Climate Smart Village Approach Design Document

(Bangladesh Context)

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Contents

1.0 Introduction - Climate Smart Village (CSV) Approach Assessment :

The changing climate largely being caused by Global warning consequently multi-hazard events becoming recurrent over the Bangladeshi climate frontline communities, as a result their livelihood assets being hardest hit by the changing climates. Therefore, a systemic and sustainable **"Climate Smart Village (CSV)"** approach and frontline climate governance mechanism need to be put in place for making vulnerable livelihoods resilient to climate change. However considering the endowed Bangladeshi agroecological resources , deltaic geographical and geomorphological settings, prevailing local agroclimatic conditions the FHB proposed CSV concept and outset approach would heavily be imperatives to Disaster Risk Reduction(DRR), Climate Change Adaptation(CCA) , Mitigation and Resilience building while CSV components e.g. climate smart agricultural, weather, sustainable water management, low /zero carbon, organic soil/nitrogen, clean energy and self-sufficient energies to household cooking, knowledge smart related schemes could be fully implemented at household and community level for boosting household and village level economies .

1.1 Understanding the assignment:

From the above perspectives, primarily the CSV approach being pioneered by the CGIAR Research Program being undertaken by the Climate Change, Agriculture and Food Security (CCAFS) partners through providing the village communities with greater facilities for resilient agriculture, mass education & employment, sustainable clean energy, clean water, healthcare facilities, empowerment of women, transportation, communication, and coping mechanisms from multi-hazard induced impacts. However, RDI Limited intended customize the approach through harmonizing local context/settings more robust approach, instrumentalizing the inclusive process, proactive engagement and self-estimated CSV governance mechanisms and suitably fitting in the local context.

The FHB intended **CSV approach** can be materialized by conducting the conclusive assessments, participatory and technical consultations (with frontline/actors/stakeholders), recurrent reviews, site visits etc., and essentially to prepare the detailed CSV masterplan for villages of the FHB intervention areas and feasibly to implement CSV centric actions/schemes/projects for making climate frontline villager's livelihoods resilient to changing climate in Bangladesh. The technical aspects of designing CSV approach are based on inclusive locally led solutions (*sustainable utilization of geological resources, establish the best practices, promote sustainable technologies, introduce smart climate services, undertaking suitable programs, and inclusively engage frontline community in informed-local planning and decision-making process*) essentially enabling frontline villagers sustaining against the persistent local climate risk and vulnerabilities.

Addressing the persistent climate risks and vulnerabilities, sustainably harnessing the local agroecological resources with inclusive village level engagement, the proposed CSV can be suitable approach to reduce poverty, ensure persistent food, energy, water, and environmental security. The CSV concept is the most transformative and paradigm shift from traditional/primitive livelihood to more sustainable, climate resilient, ecologically friendly, inclusive, participatory livelihood options governed by local agroecological resources and mitigating the persistent and incrementally impending climate change risks over the frontline villagers in Bangladesh.

1.2 Objectives of the assessment of CSV approach:

From the above conceptual approach, the overall objective of this assignment is to conduct a "**climate smart village"** approach assessment of the FHB Area Programs in Bangladesh and propose a set of recommendations in terms of climate smart village approach initiated and implement at different parts of Africa and Asia and South Asia continents that can be feasibly implemented by smallholder farmers/farmers groups to increase their resilience and adaptation to climate change.

2.0 Proposed scientific Methodology of assessment of CSV approach.

To materialize the **CSV approach** the required assessment needs to be designed and conducted conclusively so that every elements/component of the approach being well captured, and narrated. Complying with the required tools and process, the RDI Limited intended to conduct robust scientific methods, participatory consultations and field interactions over the FHB APs.

2.1 Rationale of RDI Limited engagement with the assessment

a) The CSV approach is heavily encompassing of technical structure and process that need to be instrumentalize over the last tier of local governments over the self-esteemed village level climate governance in which RDI Limited having specialization on the local government system and technical service delivery expertise.
b) RDI Limited having technical expertise in GIS (GPS and Remote Sensing) mapping and conducting geospatial technology based rural/local assessment and informed planning tools development for project planning capacity in which our professionals were heavily worked under Local Government Engineering Department (LGED) and other international agencies.
c) RDI Limited having professional knowledge on the key local governments sectoral department working at District and Upazila, Union Local Governments with thematic sectors e.g., Agriculture, Fisheries, livestock, Rural communication and infrastructures development, Public health infrastructure, Rural development & Cooperatives, Health and Family Planning, Water resource management, forestry etc., conducting climate risk and vulnerability assessment(CERVA), risk reduction action planning (RRAP), budgeting and project/scheme implementation.
d) Having professional experience in risk-informed sector integrated local development planning (LDP) , budgeting and project implementation at community level.
e) Having professional experience in multi-hazard risk assessment, risk management, early warning, impact-based forecasting and disaster risk management.

2.2 Prepare CERVA tools for develop baseline climate/multi-hazards exposure, risk and vulnerability (CERVA) scenarios:

The key components of CSV deal with Climate Change, Agriculture and Food Security (CCAFS), therefore the tailormade CERVA informed tools are essential for undertaking climate smart actions/projects/schemes at village level. To do so RDI Limited intended to apply the most strategic methods capture the CERVA scenarios and spatially interpreted GIS Base Map on the FHB Aps. The CERVA process GIS & Remote Sensing Technology followed by the elements being captured by the GPS, Kobo-toolbox, drone, and other survey apps. During consultation with local actors/stakeholder/ frontline community and field visits the GIS base map to be utilized for verifying the secondary sourced CERVA maps. RDI Limited intended to develop village level GIS base map and robustly develop climate risk informed tools for detailed CSV planning (micro level land use and land cover).

