



Summary

The study was conducted in Micro and macro level included and covered in village, taluka, district Level and also the special features of SARA plantations, As such extension of plantation activity from Afforestation to deforestation due to uncertainty and rumour on “Ban of eucalyptus plantation in Karnataka since 2015” and finally ban on eucalyptus plantations have been imposed in Karnataka State in 2017. Thus, Management has decided to analyse the lower in the productivity or yield and economic viability in the various sections due to multiple factors and maintaining, monitoring and assessment (MMA) of SARA Plantations supported by West Coast Paper Mills limited.

Study Methodology: Scope and Collection of Primary data, Secondary Data’s (published) to analyse the Impacts and Assessment. The work study was conducted, are based on mythology study on following points

- **Field survey through questionnaire formats(QF)**
- **Feedback Collection and Analysis**
- **Laboratory testing as per standards applicable for Physio-Chemical properties of Soil and Water through certified laboratory.**
- **Bench marking with optimal range for better crop yield**

Based on study methodology, we concluded that on research papers, observations, analysis of testing, Quadrates and Measurements. GPS co-ordinates and Girth formulas as tools on various aspects of Environmental friendly, Social responsible and Economic viability as key factors of FSC®-FM certified theme as SARA Management and Its Management plan of plantations.

The Environment Impact assessment and Socio-economic impact assessment are based on **Positive** as well as **Negative** impact within the plantations and projected areas to analyse and mitigate on below parameters.



The Environment study are summarized on 20 parameters depicted as

1. **Topography-Wet zone, Dry zone, Climate, rainfall, Climate Change, Physio-chemical Properties of The soil .Physio-chemical Properties of water, Water table and Ground water level, Plantation Species, Conservation areas, Bio diversity, Erosion Intensity, Root Nodulation and Root Analysis, Soil Micro Flora, Shelterbelt, Control of forest fires, Wildlife, Control of Eupatorium, Protection and conservation of Nature forest, Prevention of encroachment, Landscape and Ecological restoration, Grazing and Browsing, Growing Stock productivity covers-(a survival rate of plantations, (b) MT wood log productivity.**
2. **Social-Economic impact parameters like population ratio, Literacy rate, per capita Income Changes, Educational level, Lifestyle and awareness, Industrial impacts, Change in crop pattern, self-empowerment of farmers, Increase in basic amenities, Impacts of plantations on other opportunities, Plantation activities, employment activities, CSR activity.**

Inception 2006, SARA –WCPM has raised captive plantation in 51,995 acres(including coppices) on degraded land plantations of farmers in different districts.A number of fast growing species such as *Eucalyptus teretecornis*, *E. camaldulensis*, *E. pellita*, *E. urophylla*, *Eucalyptus Clones*, *Acacia hybrid* and *Leucaena leucocephala* have been introduced. This activity emphasises environmental improvement and in the process provide benefit to rural communities in improving their social and economic status.

With this background, A study was undertaken in 2011, 2013 and 2017 on the 'Environment, Socio-Economic Impact assessment of plantations raised mostly in Sections like Ramnagar, Khanapur (N&S), Kuluvali, Ch. Kittur, Koppal, Malgi, Chandgad, Radhanagri-Nippani of Uttar Kannada, Belgaum, Koppal, Sirsi and Dharwad districts of Karnataka, Kolhapur district of Maharashtra .

Size and Intensity of Sapling for the Study):Approx.84 Farmers from All section of FMU depending upon the Soil Texture and type, rainfall and Climate Conditions as Ecological Balance. Primary and Secondary Data Collected from the sapling.

The overall Observation/Initial assessment of regional impact of SARA plantations is helpful for analysis and helpful in decision making in future management plan for better productivity plantation or stopped the Plantation Activity presented in the *annexure*.



Observations on Positive impacts of SARA plantations:

- Improved the fertility of soil and preventing Soil erosion by addition of organic matter through litter fall.
- Created the alternative source of fuel wood and small timber from the plantation to farmers.
- Regeneration of other species is being promoted which attract the wild life and other fauna also. (act as buffer zone)
- Improved the micro-climate of the area soil & ecological soil moisture improvement which helps in growing the crops with productivity.
- Assured Income from the plantation, hence minimize the risk of crop failure in adverse conditions.
- Helps to create the employment opportunity around the year which stops the migration of the population.
- Extra Income from the wasteland/barrenland which helps to improve the socio-economic conditions of the farmers.
- Food & Shelter increase due to Flora and Fauna: Food Chain
- Green cover enhanced due to canopy of vegetation/tree Plantation.

Observations on **Negative impacts** of SARA plantations:

- **Mono-cropping** of eucalyptus promotional plantation activity (More Eucalyptus) does not support the favorable habitat for big wild animals as well as productivity.
- **Slow decomposition** of leaf litter from eucalyptus species.
- **Weak plantation** due to not proper selection of species/spacings in the section due to climatic and soil conditions.
- **Harvested/Felling plan** is not adhere on time as per agreement or farmers request (Case to case basis).



- **Decrease in Survival % of plantation** affects the productivity and source of pulp wood species to FMEs.
- **Less of Farmers Involvement** in the plantation affects their FMUs responsibilities.
- **Need to increase Trenching** improve the Water level, Moisture contents through checked runoff.

Suggestions/Mitigate for Sustainable Forest management:

- **Rotation of Planting Bamboo (5 Yr)** has declared as Domestic crop/**Casuarina Clone (CHOI- 3-4 Year)** or **Melia Dubia (6 Yr)** on selective barren land especially on red Soil in rain fed area.
- **Need To Develop Model No.3 (less input more returns)** in plantation areas for Casuarina-Seedling (*C.junghuhnina-Local species*) and Clone CHOI is released by IFGTB, Coimbatore for sustainable Forest Management and as this clone produces more side branches to effectively reduce the wind force when planted as wind breaker or seedling on selective barren land especially on red soil/sandy loamy soil to increase in FMUs, SFM-Natural and FSC® 100% pulpwood. Good yield expected in lesser rotation period 3-4 Years.
- **The suitably mix preferably multipurpose** tree species with various espacement should be promoted on the wasteland/barren land subjected to soil preference (plantation of other species like Casuarina, Acacia, Leucaena and leguminous tree species) in the scattered patches.
- **Coppices Bond agreement for Eucalyptus** should increase for productivity are based on (selective after selective soil testing, GPS and previous yield of plantation crop). