

Template/Pro forma for Submission

NMHS-FINAL TECHNICAL REPORT (FTR)

Demand-Driven Action Research Project Grant

NMHS Reference No.: NMHS/2016-17/SG17/06

Date of Submission: 0 0 0 0 0 0 0
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PROJECT TITLE (IN CAPITAL)

“CONSERVATION OF LOCAL ECOLOGY, AND DEGRADED OR WASTELAND MANAGEMENT THROUGH “RAMBANS” (AGAVE) PLANTATION AND GENERATION OF AVAILABILITY OF RESOURCES IN VILLAGES FOR PROVIDING BASE TO LIVELIHOOD ACTIVITIES“

Project Duration: from (31.03.2017) to (30.09.2020).

Submitted to:

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Submitted by:

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GENERAL INSTRUCTIONS:

1. The Final Technical Report (FTR) has to commence from the date of start of the Project (as per the Sanction Order issued at the start of the project) till its completion. Each detail has to comply with the NMHS Sanction Order.
2. The FTR should be neatly typed (in Arial with font size 11 with 1.5 spacing between the lines) with all details as per the enclosed format for direct reproduction by photo-offset process. Colored Photographs (4-5 good action photographs), tables and graphs should be accommodated within the report or should be annexed with captions. Sketches and diagrammatic illustrations may also be given giving step-by-step details about the methodology followed in technology development/modulation, transfer and training. Any correction or rewriting should be avoided. Please give information under each head in serial order.
3. Training/ Capacity Building Manuals (with details contents of training programme technical details and techniques involved) or any such display material related to project activities along with slides, charts, photographs should be brought at the venue of the Annual Monitoring & Evaluation (M&E) Workshop and sent at the NMHS-PMU, GBPNIHESD HQs, Kosi-Katarmal, Almora 263643, Uttarakhand. In all Knowledge Products, the Grant/ Fund support of the NMHS should be duly acknowledged.
4. The FTR Format is in sync with many other essential requirements and norms desired by the Govt. of India time to time, so each section of the NMHS-FTR needs to be duly filled by the proponent and verified by the Head of the Lead Implementing Organization/ Institution/ University.
5. Five (5) bound hard copies of the Project Final Technical Report (FTR) and a soft copy should be submitted to the **Nodal Officer, NMHS-PMU, GBPNIHESD HQs, Kosi-Katarmal, Almora, Uttarakhand.**

The FTR is to be submitted into following two parts:

Part A – Project Summary Report

Part B – Project Detailed Report

Following Financial and other necessary documents/certificates need to be submitted along with Final Technical Report (FTR):

Annexure I	Consolidated and Audited Utilization Certificate (UC) & Statement of Expenditure (SE) , including interest earned for the last Fiscal year(s) and the duly filled GFR-12A (with past year-wise break-up)
Annexure II	Consolidated Interest Earned Certificate
Annexure III	Consolidated Assets Certificate showing the cost of the equipment in Foreign and Indian currency, Date of Purchase, etc. (with break-up as per the NMHS Sanction Order and year wise).
Annexure IV	List of all the equipment, assets and peripherals purchased through the NMHS grant with current status of use including location of deployment.
Annexure V	Consolidated Manpower Certificate and Direct Benefit Transfer (DBT) Details showing the education background, i.e. NET/GATE etc. qualified or not, Date of joining and leaving, Salary paid per month and per annum (with break up as per the Sanction Order and year-wise).
Annexure VI	Refund of any unspent balance as Demand Draft in favor of DDO, GBPNIHESD payable at GBPNIHESD, Kosi-Katarmal, Almora, Uttarakhand.
Annexure VII	Details of Technology Transfer and Intellectual Property Rights developed.

NMHS-Final Technical Report (FTR) *template*

Demand-Driven Action Research Project

DSL: Date of Sanction Letter

3	1	0	3	2	0	1	7
d	d	m	m	y	y	y	y

DPC: Date of Project Completion

3	0	0	9	2	0	2	0
d	d	m	m	y	y	y	y

Part A: Project Summary Report

1. Project Description

i.	Project Reference No.	NMHS/2016-17/SG17/06					
ii.	Type of Project	Small Grant	√	Medium Grant		Large Grant	
iii.	Project Title	“CONSERVATION OF LOCAL ECOLOGY, AND DEGRADED OR WASTELAND MANAGEMENT THROUGH “RAMBANS” (AGAVE) PLANTATION AND GENERATION OF AVAILABILITY OF RESOURCES IN VILLAGES FOR PROVIDING BASE TO LIVELIHOOD ACTIVITIES“					
iv.	State under which Project is Sanctioned	UTTARKHAND					
v.	Project Sites (IHR States covered) (Maps to be attached)	State - Uttarakhand District - Pauri Garhwal Block - Yamkeshwar/Duggadda/Dwarikhal					
vi.	Scale of Project Operation	Local	√	Regional		Pan-Himalayan	
vii.	Total Budget/ Outlay of the Project	3429300+152000= 0.3581300 (in Cr)					
viii.	Lead Agency	Girish Grih Udyog Evam Resha Utpadn Samiti Kimsar					
	Principal Investigator (PI)	Shri Satish Kandwal					
	Co-Principal Investigator (Co-PI)	NA					
ix.	Project Implementing Partners	<ul style="list-style-type: none"> •Graphic Era university Dehradun •Villagers •Girish Grih Udyog Evam Resha Utpadn Samiti Kimsar 					
	Key Persons / Point of Contacts with Contact Details, Ph. No, E-mail	Sandeep Kandwal Contact - +9412111695 Email - sankandwal@gmail.com					

2. Project Outcome

2.1. Abstract (not more than 500 words) [it should include background of the study, aim, objectives, methodology, approach, results, conclusion and recommendations).