RDI Limited having archives of Union GIS based map to be used for CERVA purposes and all those Union base map to be further customized with necessary geospatial elements of physical infrastructures , communication networks, land use data compiled from Remote sensing google earth engine, drone captured image etc., and ultimately to develop a comprehensive GIS maps for capturing climate and muti-hazards exposure, risks and vulnerabilities from the households and community level(followed by FGD/KII/Transact-walk, field visits).

2.2.1 CERVA database development (for most vulnerable/model village) : For developing the base case CSV scenario 1 village level detailed CERVA database to be developed for informing the CSV development plan at the end of the day.

2.3 Linking socioeconomic and statistical data with CERVA database:

RDI Limited intended to leverage the most robust assessment mechanism so that a conclusive can be bought out for inclusive plannings. Since the CSV robust approach encompasses a roadmap of hypotheses are currently being

informed by the multi-factorial analytics, multiple-indicators analytics through backlogged composite informed-tools analytical recommendations based decision-supports, and consultative process(residual CERVA scenarios , Socioeconomic conditions, analysis of paradox of climatic and non-climatic risks over the agroecological, endowed resources can be harnessed, enabling capacity of frontlines, local actors/stakeholders/group, village level cooperative mannered entrepreneurships development, women empowered green entrepreneurship development for earning inclusive green growth with transforming a traditional village to climate smart and inclusive green growth and product village at the end of the day. To do so the CERVA repository database to be developed with hybrid sources of information and local consultations.

2.4 Geospatial platform for tailormade informed tools for CSV governance :

The Proposed platform to facilitate the ICT driven Evidence based geospatial services enabled facilities RDI Limited intended to online Open-source Geospatial platform for supporting inclusive CSV level planning, scheme design and implementation.

2.5 Conducting Consultation with relevant stakeholders for identifying strategy/recommendations:

2.5.1 Identify governing structure and process:

SL	CSV components	Consultation method	Participants
•	Review the stakeholder mapping and engagement strategies and charter of responsibilities for promoting CSV governance	Conduct FGD/KII	Conduct consultation with following TWGs at Upazila level; o Upazila Communication and Physical Infrastructure development committee o Upazila Agriculture and irrigation committee o Upazila Primary and Mass education committee o Upazila Health and Family Planning committee o Upazila youth and sport committee o Upazila Women and children development committee o Upazila social welfare committee o Upazila market price observation, monitoring and control committee o Upazila Finance, budget planning and local resource-based revenue earning committee. o Upazila public health, sanitation and pure drinking water supply committee o Uapzila forest department o Uapzila Cooperative Department o Conduct consultation with UP member, DAE lead farmer, Lead fish farmer, middle class landowner, poultry farmer, livestock farmer, commercial vegetable growers, agricultural input supply dealers, stocker, SMEs, rice mill owner, business community, wholesaler, and other stakeholders. o Conduct FGD/KII with educated people and identify the understanding level of rural development planning, delegation of activities,

SL	CSV components	Consultation method	Participants
			participation and coordination and logistic supports ○ Conduct FGD/KII with NGO-lead IGA groups, UP member lead farmers, With participatory & inclusive and cooperative style agricultural, risk culture, livestock farming , IFM, IPM, INM, FYM, IWRM, and other organic farming. Incentive and credit facilities for individual entrepreneurs
•	Determine climate smart village governance:	Conduct FGD/KII	• UP member, DAE lead farmer, Lead fish farmer, middle class landowner, poultry farmer, livestock farmer, commercial vegetable growers, agricultural input supply dealers, stocker, SMEs, rice mill owner, business community, wholesaler, and other stakeholders. • Conduct FGD/KII with educated people and identify the understanding level of rural development planning, delegation of activities, participation and coordination and logistic supports • Conduct FGD/KII with NGO-lead IGA groups, UP member lead farmers, With participatory & inclusive and cooperative style agricultural, risk culture, livestock farming , IFM, IPM, INM, FYM, IWRM, and other organic farming. Incentive and credit facilities for individual entrepreneurs.
•	**Identify the scope of promoting Innovative digital CSV governance:** • Scope of Participatory cooperative-led entrepreneurship development • Scope of Utilization of Digital inclusive finance from the financial institutions/credit operators • Scope of vertical and horizontal access to external finance	Conduct FGD/KII	Consultation with participants outlined on SL 1
•	**Determine Participatory streeting structures** (completely non-political and unbiased)	Conduct FGD/KII	UP member, DAE lead farmer, Lead fish farmer, middle class landowner, poultry farmer, livestock farmer, commercial vegetable growers, agricultural input supply dealers, stocker, SMEs, rice mill owner, business community, wholesaler, and other stakeholders.
•	**CSV Component/thematic area based Technical Working Group (TWG)**	Conduct FGD/KII	• Conduct FGD/KII with educated people and identify the understanding level of rural development planning, delegation of activities, participation and coordination and logistic supports. • UP member, DAE lead farmer, Lead fish farmer, middle class landowner, poultry farmer, livestock farmer, commercial vegetable growers, agricultural input supply dealers, stocker, SMEs, rice mill owner, business community, wholesaler, and other stakeholders.
•	Cooperative mannered fund raising and budgeting system:	Conduct FGD/KII	• Local Banks, Digital Finance System outlets(mobile banking), SMEs, NGO running credit facility, insurance,

