Webinar on "Implementing India's first Forest NAMA on Sustainable Fuelwood Management in Assam"

Date: 14th July 2020

Time: 11:30 am – 1:30 pm

For more information

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Proceedings of webinar on: "Implementing India's first Forest NAMA on Sustainable Fuelwood Management in Assam"

Back Drop

Unsustainable fuelwood extraction is one of the key drivers of forest degradation and deforestation in India. More than 200 million people of the Indian population are extracting fuelwood from the forests. A large part of this fuelwood is directed towards meeting household cooking needs. In Assam, around 72% of the households are extracting fuel wood from forests annually which leads to the degradation of the quality of forests and land and has also decreased the forest cover. GIZ and TERI in collaboration with Assam Forest Department have been involved in implementation of India's first Pilot Forestry NAMA on Sustainable Fuelwood Management in 6 forest divisions namely Sonitpur East and West, Nagaon and Nagaon South, Cachar and Dibrugarh. With active support of Assam Forest Department, Assam Energy Development Agency and Assam Branch of Indian Tea Association the project is getting implemented in Forest Villages, Forest Fringe Villages and selected Tea Estates in the state to address knowledge, planning, financing and communication gaps towards enhancing forest carbon stock through conservation and facilitating plantation; reducing fuelwood demand by promoting fuelwood saving technologies.

The project has been able to deploy clean cooking technologies in selected divisions to couple of the households such as Improved Cook Stoves developed by AEDA (Sukhad model) in convergence with Pradhan Mantri Ujjwala Scheme, documented the plantation details of these divisions for calculating the emission reductions. This Pilot project is focussing to achieve sustainable fuelwood management through a balanced mix of the supply and demand side management options to meet the varying needs of fuelwood consuming regions and communities in Assam.

This webinar on **"Implementing India's first Forest NAMA On Sustainable Fuelwood Management in Assam"** held on Tuesday, **July 14th, 2020** from **11:30 am to 1:30 pm, IST**, discussed the experiences of implementation of various activities under India's pilot Forestry NAMA in Assam and its relevance, opportunities of up-scaling. The project is also contributing for creation of additional carbon sink of 2.5 to 3 billion tonnes of CO_2 equivalent through additional forest and tree cover by 2030 in order to achieve India's forestry NDC targets.

The key panelists for the webinar were Mr. A M Singh, PCCF & HOFF, Assam Forest Department, Government of Assam; Dr J.V. Sharma, Director, Land Resources Division, TERI; Dr. Ashish Chaturvedi, Director - Climate Change, GIZ India; Dr. Yogesh Gokhale, Senior Fellow, TERI and Mr. Kundan Burnwal, Technical Advisor, GIZ India. The session was moderated by Mr. Siddharth Edake, Fellow, Land Resources Division, TERI. The webinar was attended by more than 200 participants from various organizations working in diversified fields. Annexure I presents the detailed agenda for the webinar.

Discussion session

At the start of the session, **Dr. Ashish Chaturvedi from GIZ** delivered his welcoming remarks. He described that, in India's NDCs both energy and forest sectors are prominently featured as the critical drivers of both carbon sequestration and emission generation. He also described how fuelwood is the biggest driver of deforestation in the country and specifically in the state of Assam. Dr.

Chaturvedi also described about GIZ and TERI's experiences while working with Assam State Forest Department and appreciated the contribution of the Divisional Forest Officers (DFOs) in taking forward the project. He highlighted that one of the key take away while working in the Pilot forestry NAMA is that there is a very big role of leadership by the state governments in such projects which can set an successful examples for others. Later Dr. Chaturvedi also focused on the scope of taking the lessons taken from the implementation of the Pilot forestry NAMA and up-scaling it to other districts of Assam and also to other states of India. He also highlighted that aspects of the pilot implementation could also reflect in the SAPCC (State Action Plan on Climate Change) which is being revised for the State of Assam.

Next in the series, **Dr. JV Sharma, Director, Land Resources Division, TERI** made his introductory remarks by explaining the importance of the Nationally appropriate mitigation actions (NAMAs) for developing countries like India and how it can help the country in the context of sustainable development by supporting and enabling technology development, financing and capacity-building, in a

measurable, reportable and verifiable manner. Further, he briefed about India's pilot forest NAMA project which is jointly being implemented by GIZ and TERI in collaboration with Assam Forest Department in the state of Assam. He highlighted on various tasks proposed under the project such as scoping exercise, baseline preparation, design and implement communication and capacity building strategy, support deployment of fuel wood saving technologies and developing a framework for Monitoring, Reporting and Verification

system for the pilot NAMA. He also mentioned the way of preparing the proposal for upscaling the work. Stating other achievements under the project he told the project has developed the baseline for 5 pool of carbon stock in 6 forest divisions, completed the socio economic survey of 1501 HH considering three strata (Forest villages, Tea estate, Forest fringe villages) built capacity of more than 150 forest officials of all 6 forest divisions with respect to assessment of five pool of carbon stock assessment and also prepared a manual specific to Assam for assessment of five pool of carbon stock. Dr. Sharma highlighted that Forestry NAMA has large scope for up scaling in the country and it can further contribute to climate change mitigation and aid in achieving India's target of creating an additional carbon sink of 2.5 to 3 billion tonnes of CO_2 equivalent through additional forest and tree cover. He also emphasized on the fact that India has innovated novel financial mechanisms such as CAMPA funds, central tax devolution to states, National Clean Energy Fund, CSR, green bonds etc. that can play an important role in financing sustainable forest management. In that regard, he mentioned that a policy on Carbon Neutrality is required at national level. He further recommended that it is important that frontline staff of state forest departments is trained on measuring forest carbon stock, this will prove useful in obtaining climate finance and implementing forest NAMA in India.

Dr. A.M. Singh, PCCF & HOFF, Assam Forest Department, Government of Assam, in his keynote address shared the objectives of the pilot project highlighting the need for

increasing plantation, creating awareness amongst individuals on the use of sustainable fuelwood management, capacity building of staffs and deliberating focus on carbon financing. Having the objectives and logical framework in place, he urged to gain understanding on the current status of achievement, applicability of NAMA projects in other states, development of stakeholders capacity, entry of ongoing NAMA project in

Mr. A M Singh

NAMA Registry to track and recognize that NAMA is being undertaken in Assam, India and development of MRV System. Further, he stated that it is essential to examine the performance of improved cooking technology that has been deployed so far to document and disseminate on a large scale.

