

To be published in Proceedings of the 23rd ASIC Colloquium; Bali; ASIC; Paris

Coffee Agroforestry in Kodagu, Western Ghats, India- Need for Conservation to sustain livelihoods.

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Summary:

Kodagu district in South India is the largest coffee producing region in India contributing to 35% of the production under shade grown system. These diverse coffee plantations which cover 30% of the landscape in the region not only provide valuable economic gains to the community but also provide vital ecosystem services to the Southern India since the most important river of South India Cauvery originates here and coffee plantations cover a large area in the watershed. With the opening of the coffee markets and related intensification of coffee production the highly diverse coffee based agro forestry systems are losing the tree cover and tree diversity and could transform to system with few native trees and exotic fast growing trees like Silver Oak (*Grevillea robusta*).

To address some of the issues related to loss of diversity and to promote sustainable coffee cultivation project CAFNET (Coffee Agroforestry Network) was launched in 2007 in 7 countries. In this project funded by European Union and coordinated by CIRAD France efforts are underway to strengthen ecological reasoning and to improve the business skills of farmers to negotiate access to payments for environmental services. Kodagu district is the only CAFNET site in India and multidisciplinary team of researchers are undertaking studies in 38 villages in the Cauvery Watershed region. Ecological and Socio-economic studies are being undertaken for the first time in the region to document and value the ecosystem services being offered by coffee based agroforestry systems. Efforts are underway to educate farmers and to form groups to add value to coffee through eco certification. This multi disciplinary study will help in providing much needed information on role of coffee plantations in providing key ecosystem services and to formulate guidelines for sustainable coffee cultivation and help the farmers through value addition and better access to markets.

Introduction:

India is the 5th largest coffee producing country in the world and third largest producer in Asia and mainly produced by small farmers. The state of Karnataka in South India is largest coffee producing state producing 80% of India's coffee and Kodagu district in this state is the largest coffee producing district in the country contributing 35% of the national production. The district of Kodagu is also one of the highly wooded district in India with 80% of the land area under tree cover and Coffee plantations constitute 33% of this wooded landscape. The diverse tree cover of

the coffee plantations which supports diversity of flora and fauna has contributed to the rich biodiversity of the Western Ghats region, one of the 8 hottest hot spot of biodiversity in the world. In addition to their role in conserving biodiversity coffee plantations in Kodagu provide valuable ecosystem services in the form of watershed services to the River Cauvery one of the important rivers of South India.

This diverse coffee producing landscape is undergoing changes with respect to coffee cultivation due to opening of the coffee trade and intensification of production through opening of the shade and providing artificial irrigation and higher nutrient inputs. The shade management is not only moving towards larger canopy opening but also replacement of slow growing native trees with fast growing exotic trees like Silver Oak (*Grevillea robusta*) to produce more coffee and to realize higher income. Replacement of native trees with exotics is not only due to fast growth rates but also due to issues related to ownership and free sale of trees, easier shade management and farmers preference of silver oak as one of the very ideal standard for black pepper. Hence the diverse coffee agroforests in Kodagu are slowly transforming into more open less diverse coffee plantations which through will help in short term economic gains for the farmers will not be able to provide the vital ecosystem services, support higher levels of biodiversity and also sustain the long term crop productivity. It is a major challenge to ensure that the economic and ecological benefits from the coffee agro forests of Kodagu are not only maintained but also sustained for the human welfare of one of the most eco sensitive eco region of the world the Western Ghats.