SL	CSV components	Consultation method	Participants
			SME loan, agricultural loan, DAE subsidies/loan, Digital finance system (DFS), • UP member, DAE lead farmer, Lead fish farmer, middle class landowner, poultry farmer, livestock farmer, vegetable growers, agricultural input supply dealers, stocker, SMEs, rice mill owner, business community, wholesaler, and other stakeholders.
•	**Rivew rural energy supply and utilization pattern** • Review rural household sources of cooking • Level of firewood uses. • Level of indoor air pollution • Review the sources of biomass potentials • Review RE and Energy efficiency options	Conduct FGD/KII	Participants outlined in point 1
•	**Climate smart homestead vegetable gardening technologies:** • Stack layer, vine, intercropping, intensify cropping density, multiple cropping , sustainable uses of homestead land. • Smart technology for integrated livestock farming, Agro-forestry technology development	Conduct FGD/KII	Participants outlined in point 1
•	**Conduct survey for sustainable landcover map:** • Existing land cover • Current land use practices • Identify the climate risks and vulnerabilities	Conduct FGD/KII	Participants outlined in point 1
•	**Improve climate smart agricultural governance and food security and agricultural value chain (AVC) at local level.** • Village level sustainable agricultural policy, planning, practices inclusivity (complying government rules /regulations) • Transformation of traditional knowledge and practice based less yielding agricultural to climate adaptive/resilient sustainable agriculture by sustainable/optimally uses agroecological and environmental resources. • Market accessibility, market promotion,		Participants outlined in point 1

SL	CSV components	Consultation method	Participants
	• Climate tolerant seedling, sapling, cold storage facilities, agricultural input supplies • Green Entrepreneurship development		
•	**Uses of climate-smart agricultural technologies and practices** • Climate smart IFM (combined organic farming, fish culture, livestock), Integrated Pest management (IPM) , integrated nutrition management, farm-yard manure production(FYM) INM, FYM, for boosting agricultural yields and villagers food security. • Organic agriculture, intercropping, increasing cropping intensity, High Yielding Variety (HYV), High Value Cropping (HVC). • Judicial uses of water resources, rainwater harvesting, water retention, sustainable irrigation practices (AWD, Modular Drip system), less water and high value cropping. • Round the year seedling, sapling, agricultural with green shed and climate adaptive agricultural practices • Green technology based storage facilities (CSD/Silos)		Participants outlined in point 1
•	**Transforming tradition sources of household energy by harnessing sustainable renewable energy sources** • Solar Home Living System, Solar Water Pumping (automatic) • Biogas digester and uses slurry to homestead organic farming. • Rainwater harvesting at household level (Barguna, other coastal areas) • Uses of improved and efficient cook stoves for reducing indoor pollution		Participants outlined in point 1
•	**Green entrepreneurship development**		Participants outlined in point 1

SL	CSV components	Consultation method	Participants
	• Promoting Women headed green entrepreneurships and cooperatives with financial inclusion to create ideal and women friendly smart agricultural community. • Promoting youth green entrepreneurships • Disseminate modern farming knowledge, technologies among female farmers to create ideal and women friendly smart agricultural community. • Promoting local fiscal facilities for encouraging entrepreneurships development, access to green finances and green credit facility for marginal farmers.		
•	**Explore Climate information service** • sector specific operational forecasting, • community based multi-hazard early warning, • weather alerts FM, AM Radio , SMS, Cell Broadcast, IVR etc		Participants outlined in point 1
•	**Dissemination of tools, technical, ideas, best practices** • Social networking group • Climate kiosk • Community Radio • Geospatial web portal		Participants outlined in point 1

2.5.2 Identify the level of climate / multi-hazard risk & vulnerability perception and conducting CREVA and planning tools development.

SL	CREVA Perception of CSV stakeholders	Consultation method	Participants
•	Level of understandability/perception/indigenous knowledge of Climate and Multi-hazard exposure, risk, vulnerability and sensitivity to food and livelihood sector elements	Conduct FGD/KII	UP member, DAE lead farmer, Lead fish farmer, middle class landowner, poultry farmer, livestock farmer, vegetable growers, agricultural input supply dealers, stocker, SMEs, rice mill owner, business community, wholesaler, and other stakeholders.
•	Persistent Climate and Multi-hazard exposure, risk, vulnerability and sensitivity	Conduct FGD/KII	UP member, DAE lead farmer, Lead fish farmer, middle class landowner, poultry farmer, livestock farmer, vegetable growers, agricultural input supply dealers, stocker, SMEs, rice mill owner, business community, wholesaler, and other stakeholders.

SL	CREVA Perception of CSV stakeholders	Consultation method	Participants
•	Community indigenous knowledge on copping capacity and risk reduction strategy	Conduct FGD/KII	UP member, DAE lead farmer, Lead fish farmer, middle class landowner, poultry farmer, livestock farmer, vegetable growers, agricultural input supply dealers, stocker, SMEs, rice mill owner, business community, wholesaler, and other stakeholders.

