program Manual. The performance assessment ratings will be captured in the e state MIS systems. This indicator will capture information on women's participation and engagement in leadership positions in WCs. It will capture information separately on WCs and GPs led by women (as Chairpersons of WCs and as elected members of Gram Panchayat).	Annual	MIS	Review of MIS data	DSC&WD
Percentage of women headed WCs and GPs which demonstrate satisfactory watershed management as measured through a performance rating system.	This indicator measures the percentage of Watershed Committees and/or Gram Panchayats (WCs and/or GPs) in the REWARD Program's science-based micro-watersheds, covering 0.10 million hectares areas, that achieve a score above 50% (considered as satisfactory) on the 'Performance Assessment Tool' that is developed specifically for the purpose. The Performance Assessment Tool (PAT) will contain indicators covering each phase of the watershed sub-project (preparatory phase, execution phase, and O&M phase). All participating states shall develop an appropriate PAT with key performance indicators for all three stages and a rating system and reflect the same in the Program Manual. The performance assessment ratings will be captured in the state MIS systems. This indicator will capture information on women's participation and engagement in leadership positions in WCs. It will capture information separately on WCs and GPs led by women (as Chairpersons of WCs and as elected members of Gram Panchayat).	Annual	MIS	Review of MIS data	DSC&WD
Land area treated with science-based	This indicator measures the area (in hectares) of watersheds where science-based watershed development has been implemented in a	Annual	MIS, Process	Review of MIS data;	DSC&WD, Process

watershed management technologies.	saturation mode. To be considered as 'science-based watershed management', all of the following criteria are to be met: 1) DPRs have been prepared utilizing LRI outputs and approved by Gram Sabha; 2) Implementation of watershed development works has been undertaken in saturation mode. 'Saturation' refers to treatment of at least 70% of all parcel of land that has been recommended for treatment in DPR; and 3) Science-based watershed development will include measures related to restoration of degraded land and rainwater harvesting to address drought vulnerability.		Monitoring Agency	Sample survey of micro-watersheds	Monitoring Agency
Number of farmers who adopt resilient agriculture technologies and practices.	This indicator measures the number of farmers who adopt at least one technology/practice from a core set of resilient agriculture technologies and practices recommended through agro-advisory. The agro-advisory may be provided through multiple channels including: LRI cards, weather based agro-advisories over mobile, bulletins, communication from extension workers, farmer training programs, etc. The core set of resilient agriculture technologies and practices will be as defined by the Government of India / respective state governments and include measures but not be limited to crop diversification, water use efficiency, and other package of appropriate practices that strengthen resilience to climate change impact for the given agro-climatic zone. An identified list of resilient technologies will be reflected in the Program Manual. Adoption of one or more technologies or practices will be considered as adequate for meeting this indicator. The indicator will separately track the number of farmers by their gender and by their social group (SC/ST). Women engaged in farming will be considered as 'female farmers' irrespective of whether or not they are the legal title holders to the land.	Annual	MIS, Process Monitoring Agency	Review of MIS data, Field survey sample farmers	DSC&WD, Process Monitoring Agency
Of which, female farmers.		Annual	MIS, Process Monitoring Agency	Review of MIS data, Field survey sample farmers	DSC&WD, Process Monitoring Agency
Of which, SC and ST farmers.		Annual	MIS, Process Monitoring Agency	Review of MIS data, Field survey sample farmers	DSC&WD, Process Monitoring Agency
Increase in climate-adjusted soil moisture in	This indicator measures soil moisture improvement, correcting for short term weather effects in a sample of the science-based watersheds, as per established scientific processes.	Base-line, End-term	Impact evaluation study	Field study (using sensors and probes)	Impact evaluation agency

targeted watershed areas.				and analysis of RS data of sample of treatment and control sites.	
Number of Farmer Producer Organizations (FPOs) with 25% increase in annual business turnover relative to baseline.	This indicator measures the number of Farmer Producer Organizations (FPOs) supported under the REWARD Program, that achieve an annual sales turnover that is at least 25% higher than their baseline levels. The average sales turnover will be calculated based on annual sales reported by the FPOs in their annual audited financial statements during the reporting period. All states shall develop appropriate criteria to shortlist FPOs eligible to be supported under this program and use the same to select target number of FPOs. The criterial for shortlisting FPOs shall be reflected in the Program Manual.	Baseline, year 3, 4, 5	MIS, FPOs' annual audited account	Review of MIS data; Review of FPOs' accounts	DSC&WD
Direct Program Beneficiaries.	This indicator measures the number of individuals receiving outputs from the Program. Outputs include watershed structures and assets located on private land/ common lands, training programs, crop advisory services, value chain services, wage employment, financial support, etc. The indicator will separately track the number of beneficiaries by their gender and by their social group (SC/ST).	Annual	MIS	Review of MIS data	DSC&WD
Of which, female beneficiaries		Annual	MIS	Review of MIS data	DSC&WD
Of which, SC and ST beneficiaries.		Annual	MIS	Review of MIS data	DSC&WD

Monitoring & Evaluation Plan: Intermediate Results Indicators					
Indicator Name	Definition/Description	Frequency	Data source	Methodology for Data Collection	Responsibility for Data Collection
Adoption of strengthened watershed O&M policy by number of states	This indicator measures the number of states that have formally issued a government directive on operation and maintenance of structures and assets of completed watershed projects that have been handed over to Gram Panchayats.	One-time	DSC&WD	Review of issued state government directives	DSC&WD
Results from pilots on science-based fertilizer application captured and disseminated.	This indicator checks that results note/s have been developed, capturing results and lessons from pilots and disseminated.	One time	DSC&WD reports; Results note/s	Review of DSC&WD reports and results note/s	DSC&WD
Land area for which watershed plans are available and approved.	This indicator measures the area in hectares for which watershed plans are available. The watershed plans are developed as per national/ state guidelines, issued from time to time	Annual	MIS digital Portal	Review of MIS data and review of Digital Portal	DSC&WD
Farmers accessing agro-advisory information.	This indicator measures the number of farmers who received science / weather based agro-advisory information that will strengthen farmers' preparedness and resilience to climate change impacts, at least once in the Program duration through various channels such as LRI cards, mobile messaging, mobile apps, bulletins, communication from extension workers, training programs. All the states will develop a short list of approved resilient technologies and reflect the same in the Program Manual.	Annual	MIS, Process Monitoring Study	Review of MIS data, Field survey of sample farmers	DSC&WD, Process Monitoring Agency
Of which, female farmers.		Annual	MIS, Process Monitoring Study	Review of MIS data, Field survey of sample farmers	DSC&WD, Process Monitoring Agency
Of which, SC and ST farmers.		Annual	MIS, Process Monitoring Study	Review of MIS data, Field survey of sample farmers	DSC&WD, Process Monitoring Agency
Increase in farmers adopting value chain services of targeted Farmer Producer Organizations.	This indicator measures the increase in percentage of farmers (over baseline) using value chain services of FPOs supported under the Program	Annual	MIS, FPO records	Review of MIS data, Review of FPO records	DSC&WD, FPOs

ANNEXURE- 2.

DISBURSEMENT LINKED INDICATORS, DISBURSEMENT ARRANGEMENTS AND VERIFICATION PROTOCOLS

Verification Protocol Table: Disbursement Linked Indicators	
DLI 1	Percentage of WCs and GPs which demonstrate satisfactory watershed management as measured through a performance rating system.
Description	This DLI is defined as the percentage of Watershed Committees and/or Gram Panchayats (WCs and/or GPs) in the REWARD Program's science-based micro-watersheds, covering 0.10 million hectares areas, that achieve score above 50% (considered as satisfactory) on the 'Performance Assessment Tool' (PAT) that is developed specifically for the purpose. The PAT will contain indicators covering each phase of the watershed sub-project (preparatory phase, execution phase and O&M phase). It is measured in Year 2, 3 and 5. The DLI comprises the following Disbursement Linked Results: • DLR 1.1: In Year 2, score on the indicators pertaining to Preparatory Phase in the Performance Assessment Tool is considered. The indicators will include improved representation of women in the WCs and greater weightage for women in leadership positions in the WCs. • DLR 1.2: In Year 3, score on the indicators pertaining to Execution Phase in the Performance Assessment Tool is considered. • DLR 1.3: In Year 5, score on the indicators pertaining to O&M Phase in the Performance Assessment Tool is considered. In each year, at least 30% of the WCs and/or GPs in the science-based MWS need to achieve score of more than 50% on the PAT. All participating states shall develop an appropriate PAT with key performance indicators for all three phases and reflect the same in the Program Manual. The performance assessment scores will be captured in the state MIS systems.
Data source/ Agency	MIS/SWDs
Verification Entity	IVA
Procedure	Procedure for DLRs 1.1, 1.2 and 1.3: i. The IVA will undertake desk verification of the MIS data to determine the number of WCs/GPs that scored more than 50% on the Performance Assessment Tool. ii. The IVA will conduct field verification in a representative sample of WCs/GPs. The field verification will involve checking records of WCs/ GPs for information on all the indicators pertaining to the phase being considered and confirming the scores reported in the MIS.
DLI 2	Land area treated with science-based watershed management technologies
Description	This DLI is defined as the area (in hectares) of watersheds where science-based watershed development has been implemented in a saturation mode. This is measured in Year 2, 4, 5. The DLI comprises 3 Disbursement Linked Results, including a Prior Result: • DLR 2.1 (Prior Result): Memoranda of Understanding (MoU) are signed with Technical Partners for LRI, Hydrology and RS/GIS. This is verified in year 1. • DLR 2.2: DPRs have been prepared utilizing LRI outputs with key environmental and social data/information, and are approved by Gram Sabha. This is measured in year 2. • DLR 2.3: Watershed works have been implemented in a saturation mode. This is measured in years 4 and 5.
Data source/ Agency	MIS/SWDs

Verification Entity	World Bank will carry out the due diligence for prior results; and IVA for all other results
Procedure	Procedure for DLR 2.1 (Prior Result): The Bank will carry out the due diligence of the MoU documents signed with Technical Partners for LRI, Hydrology and RS/GIS. The due diligence procedure will involve reviewing the hard copies or softcopies of the signed MoU documents. Procedure for DLR 2.2: The IVA will verify the DPRs through desk review, and check that the DPR is generated by utilizing the LRI outputs with key environmental and social data/information and is approved by the Gram Sabha. This will involve confirming that all of the following are part of the DPR: • Soil and water conservation plans and drainage line treatment plans covering each land management unit in the micro-watershed with supporting GIS maps. • Productivity improvement plans for major agriculture and horticulture crops with supporting GIS maps. • Nutrient management plan. • Record of community consultations. • Record of Gram Sabha approval. • Maps and data on environmentally sensitive areas, common properties including physical and cultural resources. Procedure for DLR 2.3: The verification by IVA will involve both desk review and field verification, as detailed below: Desk review: The IVA will undertake desk review of the Project Completion Reports (PCRs) of the micro-watershed sub-projects. The purpose of the review is to check if the watershed development works have been implemented in a 'saturation' mode. 'Saturation' refers to soil and water conservation and drainage line treatment of every parcel of land that has been recommended for soil and water conservation and drainage line treatment on the basis of LRI as specified in DPR. This will be verified through a comparison of the total number of parcels recommended for soil and water conservation and drainage line treatment in the micro-watershed and the number of treated parcels as reported in the PCRs. This criterion will be considered as met if at least 70% of the total parcels recommended for soil and water conservation and drainage line treatment are listed as treated in the PCRs. Field verification: The IVA will undertake field verification of a representative sample of soil and water conservation and drainage line works in a representative sample of the micro-watershed sub-projects. The purpose of the field verification is to check if the soil and water conservation and drainage line works have been implemented. Compliance with Environmental and Social guidance, including the Excluded Activities List, will also be verified. This will be verified through a comparison of the works as listed in the PCRs and the completed soil and water conservation and drainage line works noted during the field verification. This criterion will be considered as met if 90% of the sampled soil and water conservation and drainage line works are found to be completed during the field verification. Double counting of micro-watersheds for disbursements in years 4 and 5 will be avoided (that is, the micro-watersheds that have been verified as suitable for disbursements in a year will not be considered for verification in the subsequent years) .
DLI 3	Number of farmers who adopt resilient agriculture technologies and practices
Description	This DLI is defined as the number of farmers who adopt at least one technology/practice from a core set of resilient agriculture technologies and practices recommended through agro-advisory (delivered through LRI cards, weather based agro-advisories over mobile, bulletins, communication from extension workers, farmer training programs, etc.). The core set of resilient agriculture technologies and practices will be as

	defined by Government of India / respective state governments and include measures related to crop diversification, water use efficiency, and other package of appropriate practices that strengthen resilience to climate change impact for the given agro-climatic zone. Such a short list of approved resilient technologies will be reflected in the Program Manual. This DLI is measured in Year 3, 4 and 5.
Data source/ Agency	MIS/SWDs
Verification Entity	IVA
Procedure	The verification by IVA will involve both desk review and field verification, as detailed below: Desk review: The IVA will undertake desk review of the MIS data on farmer adoption. Field verification: The IVA will undertake field verification of a representative sample of farmers in the program areas and verify if the farmers have adopted at least one of the recommended technologies/practices. This criterion will be considered as met if 90% of the sampled farmers are found to have adopted the recommended technologies/practices. Double counting of farmers for disbursements will be avoided (that is, farmers verified as suitable for disbursement in a year will not be considered for verification in the subsequent years).
DLI 4	Number of Farmer Producer Organizations (FPOs) with 25% increase in annual business turnover relative to baseline.
Description	This DLI is defined as the number of Farmer Producer Organizations (FPOs) supported under the REWARD Program, that achieve an average annual sales turnover that is at least 25% higher than their baseline levels. The average sales turnover will be calculated based on the annual sales reported by the FPOs in their annual audited financial statements during the reporting period (the average of all years in the reporting period will be considered). This DLI is measured in Year 3, 4, 5. Each year a fresh set of FPOs will be considered for this DLI. The baseline will be the year preceding the FPOs entry into the Program (for existing FPOs) All states shall develop appropriate criteria to shortlist FPOs eligible to be supported under this program and use the same to select target number of FPOs. The criteria for shortlisting FPOs shall be reflected in the Program Manual
Data source/ Agency	MIS/SWDs; Annual audited accounts
Verification Entity	IVA
Procedure	The verification by IVA will involve desk review of the MIS data and on-site (at FPO offices) review of the annual audited accounts statements of the FPOs

Expression of Interest (EOI) Document

Hiring of Consultancy Agency for Project Process Monitoring and Documentation Assignment
for
Rejuvenating Watersheds for Agricultural Resilience through Innovative Development Program (REWARD PROGRAM),Govt of Odisha

Director

Directorate of Soil Conservation and Watershed Development Odisha, Bhubaneswar
Krushi Bhawan, Keshari Nagar, Bhubaneswar. 751001
Contact No:0674-2391840
Email ID:soilconservationorissa@gmail.com,iwmporissa@gmail.com
https://www.soilodisha.nic.in

EOI No.02/REWARD, DSC&WD(O)/dt. 20.01.2022

REQUEST FOR EXPRESSION OF INTEREST (REOI)

1) Directorate of Soil Conservation and Watershed Development Odisha (DSC&WD), Bhubaneswar on behalf of **Rejuvenating Watersheds for Agricultural Resilience through Innovative Development Program (REWARD PROGRAM)** invites Expressions of Interest **(EOI**) from Consultancy agencies desirous of and having proven track record of experience.

2) Interested Consultancy agencies who meet the criteria may furnish their Expression of Interest with all the necessary documents in a sealed cover along with the covering letter, duly signed by an authorized signatory

3) Interested Consultancy firms must provide the following information indicating that they are qualified to perform the service.

4) EOI short listing criteria

(i) The agency/organization should have proven experience with implementation (either directly or through supervision of sub-contractors) of at least 3multi-year process monitoring projects on topics comparable to this assignment (agriculture/ rural development/watershed management) in at least one state in India

(ii) The agency/organization should have proven experience with qualitative and quantitative data collection for monitoring, supervision of biophysical data collection and supporting management information systems/ data collection for project result measurements in at least 3 different projects.