Dr Yogesh Gokhale, Senior Fellow, TERI, made a presentation on the "Approach, Progress and Findings of Implementation of Pilot Forest NAMA project in Assam". He highlighted upon the major drivers of degradation in Assam to be encroachment and fuel wood extraction and for addressing the aforementioned concern, socio-economic survey and Forest Carbon

Dr Yogesh Gokhale

assessment are carried out in focussed districts. He further discussed the logical framework which has been prepared to achieve the objectives of Pilot Project NAMA.

He shared that the project has used cluster approach for the baseline survey for identifying the forest villages, forest fringe villages and the design has been developed through statistically significant methodologies. For forest carbon assessment, land use and land cover maps were created and the forest area was further marked as per the forest types. A total of 1501 households were sampled with stratified random approach and 11 major indicators were considered for documentation. Along with this, 199 sampling plots were laid over different forest types covering all 6 Forest Divisions. Training of 150 frontline staff of the Forest Department on carbon stock assessment of forest ecosystems has also been conducted. He also shared the findings relating to digitising a total of 722.43 ha of plantation area, procuring geo-coordinates of additional 500 ha plantation in Cachar and elsewhere and suggested to consider the plantation of agro-forestry models on private areas.

While shedding the light on the deployment of Improved Cooking Technology (ICT), he highlighted Sukhad Model to be most popular as it was affordable, feasible, easy to install and sought larger acceptability by the people. L.P.G though Ujjwala Yojana was also given emphasis for distribution in the project areas. Further adding to it, bio gas as the alternative of fuelwood showed poor response due to the shortage of cow dung. A number of education and awareness programmes were organised along with conducting on-site technology demonstration for gaining acceptability amongst the beneficiaries. Along with this, local innovations in using bamboo, tins and thick thermocols for making cook stoves forma are encouraged to further reduce the cost and utilise the locally available products. He claimed that so far, 19367 households comprises of the beneficiaries of ICT including cook stoves and L.P.G. Adding to it, he further shared various financial models for deployment of ICT including (1) tea garden model, (2) Forest Department facilitation and (3) Carbon finance. Since the deployment has been happening in a staggered manner since June 2019, it would take some time to understand exact extent of emission reduction due to the deployment of technology. At the end, he laid emphasis on alternative livelihood promotion mechanism such as training manpower for ICT deployment and initiating Areca nut plate making enterprise which will further enhance the buying capacity of the beneficiaries. The lessons learnt from the project includes using combination of low cost fuelwood saving technology along with Ujjwala Yojana, promotion of agro-forestry models for enhancing trees outside forest (ToF) to provide win-win situation, continuous engagement for communicating the benefits of clean cooking technologies is necessary.

Mr Kundan Burnwal from GIZ, made a presentation on "Upscaling Potential of the Pilot implementation of Forestry NAMA in Assam". He emphasised that the unsustainable fuelwood extraction is the most prevalent unplanned driver of forest degradation in India including Assam. He also discussed India's target under Bonn Challenge to restore 26 million hectares of degraded and deforested land by 2030. He discussed that Indian government focuses on schemes such as Ujjwala that has

Mr. Kundan Burnwal

reduced the dependence on fuelwood from 294.28 kg/capita/year in 2011 to 278.21 kg/capita/year in 2019 which is a reduction of 5.46%. He also discussed about the integration of Sustainable fuelwood management in the State Action Plans on Climate Change and how

they are in line with the objectives of Pilot NAMA project. He highlighted that in the State of Assam, there is a huge gap between the demand and supply of fuel wood, timber and fodder. He discussed the various parameters important for upscaling of the project such as: geographical expanse, inclusion of additional fuelwood users such as road side *dhabas*, financial incentives for refilling of Ujjwala LPG, Institutionalisation of forest Carbon assessment through wider capacity building and study material, Enhancement of ecosystem services and accounting for co-benefits from afforestation, plantation, protection efforts so as to approach for carbon finance, developing agro-forestry models, species and facilitation of plantations on various kinds of lands outside forests and aligning priorities identified by SAPCC. He discussed the objectives of the NAMA Project and how they are aligned with the ASAPCC strategies. Mr Kundan also discussed the different phases in which upscaling plan for the NAMA project will be implemented. He discussed in detail the two phases where Phase I will be the establishment phase (2018-2020) and Phase II that will be the NAMA expansion phase (2020-2030). He discussed in detail the various activities that have already been initiated and also the activities planned for upscaling of NAMA in Assam (identification of beneficiaries, deployment along with sustained use of clean cooking technologies, plantations, SHG creation, implementation of MRV mechanisms etc). He concluded his presentation by discussing the necessary strategies for upscaling of NAMA which included – dissemination of Carbon stock assessment methodology, institutionalisation of results of socio-economic survey, identifying financing for relevant technology deployment, interdepartmental coordination for example between AEDA, AFD etc, developing standards for nursery development in respective forest divisions, integrating the aspects of pilot implementation of forest NAMA and continuous engagement with the community on benefits of using clean cooking technologies.

Training Manual for Capacity Building of Assam Forest Department on Carbon Stock Assessment of Forests

Next in the series of events, the release of documents and videos developed under the Forest NAMA project took place. This included-
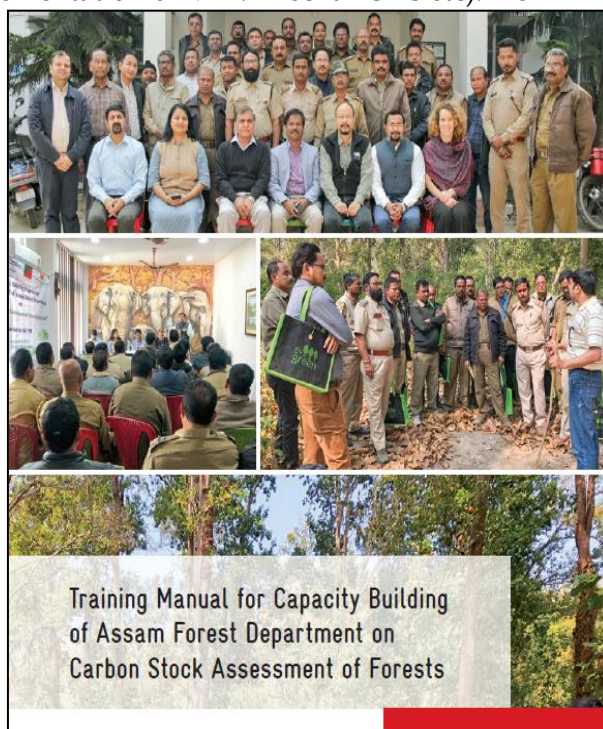
Training Manual for Capacity Building of Assam Department on Carbon Stock Assessment of Forests (English)

