CREATING A CARBON NEUTRAL MEENANGADI GRAMA PANCHAYAT

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SUMMARY

The people of Meenangadi Panchayat of Kerala in India are aiming to become the world's first Carbon Neutral Grama Panchayat by 2020. It aims to achieve this by conserving and expanding its forests and biodiversity; reducing its carbon emissions drastically from household, transportation and industrial sectors; conserving its soil and water; practicing organic agriculture; reducing and recycling its waste and preparing to tackle climate change with best practices for sustainable development.

About Meenangadi Grama Panchayat

Meenangadi is a village panchayat located nearly at the centre of Wayanad district between the North latitude 11°9' and 11°13' and East longitude 76°38' and 76°48' at 1022m above sea level. This northern district in Kerala lies on the edge of the Deccan plateau and is a part of the Western Ghats - a biodiversity hotspot and World Heritage site.

The panchayat covers 53.52 sq. km with rocky hilly area, valley and plains. More than 70% of the total area is tableland and 20% is fertile plains. Nearly 2.7 % (145ha) of the total area is covered by forest. Annual rain fall is 221 cm. The whole area is drained by four small rivers and 23 rivulets/streams. Total farming in the area is about 4919 ha. Pepper, coffee, coconut, arecanut, rubber, cocoa, paddy, banana, ginger, turmeric, cassava, yam, colocasia etc. are the major crops grown in the panchayat. Total population is 34601 (17356 men and 17245 women), with tribal communities forming nearly a quarter of it. Population density is 646. 76% of total population is dependent on agriculture sector for livelihood.

(Source: Meenangadi Grama Panchayat, as per 2012 records)

1. CONCEPT NOTE

In recent times, global warming and climate change issues have become a non-negotiable reality. Rising global temperature, prolonged dry spells, unpredictable rain patterns and extreme climate events have been wreaking havoc around us and posing a threat to our everyday living. The scientific community had in the past warned us that global warming will cause an imbalance in our environment that could lead to the destruction of species and habitats. For most of us, the phenomena of global warming and climate variations merely means increased temperature levels, melting glaciers or rising sea levels. However experts point out that the impact of human induced climate change goes far beyond our common perception. Studies reveal that by 2050, the whole of South Asia will be direly affected by climate change repercussions, disrupting the availability of clean water, food, and energy. This will only add to extreme poverty, occurrence of epidemics and food insecurity globally, resulting in social chaos.

With such pressing concerns in mind, proposals for climate change mitigation actions were put forward by United Nations and in December 2015, world leaders united during the Paris Climate Convention to fight climate change, unanimously agreeing upon strategies to limit the rise in global temperature. It has been recognized that the existing socio-economic and industrial activities must be redesigned in a way that prevents the temperature level from rising beyond the $2^{o}C$ threshold in this century by containing atmospheric concentration of carbon dioxide and other Greenhouse Gases (GHGs) through reduced emissions from human activities. In Meenangadi, unmitigated climate change impact can cause irregular rains, extreme intensity precipitation, flood, drought or other natural calamities. Agriculture sector is especially vulnerable to climate extremities and unpredictability, and therefore has serious implications for food security and local economy. Forest profile and biodiversity resources are also likely to be impacted.

The concept of 'Carbon Neutral Grama Panchayat' puts forth the notions of zero carbon development, nature conservation, food and energy self-sufficiency, economic well-being and development at local self-government level. Having identified that the major cause of temperature rise is the uncontrolled emissions of greenhouse gases, in which carbon dioxide is the major gas, assessment of these emission levels make use of CO_2 as an equivalent indicator. Carbon neutrality refers to achieving net zero carbon emission by balancing the measured amount of carbon released into atmosphere due to human activities, with an equal amount sequestrated in carbon pools/sink. It is crucial to restrict atmospheric concentrations of GHGs released from various socio-economic, developmental and life style activities using biological or natural processes. This will help to regulate global temperature levels.

Carbon neutral development thus designs developmental processes in a sustainable manner, through offsetting and mitigation measures in an effort to reduce GHG levels. Carbon sequestration, a process of absorbing and storing atmospheric carbon dioxide in organic matter through carbon capture mechanism, is also a key to achieve this goal.