(iii) The agency should have demonstrated ability to regularly produce high quality reports and effective communication and dialogue with a wide range of stakeholders in Government as well as civil society (at least 3 completed contracts with scope of work comparable to this assignment);

(iv) The agency/organization should have proven experience to manage complex projects requiring (i) ability to mobilize diverse skills in the subject matter areas of concern; (ii) close interaction and consultation with a wide range of stakeholders in Government as well as civil society; (iii) communicating results to policy makers at all levels through a variety of channel (at least 3 completed contracts with scope of work comparable to this assignment);

(v) The agency/organization should have a cumulative turnover of Rs. 15 Crores (Rs. 150 Million) in past five years. (2016-17.2017-18,2018-19,2019-20,2020-21) (Government and aided agencies exempted from this condition)

5) Detailed information can be obtained at the address below during office hours i.e. 10.00 to 17.30 hours and the detailed draft ToR can be downloaded

from DSC& WD website.

https://www.soilodisha.nic.in/s

6) Documents to be submitted

- Profile of the Agency.
- Proof of necessary documents/supporting/evidence substantiating the EOI short listing criteria mentioned above.
- Proof of Relevant experience mentioned in the short listing criteria. (copies of work order/appointment order etc)
- Audited Financial Statements for proof of Turnover of FY 2016-17, 2017-18, 2018-19,2019-20. And 2020-21.
- GST registration Certificate.
- Copy of PAN.
- Manpower strength to execute the assignment
- Any other document if any as described for evaluation purpose.

7) In case of any Addendum/Clarification/Corrigendum/Extension regarding this REOI, the same will be published in the above website only.

8) The shortlisted agency (if required) may be asked to make a presentation of their available facilities, manpower, capabilities, past experiences, etc.

9) After scrutiny of the Expressions of Interest (EoI), DSC & WD will come up with a detailed RFP which will be issued to shortlisted agencies inviting their Technical & Financial proposals.

10) RFP will be issued to shortlisted agencies only.
The agency will be selected under Quality & Cost Based Selection (QCBS) procedures in a full Technical Proposal (FTP) & Financial Proposal (FP) format to be described in the RFP.

11)The Expression of Interest in a sealed cover must be submitted on or before February 21, 2022 by 5 P.M. either through Speed Post/registered Post or courier at the following address with the heading on the Envelop “REOI for Hiring consultancy Agency for Process Monitoring Assignment (REWARD)”:
Director, Directorate of Soil Conservation and Watershed Development Odisha, Bhubaneswar
Krushi Bhawan, Keshari Nagar, Bhubaneswar. 751001
Contact No:0674-2391840

12)The EOI submitted by telegram/fax/e-mail, etc. shall not been entertained.

13)DSC& WD shall not be responsible for any postal delay or non-receipt/ non-delivery of the documents. No further correspondence on the subject will be entertained.

14)Consultancy firms are requested regularly to visit the web site https://www.soilodisha.nic.in for any updates.

15)Authority reserves the right to accept or reject any EOI and to cancel the procurement process at any time prior to the award of contract, without assigning any reason thereof.

16) Submission of EOI in response to this notice shall be deemed to have been done after careful study and examination of this document with full understanding of its terms, conditions and implications.

Sl. No.	Information	Details
1.	EOI No.	02/REWARD,DSC&WD(O) Date: 20.01.2022
2.	Last Date and Time for submission of EOI	5PM, February 21, 2022
3.	Address at which EOI to be submitted	Director, Directorate of Soil Conservation and Watershed Development, Odisha, Bhubaneswar Krushi Bhawan, Keshari Nagar Bhubaneswar, 751001 Contact No- 0674- 2391840

17) The Consultancy firm are responsible for all costs incurred in connection with participation in this process, including cost incurred in preparation of EOI, participation in meetings/discussion. The DSC& WD is in no case will be responsible or liable for these costs, regardless of the conduct or outcome of the EOI process.

18) The EOI does not commit DSC& WD to award a contract or to engage in negotiation. Further no reimbursable cost may be incurred in anticipation of award or for preparing this EOI.

19) All materials submitted by the consultants/firm will become the property of DSC&WD.

20) The Consultant shall not subcontract the whole of the Services.

21) The authority may at its sole discretion and at any time during the evaluation of the EOI disqualify any applicant if the applicant as:

i. Made misleading or false representations in the forms, statements and attachments submitted in proof of the eligibility requirements

ii. Exhibited a record of poor performance such as abandoning works, not properly completing the contractual obligations, inordinately delaying completion or financial failures in any of the previous undertakings by the concerned bidder.

iii. Declared as ineligible by GoI / State for corrupt, fraudulent practices or has been blacklisted.

iv. An EOI may be rejected if it is determined that the applicant has engaged in corrupt, fraudulent or unfair trade practices.

v. An EOI which does not satisfy each and every condition laid down in REOI will be liable for rejection.

vi. Does not submit the EOI before the stipulated time line to the inviting authority

vii. Does not attach the required documents along with the EOI.

22) Further DSC& WD reserves the right to modify/amend the contents of REOI before the last date of submission or any clarification and query contact Sri Satchidananda Swain (Mob No-9437197396) and Sri Binaya Bhusan Tripathy (Mob No- 9937340392)

Director,
Directorate of Soil Conservation and Watershed Development Odisha,
Krushi Bhawan, Keshari Nagar
Bhubaneswar-751001

Terms of Reference

Title of the Project: Project Process Monitoring and Documentation Assignment for Rejuvenating Watersheds for Agricultural Resilience through Innovative Development Program (REWARD PROGRAM).

The ToR will be used to solicit proposals from qualified consultant agencies (or consortium of consultant agencies with one lead applicant) to develop and implement a comprehensive Process Monitoring and Documentation system for the REWARD Project. The TOR presents the background of the project and the assignment, scope of work, specific activities, deliverables and reporting arrangements, and qualification requirements.

1. Background and context

Climate smart agriculture and integrated watershed management

Agriculture is one of the largest greenhouse gas emitters, but it is also one of the climate's greatest allies. Effective management of drylands is essential to achieve global goals of adapting to climate change, enhancing resilience, reducing poverty and lowering conflict potential. About half of India's 140 mn. ha or net sown area is rainfed areas (defined as receiving less than 750 mm of annual rainfall and having less than one third of area under irrigation) which are home to 86% of the country's poor and 85% of its degraded land. This renders effective use of dryland resources of great importance for poverty reduction, mitigating the risks of climate change, and stopping further land degradation.

The agriculture sector can play a major role in climate mitigation by reducing emissions and avoiding further loss of carbon stored in forests and soil. Keeping soils and forests healthy also helps to fight climate change as both of these act as "sinks" that sequester carbon. Climate Resilient Agriculture is an approach to transform and reorient agriculture systems to effectively support development and ensure food security in a changing climate, by sustaining agricultural yield and income, as well as reducing the greenhouse gases. Enhancing farmers' knowledge is the key to ensue climate smart agriculture.

Integrated watershed management provides the national framework for a resilient food system in rainfed areas and programs to achieve it have been well-resourced. Factors including top-down implementation, lack of clear technical criteria, absence of long-term planning and convergence between institutions and programs together with the danger of decisions being guided by political considerations are, however, often perceived as having reduced effectiveness and sustainability (Bouma et al. 2007) and hardly any economic evaluations have been conducted (Gray and Srinidhi 2013). An evaluation based on satellite imagery fails to find any impact of watershed development programs completed in 2007-2010 on vegetative cover in treated Micro-Watersheds (MWSs) as proxied by the Normalized Difference Vegetation Index (NDVI) compared to either the same MWS pre-treatment or to neighbouring MWSs (Bhalla et al. 2013).

Strategies for improving outcomes of integrated watershed management projects

Improving outcomes will require a more science-based and data-driven approach, shorter project cycles, stronger institutional capacities, and greater attention to farmers' needs. The redesign of national watershed guidelines provides a unique opportunity for doing so and incorporates lessons from several World Bank interventions (including in Karnataka),[1] aimed to implement a more synergistic approach in two respects.

First, conservation interventions are based on a comprehensive science-based inventory of resources available locally through a comprehensive 'Land Resource Inventory' (LRI) and hydrology data that, together with technical parameters identifies a menu of intervention options to illustrate relevant trade-offs. Out of these, an area-wide set of treatments for the entire watershed is then identified in a participatory fashion, an approach referred to as 'saturation mode', ideally converging with other schemes such as MGNREGS.