It is intended to serve as a guide for conducting measurements of 5 pools of carbon for estimation of carbon stocks as per the 'Good Practises Guidance' (GPG) developed by Inter-governmental Panel on Climate Change (IPCC),

It aims to assist the State Forest Department in meeting the requirements in respect of forest carbon inventory methods that would in turn assess the contribution of forests in sequestration of atmospheric carbon, and

It covers topics such as Forest Carbon Assessment and Geospatial tools for mapping of project boundary for carbon assessment, and

It can support Forest Department to evaluate quality of their forest and accordingly take further actions for improvement of forest cover and contribute to achieving the Forest related NDC target of 2.5 to 3 billion tons of CO_2 by 2030.

Summary of Training Manual in Assamese

The executive summary would serve as the guide for frontline staff to for measuring the five pools of carbon. It can be used in the field and has all essential elements of carbon assessment methodology.

Video on Deploying Sukhad- Improved Chulhas in Assam

It provides guidance and practical on construction of alternative cookstoves and installation in the beneficiaries' houses.

Video on Training of frontline staff

It provides a glimpse of 3-days field-based training conducted by the project for the frontline staff of Assam Forests Department

All the aforementioned documents and videos will be uploaded on Assam Forest Department's website.

This was followed by experience **sharing by the different stakeholders of Project NAMA** that included Divisional Forest Officers from Forest Department and representative from Assam Energy Development Agency. The details are provided below:

Mr Sunnydeo Choudhary, DFO, Cachar Forest Division, Assam shared his experience regarding implementation of NAMA in Cachar Forest Division. He described that they have targeted a total of around 4000 households comprising of almost 20 Forest Villages and in these villages almost 70-80% households have already constructed the improved *chulhas* and in a couple of months all the 4000 households will be completed. He also stated that this has led to reducing the pressure on the forests from these forest fringe villages and forest villages and the fuelwood collection has reduced drastically post deployment of *Sukhad Chullhas*. He also discussed about raising plantations in around 500 hectares of area with the help of JFMCs in Cachar Forest Division.

Mr Rajen Choudhury, DFO Nagaon Forest Division, Assam shared that the NAMA project activity has started in Nagaon since 2019 and is being implemented in a very effective

manner. Capacity building part has been complemented. People in Nagaon have shown interest after demonstration of improved *Chullhas*. He also discussed that during workshop on demonstration of ICS, representatives from almost 20 villages participated and they felt the need to carry out this demonstration in each and every village. He also suggested that in order to popularise the improved cook stove, the demonstration has to be carried out covering the maximum number of villages possible. He also explained that ABITA authority should also motivate the people to adopt the improved cookstoves which will lead to reducing pressure on the forests. He also requested TERI to go for large scale demonstration in the coming days.

Mr Ranjit Konwar, DFO Sonitpur West Forest Division, Assam said that the meeting and workshop with front line staff with the forest villages has been carried out. He said that in Sonitpur West division there was a week-long capacity building training with only 18 trainees in various forest villages but post that no progress has been observed and therefore there is a need to popularise the improved cookstove among the Forest villages and the tea garden labourers since these are the main populace of district. He also discussed the issue of encroachment in Sonitpur West.

Mr Mrinal Choudhary, AEDA, stated that the exercise with Forest Department on improved cookstoves will lead to more master craftsmen in each of the 6 districts and will lead to motivate the people to use these fuelwood saving technologies for cooking. He also suggested that local NGOs should also be involved in this whole process who would work with the rural communities along with conducting / organising street plays in order to at least taking forward the concept of improved cookstoves. He stated that this will definitely motivate them to use them more frequently. He also highlighted that we are focusing only on firewood, but why not firewood alternatives such as pallets or loosely densified briquettes that can also be alternative options for reducing the pressure on forests. He suggested that TERI can conduct some R&D for the same. He also said chimneys is one of the constraints in ICS, and if potters can be identified for making pottery pipes in selected 6 districts this will help the program pickup in a much faster pace.

Mr Siddharth S Edake shared the experience of **Mr. Anjan Roy** in a tea estate from Dibrugarh. He shared that the project has actually helped in reducing the firewood in and around the tea estate and it has also improved the health of the workers in the tea estate which has resulted into a better work efficiency.

Mr Amit Sahai, Assam Forest Department appreciated the activities carried out during project NAMA. He suggested that learnings from similar projects done earlier shall be included while implementing NAMA since microplans for alternative livelihood have been prepared under the other projects.

Miss Davinder Suman, Assam Forest Department suggested to have a discussion on the logical framework point by point so that all the parameters are understood in a better way for effective implementation of the project.

Question and Answer session

This experience sharing was followed by Question and Answer sessions. Some of questions of the participants addressed were:

Question: What are the synergies between the ongoing government schemes such as NAP, GIM and forest fire prevention and management scheme?

Answer: NAMA project converges with the different Government schemes wherever it is possible. Also, usually for forestry project 5 years is needed to observe substantial change in the stock due to the time constraints (two years period), but whenever large scale project will be carried out the time period will not be kept less than 5 years.

Question: What are your observations on Ujjwala scheme and has it reduced the firewood collection from forest area?

Answer: We should positively hope on Ujjwala scheme since it is a change in the behavioural aspect to change from firewood to LPG and it will take some time for people to shift from their traditional methods. But access to LPG at household level will motivate the younger generation to shift to clean fuel technology than the traditional systems. Hence, there is a need to provide some gestation time to understand the success of Ujjwala Yojana. There has been marginal reduction in fuelwood dependence.

Question - From the present NAMA study in Assam what are the top mitigation actions appropriate for the State?

Answer - Based on the feasibility study conducted, Sustainable fuelwood management was identified as priority for implementation of Forest NAMA in India by MoEFCC.