2.5.3 Identify the level of climate smart subsistence farming:

SL	CREVA Perception of CSV stakeholders	Consultation method	Participants
•	**Knowledge/practices on Climate Smart Agriculture :** Understandability of design the applicability of natural protection/fruit trees surrounding canopies to climate sensitive vegetables gardens (round the year) homestead/orchard for protecting weather stress	Conduct FGD/KII	• Conduct consultation with SMEs, engaging rural development sectors, rural market promoter, business entities, small holder farmers, local NGO credit supported women headed IGA groups, household IGA groups, local cooperative societies, fisheries communities, fish pond owner, Union/Upazila land office, Union/Upazila 17 local government sector departments (Agriculture, Fisheries, livestock, LGED, DPHE, Rural development & Cooperatives, Health and Family Planning, • LGED/BMDA SAE, DAE-SAAO, DPHE SAE/Technicians, DAE lead farmer, Lead fish farmer, middle class landowner, poultry farmer, livestock farmer, vegetable growers, agricultural input supply dealers, stocker, SMEs, rice mill owner, business community, wholesaler, and other stakeholders.
•	**Access to agroclimatic, agricultural operational forecasts, weather warning/alerts :** Review the information tools, disseminations tools and knowledge level of villagers/farmers.	Conduct FGD/KII	LGED/BMDA SAE, DAE-SAAO, DPHE SAE/Technicians, DAE lead farmer, Lead fish farmer, middle class landowner, poultry farmer, livestock farmer, vegetable growers, agricultural input supply dealers, stocker, SMEs, rice mill owner, business community, wholesaler, and other stakeholders.
•	**Water smart:** Sustainable Water harvesting techniques and judicial management of water resources.	Conduct FGD/KII	LGED/BMDA SAE, DAE-SAAO, DPHE SAE/Technicians, DAE lead farmer, Lead fish farmer, middle class landowner, poultry farmer, livestock farmer, vegetable growers
•	**Carbon smart AVC:** Low Carbon/Methane emission from agriculture,	Conduct FGD/KII	Union DAE-SAAO, DAE lead farmer, Lead fish farmer, middle class landowner, poultry farmer, livestock farmer, vegetable growers, agricultural input supply dealers, stocker, SMEs, rice mill owner, business community, wholesaler, and other stakeholders.
•	**Nitrogen smart:** Enriching soil nitrogen with changing cropping patterns, nitrogen fixing cropping.	Conduct FGD/KII	Union DAE-SAAO, DAE lead farmer, Lead fish farmer, middle class landowner, poultry farmer, livestock farmer, vegetable growers, agricultural input supply dealers, stocker, SMEs, rice mill owner, business community, wholesaler, and other stakeholders.
•	**Energy smart:** Potentially to harness clean energy (Renewable energies e.g., biogas/biomass standalone windmill, Solar PV etc.) and reducing indoor air pollution from traditional cooking using	Conduct FGD/KII	Upazila PIO, LGED/BMDA SAE, DAE-SAAO, DPHE SAE/Technicians, DAE lead farmer, Lead fish farmer, middle class landowner, poultry farmer, livestock farmer, vegetable growers, agricultural input supply

SL	CREVA Perception of CSV stakeholders	Consultation method	Participants
	firewood/coal/dung cake/agricultural residues)		dealers, stocker, SMEs, rice mill owner, business community, wholesaler, and other stakeholders.
•	**Knowledge smart:** Enhance marginal farmers knowledge on IFM, IOM, INM, FYM	Conduct FGD/KII	Upazila PIO, Union DAE-SAAO, DAE lead farmer, Lead fish farmer, middle class landowner, poultry farmer, livestock farmer, vegetable growers, agricultural input supply dealers, stocker, SMEs, rice mill owner, business community, wholesaler, and other stakeholders, energy & electronics equipment/accessories traders.
•	**CSV Component/thematic area based Technical Working Group (TWG)**	Conduct FGD/KII	UP member, DAE lead farmer, Lead fish farmer, middle class landowner, poultry farmer, livestock farmer, vegetable growers, agricultural input supply dealers, stocker, SMEs, rice mill owner, business community, wholesaler, and other stakeholders.

2.5.4 Identify Village level disaster management mechanism, copping capacity, emergency response and recovery capacity

SL	CREVA Perception of CSV stakeholders	Consultation method	Participants
•	Level of understandability/perception/indigenous knowledge of Climate and Multi-hazard exposure, risk, vulnerability and sensitivity to food and livelihood sector elements	Conduct FGD/KII	Conduct consultation with Disaster Management Committees: Union Disaster Management Committee (UDMC), Ward Disaster Management Committee (WDMC) member and NGO servicemen, volunteer groups, frontlines, local actors/stakeholders/group, village level cooperatives, NGO running cooperatives, green entrepreneurs, women headed entrepreneurs.
•	DRR/DRM activities, community built structures, DRR related schemes etc.		Upazila PIO, LGED/BMDA SAE, DAE-SAAO, DPHE SAE/Technicians, DAE lead farmer, Lead fish farmer, middle class landowner, poultry farmer, livestock farmer, vegetable growers, agricultural input supply dealers, stocker, SMEs, rice mill owner, business community, wholesaler, and other stakeholders.