Second, implementing biophysical interventions in bulk rather than a piecemeal fashion is expected to leverage economies of scope that would allow to shift towards more sustainable patterns of production. To do so, the program combines biophysical interventions with technical support to help farmers diversify into crops with higher value added, invest in Farmer Producer Organizations (FPOs) to create the forward- and backward- linkages to allow bulk marketing of output and acquisition of inputs to help reduce costs, increase efficiency, and increase local value addition and labour demand on and off the farm (e.g., in agro-processing) that would also benefit vulnerable and landless groups. The economic benefits generated in this way will, it is expected, ensure maintenance of structures which have often plagued other approaches.

Watershed Development projects in Odisha:

Odisha is largely a rural and an agrarian economy. Close to 83 per cent of its people live in rural areas and about 61.8 per cent of its 17.5 million workforce is employed in agriculture. The sector contributes about 18 per cent to the state's GDP. The state has a gross cropped area of about 8 million hectares, 46 per cent of which is double-cropped. Paddy is the main crop and covers about 3.89 million hectares (for the triennium ending 2017-18).

Government of Odisha is dedicatedly working towards development of farmers and is committed to hike farmers' income. Agriculture being the prime source of wealth in Odisha and the key to the reduction of rural poverty, all Government's policies and programmes including the new agriculture policy (2020) – SAMRUDHI have aimed at achieving rapid agricultural growth through optimum utilization of land, water, soil and plant resources. Odisha farmer's incomes has grown more than seven times or at a compound annual growth rate (CAGR) of 16.5 per cent in nominal terms and 8.4 per cent in real terms during the period 2002-03 and 2015-16. Odisha's agricultural GDP has doubled in real terms in the last 16 years, clocking an average annual growth rate of about 4.5 per cent, higher than all India average of 3.1 per cent.

The strategy for doubling farmers' incomes recognizes that watershed-based management of resources is a comprehensive and scientific approach to achieve sustainability and manage risk in agriculture. From top-down standalone soil and water conservation structures to participatory watershed management, Watershed Management

Programmes have evolved overtime in terms of approach, strategy and operational scale. In 2009, the Integrated Watershed Management Programme (IWMP) was launched, which marked the consolidation of various watershed development schemes under an integrated program. In 2015-16, the IWMP became a component of the GoI's flagship program the Pradhan Mantri Krishi Sinchayee Yojana (PMKSY).

Land resources are not uniform and vary from field to field in a landscape or watershed area. While watershed programmes have treated significant land areas to date with basic soil and water conservation, the broader impacts have been below expectations in terms of incorporating hydrology, water management, and climate resiliency into plans, and investments on greater value addition and market access for increased productivity and incomes. This is attributed to "Non availability of site-specific land resource information", weak community capacities and lack of incentives for post project sustainability.

Recently, the World Bank-supported Sujala III watershed projects in Karnataka began emphasizing on more science-based data driven watershed planning and value-chain development through supporting investments in farmer producer organizations (FPOs) and market linkages. There is a growing need to focus on the demand side of groundwater management in watersheds, crop selection based on land suitability assessment, rational fertilizer use informed by analysis of soil nutrient status, and greater value addition and market access.

Odisha has a total geographical area of about 15.57 million ha, which is divided into 20,079 micro-watersheds. Of these, 16,873 are treatable and 7,721 have been taken up so far under different schemes. A total of 9,152 micro-watersheds covering an area of about 8.6 million ha is yet to be treated. The WDC-PMKSY (erstwhile IWMP) has been the main source of funding for watershed development in the state, which is ending in March, 2021, and a new follow-up national programme is awaiting cabinet approval. The Draft Guidelines for New Generation Watershed Development Projects, 2020 has incorporated new approaches, many adopted from the Sujala III project, that address many of the above issues.

Hence, with this background, the REWARD has been conceived based on the experience of the World Bank assisted Sujala-III Project in Karnataka. The state of Karnataka has been identified to have an additional role as a 'lighthouse' state that will enable knowledge exchange and provide capacity building support to other states because of its experience in implementing science-based watershed planning and monitoring at a fairly large scale.

2. REWARD: Program characteristics and objective

The 'Rejuvenating Watersheds for Agricultural Resilience through Innovative Development' (REWARD) project will build on the achievements made in Karnataka while also expanding the geographical scope to Odisha (OD). With an IBRD support of USD 115 million., the REWARD project activities are part of the USD 243.25 million WDC-PMKSY program over the 2021-2026 period. It is implemented as a 'Program for Results' (PforR), implying that activities are implemented using state's own institutions and processes and disbursement of funds is directly linked to the achievement of specific program results. REWARD will directly contribute to the watershed programs of Karnatak and Odisha and, in light of the advances that have already been made in Karnatak, the KA Watershed Development Department will participate as a 'light house partner' for other states.

Program objective, components and indicators

REWARD's objective is to Strengthen capacities of national and state institutions to adopt improved watershed management for increasing farmers' resilience and support value chains in selected watersheds of participating states. Indicators for achieving it are

Percentage of Watershed Committees and Gram Panchayats undertaking operation and maintenance of watershed assets.

- Number of farmers who adopt climate resilient agriculture technologies.
- Area (hectares) on which science-based watershed development has been implemented partnering with national or state technical institutions.
- Number of farmers reached with value-chain development services.
- Number of state and district level functionaries trained by the Centre of Excellence established on science-based watershed management.

To achieve these, REWARD project will support the next phase of the WDC-PMKSY program in two areas. One area is to strengthen institutions and ensure a supportive policy for watershed development by

- Enhancing capacity for watershed management in national institutions;
- Leveraging agriculture extension systems;
- Enhancing community institutions' and local government bodies' management capacity and systems for watershed development;
- Establishing a centre of excellence on science-based watershed management;
- Strengthening monitoring and evaluation systems:
- Improving operational guidelines on science-based planning of watersheds:
- Creating of a Multi Stakeholder Platform (MSP) for policy advocacy for management of rainfed areas and watersheds

A second area is to improve science-based watershed management and livelihoods through:

- Development and dissemination of scientific information for watershed planning:
- Planning and implementation of watershed development interventions in select sub-watersheds in a saturation mode;
- Provision of weather-based agro-advisories for farmers;
- Implementation of value-chain development interventions for longer term COVID-19 recovery:
- Livelihood protection and enhancement support for poor and land-less households for medium term COVID-19 recovery.

A detailed description of development project objectives, result matrix and Key Performance Indicators (KPIs) can be found in annexure -1)

Implementation arrangements and program stakeholders

At the national level, DoLR will establish a PMU; establish a Secretary level national steering committee to improve convergence between agriculture, watershed, ground water and other related departments; establish a national technical committee headed by NRAA to develop, test and standardize scientific protocols and DSS tools and strengthen the national digital library and develop/refine national guidelines for watershed projects; distil lessons from REWARD and mainstream them in revised national guidelines.

At the state level, Directorate of Soil Conservation & Watershed Development (DSC &WD) will be the nodal agency of the REWARD Program, with responsibility to prepare the annual work plan and carrying out Program activities. At the state-level, there would be a strong dedicated Project Management Unit (PMU). The PMU will be staffed with a dedicated team of experienced personnel drawn from the cadre of Odisha Soil Conservation Service, Odisha Agriculture Service, Odisha Horticulture Service and Odisha Agricultural Engineering Service. The PMU will be supplemented with consultants so that the needed technical, safeguard, monitoring and evaluation (M&E), and fiduciary (procurement and financial management) capacity is available. States would have financial control and accountability to implement the majority of project activities in conjunction with state-level science and technical partners, as well as field-based organizations who would facilitate engagements and capacity building with communities and farmers.

At the district Level, Watershed Cell cum Data Centre (WCDC) headed by the Project Director, Watersheds cum Deputy Director, Soil Conservation will be responsible for overseeing the implementation in the district. The actual planning and implementation will be carried out by Project Implementation Agency (PIA) located at the cluster level. A PIA is a government unit under the administrative control of DSC &WD, with adequate expertise and capacity to implement watershed projects under IWMP / PMKSY: WD. The village level institutions involved in watershed development planning, implementation, monitoring and post-project sustainability include the Watershed Development Committee, User Groups, Self Help Groups and the Gram Panchayat.