Background: Since Rambans (AGAVE) plant grows in hill areas local peoples use it for fencing some where they use it for making ropes but they were not aware about its uses for their livelihood activities. In 1982 an experiment done at village level in Kimsar village of Pauri Garhwal District of Uttarakhand 05 hac plantation done in landslide affected waste land. After few months later fibre extraction starts from the plantation site and few peoples starts the livelihood activity from the village. As the plantation grows it was noticed that, land slide affected area prevented from land slide and plantation site filled with other type of small new plants (Sal ,Sheesham, Sandan, Bhimal Timlu, cheed etc), which was a good result found other then the result found for livelihood activity. Multiple dimensional results found through one activity in the village. In this background following objectives were set to to execute the project.

Objectives/ Aim: Prevention of Soil Erosion through Rambans Plants Plantation, Prevention of Land Degradation through Rambans Plants Plantation, Increase Forest Cover Area in the Region through Rambans Plants Plantation, Increase of Fiber yield in the Villages through Rambans Plants Plantation, Develop Income Generation Sources for the Villagers in Remote Areas through Rambans Plants Plantation, Stop migration from villages.

Methodologys: Awareness meetings with villagers, selection of land, preparation of nursery sites, plantation of Rambans plants, skill up gradation trainings, Designs development workshops, installation of fibre extraction machines, installation of bio gas plants, fibre extraction on sites.

Approach: Primary level meetings with villagers especially women groups in different villages. Next round of meeting to clear their doubts, assumptions. Third round of meeting to plane how to act for project findings.Regular talks with villagers.

Results:

- Before project, villagers were not aware about how to use the waste land (unused land) for their livelihood activities Now with support of the project 20 Hac waste land covered through Rambans plantation in 11 No of villages to meet out all the project objectives.
- Before project villagers specially women SHGs were not trained about how to grow Rambans plantation, use it to check soil erosion, to increase forest cover area, to collect fibre, to produce fibre base new products. Now with support of the NMHS project ~500 nos of villagers are and trained skilled to produce fibre /finished products.
- Fibre yield starts at 04 No's of villages.
- Bio gas plants are running in the villages, four families are sported for saving their time and money.

Conclusion:- Rambans palant is a xerophytes and suitable for waste land development as well as beautification of un used land near the villages, suitable for development of green belt near villages, suitable for treatment of land slide prone areas, suitable for fiber yield in the villages for livelihood activity,

Recommendations: There is scope for Project replication in villages in hills of Uttarakhand where there are peoples are not doing agriculture/horticulture activities due to climate change, due to loss in yield by wild animals, due to non or less availability of water supply in villages etc.

2.2. Objective-wise Major Achievements

S. No.	Objectives	Major achievements (in bullets points)
01	Prevention of Soil Erosion through Rambans Plants Plantation	<ul style="list-style-type: none"> • Command Area prevented from soil erosion through Rambans plantation, 20 ha. covered by 93000 Rambans Plants at village Pumba, Kuletha, Kanda, Umroli, Panchur, Amgaon, Kandi, Jayhari, Kasyali, Kotkinda, Baghelgaon, of Yamkeshwar Block. Since Rambans is a perfect soil binder so this plantation will effectively check soil erosion in and around the plantation and provide solid base to complete check on soil erosion for future.
02	Prevention of Land Degradation through Rambans Plants Plantation	<ul style="list-style-type: none"> • 20 ha. covered by 93000 Rambans Plants at village Pumba, Kuletha, Kanda, Umroli, Panchur, Amgaon, Kandi, Jayhari, Kasyali, Kotkinda, Baghelgaon, of Yamkeshwar Block. This will effectively prevent land degradation in and around plantation provide solid base to complete check on further land degradation in future.
03	Increase Forest Cover Area in the Region	<ul style="list-style-type: none"> • Increase in the Forest Cover Area, 20 ha. covered by 93000 Rambans Plants at village Pumba, Kuletha, Kanda, Umroli, Panchur, Amgaon, Kandi, Jayhari, Kasyali, Kotkinda, Baghelgaon, of Yamkeshwar Block. This will provide solid base to increase forest cover in and around the plantation sites since Rambans plantation protects other nearby plants from animals and provide favorable condition to grow.
04	Increase of Fiber yield in the Villages	<ul style="list-style-type: none"> • Before plantation Rambans fibre yield was zero in the villages where Rambans plantation is done, • After plantation fibre yield or potential of fibre yield is increased by 450 kg/ hac.
05	Develop Income Generation Sources for the Villagers in Remote Areas	21 spots of Rambans Plantation developed in Pumba, Kuletha, Kanda, Umroli, Panchur, Amgaon, Kandi, Jayhari, Kasyali, Kotkinda, Baghelgaon,
06	Stop migration from villages	<ul style="list-style-type: none"> • Before plantation Rambans fibre yield was zero in the villages where Rambans plantation is done, • After plantation fibre yield or potential of fibre yield is increased by 450 kg/ hac. • This development definitely capable to provide small & solid base to the people who want to migrate from the village on the basis of non availability of raw material to start production for livelihood cause.