3 Conduct Assessment for AVC components wise Planning process, scheme design and implementation :

SL	CREVA Perception of CSV stakeholders	Consultation method	Participants
•	**Land cover plan (GIS tools supported) : Detailed** village GIS base map to be developed to show the current land cover status which would be supportive for CERVA. With this tool the CSV would have convincing and negotiation power with Upazila/Union Land Office for accessing agroecological and other khash land-based resources to be sustainably used by the villagers.	Conduct FGD/KII	• Conduct consultation with SMEs, engaging rural development sectors, rural market promoter, business entities, small holder farmers, local NGO credit supported women headed IGA groups, household IGA groups, local cooperative societies, fisheries communities, fish pond owner, Union/Upazila land office, Union/Upazila 17 local government sector departments (Agriculture, Fisheries, livestock, LGED, DPHE, Rural development & Cooperatives, Health and Family Planning,

SL	CREVA Perception of CSV stakeholders	Consultation method	Participants
			• LGED/BMDA SAE, DAE-SAAO, DPHE SAE/Technicians, DAE lead farmer, Lead fish farmer, middle class landowner, poultry farmer, livestock farmer, vegetable growers, agricultural input supply dealers, stocker, SMEs, rice mill owner, business community, wholesaler, and other stakeholders.
•	**Agricultural and land use management plan (GIS tools supported):** Agricultural cropping plan (GIS tools supported) : Detailed plans to be developed based on Village GIS based map(plot) showing Where and what type of cropping are appropriate to which land. Detailed multi-hazard/season and livelihood IGA based calendars and soil suitable crop selection.	Conduct FGD/KII	LGED/BMDA SAE, DAE-SAAO, DPHE SAE/Technicians, DAE lead farmer, Lead fish farmer, middle class landowner, poultry farmer, livestock farmer, vegetable growers, agricultural input supply dealers, stocker, SMEs, rice mill owner, business community, wholesaler, and other stakeholders.
•	**Agricultural crop management plan (GIS tools supported):** Detailed village GIS base map on cropping to be developed (showing Agri plots) to show what type & location for seedling, sapling, type of crops are suitable to which plots considering agro-climate, impeding nature & types of multi-hazards, agroecology, agrotechnology, cropping season, less water consuming factors, high market value (ahead of season) etc. Selection of intercropping agri-plots, one/tow/multi-season cropping etc.	Conduct FGD/KII	Union DAE-SAAO, DAE lead farmer, Lead fish farmer, middle class landowner, poultry farmer, livestock farmer, vegetable growers, agricultural input supply dealers, stocker, SMEs, rice mill owner, business community, wholesaler, and other stakeholders.
•	**Agriculture horticulture development plan (GIS tools supported):** Suitable site selection for developing permanent horticulture for supplying round the year seedling, sapling etc. Site selection for climate Protective Greenhouse development for round the year cropping. Selection of suitable location for IFM, IPM, INM, Stack-layer faring, road-side slope, fellow land, barren land, river/canal side etc.	Conduct FGD/KII	Union DAE-SAAO, DAE lead farmer, Lead fish farmer, middle class landowner, poultry farmer, livestock farmer, vegetable growers, agricultural input supply dealers, stocker, SMEs, rice mill owner, business community, wholesaler, and other stakeholders.
•	**Water Resources Management Plans (GIS tools supported) :** Detailed village water resource GIS map(plot) based to be prepared showing the waterbodies, wetlands, catchment, rainwater harvesting ponds, water retention ponds, dentification of proposed irrigation access point, drainage facility, wire structure over the drainage network, river tributaries, canals etc, for integrated surface water resource management(IWRM) planning so that the village to be well adapted to climate changing climates.	Conduct FGD/KII	Upazila PIO, LGED/BMDA SAE, DAE-SAAO, DPHE SAE/Technicians, DAE lead farmer, Lead fish farmer, middle class landowner, poultry farmer, livestock farmer, vegetable growers, agricultural input supply dealers, stocker, SMEs, rice mill owner, business community, wholesaler, and other stakeholders.

2.5.6 Assessment of developing climate resilient business model.

SL	CREVA Perception of CSV stakeholders	Consultation method	Participants
•	**Northern agricultural drought prone areas :** Organic Agriculture (IFM, IPM, INM, Stacker agriculture, and other agriculture to fellow lands), soil health improvements etc.	Conduct FGD/KII	• Conduct consultation with SMEs, engaging rural development sectors, rural market promoter, business entities, small holder farmers, local NGO credit supported women headed IGA groups, household IGA groups, local cooperative societies, fisheries communities, fish pond owner, Union/Upazila land office, Union/Upazila 17 local government sector departments (Agriculture, Fisheries, livestock, LGED, DPHE, Rural development & Cooperatives, Health and Family Planning, • LGED/BMDA SAE, DAE-SAAO, DPHE SAE/Technicians, DAE lead farmer, Lead fish farmer, middle class landowner, poultry farmer, livestock farmer, vegetable growers, agricultural input supply dealers, stocker, SMEs, rice mill owner, business community, wholesaler, and other stakeholders.
•	**Flood and river-bank erosions prone areas :** Identify the scope of developing inclusive growth centric entrepreneurships ; • Women/marginal cooperative group based Green entrepreneurship development, business scope and market potential, • Sustainable agricultural management Climate resilient AVC, Livestock Value Chain, Fisheries Value Chain, SME Value chain, green entrepreneurship value chain	Conduct FGD/KII	LGED/BMDA SAE, DAE-SAAO, DPHE SAE/Technicians, DAE lead farmer, Lead fish farmer, middle class landowner, poultry farmer, livestock farmer, vegetable growers, agricultural input supply dealers, stocker, SMEs, rice mill owner, business community, wholesaler, and other stakeholders.
•	**CSV entrepreneurship scope over the Costal fragile landscape :** • The scope of villagers Promoting ecotourism at village level • Scope of the developing permanent shed for smart seedling /sapling • How to develop greenhouse for round the year vegetable production • Ecotourism development	Conduct FGD/KII	LGED/BMDA SAE, DAE-SAAO, DPHE SAE/Technicians, DAE lead farmer, Lead fish farmer, middle class landowner, poultry farmer, livestock farmer, vegetable growers