Location:

REWARD is planned to develop 17 Green field sites to establish model watersheds on saturation. For this purpose, 152 micro watersheds have been identified in five pilot disticts for taking up intended interventions, covering a total geographical area of 1.15 lakh ha. Land Resources Inventory (LRI) activities will also be taken up in 4.11 lakh ha in seven districts (including five pilot districts) to provide comprehensive site- specific cadastral level information useful for appropriate Natural Resources Management (NRM) planning at farm level and integrated development of the area.

The districts have been selected considering several criteria such as situational contexts (Agro-climatic Zones, Aspirational districts, communication & accessibility, Non DMF / OMBADC operational areas), Socio-Economic Contexts (KBK region), watershed contexts (prioritisation of watersheds by Odisha Remote Application Centre, Left over untreated watersheds, drought vulnerability) and institutional contexts (capacity of the district watershed implementation team, performance of the ongoing watershed projects). The blocks within the districts are selected considering extent of rain fed areas, drought vulnerability, value chain opportunities, extent of ground water exploited etc. The details of the districts and areas for developing green field sites and Land Resource Inventory Activities are as detailed below:

District Wise Proposed Clusters of Micro Watersheds for Pilot

SL.NO	NAME OF DISTRICT	NAME OF BLOCK	NUMBER OF MICRO WATERSHEDS	GEOGRAPHIC AREA in hectares
1	SAMBALPUR	BAMRA	9	7210.84
		KUCHINDA	9	7670.87
		JAMANKIRA	9	7139.76
		RAIROKHOL	11	7611.42
		RENGALI	10	7186.03
		NAKTIDEUL	11	7234.92
		SUB TOTAL	59	44053.84
2	DHENKANAL	KANKADAHADA	13	6836.85
		HINDOL	10	6470.85
		SUB TOTAL	23	13307.7
3	NAYAGADA	ODAGAON	7	5847.79
		DASPALLA	10	7029.3
		SUB TOTAL	17	12877.09
4	DEOGARH	BARKOTE	8	6111.94
		REAMAL	8	6626.91
		SUB TOTAL	16	12738.85
5	KORAPUT	BORIGUMA	8	6680.54
		JAYPORE	6	6798.38
		KORAPUT	9	6439.21
		LAMTAPUT	8	6884.66
		BOIPARIGUDA	6	5603.22
		SUB TOTAL	37	32406.01
TOTAL			**152**	**115383.49**

District Wise Proposed Clusters of Micro Watersheds for Land Resource Inventory

SL.NO	NAME OF DISTRICT	NAME OF BLOCK	NUMBER OF MICRO WATERSHEDS	GEOGRAPHIC AREA in hectares
1	SAMBALPUR	KUCHINDA	29	19516.87
		RAIROKHOL	67	49621.06
		JUJUMURA	25	22604.38
		SUB TOTAL	121	91742.31
2	DHENKANAL	KANKADAHADA	37	21912.4
		HINDOL	30	19653.08
		SUB TOTAL	67	41565.48
3	NAYAGADA	RANAPUR	18	11147.5
		ODAGAON	9	5431.42
		DASPALLA	28	19656.98
		SUB TOTAL	55	36235.9

4	DEOGARH	BARKOTE	28	19276.54
		REAMAL	38	27873.12
		SUB TOTAL	66	47149.66
5	KORAPUT	BORIGUMA	19	14401.85
		JAEPORE	24	18572.94
		BOIPARIGUDA	17	15137.83
		SUB TOTAL	60	48112.62
6	NABARANGPUR	RAIGHAR	29	30151.82
		UMARKOTE	10	8884.49
		SUB TOTAL	39	39036.31
7	SUNDERGARH	LEFRIPADA	46	35490.86
		SUNDERGARH	28	22194.25
		BALISANKARA	30	24191.41
		BARGAON	18	11634.85
		KUANARMUNDA	23	13958.21
		SUB TOTAL	145	107469.58
TOTAL			553	411311.86

3. Scope of the assignment:

Produce 3-monthly (Quarterly) status reports to the government, implementing team and the World Bank on progress and quality of project implementation that are based on process monitoring. The consultant agency will design the comprehensive quantitative and qualitative process monitoring system, develop the data templates for the Management Information System and produce quarterly reports throughout the lifetime of the project (5 years). The consultant will also produce annual thematic reports and ad-hoc case studies and propose recommendation for the impact evaluation.

4. Specific activities:

4.1 Inventory of indicators and measurement approaches as basis for the design of the process monitoring system

The agency will start with field work and other studies to identify the indicators to be included in the process monitoring system, effective and efficient of ways for measurement and documentation, and proposed information flow.

Analysis to develop PM design:

i. **Institutional and stakeholder analysis**:
   - Characterize public institutions (line departments, local Governments at GP,block, and district level) or private institutions (FPOs, SHG, input/output dealers) in terms of their history, composition, challenges, views and relationship with the project as well as different institutions representing it.

- To the extent that these groups have a formal role in the REWARD project, complement the characterization above with a description of these groups' understanding of their duties in the REWARD project, difficulties they expect to encounter in effectively discharging them (and how these will be resolved by the project), and what they propose as indicators to characterize project success in its different dimensions.
- Propose and articulate issues for detailed attention and suggestions for addressing them in the PM and metrics for doing so effectively.
- Propose detailed approaches for collecting high quality information effectively and efficiently including, for example, via SMS messages of phone interviews of a random set of participants from meeting/training participant lists.

ii. **Beneficiary engagement in project economic and livelihood activities***:* Building on the mapping of institutional actors (see i), the consulting agency will assess potential participation in, understanding of and demand for project-supported activities on conservation and livelihood support. In each of these areas, issues for attention will be flagged and suggestions for addressing them (as well as indicators for measuring success in doing so) articulated. Specific attention will be given to:
   - Land resource inventory preparation, conservation activity planning, implementation and maintenance;
   - Beneficiary awareness of different types of constraints to productivity of land use, cultivation technologies, input and output market opportunities, diversification options and views on key challenges of dryland development;
   - Beneficiary membership in and contact with bodies relevant for project implementation (WCs, farmer groups, FPOs, SHGs, local groups and politics);
   - Beneficiary participation in project-organized activities
   - Awareness of input and output markets,
   - Demand for and access to project-supported meteorological and technological information (including channels for acquiring such information and assessment of its reliability and quality), willingness to exert effort to sustain/pay for.
   - Identify nature of expected outputs and ways in which they will inform project-relevant actions by key stakeholders and be communicated to them

iii. **Complete mapping of processes, actors and workflows***:* The information gathered in the steps i and ii described above will be used to prepare a complete list of project-supported interventions and activities (including information and training sessions), with for each item the way in which these activities will be documented and measured in the PM.

4.2 Prepare data template and outline for process monitoring reporting:

Data template to measure progress on indicators+ data collection tool and formulae for computing*:* The quarterly project status report will capture any information considered as necessary for sectoral analysis in line with the project Results Matrix and Key Performance Indicators. The data templates prepared for this status reports are linked explicitly to:

- Sources of different data (many from the project MIS); data collection tools and forms
- Forms on project staff/activities integrated in MIS

- Responsibility for providing these data
- Formulae for computing
- Data quality assurance mechanisms (such as verification MIS data integrity through periodic field verification).

These data templates should also cover the quantitative input required by the PMU on project progress for its program reporting.

Documenting progress with project approach*:* The quarterly project status report will also report on selected intermediate outcomes and reflect on the theory of change. The report will be:

- detailing the key processes observed,
- document adherence to and variances in the laid processes
- provide potential implications on the project of findings;
- providing actionable recommendations on specific areas to the project senior management, PMU and district managers.

Progress on topics*:* Based on the issues identified under 4.1 a list of topics that are important for meeting REWARD project objectives will be suggested to the DSCWD as focus areas for regular process monitoring. Topics could include:

- Social inclusion and distributional impact of project interventions,
- Current project impacts on women's empowerment and ways to enhance gender impacts,
- O&M and sustainability,
- Income generating activities,
- Opportunities for integration into value chains,
- Land cover transformation,
- Awareness and participation, and effectiveness of PIAs in project implementation.

For each topic, guiding hypotheses and methodology for addressing them will be described and a time plan for implementation suggested. The findings will be linked to other evidence, including data from household surveys as needed. Highlighted topics/scope for each next project status report should be agreed upon with the DSCWD and WB and can be further developed in a thematic report.