The carbon neutral development thus designs developmental processes in a sustainable manner, through offsetting and mitigation measures in an effort to reduce GHG levels, like,

- Adopting green technologies in all walks of life - natural resource use, food and nutrition, health care, animal husbandry, socio-economic domain and civic amenities
- Sustainable energy consumption - reduce fossil fuel dependence and switching into renewable energy consumption, sustainable resource use and waste management – solid waste management and resource recovery
- Better management of forest- improving tree cover with indigenous species and augmenting green cover in human settlements and homestead farming systems
- Sustainable management of natural resources- water bodies, paddy fields, wet lands, etc.
- Better management of soil and enhance productivity by adopting agro-ecological practices
- Augmenting community level preparedness training and capacity building among farmers, communities and all the stakeholders are required

Carbon neutral panchayat aims at managing anthropogenic carbon emissions through a series of environmental friendly methods and techniques for sustainable development. The upcoming scheme in Meenangadi panchayat will be a model project in India, which is inclusive of interventions in every aspect of human life, guaranteeing income security and ensuring better living conditions for all. **The 'Carbon Neutral Meenangadi Grama Panchayat' project envisions reduction of human induced carbon emission through people's lifestyle and sustainable development in this region.**

Why Meenangadi, Wayanad?

The State Action Plan on Climate Change (SAPCC) of Kerala has categorized Wayanad as one among the four climate change hotspot districts in Kerala, with a high degree of vulnerability to natural hazards like flood and drought and impact on biodiversity and human life. The minimum surface temperature in the Western Ghats region may rise by 2^{o} to 4.5^{o} Celsius by 2050. The SAPCC report estimates that paddy production in Kerala would drop by six per cent with each degree rise in temperature. The changes in temperature and rainfall would be detrimental to thermo-sensitive crops like cardamom, coffee, tea and black pepper cultivated in the high

ranges. It estimated that heat stress and humidity variation could also lead to the emergence of new livestock diseases.

In the discussions post-Paris agreement, the panchayat leaders in Wayanad district and resource persons across Kerala came together to strategize their way forward. Through this exercise, Meenangadi in Wayanad came forward to adapt to a carbon-neutral economy, pressed by the facts that Meenangadi has shrinking paddy fields and faces climate vulnerability, as especially seen in agriculture sector in its prevalent cash crops such as coffee and pepper and the overall ecological landscape. Climatic variations and environmental issues such as prolonged dry spells, seasonal variations in rainfall, hotter summer days' etc. increase the vulnerability at village level. To combat such climate risks and lead by example, the panchayat, along with the support from the State ministry, declared its intention to be carbon neutral by 2020.

2. PROJECT OUTLINE

It has been decided to conceptualize innovative schemes and collect resources, including for social costs, in the upcoming three months for the design of an action plan for the next five years. This program aspires to collate the opinions of all stakeholders towards **building a carbon neutral, toxic-free, zero-waste society**. The project has been envisioned as a popular grassroots movement for the integral development of Meenangadi Panchayat.

Phase 1 ***(Approximate time period of 6 months – 1 year)***

Feasibility and baseline assessments

- Stakeholder consultation and participatory discussions, commitment process, inception workshop
- Benchmark the existing emission levels (vehicular, industrial, agricultural, household etc.)
- Carry out soil carbon assessments in a structured sampling method to set a baseline
- Data collection and analysis of current forest cover, deforestation/afforestation rate, current conservation practices and future afforestation possibilities along with carbon sequestration potential

Resource centre (Thanal)

- Social preparation, engagement and outreach
- Model space for demonstrating, prototyping and testing green practices such as solar powered systems, agro-ecological farming, aerobic digestion/composting (eg. Thumburmuzhi composting), green innovations (like EcoSan toilets) etc.
- Research resources, outreach (campaigns, media) and learning centre for the entire community
- Hub for students to innovate and experiment
- Monitoring and documentation; thrust

• Create an inventory of data and records for yearly comparison throughout the project tenure to measure cumulative impact. The success of tree planting can be easily measured by comparing satellite imageries. Use of appropriate technologies such as GIS systems and other relevant tools would be employed.	will be given to develop standards/evaluation mechanisms in the local context, equivalent to international counterparts through various local organizations/community participants. Measurable, reportable and verifiable outputs to be produced for project evaluation, with indicators selected by experts as well as the community.