2.6 Consultation Process for the TOR Indicated queries :

SL	ToR Indicated Queries	FGD/KII Questionnaires	Consultation Tools	Consultation Process	Target Audiences/ Stakeholders
1)	Identify the climate smart (indigenous and technological) agriculture practice in different agroecological zones of Bangladesh in terms of yield increases, efficiency, environmental benefits, soil quality and consideration of gender-responsive technology etc.	Typically, Bangladesh divining into 30 micro-agroecological zones. 1) Tanore AP, Rajshahi district falling under falling under high Ganges river flood plain AEZ 2) Godagari AP, Chapai Nawabganj district falling high Barind track 3) Chapai Nawabganj AP, Chapai Nawabganj district falling under high Ganges River flood plain 4) Ukhiya AP, Cox's Bazar district falling under Chittagong Coastal Plain 5) Patuakhali & Barguna Coastal AP falling under Ganges tidal floodplain.	• GIS Google Map • GIS Base Map of Area Programs • FGD/KII field query Template • CERVA Questionnaire Template • AEZ Maps of the AP	• Review SRDI, BARC, BAMIS tools, process • Conduct KII	• Bangladesh Agricultural Research Council (BARC) • Soil Resource Development Institute SRDI • Bangladesh Agro-Meteorological Information Service (BAMIS) • Uapzila level DAE Offices • Union level SAAO • DAE Local Horticulture and Plant breeding services • NGO led agro services. • Local agro-input supplier/dealer
2)	Identify policy gaps and barriers in promotion of climate smart agriculture in Bangladesh.	• DAE CERVA tools, risk gathering techniques, informed-tools development process. • Identify DAE local level agriculture extension policy and programs and project barriers. • Identify the limitation of DAE agro-met services agri-based operation weather forecasting process. • Climate sensitive cropping calendar, water management calendar • Multi-hazard calendar, impending weather risk, vulnerability, exposure, sensitivity to seasonal agricultural cropping • Level of implementation of Index based crop-agriculture, livestock and fisheries farming. • Financial inclusion to small-holder farming, financial package for lead/marginal/ cooperative and individual farmers (Crop agriculture, Livestock, Fisheries) • DAE perception/understandability to standing crop's exposure risk, vulnerability, sensitivity to sudden on-set multi-hazards (flash *flooding , waterlogging, tidal floods, landslide, agricultural droughts, high winds, high temperature/heat spell,*	• GIS Google Map • GIS Base Map of Area Programs • FGD/KII field query Template • CERVA Questionnaire Template • AEZ Maps of the AP	Review DAE plans, projects, field demonstration schemes, annual plan(ADP), ADP budgets, annual scheme budgets, number	• Bangladesh Agricultural Research Council (BARC) • Soil Resource Development Institute SRDI • Bangladesh Agro-Meteorological Information Service (BAMIS) • Uapzila level DAE Offices • Union level SAAO • DAE Local Horticulture and Plant breeding services • NGO led agro services. • Lead farmer, fish culture farms, livestock farms, poultry farms, • Local agro-input supplier/dealer • Number of farmers receiving agriculture package/subsidies/benefits • No of crop diversification projects

SL	ToR Indicated Queries	FGD/KII Questionnaires	Consultation Tools	Consultation Process	Target Audiences/ Stakeholders
		high humidity, dry spell, high dense fogging, hailstorm, nor waster, tornadoes), level of damage, recovery option. • Upazila level DAE CSA scheme planning and implementation gaps • Level of barriers to CSA local-level planning being induced by in place environmental laws, land management laws, ecosystem, surface waterbody management policy/laws. Level of DAE led negotiation and conflict resolution process. • Barriers of community access to the local agroecological resources, open waterbody(large), fellow(khash) land for sustainable farming, roadside slop, government khans canal (Coastal area), khash pond, khash wetland, khash barren land for sustainable farming.			
3)	Identify crops that can be grown as alternatives to the most impacted crops based on the environmental conditions, farmer livelihoods, and future climate scenarios.	The methodologies include. a) RDI Limited intended to develop a baseline scenarios agroecological resource endowment, harness able renewable and environmental resources (khash water canals at coastal areas, open waterbody in northern aeras) on climate change exposure, risk and vulnerabilities using GIS & Remote Sensing (RS) technology by conducting CERVA over the FHB Program Areas (AP) b) In consultation with DAE officials, Lead farmers, marginal farmers, AVC operators, input suppliers, DAE/Private horticulture, commercial seedling/sapling producers identify the following factors affecting crops-agriculture. ○ Identify the current traditional cropping patters, determine estimation from gross traditional crop yields, identify scope of less water consuming high-value cropping (based on soil condition), determine sudden-onset multi-hazards impact over the standing crops varieties. ○ Summarizing the recommendations on the effectiveness and yielding of climate stress tolerant crop varieties. ○ Identify the market demand of the early yielding varieties, round-the-year vegetable/fruits production (with makeshift model greenhouse) , new crop varieties suitable to agroecology,	• GIS Google Map • GIS Base Map of Area Programs • FGD/KII field query Template • CERVA Questionnaire Template • AEZ Maps of the AP	Review DAE plans, projects, field demonstration schemes, annual plan (ADP), ADP budgets, annual scheme budgets, number	• Uapzila level DAE Offices • Union level SAAO • DAE Local Horticulture and Plant breeding services • NGO led agro services. • Lead farmer, fish culture farms, livestock farms, poultry farms, • Local agro-input supplier/dealer • Number of farmers receiving agriculture package/subsidies/benefits • No of crop diversification projects