2.3. Outputs in terms of Quantifiable Deliverables*

S. No.	Quantifiable Deliverables*	Monitoring Indicators*	Quantified Output/ Outcome achieved	Deviations made, if any, and Reason thereof:
1.	Skill Building Trainings and Market Linkages to generate livelihood support for ~ 500 villagers.	Skill building of community/villagers Nos.)	<ul style="list-style-type: none"> • 512 no's of villagers trained •228 no's of participants take part in Capacity building about, Nursery development, Plantation of Rambans plants in correct way to achieve the maximum benefits. •166 no's Skilled to collect the leaves from plant without harming the plant & plantation and, to operate decorticator machine to extract or produce fibre, Stock keeping and maintenance. •118 No skilled to produce and finish new designs. •Due to covid-19 situation and other technical and certifications issues only the local market linkages are established for the groups 	Due to Covi-19 only linkage with local buyers are established yet, when the SHG's have their own GST no's and other certifications online linkages through registration could be established easily (no need of any grant).
2.	Plantation of Rambans for soil erosion control in 18 hectares degraded/ waste land	Command Area prevented from soil erosion through Rambans plantation(Ha).	20 Hac Rambans plantation completed and 18 hac of land is sloppy and landslide prone. Since Rambans plant is suitable to check the land slide so in near future 17 hac of plantation will play effective roll in the area.	
3.	Assessment Report on Increase in Green Belt through Village Ecosystem	Increase in the Forest Cover Area (in ha) in the target region/ site.	20 Hac Rambans plantation completed as per previous studies it would effectively provide protection to grow other natural wild plants which turn into the green belt in 05-10years.	
4	Fact File on Trends of Fiber Yield in the Villages of the Selected Sites.	Livelihood Enhancement achieved in identified Villages(Rs/Ca pita; beneficiaries Nos)	Fibre yield or fibre yield potential increased from 00kg - 450 kg/hac (Rs00 to Rs 67500/hac)/25 beneficiaries	
5	A Strategic Manual on Rambans Plantation and Development for livelihood support and	Manual and new technology developed (Nos)	21 spots of Rambans plantations (20hac) are established and the plantation has potential to collect 9000kg (in Rs 1350000.00) of fibre yield per annum. This availability of raw material would provide strong support to the Govt. Policy to check kind of migration based on non	

checking outmigration	availability of raw material for livelihood activity.
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(*) As stated in the Sanction Letter issued by the NMHS-PMU.

2.4. Strategic Steps with respect to Outcomes (in bullets)

S. No.	Particulars	Number and Brief Details	Details of Attachment/ Supporting Document
1.	New Methodology developed:	-----	
2.	New Models/ Process/ Strategy developed:	New process established- means new fibre extraction (decortications) technique established in the area, New Strategy developed- means to aware villagers to utilize their land near village to beautify their villages through Rambans plantation and develop raw material bank for livelihood activity in the villages.	Photographs attached,
3.	New Species identified:	.....	.....
4.	New Database established:	.....	.....
5.	New Patent, if any:	.....	.....
	I. Filed (Indian/ International)	.....	.....
	II. Granted (Indian/ International)	.....	.....
	III. Technology Transfer(if any)	.....	.....
6.	Others (if any):	.....	.....

3. Technological Intervention

S. No.	Type of Intervention	Brief Narration on the interventions	Unit Details (No. of villagers benefited / Area Developed)
1.	Development and deployment of indigenous technology	At four places 04 Decorticator machine for fibre extraction are deployed for 20 hac plantation.	20 hac. Rambans plantation completed in 11 villages, 201 No of villagers benefited (Land owners).
2.	Diffusion of High-end Technology in the region	NA	NA

3.	Induction of New Technology in the region	There was no fibre extraction machine (manual, motorised machines) was available for the peoples in the region. Through the NMHS project villagers have their own fibre extraction machine to collect and produce Rambans leaf fibre.	04 No's Decorticator machine running in the area, 201 No's of villagers/ SHG members benefited.
4.	Publication of Technological / Process Manuals	NA	NA
	Others (if any)	NA	NA

4. New Data Generated over the Baseline Data

S. No.	New Data Details	Status of Existing Baseline	Additionality and Utilisation New data
1.	20 hac land covered through Rambans plantation.	11 villages have their own Rambans plantation sites.	Have potential to set a trend to utilise waste land near villages.
2.	04 Decorticator machine installed	04 Decorticator machines are running in the area.	Villagers know how to operate fibre extraction machine.
3.	~ 500 villagers associated	Villagers know how to grow nursery, develop plantation, Operate decorticator machine, produce products from Rambans fibre for market.	Ready for supply on demand.