Concluding Remarks

Concluding remarks were delivered by Mr A M Singh, PCCF and HoFF, Assam Forest Department. He stated that we have climate change management society in Assam, and since Government of India has asked to revise the State action plan, in future this NAMA project will collaborate with the management society of Assam. He also suggested that there should be a detailed Training of Trainers for assessing the carbon stock from forests of Assam along with deployment technologies so that they can train more and more number of individuals in assessing the Carbon stock and also construction of ICS. He also emphasised in raising the plantations to reduce the pressures on Assam State's forests. He concluded by saying that by practicing sustainable fuelwood management, definitely we are going to have a positive impact on reducing the forest degradation of the existing forests and scaling it to Assam. He stated that we need to have a concrete outcome of this project in next couple of months before discussions with the policy makers. He also mentioned that there is a need to compile all the relevant information related to the NAMA pilot project in line with the logical framework. He mentioned that the training manuals and the documentaries will be uploaded in the Assam Forest Department Portal for better outreach.

Key findings of the discussion and recommendations:

- Forestry NAMA has large scope for up scaling in the country. It can further contribute to climate change mitigation and aid in achieving India's target of creating an additional carbon sink of 2.5 to 3 billion tonnes of CO_2 equivalent through additional forest and tree cover.

- India has innovated novel financial mechanisms for sustainable forest management and climate change mitigation. These include CAMPA funds, central tax devolution to states, National Clean Energy Fund, CSR, green bonds etc. Funding from these sources may not be enough. Carbon and climate finance can play an important role in financing sustainable forest management. In that regard, a policy on Carbon Neutrality is required at national level.

- A number of schemes and programmes exist that can help implement the pilot Forestry NAMA in India. Capacity building of stakeholders should be undertaken to make them aware about these schemes such as Ujjawala, MANREGA ,MSP for MFP,PMVDY and many other livelihood related schemes ,and how to get benefitted under them.

- It is important that frontline staff of state forest departments is trained on measuring forest carbon stock and preparing Project Designing Document (PDD). This will prove useful in obtaining climate finance and implementing forest NAMA in India

- A combination of low-cost fuelwood saving technology along with Ujjwala Yojana will remain the choice of community till alternative livelihood sources are not developed.

- Robust Monitoring Reporting and Verification mechanism in form of Division level carbon assessment and training of frontline staff with literature in Assamese would be important for developing carbon finance projects.

- There is a need to promote agroforestry models for enhancing Trees outside Forests and that would provide win-win situation both for the farmers as well as help in reducing the GHG emissions.

- There is a need to develop model nurseries catering to the choice of tree species of local preference.

- There is a need to have continuous engagement for communicating the benefits of clean cooking technologies to the local communities.

- A proposal for large scale Forest NAMA for all districts of Assam may be prepared in consultation with AFD.

The meeting ended with the vote of thanks from Mr Siddharth S Edake.

Annexure I. Agenda of the webinar

Webinar on:
Implementing India's first Forest NAMA On Sustainable Fuelwood Management in Assam
Date: 14th July 2020, Time: 11:30 am – 1:30 pm

Time	Moderation of Webinar by TERI
11:30-11:40	Welcome and Background Dr. Ashish Chaturvedi, Director Climate Change, GIZ India
11:40-11:50	Setting the context of the meeting Dr. J V Sharma, Director, Land Resources, TERI
11:50-12:00	Keynote address Mr. A M Singh, PCCF & HOFF, Assam Forest Department, Government of Assam
12:00-12:15	Approach, Progress and findings of the Forest NAMA project Dr. Yogesh Gokhale, Senior Fellow, TERI
12:15-12:30	Release of following documents and videos from the Forest NAMA project Moderated by Mr. Kundan Burnwal, Technical Advisor, GIZ India 　　1.　Training Manual for frontline staff of the Assam Forest department (English) 　　2.　Summary of Training Manual in Assamese 　　3.　Videos on 　　　　a)　Deployment of improved cookstoves 　　　　b)　Training of frontline staff
12:30 – 12:40	Upscaling of the forest NAMA project Mr. Kundan Burnwal, Technical Advisor, GIZ India
12:40-13:00	Q&A and Feedback on the project by various project implementation partners: • Assam Forest Department – by concerned DFOs • Assam Branch for Indian Tea Association • Assam Energy Development Agency • Tea estates
13:00-13:15	Concluding remarks • Mr. A M Singh, PCCF & HOFF, Assam Forest Department, Government of Assam
13:15-13:20	Vote of Thanks (TERI)

# Context and Background for Upscaling implementation of Forest NAMA

➢ Unsustainable fuelwood extraction - the most prevalent **unplanned driver** of forest degradation in India including in Assam

➢ **30%** of total global reliance on solid biomass for cooking is in India.

➢ Under Bonn Challenge India aims to **restore 26 million hectares of degraded and deforested land by 2030 – addressing unsustainable extraction of fuelwood will be necessary.**

➢ More than **85 mn tonnes** of fuelwood is extracted from forests in India by FFVs - annual removal of the small timber by the people living in forest fringe villages is nearly 7% of the average annual yield of forests in the country.

➢ Indian government focuses on schemes such as Ujjwala that has reduced the dependence on fuelwood from 294.28 kg/capita/year in 2011 to 278.21 kg/capita/year in 2019 which is a reduction of 5.46%.

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Integration of Sustainable Fuelwood Management in SAPCCs

1. State Action Plans on Climate Change provide an opportunity to integrate sustainable fuelwood management as a part of their efforts in the 'Forest and Biodiversity' chapter.

2. The 'Forest and biodiversity' chapter of Assam State Action Plan on Climate Change aims to address:

   – the forest area is suffering from habitat degradation, encroachments, fuel wood extraction

   – Reducing forest degradation and deforestation

   – Improving carbon sequestering capacities of forests

   – Promoting alternate sources of energy for wood substitution as fuel

3. In Assam there is huge gap between demand and supply of fuel wood, timber and fodder

4. 81% of Assam's households, approx. 5 million are dependent on fuelwood for cooking. Annual fuelwood consumed from forests is 2.49 mio tonnes.
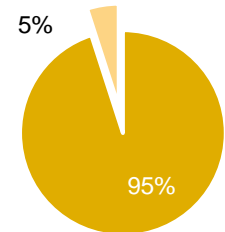
Supply Side

■ Forests

20%

80%
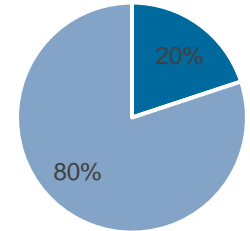
■ Household Sector
■ Other Commercial/Cultural…

5%

95%

Demand Side

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Parameters / Basis for upscaling