SL	ToR Indicated Queries	FGD/KII Questionnaires	Consultation Tools	Consultation Process	Target Audiences/ Stakeholders
		○ Identify the future climate risks over the round- the-year seedling/sapling and climate stress tolerant cropping. ○ Identify the less nursing intensive and easily nursing vaties of cropping (homestead crop gardening, roadside, river side, lakeside, vine over the canal/pond/khash pond etc.			
4)	Assess which amongst the climate-smart village approaches (weather-smart, water smart, carbon smart, nitrogen smart, energy smart, and knowledge smart) would be most appropriate to be implemented in the FH Bangladesh Area Programs.	Develop Sample survey questionnaires/FGD/KII template on each thematic area and conduct assessment/consultation. a) **Weather-smart:** Define/design the applicability of natural protection/fruit trees surrounding canopies to climate sensitive vegetables gardens (round the year) homestead/orchard for protecting weather stress. b) **Water smart:** Sustainable Water harvesting techniques and judicial management of water resources. c) **Carbon smart AVC:** Low Carbon/Methane emission from agriculture, d) **Nitrogen smart:** Enriching soil nitrogen with changing cropping patterns, nitrogen fixing cropping. e) **Energy smart:** Potentially to harness clean energy (Renewable energies e.g., biogas/biomass standalone windmill, Solar PV etc.) and reducing indoor air pollution from traditional cooking using firewood/coal/dung cake/agricultural residues) **f) Knowledge smart:** ○ Enhance marginal farmers knowledge on IFM, IOM, INM, FYM ○ Gap identification and strategy /tools development for enhancing knowledge on CSV, its components, practices etc. ○ Traditional means of livelihood option	• GIS Google Map • GIS Base Map of Area Programs • FGD/KII field query Template • CERVA Questionnaire Template • AEZ Maps of the AP	Review DAE plans, projects, field demonstration schemes, annual plan(ADP), ADP budgets, annual scheme budgets, number	• Uapzila level DAE Offices • Union level SAAO • DAE Local Horticulture and Plant breeding services • NGO led agro services. • Lead farmer, fish culture farms, livestock farms, poultry farms, • Local agro-input supplier/dealer • Number of farmers receiving agriculture package/subsidies/benefits • No of crop diversification projects
5)	Propose specific climate-smart agricultural technologies and practices, under the aforementioned CSV approaches, for smallholder farmers/farmers' groups in the assessment areas aimed at productivity improvement, as well as adaptation	Develop Sample survey questionnaires/FGD/KII template on aforementioned key thematic components of CSV and conduct assessment/consultation to solidify the findings over the following CSV components. a) Local consultation and strategy development on village based participatory local climate governance (mini constituency/governing body) • Develop governance body/stakeholder map. • Inclusive participatory mechanism for planning decision	• GIS Google Map • GIS Base Map of Area Programs • FGD/KII field query Template • CERVA Questionnaire Template • AEZ Maps of the AP	Review DAE plans, projects, field demonstration schemes, annual plan(ADP), ADP budgets, annual scheme budgets, number	• Uapzila level DAE Offices • Union level SAAO • DAE Local Horticulture and Plant breeding services • NGO led agro services. • Lead farmer, fish culture farms, livestock farms, poultry farms, • Local agro-input supplier/dealer

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	to and/or mitigation of the effects of climate change.	• Ensure legal access to local government owned agroecological resources (khash properties) and land tenure mechanism. • Ensure improved access to local government technical and utility services, • How community will have increased knowledge in climate/multi-hazard risk-informed sustainable livelihood practices. b) Identify the options for developing Technical Working Group (TWG) for Union Disaster Management Committee (UDMC), Ward Level Disaster Management Committee, Village level disaster management committee (VDMC) would be mandated to implement village level standing orders on disaster (SoD) , DRM activities, risk reduction action plan (RRAP) • Conducting CREVA • Conducting Post Disaster Damage, Loss and Needs Assessment (PDNA) • Disaster Response and recovery c) Identify the scope of developing CSA and interventions, climate adaptive/resilient model households and households' centric adaptive activities. d) How the household would be self-sufficient in harnessing renewable energies (cooking, home lighting) e) Sefl-sufficient CSV on climate smart agriculture f) Agroecology based adaptive agriculture Over the village administrative areas. g) How to implement IFM, IPM, INM, FYM stack layer farming, floating agriculture, h) Conducting CERVA capacity by CSV TWGs i) Identify the scope of local agroecology based adaptive options. j) Following through above conclusive assessments, RDI Limited intended to identify the CSA affordable suitable technology, new innovation, sustainable indigenous tools/practices, best practices and advocating for the model CSV approaches.			• Number of farmers receiving agriculture package/subsidies/benefits • No of crop diversification projects