5. Demonstrative Skill Development and Capacity Building/ Manpower Trained

S. No.	Type of Activities	Details with number	Activity Intended for	Participants/Trained				
				SC	ST	Obc	Woman	Total
1.	Workshops	00	---	00	00	00	00	00
2.	On Field Trainings	19	<ul style="list-style-type: none"> • Nursery development 03 • 01 Capacity building training of women groups • Plantation 11 • 04 on Leaf cutting (how to cut Rambans Leaf from plant safely without damaging plant). • How to operate Decorticator machine. • Fibre Extraction from Rambans leaf. • Fibre cleaning • Fibre Keeping 	12	00	00	33	45
				11	00		15	26
				...	00	00	183	183
								140
								=394
3.	Skill Development/ Design development	04	• Use of Rambans Leaf fibre to produce various products & designs	16	00	07	95	118
4.	Academic Supports							
5.	Others (if any)							

6. Linkages with Regional & National Priorities (SDGs, INDC, etc)/ Collaborations

S. No.	Linkages /collaborations	Details	No. of Publications/ Events Held	Beneficiaries
1.	Sustainable Development Goal (SDG)			
2.	Climate Change/INDC targets			
3.	International Commitments			
4.	Bilateral engagements			
5.	National Policies			
6.	Others collaborations			

7. Project Stakeholders/ Beneficiaries and Impacts

S. No.	Stakeholders	Support Activities	Impacts
1.	Gram Panchayats	--	--
2.	Govt Departments (Agriculture/ Forest)	--	--
3.	Villagers	Awareness activity towards Rambans plantation & Lantana removal,	Lantana Removal program executed on 21.5 hac land near the villages
4.	SC Community	--	--
5.	ST Community	--	--
6.	Women Group	<ul style="list-style-type: none"> •Nursery development & Rambans plantation to use degraded/ unused land with in or near village for Rambans plantation and to beautify the land. •Skill up gradation/ Design development. •Capacity building workshop on Leaf cutting (how to cut Rambans Leaf from plant safely without damaging the plant), How to operate Decorticator machine, Fibre Extraction from Rambans leaf, Fibre cleaning, Stock Keeping. 	20Hac. of Rambans plantation done 228 women benefitted 118 women benefitted 166 women benefitted
	Others (if any)		

8. Financial Summary (Cumulative)

S. No.	Financial Position/Budget Head	Funds Received	Expenditure/ Utilized	% of Total cost
I.	Salaries/Manpower cost	250000.00	250000.00	100%
II.	Travel	180000.00	180000.00	100%
III.	Expendables & Consumables	00.00	00.00	00%
IV.	Contingencies	180000.00	180000.00	100%
V.	Activities & Other Project cost	1832000.00	1832000.00	100%
VI.	Institutional Charges	447300.00	447300.00	100%
VII.	Equipments	652000.00	652000.00	100%
	Total	3541300.00	3541300.00	
	Interest earned			
	Grand Total			

* Please attach the consolidated and audited Utilization Certificate (UC) and Year wise Statement of Expenditure (SE) separately, *ref. Annexure I.*

9. Major Equipment/ Peripherals Procured under the Project** (if any)

S. No.	Name of Equipments	Cost (INR)	Utilisation of the Equipment after project
1.	04 No's of Decorticator with Engine	500000.00	For Rambans leaf Fibre extraction from the plantation area
2.	04 No's of Bio Gas systems	152000.00	For utilization of Rambans leaf pulp (separated during decortications process) for collection of Bio gas before turnout into the compost, so that beneficiaries can use it for cooking .

**Details should be provided in details (ref Annexure III &IV).

10. Quantification of Overall Project Progress

S. No.	Parameters	Total (Numeric)	Details of Attachments/ Supporting Documents
1.	IHR States Covered	01	Map attached
2.	Project Site/ Field Stations Developed	21/04	Photo attached
3.	New Methods/ Modeling Developed	04	Site photos attached
4.	No. of Trainings arranged	11	Photos attached
5.	No of beneficiaries attended trainings	284 No's	List attached
6.	Scientific Manpower Developed (Phd/M.Sc./JRF/SRF/ RA):	NA	--
7.	SC stakeholders benefited	35 No's	List attached
8.	ST stakeholders benefited	NA	-
9.	Women Empowered	512 No's	List attached
10.	No of Workshops Arranged along with level of participation	00No's	-
11.	On-field Demonstration Models initiated	04 No	Map & Photo attached
12.	Livelihood Options promoted	02 No's	Photo attached
13.	Technical/ Training Manuals prepared	NA	NA
14.	Processing Units established	04	photos attached
15.	No of Species Collected	NA	--
16.	New Species identified	NA	--
17.	New Database generated (Types):	...	--
	Others (if any)		

11. Knowledge Products (KPs) and Publications

S. No.	Knowledge Products (KPs)/ Publication	Number		Total Impact Factor	Remarks/ Enclosures
		National	International		
1.	Journal Research Articles/ Special Issue:				
2.	Book Chapter(s)/ Books:				
3.	Technical Reports				
4.	Training Manual (Skill Development/ Capacity Building)				
5.	Papers presented in Conferences/Seminars				
6.	Policy Drafts/Papers				
7.	Others:				

*Please append the list of KPs/ publications (with impact factor and further details) with due Acknowledgement to NMHS.