1. Geographical expanse –Entire Assam with focus on Forest villages, Tea estates and Forest Fringe Villages

2. Inclusion of additional fuelwood users (road side *dhabas*), institutional cooking in Tea gardens, Anganwadis, etc.

3. Financial incentives for re-fill of Ujjwala LPG

4. Institutionalisation of forest carbon assessment through wider capacity building and study material

5. Enhancement of ecosystem services and accounting for co-benefits from afforestation, plantation, protection efforts so as to approach for carbon finance

6. Developing agro-forestry models, species and facilitation of plantations on various kinds of lands outside forests

7. Aligning priorities identified by SAPCC

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Alignment of Forestry NAMA objectives with ASAPCC strategies

Sl.	Forestry NAMA Objectives	Strategies of ASAPCC
1.	Promotion of efficient & clean fuelwood technologies such as improved cookstoves, LPG and biogas	a) Identify the potential co-benefits for mitigation and adaptation b) Reducing fuel-wood dependencies by promoting re-filling of LPG cylinders through incentives, awareness and financial mechanism; c) Recognizing penetration and impact of Ujjwala Scheme (More than 50% of the population goes for 0-3 refilling annually. The remaining population goes for 3-8 refilling annually) d) Need of intermediate technologies for reducing fuelwood use – cost effective, easy to install and have higher adoption by communities such as Improved Cook Stoves
2.	Capacity building of stakeholders for effective and sustained adoption of the fuelwood saving technologies and adopting alternative livelihood options	a) Institutionalization of results of carbon stock assessment and socio economic study b) Agroforestry practices for livelihood development c) Development of training manual and e-learning module on carbon stock assessment methodology at National level. d) Monitoring, Reporting, Verification for forest carbon assessment e) Institutional capacity building for MRV f) NTFP focussed forest management
3.	Sustained supply of fuelwood and enhancing carbon sequestration from plantation and Assisted Natural Regeneration.	a) Afforestation practices to improve forest cover b) Energy plantation activities & enrichment planting (Increasing the density of desired species) c) Development of standards for nursery in respective forest divisions

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Phased manner upscaling plan for implementation of the Forest NAMA in Assam

Phase I (2018 – 2022) NAMA Establishment Phase

- Raising fuelwood plantations
- Deployment & sustained adoption of fuelwood saving technologies
- Development of AFDSS
- Region specific communication campaign
- Capacity building on sustained use of clean cooking technologies and carbon stock assessment of forest ecosystems
- MRV

Phase II (2023 – 2030) NAMA Expansion Phase

- Identify beneficiaries at demand & supply side
- Deployment and sustained use of clean cooking technologies across all other districts of Assam
- Demand side – commercial consumers, residential, community.
- Plantations to ensure steady supply of sustainable fuelwood
- Creation of SHGs
- Implementing MRV mechanisms

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Necessary Strategies/Actions for upscaling of NAMA

1. Dissemination of carbon stock assessment methodology – in English and Assamese for forest officers and frontline staff of the forest department

2. Institutionalization of the results of socio economy assessment of fuelwood dependence and carbon stock assessment

3. Identifying financing for deployment of relevant technologies based on local conditions and requirements that can be deployed

4. Whole of government approach – interdepartmental coordination for example between AEDA, AFD etc. - Effective intersectoral institutional links must be established

5. Developing standards for nursery development in respective forest divisions - catering to the choice of tree species of local preference is necessary

6. Integrating aspects of the pilot implementation of the forest NAMA into the revised version of the Assam SAPCC 2.0 to be developed

7. Continuous engagement with the community on benefits of using clean cooking technologies

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Thank you for your attention!

Contact

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Ministry of Environment, Forest and Climate Change
Government of India

Approach, Progress and Findings of implementation of Pilot Forest NAMA in Assam

14th July 2020
Dr Yogesh Gokhale, Senior Fellow, TERI

giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

On behalf of:

Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety

of the Federal Republic of Germany

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Project Objective

The project aims is to reduce emissions, enhance carbon sequestration and to reduce pressure on forests by addressing unsustainable fuelwood extraction by creating tree plantations and deployment of clean cooking technologies in select districts of Assam.

This would be achieved through the following:

1. Promotion of efficient & clean fuel wood technologies such as improved cook stoves, LPG and biogas

2. Capacity building of stakeholders for effective and sustained adoption of the fuel wood saving technologies and adopting alternative livelihood options

3. Sustained supply of fuel wood and enhancing carbon sequestration from plantation and Assisted Natural Regeneration.

Project Activities

1. Scoping exercise

2. Baseline preparation

3. Design and implement communication and capacity building strategy

4. Support deployment of fuel wood saving technologies and raising plantations through agroforestry

5. Develop a framework for Monitoring, Reporting and Verification system for the pilot NAMA

6. Dissemination activity

7. Proposal preparation for upscaling

ASSAM DISTRICT MAP
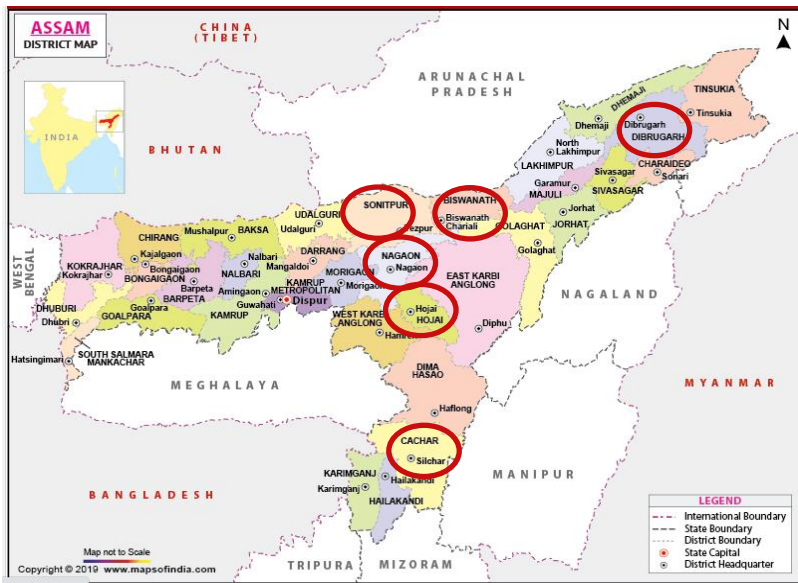
Focussed districts - Sonitpur, Biswanath Charali, Nagaon, Hojai, Cachar and Dibrugarh