Discussing and finalizing the design of the process monitoring*:* All of these materials prepared under 4.1 and 4.2 will be submitted to the DSCWD and World Bank in written form and, after comments have been received and incorporated, presented to project stakeholders in a workshop to incorporate additional feedback before being finalized.

Input in Impact Evaluation design: based on the above findings the consultant will make inputs into the IE design and instruments for household-level IE data collection (e.g. in terms of inclusion or framing of specific questions; and Input into IE data collection tools Institutional questionnaires). It must be noted however that the design and implementation of the IE will be carried out by a separate consultant agency

4.3. Quarterly project status reports throughout REWARD project life cycle

Process Monitoring status reports: The agency will produce quarterly monitoring reports on implementation progress using the data template, data sources and methodology established in section 4.1 and 4.2 above.

Regular verification MIS data quality*:* Once the MIS is established, the agency will regular review (at least every 6 months) the data quality and the completeness of the MIS, and, in case of gaps, ways to fill them will be suggested in the project status report.

Regular review success indicators; calculation and review of KPIs*:* the agency will:

- provide support to DSCWD in the calculation of KPIs
- contribute to project discussions of DSCWD and World Bank towards refining the definition of success of indicators and propose additional KPIs beyond those already included in the Result framework and DLI, together with the formulae for computation of all of them.

Support project discussion and stakeholder outreach*:* The agency will present the key findings on project status to the DSCWD and district managers. Following approval, the firm will also conduct additional stakeholder workshops on project progress in coordination with the DSCWD.

4.4. Qualitative thematic studies and case studies:

The agency will also prepare thematic assessments for areas of improvement, as well as case studies highlighting key accomplishments.

- The agency will carry out five thematic studies on key issues as identified by the agency and accepted by DSCWD. These could focus on the bigger picture of the REWARD methodology as well as results (e.g. Value Chain and income, land cover transformation, awareness and participation, gender, social inclusiveness; effectiveness of PIAs in project implementation, etc.**)**. This would be typically done through quick-turnaround evaluation studies.

- When project activities have started up, the agency has to identify, study in detail and prepare case studies/ success stories on important learnings, success stories and case studies using a standard methodological approach and outline, substantiated with appropriate photographs.

The topic for the thematic studies and case studies will be decided in consultation with DSCWD and World Bank. These outputs will be presented to the DSCWD and relevant stakeholders as required.

5. Support and resources provided to the consultant

The M & E Cell at DSCWD will be the main interlocutor for the agency on any project related issues including establishing contact with key stakeholders and making logistical arrangements for field visits, survey implementation and presentations of any outputs to project stakeholders. The DSCWD will be responsible for:

- Support agency with logistical arrangements for interaction with project stakeholders and conducting data collection activities

- Maintain technical dialogue with the agency and the WB team throughout and support logistical arrangements for consulting firm/DEC/WBT interaction
- Make MIS and other project related data needed for program monitoring and IE available as needed
- Review project status and process monitoring results, thematic and case studies (as well as IE results) and solicit input from other stakeholders
- Use Process Monitoring outputs (and IE results) to adjust implementation as needed to achieve DLIs and communicate these results to stakeholders at all levels as needed

The World Bank will be responsible for:

- Supervision of the activities of the agency based on agreed activities and outputs (WB research team)
- Technical oversight over and QA for thematic studies and progress reporting by the agency (WB research team)
- Facilitate dissemination of results to DoLR and other states to allow lessons to be used at national and state level (WB project team)

6. Deliverables, qualifications and team composition:

Reporting arrangements and deliverables

The agency will report to the DSCWD and a list of deliverables and timeline is given in table 1 below:

Table 1: Suggested timeline

Output	**Timing**	**Value %**
Contract signing		10%
Progress Monitoring design (i) reports 3 analytical studies; (ii) complete data template and guidance for MIS with data collection tools; (iii) Forms on project staff/activities integrated in MIS; (iv) detailed guidance for reporting on approach; (v) elaborated list of topics for PM; Input in IE data collection tools**)**	Month 3	15%
Project status report year 1: (3 process monitoring reports; 1 thematic study; at least 2 success stories; 4 project briefings; at least 3 stakeholder workshops)	Month 6, 9, 12	15%
Project status report year 2: (4 process monitoring reports; 1 thematic study; at least 2 success stories; 4 project briefings; at least 3 stakeholder workshops)	Month 3,6,9 and 12	15%
Project status report year 3: (4 process monitoring reports; 1 thematic study; at least 2 success stories; 4 project briefings; at least 3 stakeholder workshops)	Month 3,6,9 and 12	15%

Project status report year 4: (3 process monitoring reports; 1 thematic study; at least 2 success stories; 4 project briefings; at least 2 stakeholder workshops)	Month 6,9 and 12	15%
Project status report year 5: (3 process monitoring reports; 1 thematic study; at least 2 success stories; 4 project briefings; at least 2 stakeholder workshops)	Month 3,6,9	15%

Note: Time is in terms of months after contract signature

7. Team composition and Selection criteria:

Consultant agency qualifications:

(i) successful implementation (either directly or through oversight of sub-contractors) of at least 3 multi-year process monitoring evaluation projects.

(ii) demonstrated ability to manage complex projects requiring close interaction and consultation with a wide range of stakeholders in Government as well as civil society (at least 3 completed contracts with scope of work comparable to this assignment);

(iii) demonstrated experience with conducting high quality qualitative and quantitative data collection in rural India and communicating results to policy makers at all levels through a variety of channels;

(iv) ability to mobilize a team with the required expertise and skills in the subject matter areas of concern.

Table 2: Minimum team composition and qualifications

Key Expert	**Qualification**	**Experience**
Team leader -economist or social scientist with comparable quantitative expertise	Minimum Master degree (preferable PhD) or equivalent qualification with field experience in process monitoring (quantitative and qualitative) - preferably in watersheds or rural development projects; with excellent team leadership, reporting and communication skills	At least 10 years of work experience in process monitoring/IEs/hh surveys, and proven publication record (policy-relevant research and publications in Indian and international journals). Completed at last 3 projects of similar complexity successfully
Monitoring /survey specialist	Minimum Master degree in relevant field or equivalent qualification with experience in process monitoring/ surveys	Minimum of 8 years work experience in quantitative data collection, analysis, reporting and quality assurance; Completed at least 3 projects as lead process monitoring/ survey specialist

Expert in watersheds and Agricultural and allied sectors	Minimum Master degree (preferable PhD) with specialization in dry lands Agricultural/watershed Management	Minimum 8 years work experience, including solid field experience in watersheds; experience with preparing thematic case studies and case studies preferably in watersheds or rural development projects
Expert in institutional/ organizational development (Public and private)	Minimum Master degree (preferable PhD) with specialization in political sciences, public sector, organizational development or other comparable expertise	Minimum 8 years work experience with solid field experience in dry land agriculture/ watershed management. Experience with case studies and case studies for rural development projects (participation, stakeholders and institutional analysis)
Research Associates (2) for quantitative and qualitative process monitoring	Minimum Master degree in Statistics/Economics/Sociology/ Mathematics or equivalent qualification	Minimum of 5 years work experience with solid field experience in (quantitative) data collection and monitoring, case studies preparations. Solid field experience in qualitative monitoring / case studies preparations

ANNEXURE- 1.

RESULTS FRAMEWORK MATRIX

Results Framework

Rejuvenating Watersheds for Agricultural Resilience through Innovative Development

Program Development Objective(s):

Strengthen capacities of national and state institutions to adopt improved watershed management for increasing farmers' resilience and support value chains in selected watersheds of participating states.