Phase 2 ***(Approximate time period of 1 – 4 years)***

The scheme formulates activities on completion of Phase 1 and its analysis, in functions which will be formulated into task force action groups comprising of the various stakeholders, in the following domains:

TASK A: Mitigation	TASK B: Adaptation
Industries and technology • Innovating small industries based on carbon neutral principles • Transfer of eco-friendly technologies • Creation of more 'green' jobs **Energy and transport** • Expansion of solar electricity consumption and minimizing fossil fuel usage • Energy audits for both renewables and non-renewables • Strategies for operating community centric and 'green' transport systems **Integrated resource and waste management** • Sustainable resource consumption and production • Decentralized solid waste management and waste reduction • Gender equitable livelihoods and empowering informal sectors **Soil and water** • Water conservation by improving	**Agriculture and food** • Promotion of agro-ecological farming, strengthening animal husbandry, self-sufficiency in food, and reducing food miles through promoting 'local eating' • Strategies to bring in increased income generation from agriculture sector, revival of traditional farming systems; food processing and value addition. • Expansion of organic farming • Branding, certification and marketing of organic products **Responsible tourism** • Design strategies for conceptualizing and implementing responsible tourism plan • Enabling local communities as stewards of their ecosystems **Forests and biodiversity** • 'Tree is Wealth' project; incentivizing

watershed management, water usage efficiency, rain water harvesting and other initiatives • Soil health enrichment and conservation through permaculture principles • Restoration and revival of farmlands/wastelands through boosting soil carbon	tree planting by giving year/term end rewards in an effort to promote returns in short term for a long term capital gain and growing of trees that will sequester carbon • Medicinal 'streams' project by planting native medicinal plant varieties along the riverine banks and stream areas • Landscape ecological innovations with thrust on restoring watersheds • Biodiversity and forest conservation through inventory, appreciation campaigns and research • Bird friendly forest coffee certification and branding to augment income of coffee sector including setting up of "Coffee Park" as production centre for coffee powder.
TASK C: Disaster Risk Reduction	**TASK D: Loss and Damages**
• Develop a framework for the local context in accordance with the studies undertaken globally and by the National Platform for Disaster Risk Reduction • Stake holder awareness creation, capacity building, and mitigation strategy to deal with impacts and effects of climate extreme events; orientation at particularly vulnerable sectors and communities.	• Developing a monitoring framework to assess L&D by climate change focussing various sectors in the region especially taking into consideration gender-based disparities, children's welfare and socio-economic status • Creating community compensation fund for vulnerable groups like farmers, forest dwellers, tribal communities, etc.

3. ACTIVITIES

Chief elements of the project consist of formation of relevant teams, research in the above mentioned fields, situation analysis, systematic actions based on a strategic action plan, awareness programs and regional development with participatory community engagement. A

multi-faceted program will be formed that includes fundamental data collection and accurate analysis to construct a course of action for the implementation of carbon neutral schemes and public awareness programs. Through the resource centre and its intended activities, it aims to:

- Enhance participation and build strategic partnerships within the stakeholders of the region to accomplish project deliverables
- Expand knowledge sharing and technology transfer with outside players (States, National and International levels)
- Create a platform for the leaders of the project to share their success stories and learning through demonstration campaigns to connect with other societies
- Document and develop the methodology of the project (as toolkits, resources etc.) to serve as a model to other communities through a resource centre.
- Information dissemination, outreach and awareness creation programs, and ensuring leadership of students and educational institutions in the program

4. PROJECT IMPLEMENTATION

'Carbon Neutral Panchayat' is a unique pilot initiative by the Meenangadi grama panchayat with the support of Kerala State government. A **Core Committee** will be constituted comprising representatives of Meenangadi Panchayat, Thanal, Department of Zoology (Kannur University Mananthavady Campus), Kerala Suchitwa mission and other relevant departments. Expert **Task Forces** will be formed under the core committee for each of the identified sectors of interventions. A Resource Team consisting of experts in each sector, including representatives of organizations and scientific community, and a Technical Support Team for technical assistance would be included in the Task Force to design, strategize, guide and monitor the project. Project monitoring and evaluation will be an important aspect towards achieving measurable, verifiable and reportable outcomes.

Organization Structure