12.1. Success Model(s)/ Best Practice(s) under the Project:

Parameters	Description	Details of Attached supporting documents
(1) Adaptability of the Technology:	Fibre extraction Technology is adopted easily by the women SHG members	Photos attached
(2) Acceptability (interest of the local people):	Local people are more interested about fibre related income generation activity and asking for Rambans plants to develop Rambans Plantation in the villages to use the nearby waste land.	
(3) Improvement in Ecological Variables:		
(4) Baseline Data and Comparison with the Controlled Data:		
(5) Outcomes of the Scientific Publications, Knowledge Products:		

12.2. Recommendation on Utility of Project Findings, Replicability and Exit Strategy

Particulars	Recommendations
Utility of the Project Findings:	<ul style="list-style-type: none"> •Plantation will be Demonstrative model for the other peoples to think about utilization of waste land development, for their livelihood activity and to contribute for environmental purpose. •Plantation will be Demonstrative model to inspire other peoples to establish low cost raw material bank at village level. • Established Fibre extraction mechanism will build confidence among the villagers and inspire other local people to think about same or other establishments at their own areas. • The project findings would play revolutionary effect to spread awareness regarding uses of available natural fibre in hill areas.
Replicability of Project:	Easily replicable anywhere especially in the hill areas.
Exit Strategy:	<p>Since during the project women SHG’s and individuals gain all the practical knowledge with field practice about all the steps and technical knowhow for, how to grow nursery of Rambans plants, how to plan plantation, about suitable land selection for Rambans plantation for maximum benefits regarding environment and fibre yield, about fibre extraction machine as well as fibre extraction through decortications process, use of pulp for collection of bio gas and compost, fibre keeping, availability of market for supporting accessories, product designing stocking and, availability of market, preparation to conjoin market demand. This is the complete exercise done for self-sustaining and benefitting the stakeholders and local community at project sites and for safe exit after completion of the project.</p> <ul style="list-style-type: none"> •All the benefits of Rambans Plantation, Decorticator machine establishment, Bio gas systems all are handed over to the villagers. •For self-sustaining all the information regarding the documentation and certifications for listing their products online has properly given to the stakeholders and local community. We are also with them for any help in future regarding marketing strategies and to sale their produces in local market as the market grows after Covid-19 effect.

(PROJECT PROPONENT/ COORDINATOR)

(Signed and Stamped)

(HEAD OF THE INSTITUTION)

(Signed and Stamped)

Place:

Date:/...../.....

Ramabns fibre Extraction Machine (Decorticator)

Jayhari



Kasyali



Pumba



Umroli



Bio Gas Systems

Jayhari



Kasyali



Umroli



Pumba



PART B: PROJECT DETAILED REPORT

The Detailed report should include an Executive Summary and it should have separate chapters on (i) Introduction (ii) **Methodologies, Strategy and Approach** (iii) **Key Findings and Results** (iv) **Overall Achievements** (v) **Project's Impacts in IHR** (vi) **Exit Strategy and Sustainability** (vii) **References and** (viii) **Acknowledgement** (It should have a mention of financial grant from the NMHS, MoEF&CC)

Further, description of Technical Activities, List of Trainings/ Workshops/ Seminars with details of trained resources, list of New Products developed under the project, Manual of Standard Operating Procedures (SOPs) developed, Technology developed/Transferred etc should be enclosed as Appendix.

EXECUTIVE SUMMARY

The Executive Summary of the project should not be more than 3–5 pages, covering all essential features in precise and concise manner as stated in Part A (Project Summary Report) and Part B (Comprehensive Report).

INTRODUCTION

Background of the Project :Since Rambans (AGAVE) plant grows in hill areas local people use it for fencing some where they use it for making ropes but they were not aware about its uses for their income generation activities. In 1982 an experiment done at village level in Kimsar village of Pauri Garhwal District of Uttarakhand, 05ha landslide affected waste land covered by the Rambans plantation. Few months later fibre extraction starts from the plantation site and few people start the livelihood activity from the village. As the plantation grows it was noticed that, landslide affected area prevented from landslide and plantation site filled with other type of small new plants (Sal, Sheesham, Sandan, Bhimal Timlu, cheed etc), which was a good result found other than the result found for livelihood activity. Multiple dimensional results found through one activity in the village. Since the process involved for Rambans plantation is not complicated so it was found good to replicate this work in hill areas to use waste land for multiple results for the villages (in terms of village environment/local ecology enhancement, etc.) (max 500 words)

Overview of the Major Issues to be Addressed (max. 1000 words)-

-Since unused land increased in the villages due to continuous migration in hill areas of Uttarakhand so there is need to use of unused land (waste land) in villages for developing some recourses at the village level for the people who are living in the villages and for the people who wants to return at there villages in the hill areas at least have some resources in there village.

- Due to many reasons soil erosion happened in hill areas among these reasons mainly water flow from hill to river basin is a major cause for soil erosion in the hill area so it is need to check or slowdown the soil erosion in hill area through plantation

-Due to heavy migration women in villages facing more pressure of work regarding fodder Collection to their cattle's . Once Rambans plantation established in wasteland near villages a time base phenomena of increase in forest cover area will happened in the region which also help for betterment in environmental causes as well as fodder availability near villages which save time of village women in hill area.

-Peoples from the village (especially women) need to develop sites for raw material for livelihood activities in village.

Baseline Data and Project Scope (max. 1000 words) NA

Project Objectives and Target Deliverables (as per the NMHS Sanction Order)

S. No.	Objectives
01	Prevention of Soil Erosion through Rambans Plants Plantation
02	Prevention of Land Degradation through Rambans Plants Plantation
03	Increase Forest Cover Area in the Region
04	Increase of Fiber yield in the Villages
05	Develop Income Generation Sources for the Villagers in Remote Areas
06	Stop migration from villages

S. No.	Quantifiable Deliverables*
1.	Skill Building Trainings and Market Linkages to generate livelihood support for ~ 500 villagers.
2.	Plantation of Rambans for soil erosion control in 18 hectares degraded/ waste land
3.	Assessment Report on Increase in Green Belt through Village Ecosystem
4	Fact File on Trends of Fiber Yield in the Villages of the Selected Sites.
5	A Strategic Manual on Rambans Plantation and Development for livelihood support and checking outmigration