Program Development Objective Indicators by Objectives/Outcomes:

Name	DLI	Baseline	End Target
Percentage of WCs and GPs which demonstrate satisfactory watershed management as measured through a performance rating system. (Percentage)	DLI 1	0	30.00
Percentage of women headed WCs and GPs which demonstrate satisfactory watershed management as measured through a performance rating system. (Percentage)		0	30.00
Land area treated with science-based watershed management technologies. (Hectare)	DLI 2	0	1,00,000.00
Number of farmers who adopt resilient agriculture technologies and practices. (Number)	DLI 3	0	16,200.00
Of which, female farmers. (Number)		0	4,860.00
Of which, SC and ST farmers. (Number)		0	3,240.00
Increase in climate-adjusted soil moisture in targeted watershed areas. (Percentage)		0	20.00
Number of Farmer Producer Organizations (FPOs) with 25% increase in annual business turnover relative to baseline. (Number)	DLI 4	0	15.00
Direct Program Beneficiaries. (Number)		0	1,18,000.00
Of which, female beneficiaries. (Number)		0	35,400.00
Of which, SC and ST beneficiaries. (Number)		0	23,600.00

Intermediate Results Indicator by Results Areas:

Indicator Name	DLI	Baseline	End Target
Results area 1: Strengthened Institutions and Supportive Policy for Watershed Development			
Adoption of strengthened watershed O&M policy by number of states. (Number)		0	1.00
Results from pilots on science-based fertilizer application captured and disseminated. (Number)		0	1.00
Results area 2: Science-based Watershed Development for Climate Resilience and Enhanced Livelihoods			
Land area for which watershed plans are available and approved. (Hectare)		0	3,00,000.00
Farmers accessing agro-advisory information. (Number)		0	43,200.00
Of which, female farmers. (Number)		0	12,960.00
Of which, SC and ST farmers. (Number)		0	8,640.00
Increase in farmers adopting value chain services of targeted Farmer Producer Organizations. (Percentage)		0	25.00

Monitoring & Evaluation Plan: PDO Indicators					
Indicator Name	Definition/Description	Frequency	Data source	Methodology for Data Collection	Responsibility for Data Collection
Percentage of WCs and GPs which demonstrate satisfactory watershed management as measured through a performance rating system	This indicator measures the percentage of Watershed Committees and/or Gram Panchayats (WCs and/or GPs) in the REWARD Program's science-based micro-watersheds, covering 0.10 million hectares areas, that achieve a score above 50% (considered as satisfactory) on the 'Performance Assessment Tool' that is developed specifically for the purpose. The Performance Assessment Tool (PAT) will contain indicators covering each phase of the watershed sub-project (preparatory phase, execution phase, and O&M phase). All participating states shall develop an appropriate PAT with key performance indicators for all three stages and a rating system and reflect the same in the Program Manual. The performance assessment ratings will be captured in the e state MIS systems. This indicator will capture information on women's participation and engagement in leadership positions in WCs. It will capture information separately on WCs and GPs led by women (as Chairpersons of WCs and as elected members of Gram Panchayat).	Annual	MIS	Review of MIS data	DSC&WD
Percentage of women headed WCs and GPs which demonstrate satisfactory watershed management as measured through a performance rating system.	This indicator measures the percentage of Watershed Committees and/or Gram Panchayats (WCs and/or GPs) in the REWARD Program's science-based micro-watersheds, covering 0.10 million hectares areas, that achieve a score above 50% (considered as satisfactory) on the 'Performance Assessment Tool' that is developed specifically for the purpose. The Performance Assessment Tool (PAT) will contain indicators covering each phase of the watershed sub-project (preparatory phase, execution phase, and O&M phase). All participating states shall develop an appropriate PAT with key performance indicators for all three stages and a rating system and reflect the same in the Program Manual. The performance assessment ratings will be captured in the state MIS systems. This indicator will capture information on women's participation and engagement in leadership positions in WCs. It will capture information separately on WCs and GPs led by women (as Chairpersons of WCs and as elected members of Gram Panchayat).	Annual	MIS	Review of MIS data	DSC&WD
Land area treated with science-based watershed management technologies.	This indicator measures the area (in hectares) of watersheds where science-based watershed development has been implemented in a saturation mode. To be considered as 'science-based watershed management', all of the following criteria are to be met: 1) DPRs have been prepared utilizing LRI outputs and approved by Gram Sabha; 2) Implementation of watershed development works has been	Annual	MIS, Process Monitoring Agency	Review of MIS data; Sample survey of micro-watersheds	DSC&WD, Process Monitoring Agency

	undertaken in saturation mode. 'Saturation' refers to treatment of at least 70% of all parcel of land that has been recommended for treatment in DPR; and 3) Science-based watershed development will include measures related to restoration of degraded land and rainwater harvesting to address drought vulnerability.				
Number of farmers who adopt resilient agriculture technologies and practices.	This indicator measures the number of farmers who adopt at least one technology/practice from a core set of resilient agriculture technologies and practices recommended through agro-advisory. The agro-advisory may be provided through multiple channels including: LRI cards, weather based agro-advisories over mobile, bulletins, communication from extension workers, farmer training programs, etc. The core set of resilient agriculture technologies and practices will be as defined by the Government of India / respective state governments and include measures but not be limited to crop diversification, water use efficiency, and other package of appropriate practices that strengthen resilience to climate change impact for the given agro-climatic zone. An identified list of resilient technologies will be reflected in the Program Manual. Adoption of one or more technologies or practices will be considered as adequate for meeting this indicator. The indicator will separately track the number of farmers by their gender and by their social group (SC/ST). Women engaged in farming will be considered as 'female farmers' irrespective of whether or not they are the legal title holders to the land.	Annual	MIS, Process Monitoring Agency	Review of MIS data, Field survey sample farmers	DSC&WD, Process Monitoring Agency
Of which, female farmers.		Annual	MIS, Process Monitoring Agency	Review of MIS data, Field survey sample farmers	DSC&WD, Process Monitoring Agency
Of which, SC and ST farmers.		Annual	MIS, Process Monitoring Agency	Review of MIS data, Field survey sample farmers	DSC&WD, Process Monitoring Agency
Increase in climate-adjusted soil moisture in targeted watershed areas.	This indicator measures soil moisture improvement, correcting for short term weather effects in a sample of the science-based watersheds, as per established scientific processes.	Base-line, End-term	Impact evaluation study	Field study (using sensors and probes) and analysis of RS data of sample of treatment and control sites.	Impact evaluation agency

Number of Farmer Producer Organizations (FPOs) with 25% increase in annual business turnover relative to baseline.	This indicator measures the number of Farmer Producer Organizations (FPOs) supported under the REWARD Program, that achieve an annual sales turnover that is at least 25% higher than their baseline levels. The average sales turnover will be calculated based on annual sales reported by the FPOs in their annual audited financial statements during the reporting period. All states shall develop appropriate criteria to shortlist FPOs eligible to be supported under this program and use the same to select target number of FPOs. The criterial for shortlisting FPOs shall be reflected in the Program Manual.	Baseline, year 3, 4, 5	MIS, FPOs' annual audited account	Review of MIS data; Review of FPOs' accounts	DSC&WD
Direct Program Beneficiaries.	This indicator measures the number of individuals receiving outputs from the Program. Outputs include watershed structures and assets located on private land/ common lands, training programs, crop advisory services, value chain services, wage employment, financial support, etc. The indicator will separately track the number of beneficiaries by their gender and by their social group (SC/ST).	Annual	MIS	Review of MIS data	DSC&WD
Of which, female beneficiaries		Annual	MIS	Review of MIS data	DSC&WD
Of which, SC and ST beneficiaries.		Annual	MIS	Review of MIS data	DSC&WD

Monitoring & Evaluation Plan: Intermediate Results Indicators					
Indicator Name	Definition/Description	Frequency	Data source	Methodology for Data Collection	Responsibility for Data Collection
Adoption of strengthened watershed O&M policy by number of states	This indicator measures the number of states that have formally issued a government directive on operation and maintenance of structures and assets of completed watershed projects that have been handed over to Gram Panchayats.	One-time	DSC&WD	Review of issued state government directives	DSC&WD
Results from pilots on science-based fertilizer application captured and disseminated.	This indicator checks that results note/s have been developed, capturing results and lessons from pilots and disseminated.	One time	DSC&WD reports; Results note/s	Review of DSC&WD reports and results note/s	DSC&WD
Land area for which watershed plans are available and approved.	This indicator measures the area in hectares for which watershed plans are available. The watershed plans are developed as per national/ state guidelines, issued from time to time	Annual	MIS digital Portal	Review of MIS data and review of Digital Portal	DSC&WD
Farmers accessing agro-advisory information.	This indicator measures the number of farmers who received science / weather based agro-advisory information that will strengthen farmers' preparedness and resilience to climate change	Annual	MIS, Process Monitoring Study	Review of MIS data, Field	DSC&WD, Process

	impacts, at least once in the Program duration through various channels such as LRI cards, mobile messaging, mobile apps, bulletins, communication from extension workers, training programs. All the states will develop a short list of approved resilient technologies and reflect the same in the Program Manual.			survey of sample farmers	Monitoring Agency
Of which, female farmers.		Annual	MIS, Process Monitoring Study	Review of MIS data, Field survey of sample farmers	DSC&WD, Process Monitoring Agency
Of which, SC and ST farmers.		Annual	MIS, Process Monitoring Study	Review of MIS data, Field survey of sample farmers	DSC&WD, Process Monitoring Agency
Increase in farmers adopting value chain services of targeted Farmer Producer Organizations.	This indicator measures the increase in percentage of farmers (over baseline) using value chain services of FPOs supported under the Program	Annual	MIS, FPO records	Review of MIS data, Review of FPO records	DSC&WD, FPOs

ANNEXURE- 2.