SL	ToR Indicated Queries	FGD/KII Questionnaires	Consultation Tools	Consultation Process	Target Audiences/ Stakeholders
		k) Develop query formats to identify the climate smart strategies on the components CSV approaches. l) Identify all value chain approaches (AVC, Fisheries, Livestock etc.)			
6)	Develop feasibility of climate-smart village and climate-smart agriculture analyzing existing climate-vulnerability and future trends of climatic risks.	Conducting above assessment and develop findings	• GIS Google Map • GIS Base Map of Area Programs • FGD/KII field query Template • CERVA Questionnaire Template • AEZ Maps of the AP	Review DAE plans, projects, field demonstration schemes, annual plan(ADP), ADP budgets, annual scheme budgets, number	• Uapzila level DAE Offices • Union level SAAO • DAE Local Horticulture and Plant breeding services • NGO led agro services. • Lead farmer, fish culture farms, livestock farms, poultry farms, • Local agro-input supplier/dealer • Number of farmers receiving agriculture package/subsidies/benefits • No of crop diversification projects
7)	Assess farmer needs (access to inputs, trainings, etc.) to adopt climate-smart agricultural technologies and practices.	• Discussed above	• GIS Google Map • GIS Base Map of Area Programs • FGD/KII field query Template • CERVA Questionnaire Template • AEZ Maps of the AP	Review DAE plans, projects, field demonstration schemes, annual plan(ADP), ADP budgets, annual scheme budgets, number	• Uapzila level DAE Offices • Union level SAAO • DAE Local Horticulture and Plant breeding services • NGO led agro services. • Lead farmer, fish culture farms, livestock farms, poultry farms, • Local agro-input supplier/dealer • Number of farmers receiving agriculture package/subsidies/benefits • No of crop diversification projects
8)	Assess the present climate information service (CIS) system in Bangladesh to promote climate-smart village and its effectiveness, best effective and viable solution	• sector specific operational forecasting, • community based multi-hazard early warning, • weather alerts FM, AM Radio , SMS, Cell Broadcast, IVR etc	• GIS Google Map • GIS Base Map of Area Programs • FGD/KII field query Template • CERVA Questionnaire Template • AEZ Maps of the AP	Review DAE plans, projects, field demonstration schemes, annual plan(ADP), ADP	• Uapzila level DAE Offices • Union level SAAO • DAE Local Horticulture and Plant breeding services • NGO led agro services.

SL	ToR Indicated Queries	FGD/KII Questionnaires	Consultation Tools	Consultation Process	Target Audiences/ Stakeholders
	for eart warbubg message (EWM) dissemination.			budgets, annual scheme budgets, number	• Lead farmer, fish culture farms, livestock farms, poultry farms, • Local agro-input supplier/dealer • Number of farmers receiving agriculture package/subsidies/benefits • No of crop diversification projects
9)	Assess backward and forward linkage of the small farmer's/farmers groups' in the assessment Identify appropriate and efficient stakeholders (local/national/international) to assist climate smart village approach.	Discussed above	• GIS Google Map • GIS Base Map of Area Programs • FGD/KII field query Template • CERVA Questionnaire Template • AEZ Maps of the AP	Review DAE plans, projects, field demonstration schemes, annual plan(ADP), ADP budgets, annual scheme budgets, number	• Uapzila level DAE Offices • Union level SAAO • DAE Local Horticulture and Plant breeding services • NGO led agro services. • Lead farmer, fish culture farms, livestock farms, poultry farms, • Local agro-input supplier/dealer • Number of farmers receiving agriculture package/subsidies/benefits • No of crop diversification projects
10)	Identify appropriate and efficient stakeholders (local/national/international) to assist climate smart village approach.	Discussed above	• GIS Google Map • GIS Base Map of Area Programs • FGD/KII field query Template • CERVA Questionnaire Template • AEZ Maps of the AP	Review DAE plans, projects, field demonstration schemes, annual plan(ADP), ADP budgets, annual scheme budgets, number	• Uapzila level DAE Offices • Union level SAAO • DAE Local Horticulture and Plant breeding services • NGO led agro services. • Lead farmer, fish culture farms, livestock farms, poultry farms, • Local agro-input supplier/dealer • Number of farmers receiving agriculture package/subsidies/benefits • No of crop diversification projects

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11)	Assess the environmental and social (including a gender and youth perspective) impacts of implementing the proposed climate-smart agricultural practices.	Discussed above	• GIS Google Map • GIS Base Map of Area Programs • FGD/KII field query Template • CERVA Questionnaire Template • AEZ Maps of the AP	Review DAE plans, projects, field demonstration schemes, annual plan(ADP), ADP budgets, annual scheme budgets, number	• Uapzila level DAE Offices • Union level SAAO • DAE Local Horticulture and Plant Breeding Services • NGO led agro services. • Lead farmer, fish culture farms, livestock farms, poultry farms, • Local agro-input supplier/dealer • Number of farmers receiving agriculture package/subsidies/benefits • No of crop diversification projects
12)	Disseminate modern farming knowledge and technologies among female farmers to create an ideal and women-friendly smart agricultural community.	Discussed above			
13)	Provide a feasible climate-smart village model, considering environmental, ecological, and climate change legislation and policies of Bangladesh.	• Sample assessment Survey being followed by field visits to agroecology (Tanore , Godagari, Chapai Nawabganj, Barguna, Patuakhali, Ukhiya) • A detailed assessment is being conducted to FHB AP locations to contextualize the CSV model based on			

3.0 Deliverables and Timeline:

Deliverable	Timeline												Completion data
	Dec 2023				Jan 2024				Feb 2024				
	W1	W2	W3	W4	W1	W2	W3	W4	W1	W2	W3	W4	
Plan with the explanation of how the tasks will be undertaken, including detailed methodology for all tasks and their indicative timelines													10th Dec 2023
Develop set of questionnaires for survey, KII, FGD													20th Dec-2023
Evaluation of the selected deliverables (takes into account evaluation tools of the Methodology)													5th Jan 2024
Draft assessment report, which reflects on key items of the assessment as pointed out in the scope of work, developed and submitted													10th Jan 2024
Final assessment report, which addresses comments and additions from the FH, submitted													20th Feb 2024