METHODOLOGIES, STARTEGY AND APPROACH

Methodologies used for the study (max. 1000 words)

- FOCUS AREA
 - REACH IN VILLAGES
 - PRIMARY PREPRATION
 - SELECTION OF SITE
 - NURSERY SETUP
 - PLANTATION
 - TRAININGS
 - SKILL DEVELOPMENT
 - SECOND ROUND OF PLANTATION
 - ON FIELD TRAININGS
 - EXPOSURE
 - MARKET
-
- Selection of target areas of Yamkeshwar, Dwarikhal, Dugdda those who are focus blocks.
 - First round of meeting held at village level regarding awareness about NMHS project.
 - Approach to the women groups those who shown interest about work with NMHS project.
 - Second round of meeting organized with interested women groups for awareness about project

goals.

- Meeting with people to find suitable land for nursery development.
- Approach to nearby SHG's to meet interested SHG's members to short out local issues and join other SHG's to meet out project goal.
 - Selection of lands those who are land slide prone, waste land, near village, one of the sites which can contribute for beautification of village after plantation.
 - Collection of pre plantation soil data, plants data, etc.
 - Nursery development.
 - Site preparation for plantation.
 - Plantation of Rambans plants.
 - Post plantation data collection for study.

Preparatory Actions and Agencies Involved (max. 1000 words)

- Selection of target areas of Yamkeshwar, Dwarikhal, Dugdda those who are focus blocks.
 - First round of meeting held at village level regarding awareness about NMHS project.
 - Approach to the women groups those who shown interest about work with NMHS project.
 - Second round of meeting organized with interested women groups for awareness about project goals.
 - Meeting with people to find suitable land for nursery development.
 - Approach to nearby SHG's to meet interested SHG's members to short out local issues and join other SHG's to meet out project goal.
 - Selection of lands those who are land slide prone, waste land, near village, one of the sites which can contribute for beautification of village after plantation.
 - Collection of pre plantation soil data, plants data, etc.
 - Nursery development.
 - Site preparation for plantation.
 - Plantation of Rambans plants.
 - Post plantation data collection for study.
- Graphic Era University Dehraoon for technical study on Rambans plantation.

Details of Scientific data collected and Equipments Used (max 500 words)

The locations were identified from the eight villages and the soil samples were collected randomly. The soil samples from 0-15 cm depth were collected by using spade and pawada. The samples were homogenized and about 1 Kg soil sample was collected in the polyethylene bag, labeled with sample ID which includes site number. The samples were brought to the laboratory for analysis of pH, EC, organic carbon, available phosphorus, available potassium, sulphur, boron, zinc, iron, manganese and copper.

Primary Data Collected (max 500 words)

The soil samples from 0-15 cm depth were collected by using spade and pawada. The samples were homogenized and about 1 Kg soil sample was collected in the polyethylene bag, labeled with sample ID which includes site number.

Details of Field Survey arranged (max 500 words)

Strategic Planning for each Activities (max. 1000 words)

- Selection of target areas of Yamkeshwar, Dwarikhal, Dugdda those who are focus blocks.
- First round of meeting held at village level regarding awareness about NMHS project.
- Approach to the women groups those who shown interest about work with NMHS project.
- Second round of meeting organized with interested women groups for awareness about project

goals.

- Meeting with people to find suitable land for nursery development.
- Approach to nearby SHG's to meet interested SHG's members to short out local issues and join other SHG's to meet out project goal.
 - Selection of lands those who are land slide prone, waste land, near village, one of the sites which can contribute for beautification of village after plantation.
 - Collection of pre plantation soil data, plants data, etc.
 - Nursery development.
 - Site preparation for plantation.
 - Plantation of Rambans plants.
 - Post plantation data collection for study.

Activity wise Time frame followed [using Gantt/ PERT Chart (max. 1000 words)]

Activity1.1

Nursery development, land preparation 1-7 month

Activity1.2

RAMBANS (AGAVE) Plantation 8-10 & 20-22 month

Activity1.3

Biogas Plant 31-33 month

Activity2.1

Machine Installation 16-18 & 23-25 month

Activity2.1

Machine Installation 16-18 & 23-25 month

KEY FINDINGS AND RESULTS

Major Research Findings (max. 1000 words)

Key Results (max 1000 words in bullets covering all activities)

Conclusion of the study (maximum 500 words in bullets)

The plantation of *Agave sisal* in the study area is part of revegetation and reclamation of barren land of the Garhwal region. The plantation aims to bind the soil, improve its condition and socio-economic upliftment of rural people. The soil samples were collected randomly before and after plantation from the eight sites. Collected soil samples were analyzed and tabulated in Table.1. Thus far, there are no significant differences among the parameters before and after plantation. It was observed that the average value (ppm) for iron and zinc was high as compared to other authors, which might be due to pH value and difference in regions.

Some of the authors reported that the impact outcome of the plantation of *Agave sisal* continuously on-site can alter habitat, modification of nutrient regime, monoculture formation. It might be due to high reproductive potential (Hartemink et al., 1996, FAO, 2012). In study sites, any drastic changes in soil condition were not observed but it is very early to say that there is no impact of *A.sisal* on soil characteristics.