DISBURSEMENT LINKED INDICATORS, DISBURSEMENT ARRANGEMENTS AND VERIFICATION PROTOCOLS

Verification Protocol Table: Disbursement Linked Indicators	
DLI 1	Percentage of WCs and GPs which demonstrate satisfactory watershed management as measured through a performance rating system.
Description	This DLI is defined as the percentage of Watershed Committees and/or Gram Panchayats (WCs and/or GPs) in the REWARD Program's science-based micro-watersheds, covering 0.10 million hectares areas, that achieve score above 50% (considered as satisfactory) on the 'Performance Assessment Tool' (PAT) that is developed specifically for the purpose. The PAT will contain indicators covering each phase of the watershed sub-project (preparatory phase, execution phase and O&M phase). It is measured in Year 2, 3 and 5. The DLI comprises the following Disbursement Linked Results: • DLR 1.1: In Year 2, score on the indicators pertaining to Preparatory Phase in the Performance Assessment Tool is considered. The indicators will include improved representation of women in the WCs and greater weightage for women in leadership positions in the WCs. • DLR 1.2: In Year 3, score on the indicators pertaining to Execution Phase in the Performance Assessment Tool is considered. • DLR 1.3: In Year 5, score on the indicators pertaining to O&M Phase in the Performance Assessment Tool is considered. In each year, at least 30% of the WCs and/or GPs in the science-based MWS need to achieve score of more than 50% on the PAT. All participating states shall develop an appropriate PAT with key performance indicators for all three phases and reflect the same in the Program Manual. The performance assessment scores will be captured in the state MIS systems.
Data source/ Agency	MIS/SWDs
Verification Entity	IVA
Procedure	Procedure for DLRs 1.1, 1.2 and 1.3: i. The IVA will undertake desk verification of the MIS data to determine the number of WCs/GPs that scored more than 50% on the Performance Assessment Tool. ii. The IVA will conduct field verification in a representative sample of WCs/GPs. The field verification will involve checking records of WCs/ GPs for information on all the indicators pertaining to the phase being considered and confirming the scores reported in the MIS.
DLI 2	Land area treated with science-based watershed management technologies
Description	This DLI is defined as the area (in hectares) of watersheds where science-based watershed development has been implemented in a saturation mode. This is measured in Year 2, 4, 5. The DLI comprises 3 Disbursement Linked Results, including a Prior Result: • DLR 2.1 (Prior Result): Memoranda of Understanding (MoU) are signed with Technical Partners for LRI, Hydrology and RS/GIS. This is verified in year 1. • DLR 2.2: DPRs have been prepared utilizing LRI outputs with key environmental and social data/information, and are approved by Gram Sabha. This is measured in year 2. • DLR 2.3: Watershed works have been implemented in a saturation mode. This is measured in years 4 and 5.
Data source/ Agency	MIS/SWDs
Verification Entity	World Bank will carry out the due diligence for prior results; and IVA for all other results
Procedure	Procedure for DLR 2.1 (Prior Result): The Bank will carry out the due diligence of the MoU documents signed with Technical Partners for LRI, Hydrology and RS/GIS. The due diligence procedure will involve reviewing the hard copies or softcopies of the signed MoU documents. Procedure for DLR 2.2: The IVA will verify the DPRs through desk review,

	and check that the DPR is generated by utilizing the LRI outputs with key environmental and social data/information and is approved by the Gram Sabha. This will involve confirming that all of the following are part of the DPR: • Soil and water conservation plans and drainage line treatment plans covering each land management unit in the micro-watershed with supporting GIS maps. • Productivity improvement plans for major agriculture and horticulture crops with supporting GIS maps. • Nutrient management plan. • Record of community consultations. • Record of Gram Sabha approval. • Maps and data on environmentally sensitive areas, common properties including physical and cultural resources. Procedure for DLR 2.3: The verification by IVA will involve both desk review and field verification, as detailed below: Desk review: The IVA will undertake desk review of the Project Completion Reports (PCRs) of the micro-watershed sub-projects. The purpose of the review is to check if the watershed development works have been implemented in a 'saturation' mode. 'Saturation' refers to soil and water conservation and drainage line treatment of every parcel of land that has been recommended for soil and water conservation and drainage line treatment on the basis of LRI as specified in DPR. This will be verified through a comparison of the total number of parcels recommended for soil and water conservation and drainage line treatment in the micro-watershed and the number of treated parcels as reported in the PCRs. This criterion will be considered as met if at least 70% of the total parcels recommended for soil and water conservation and drainage line treatment are listed as treated in the PCRs. Field verification: The IVA will undertake field verification of a representative sample of soil and water conservation and drainage line works in a representative sample of the micro-watershed sub-projects. The purpose of the field verification is to check if the soil and water conservation and drainage line works have been implemented. Compliance with Environmental and Social guidance, including the Excluded Activities List, will also be verified. This will be verified through a comparison of the works as listed in the PCRs and the completed soil and water conservation and drainage line works noted during the field verification. This criterion will be considered as met if 90% of the sampled soil and water conservation and drainage line works are found to be completed during the field verification. Double counting of micro-watersheds for disbursements in years 4 and 5 will be avoided (that is, the micro-watersheds that have been verified as suitable for disbursements in a year will not be considered for verification in the subsequent years) .
DLI 3	Number of farmers who adopt resilient agriculture technologies and practices
Description	This DLI is defined as the number of farmers who adopt at least one technology/practice from a core set of resilient agriculture technologies and practices recommended through agro-advisory (delivered through LRI cards, weather based agro-advisories over mobile, bulletins, communication from extension workers, farmer training programs, etc.). The core set of resilient agriculture technologies and practices will be as defined by Government of India / respective state governments and include measures related to crop diversification, water use efficiency, and other package of appropriate practices that strengthen resilience to climate change impact for the given agro-climatic zone. Such a short list of approved resilient technologies will be reflected in the Program Manual. This DLI is measured in Year 3, 4 and 5.
Data source/ Agency	MIS/SWDs
Verification Entity	IVA
Procedure	The verification by IVA will involve both desk review and field verification, as detailed below: Desk review: The IVA will undertake desk review of the MIS data on farmer adoption. Field verification: The IVA will undertake field verification of a representative sample of farmers in the program areas and verify if the farmers have adopted at least

	one of the recommended technologies/practices. This criterion will be considered as met if 90% of the sampled farmers are found to have adopted the recommended technologies/practices. Double counting of farmers for disbursements will be avoided (that is, farmers verified as suitable for disbursement in a year will not be considered for verification in the subsequent years).
DLI 4	Number of Farmer Producer Organizations (FPOs) with 25% increase in annual business turnover relative to baseline.
Description	This DLI is defined as the number of Farmer Producer Organizations (FPOs) supported under the REWARD Program, that achieve an average annual sales turnover that is at least 25% higher than their baseline levels. The average sales turnover will be calculated based on the annual sales reported by the FPOs in their annual audited financial statements during the reporting period (the average of all years in the reporting period will be considered). This DLI is measured in Year 3, 4, 5. Each year a fresh set of FPOs will be considered for this DLI. The baseline will be the year preceding the FPOs entry into the Program (for existing FPOs) All states shall develop appropriate criteria to shortlist FPOs eligible to be supported under this program and use the same to select target number of FPOs. The criteria for shortlisting FPOs shall be reflected in the Program Manual
Data source/ Agency	MIS/SWDs; Annual audited accounts
Verification Entity	IVA
Procedure	The verification by IVA will involve desk review of the MIS data and on-site (at FPO offices) review of the annual audited accounts statements of the FPOs