Main stakeholders identified due to dependence on fuelwood –

1) **Tea estate labour** - 228 cu ft per yr per HH
2) **Forest Villagers** – remoteness and forest proximity
3) **Forest Fringe Villagers** – affordability

Inception workshop on 30th November 2018

Road map of implementation was finalised in Inception Workshop
Review meeting conducted on 24th June 2019

✓Encroachment and fuel wood extraction have been re-emphasized as the major drivers of degradation.
✓Socio-economic survey and Forest Carbon assessment to be carried out in all the districts covering six divisions
✓Customization fuel wood saving technologies to be deployed in a consultative manner.
✓Financial mechanisms be devised to ensure sustained usage of fuelwood saving technologies.
✓Assam Forest Department **(AFD)**, Assam Branch of Indian Tea Association **(ABITA)** and Assam Energy Development Agency **(AEDA)** as main partners

Logical Framework

Goal - Contributing to achieve 2.5 - 3 billion tCO2 carbon sink through Pilot Sustainable Fuel wood Management NAMA project in Assam

Sr no	Objective	Methodology	Indicator	Verifiable Indicator	Source
1	Developing Baseline values for fuelwood dependence, forest carbon and socio-economic status	Primary Questionnaire Survey and Focus Group Discussion, forest carbon surveys	Survey of 1500 HHs and 90 FGDs, 199 sample plots across 6 forest divisions	1500 survey questionnaires and FGD reports	Primary survey reports
2	Develop capacity of stakeholders through communication strategies	Street Plays, Audio-visual material, Hardcopy training and communication material, Media articles and news	No of street plays performed, Project Outreach to 2 Lakh Individuals	Video documentation of the quantum of crowd watching the street play performance, readership of publications, list of individuals trained	Outreach of respective tool used for e.g No of people attending the street plays, newspaper readership project area
3	Deployment of fuelwood saving technologies	Provision of fuelwood saving technology to 15000 HHs to reduce fuelwood consumption	15000 HHs adopting clean cooking technology	List of Stakeholders who have adopted the FST	Database of FST adopting HHs
4	Facilitate fuelwood plantations and Assisted Natural Regeneration	Convergence with Forest Department, Tea Estate Management, Facilitation of local communities to undertake plantation	1000 ha land under plantation and ANR models	No of Saplings/Area of Land brought under plantation	Forest Department records and maps developed with identified land
5	Development of MRV system	System of linking the project activities with output and Outcome	A robust MRV system in Place	A quantification system developed for selected indicators	MRV system in place.
6	Dissemination of project outcome	Presentation in National and International Forums	Presentation of the project Outcomes in the National and international fora	Report	Publication

Action Taken on 24th June review meeting points

1) All data of carbon estimation of six divisions to be shared with the State Forest Department – The data and the reports in soft and hard copy are handed over to State Forest Department

2) Forest type wise carbon information to be provided – Report is developed as per the forest type and hence has carbon information reported typewise

3) Brochure for printing in English and vernacular language – English manual and Executive summary in Assamese is prepared. Once finalised, copies will be circulated

4) Video on methodology of carbon assessment – Short documentary has been prepared

5) Plantation targets data to be finalized in consultation with the project team – Plantation target information along with geo-reference data is procured from the DFOs wherever available

Baseline Survey – Socio-economic clusters and Forest Carbon

Legend

Very Dense Forest
Moderately Dense Forest
Open Forest
Non Forest
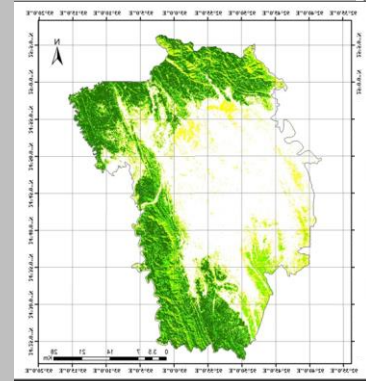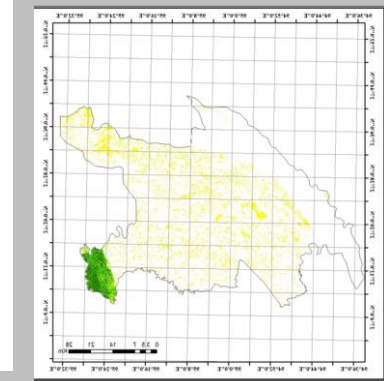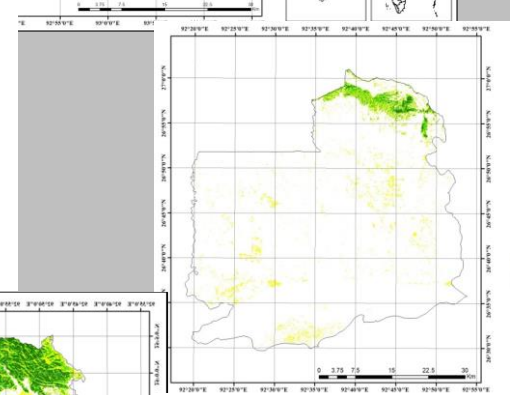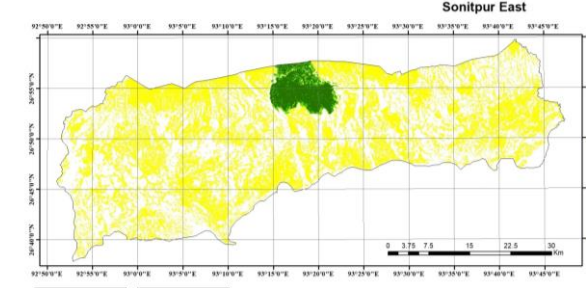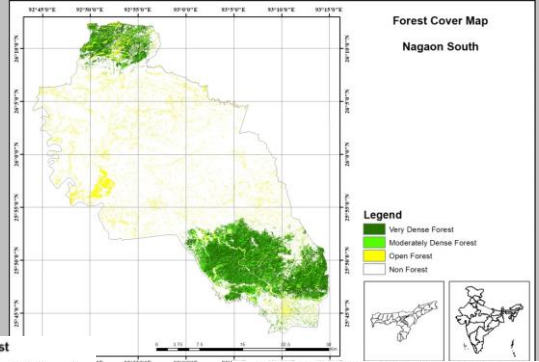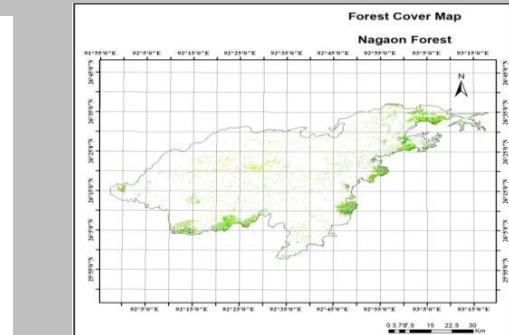
Baseline of Socio-economic Status