OVERALL ACHIEVEMENTS

Achievement on Project Objectives [Defining contribution of deliverables in overall Mission (max. 1000 words)]

Prevention of Soil Erosion through Rambans Plants Plantation-

Command Area prevented from soil erosion through Rambans plantation, 20 ha. covered by 93000 Rambans Plants at village Pumba, Kuletha, Kanda, Umroli, Panchur, Amgaon, Kandi, Jayhari, Kasyali, Kotkinda, Baghelgaon, of Yamkeshwar Block. Since Rambans is a perfect soil binder so this plantation will effectively check soil erosion in and around the plantation and provide solid base to complete check on soil erosion for future.

Prevention of Land Degradation through Rambans Plants Plantation-

20 ha. covered by 93000 Rambans Plants at village Pumba, Kuletha, Kanda, Umroli, Panchur, Amgaon, Kandi, Jayhari, Kasyali, Kotkinda, Baghelgaon, of Yamkeshwar Block. This will effectively prevent land degradation in and around plantation, it will provide solid base to complete check on further land degradation in future.

Increase Forest Cover Area in the Region-

Increase in the Forest Cover Area, 20 ha. covered by 93000 Rambans Plants at village Pumba, Kuletha, Kanda, Umroli, Panchur, Amgaon, Kandi, Jayhari, Kasyali, Kotkinda, Baghelgaon, of Yamkeshwar Block. This will provide solid base to increase forest cover in and around the plantation sites since Rambans plantation protects other nearby plants from animals and provide favorable condition to grow.

Establishing New Database/Appending new data over the Baseline Data (max. 1500 words, in bullet points)

Generating Model Predictions for different variables (if any) (max 1000 words in bullets)

Technological Intervention (max 1000 words)

Since traditionally rating or other manual process was in practice for extraction of Rambans fibre from Rambans leaf in the region, it was time taking and need more work force/ and engage more people, through NMHS project we are able to establish decorticator machine in the four places (one for 5 hac plantation) for fast extraction of leaf fibre. 000 villagers skilled to produce the Rambans leaf fibre through decorticator machine .

On field Demonstration and Value-addition of Products (max. 1000 words, in bullet points)

Three No of on filed demonstration , skill development cum value addition program held at Umroli,

Kasyali, Bhalgaon ,

- New theme of Eco friendly ornament production introduced through NMHS project.
- New designs of Souvenir, coasters, bottle hanger, eco friendly ornament introduced through NMHS

project.

- New theme of colour combination introduced through skill development & design development

Program.

Promoting Entrepreneurship in IHR

Rambans plant is a rich source of leaf fibre and able to provide solid base to produce eco friendly produces which has the potential to establish new entrepreneurship (in handicraft sector, handmade paper sector, In composite material sector, In construction sector by producing fibre mix bricks for keeping low room temperature as the temperature increasing due to global warming and reducing the energy demand) in the IHR area.

Developing Green Skills in IHR Plantation

Addressing Cross-cutting Issues (max. 500 words, in bullet points)

* Since one of the objective and result of the project is increase of green belt through RAMBANS (AGAVE) plantation which is co related to **climate change**.

* Since most of the population living in the villages are women and over 100% women self help groups were involve in the project activity which will helpful for women to get financially strong & help them to take their decision, which could help for **gender equality** in the region.

* As a demonstrative model will develop in the region after completion of the project which will help full for the nearby villager/ community as strong and live **communication** medium

PROJECT'S IMPACTS IN IHR

Socio-Economic Development (max. 500 words, in bullet points)

Socio development-

- Before NMHS project there was no resources (in terms of sisal fibre) available in the villages for the women. After the implementation of the project women SHG's have there own fiber production areas within the villages this phenomena boost the confidence of the women SHG's members.
- Before NMHS Project women SHG's was unknown about the mechanized (decortication process) production of the fiber from the Rambans leaf. After the implementation of the project women SHG's are trained about Decortication process to extract fibre from Rambans leaf. This work boost the confidence of the women SHG's members.
- Before NMHS Project women SHG's was unknown about the new design development from Rambans leaf fibre. After the implementation of the project women SHG's are skilled to develop the new designs of Rambans leaf fibre according the market demand.

Economic development-

- Before NMHS project people from the project area have zero hac, of Rambans plantation for collection of Rambans fiber.
- After NMHS Project implementation people have plantation of 25hac of Rambans plantation within project area.
- Before NMHS project people of the project area only know about rating process to extract fibre from leaf or stem .
- After NMHS project people are well known about mechanized process to extract the fibre, which saves time and increases the quantity of fibre collection.
- Before NMHS project people of the project area have the zero kg Rambans fibre production capacity .
- After NMHS project dry Rambans fiber collection capacity of the people of the project area

increases from 0 kg – 8000 kg in a year.

- Before NMHS project people of the project area have the Rs.0.00 Rambans fibre production capacity per year.
- After NMHS project people of the project area have approx (8000 kgx120/ kg) Rs.960000.00 dry Rambans fiber collection capacity per year.
- After NMHS project 04 no of family are using the bio gas plants for cooking which saves their annual expenses of per family on wood (Rs75 per day =Rs. 2250 per month) and LPG (costing Rs 1120 per month).

Scientific Management of Natural Resources In IHR (max. 500 words, in bullet points)

- Rambans plantation is done near (as much as possible) the villages which saves the time of the people of the project area to collect the fibre.
- For time saving on leaf collection Decorticator machines are placed or fixed at the center of the plantation as much possible on availability of the land in the village.
- Spacing between Rambans plant to plant within the plantation allow to develop other natural herbs and plants to grow with Rambans plantation .
- Rambans plantation is done with proper spacing between the plants to make the leaf collection easier to the SHG members.