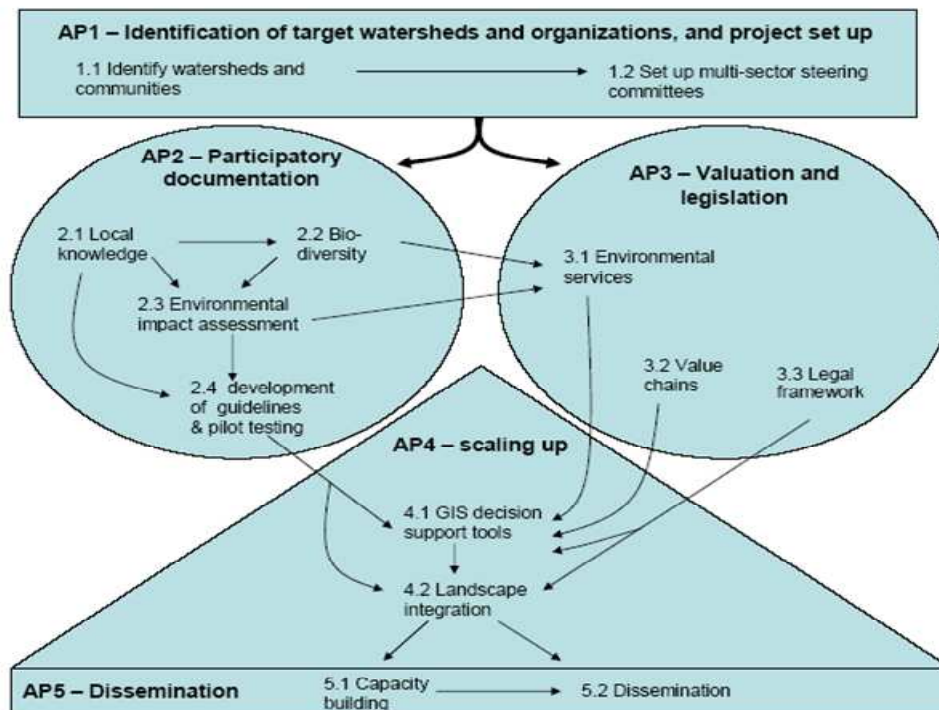
With the common belief that agroforestry is the key for coffee plantation sustainability through diversification of farmers revenue and also to value the ecosystem services to insure economic rewards to farmers Coffee Agro-Forestry Network (CAFNET) – connecting, enhancing and sustaining environmental services and market values of coffee agro-forestry in Central America, East Africa and Western Ghats of India” funded by the European Union and executed by CIRAD, France is being implemented in the Cauvery watershed region in India by three local partners viz., University of Agricultural Sciences, Bangalore (UASB); Central Coffee Research Institute, Coffee Board of India (CBI) and French Institute of Pondichery (FIP) since 2007. These three regions are not only important coffee growing regions of the world but are also part of the biodiversity hot spots (<http://www.ifpindia.org/Coffee-and-Environmental-Services-in-the-Western-Ghats.html>).

The objectives of the project are: 1) To link sustainable management and environmental benefits of coffee agroforests with appropriate remuneration for producers through better access to markets and payment for environmental services; and 2) to improve livelihoods for coffee farming communities while conserving natural resources in three major coffee agroforest regions located in world hotspots for biodiversity.

The specific objective is to strengthen ecological reasoning, access to information, management capacity and business skills of target farmers’ organizations so that they can comply with international certification criteria and hence negotiate access to markets and payment for environmental services.

Methodology:

Thirty eight villages in the Cauvery watershed region of Kodagu district were selected for the proposed study covering a range of vegetation and climatic gradients. Five activity packages were undertaken as given hereunder:



Important outputs:

Documentation of Traditional Ecological Knowledge from 120 coffee farmers using AKT tool developed by University of Wales, Bangor, UK and used for the first time in India. Four knowledge bases on floral, faunal diversity, interactions within coffee agro forestry system and by products have been developed.

Biodiversity inventory for trees, epiphytes and birds has been undertaken in 118 farms representing small, medium and large farms across 38 villages in the watershed region. In 68 hectare area sampled, 230 tree species were documented. From 3000 bird observations 80 bird species were recorded. Small mammal studies on 30 estates and microbial diversity studies from 34 farms were undertaken to represent different biodiversity elements.

Hydrological studies have been undertaken in 6 sites along different rainfall regimes for assessing the contribution of coffee plantations to ground water recharge of coffee plantations by recording observations on rainfall interception, runoff and soil moisture status. Four weather

stations were installed and historical rainfall records from 180 farmers were collected to look at the changes in pattern of rainfall which is very important for coffee production.

Quantification of carbon from coffee plantations across vegetation types and comparison with adjoining natural forests and sacred forests has been completed to quantify the carbon sequestration ability of coffee plantations under different type and density of shade.

For 114 farms, soil analysis and analysis on the economics of production were carried out to and the first time cup quality analysis were undertaken on 150 farms and results provided to farmers to educate them on the quality of their coffee with reference to the shade regimes and quality of shade.

Regular meetings with farmers and steering committee members to share the outcome of work and to provide information to farmers on the outcomes of the work were conducted. With an objective to provide alternate marketing channel and value addition farmers groups were formed and eco certification of the farms under Rain Forest Alliance and UTZ certification programmes. First group of 6 farmers from Cherambane village certified during 2010 and 8 other groups are being audited for certification.

Conclusion:

This multi disciplinary study being undertaken for the first time in India will help in providing much needed information on role of coffee plantations in providing key ecosystem services and to formulate guidelines for sustainable coffee cultivation, tree management and help the farmers through access to better market. The project aims at maintaining ecological diversity of the diverse coffee based agroforestry systems of the Western Ghats and at the same time provide economic incentives to farmers for sustainable coffee production.

Acknowledgements: The authors would like to thank the European Community for financing the CAFNET project under the Programme on Environment in Developing Countries.