District	Forest Division	FV	FFV	TE
Cachar	Cachar	19	128	126
Dibrugarh	Dibrugarh	6	108	398
Biswanath Charali	Sonitpur (East)	7	101	133
Sonitpur	Sonitpur (West)	3	88	
Nagaon	Nagaon	3	157	47
Hojai	Nagaon (South)	7	169	

Sampled 1501 Households with stratified random approach

S. No.	Baseline Indicators assessed	Method of Enquiry
1	Demand for Fuel wood	HH Survey, FGD
2	Supply for Fuel wood	HH Survey, FGD
3	Other energy sources	HH Survey, FGD
4	Status of Fuel wood resources in the region	HH Survey, FGD
5	Local barriers for not shifting to cleaner alternative fuels	HH Survey, FGD
6	Socio-economic status	HH Survey
7	Sustainable fuel wood supply management and planning	HH Survey. FGD
8	Health status of womenfolk	HH Survey
9	Existing livelihood options	HH Survey, FGD
10	Penetration of Community institutions	HH Survey, FGD
11	Level of financial linkage	HH Survey

Sampling for Forest Carbon for all 6 six divisions

Stratum	Nagaon No. of Plots and (Area in ha)	Nagaon South No. of Plots and (Area in ha)	Sonitpur East No. of Plots and (Area in ha)	Sonitpur West No. of Plots and (Area in ha)	Dibrugarh West No. of Plots and (Area in ha)	Cachar No. of Plots and (Area in ha)
Open Forests	10 (7385)	11 (8929)	32 (79707)	12 (8184)	13 (40408)	9 (23174)
Moderately Dense	10 (19346)	5 (8092)	2 (6911)	4 (1749)	6 (2498.6)	19 (30969)
Very Dense	3 (4013)	12 (16071)	0	6 (2978)	14 (60808)	31 (80173)
Total plots	23 (30744)	28 (33090)	34 (86618)	22 (12911)	33 (49714.8)	59 (134316)

In all 199 sampling plots laid covering all 6 Forest Divisions

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Training of Frontline staff of the Forest Department on Carbon Stock Assessment of Forest Ecosystems

Purpose of training: To enable the frontline staff of the State Forest Department of Assam to assess the carbon stock of the forests and use this information in meeting the requirements in respect of forest carbon inventory methods in forestry.

S. No.	Place	Number of trained staff	Dates of Training
1	Chachar	47	6th - 8th March, 2019
2	Dibrugarh	37	6th - 8th March, 2019
3	Sonitpur	40	21-23 February 2019
4	Nagaon	35	21-23 February 2019

A training manual for for *Capacity Building of Assam Forest Department on Carbon Stock Assessment of Forests* has been developed.

Executive summary in Assamese for Frontline Staff

Training Manual for Capacity Building of Assam Forest Department on Carbon Stock Assessment of Forests

Prepared for Assam Forest Department
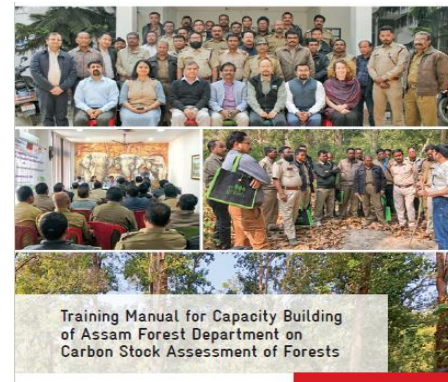
Thursday, 20 June 2019

Facilitation in Plantation

- Additional 500 ha plantation is taken up in Cachar and geo-coordinates will be procured.

- GPS coordinates and maps of all the plantation area available. Except for the 300 ha provided by Eco task force in Biswanath Chariali.

- During baseline assessment for these areas sited will be done post monsoon

- Trees Outside Forest area over 500 ha with local community has been identified and digitisation of the same will be done

Division	Digitised Plantation area (in ha)
Biswanath Chariali	64 ha + 300 ha (Ecotask force)
Sonitpur East	164 ha
Dibrugarh	0
Nagaon South	70 ha
Sonitpur West	124.43 ha
Total	**722.43 ha**