Conservation of Biodiversity in IHR (max. 500 words, in bullet points)

- Since spacing between Rambans plant to plant within the plantation area allow to develop other natural herbs and plants to grow with Rambans plantation which provides suitable conditions for conservation of the local Bio diversity.
- Rambans plantation has micro input for conservation of Bio diversity in IHR.

Protection of Environment (max. 500 words, in bullet points)

- Rambans plantation provides micro input for protection of local environment in the local area.
- 1 Hac (5000 Plants) Rambans plantation arrests 8137.7 kg carbon-dioxide in a year (since CO₂ sequestration capacity of one plant of Rambans is 1.62754 kg per year (By Eco Macher formula).
- 20 hac Rambans plantation arrests 1,62,754 kg carbon-dioxide in a year.

Developing Mountain Infrastructures (max. 500 words, in bullet points)

Rambans plantation providing base to develop mountain infrastructure in IHR

- Through carbon sequestration
- Through helping to enhance local eco system.
- Through growing green belt in plantation area.
- Through providing fibre supply bank near villages in the mountains.

Strengthening Networking in IHR (max. 700 words, in bullet points)

- Through the NMHS project 512 No's of SHG members of 10 villages are inter linked about Rambans fiber related work.
- During NMHS project people in the villages were more active and have good bonding through project works.
- Training session of the project provides platform to the SHG members to associate about inter

linkages on other socio economic reason of the villages.

- Exposure visits during NMHS project was helpful to develop bonding among different participants or SHG members.

EXIT STRATEGY AND SUSTAINABILITY

How effectively the project findings could be utilized for the sustainable development of IHR (max. 1000 words)

Efficient ways to replicate the outcomes of the project in other parts of IHR (Max 1000 words)

Identify other important areas not covered under this study needs further attention (max 1000 words)

Major recommendations for sustaining the outcome of the projects in future (500 words in bullets)

REFERENCES/BIBLIOGRAPHY

ACKNOWLEDGEMENT

APPENDICES

Appendix 1 – Details of Technical Activities

Appendix 2 – Copies of Publications duly Acknowledging the Grant/ Fund Support of NMHS

Appendix 3 – List of Trainings/ Workshops/ Seminars with details of trained resources and dissemination material and Proceedings

Appendix 4 – List of New Products (utilizing the local produce like NTFPs, wild edibles, bamboo, etc.)

Appendix 5 – Copies of the Manual of Standard Operating Procedures (SOPs) developed

Appendix 6 – Details of Technology Developed/ Patents filled

Appendix 7 – Any other (specify)

Annexure-III

Consolidated Assets Certificate

Assets Acquired Wholly/ Substantially out of Government Grants

(Register to be maintained by Grantee Institution)

Name of the Sanctioning Authority: N.M.H.S

1. Sl. No. NMHS- 01/2017-2020
2. Name of Grantee Institution: GirishGrihUdyogEvamReshaUttapadnSamitiKimsar
3. No. & Date of sanction order: NMHS/2016-17/SG17/0631st March 2017
4. Amount of the Sanctioned Grant: Rs. 652000.00
5. Brief Purpose of the Grant: "CONSERVATION OF LOCAL ECOLOGY,AND DEGRADED OR WASTELAND MANAGEMENT THROUGH "RAMBANS" (AGAVE) PLANTATION AND GENERATION OF AVAILABILITY OF RESOURCES IN VILLAGES FOR PROVIDING BASE TO LIVELIHOOD ACTIVITIES." _
6. Whether any condition regarding the right of ownership of Govt. in the property or other assets acquired out of the grant was incorporated in the grant-in-aid Sanction Order: _____
7. Particulars of assets actually credited or acquired: 04 Decorticator machine fitted with 04 engine
8. Value of the assets as on - Rs. 652000.00 (Six Lakh Fifty Two Thousand only)

9. Purpose for which utilized at present- a) Utilizing for extracting Rambans leaf fibre from Rambans leafs.
 b) Bio Gas plants are utilizing for collecting Bio Gas for cooking purpose by beneficiaries.
10. Encumbered or not Yes
11. Reasons, if encumbered Since decorticator machines are fitted with engines which makes them encumbered.
12. Disposed of or not _____ Not _____
13. Reasons and authority, if any, for disposal _____ NA _____
14. Amount realised on disposal _____ NA _____

Any Other Remarks: _____

(PROJECT INVESTIGATOR)

(FINANCE OFFICER)

(Signed and Stamped)

(Signed and Stamped)

(HEAD OF THE INSTITUTION)

(Signed and Stamped)

Annexure-II

Consolidated Interest Earned Certificate

Please provide the detailed interest earned certificate on the letterhead of the grantee/ Institution and duly signed.

Interest earned in the Year 2017-2018	- Rs. 49348.00*
Interest earned in the Year 2018-2019	- Rs. 20451.00*
Interest earned in the Year 2019-2020	- Rs. 12571.00
Interest earned from March2020 –September 2020	- Rs. 11448.00
Total= Rs.93818.00	

*Note:- Interest earned in the Year 2017-2018 Rs. 49348.00 and, in the year 2018-2019Rs. 20451.00 was adjusted in the previous release.