Outreach

At 14th session of **UNFF side event** was conducted with DG(F) as Chair

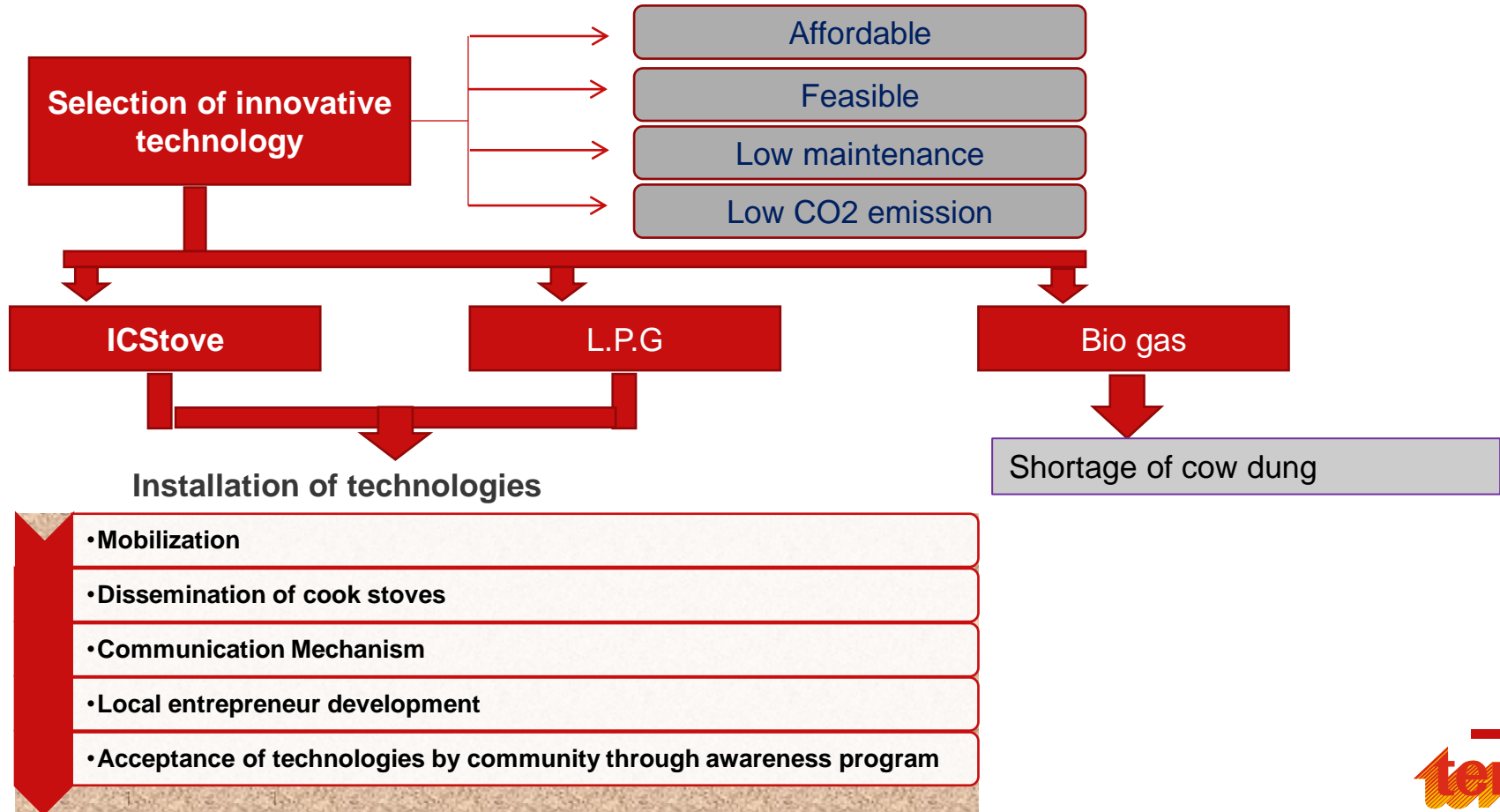Thematic track on Forest NAMA was organised at **World Sustainable Development Summit**

Publications and documentaries – Manual on forest carbon assessment for Assam along with Executive Summary in Assamese for frontline staff is prepared along with a short documentary.

A documentary on deployment of Sukhad Improved Cook Stove is prepared
A Street Play
Scientific articles have been submitted for publication. Popular articles are published in print and online media

Deployment of Improved Cooking Technology

Selection of innovative technology

- Affordable
- Feasible
- Low maintenance
- Low CO2 emission

ICStove

L.P.G

Bio gas

Shortage of cow dung

Installation of technologies

- **Mobilization**
- **Dissemination of cook stoves**
- **Communication Mechanism**
- **Local entrepreneur development**
- **Acceptance of technologies by community through awareness program**

Education and Awareness for Improved Cooking Technology deployment

Street Plays for Awareness Raising
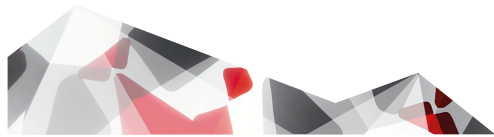
On site technology demonstrations – seeing is believing

Local innovations in technology deployment

Cost reduction, locally adapted solutions

Deployment of Improved Cooking Technologies

In all 19367 HHs are the beneficiaries of Improved Cooking Technology

Similarly, discussions with Tea Estates in Hojai have also taken place and will be followed upon post lockdown

The annual emission reduction due to ICT and LPG is 1,36,242 tCO2 but considering the staggered deployment there has been emission reduction by **90,000 tCO2** by June 2020 due to Improved Cooking Technology deployment

District / Division	Improved Cooking Stoves	LPG	Type of Beneficiaries	Total number
Biwsanath -Sonitpur East	0	2369	TE	2369
Cachar	4000	7000	TE, FV and FFV	11000
Dibrugarh	1720	889	TE (Kendugiri and Moran)	2609
Nagaun	177	100	FV, FVV	277
Sonitpur	3112	2168	TE	5280
Hojai	To be initiated post lockdwon		TE	
	9009	12526		21535

Financial Models for deployment of Improved Cooking Technology

Deployment of Improved Cooking Technology has been undertaken by developing financial models as below -

1) **Tea garden model** – Tea Garden management has supported the material, labour cost of construction of Sukhad Chullha and cost of pipe has been borne by the beneficiary. Project NAMA has done capacity building and training for deployment.

2) **Forest Department Facilitation** – Forest department has motivated forest villagers to undertake construction of Sukhad Chullha, cost of pipe has been borne by the beneficiary. Project NAMA has done capacity building and training for deployment.

3) **Carbon finance** – Carbon finance model also can be developed for the reduced emission through voluntary carbon market.

Alternative Livelihood Promotion

Trained manpower for Improved Cooking Technology deployment – More than 50 individuals covering entire project area are trained for deployment of Improved Cooking Technology. Chaiduar, an NGO in Biswanath is also trained for the deployment of technology.

Plans for areca nut plate making training – Discussions are going on to initiate Areca nut plate making enterprise but due to lockdown the process is halted. It will be taken up as and when field situation improves

Plans for Impact assessment – Socio-economic and carbon

1. Post monsoon as well as after COVID-19 lock down socio-economic survey will be undertaken for assessing the impact of the Improved Cooking Technology

2. Similarly, Change in the forest carbon will be assessed using combination of GIS-RS and groundtruthing from the field

3. Impact assessment of report with status of deliverables will be presented to AFD

Lessons learnt and Conclusion

- Combination of low cost fuelwood saving technology along with Ujjwala Yojana would remain the choice of community till alternative livelihood sources are not developed

- Robust MRV mechanism in form of Division level carbon assessment and training of frontline staff with literature in Assamese would be important for developing carbon finance projects

- Promotion of agro-forestry models for enhancing ToF would provide win-win situation

- Development of model nurseries catering to the choice of tree species of local preference is necessary

- Continuous engagement for communicating the benefits of clean cooking technologies is necessary

Thank you for your attention!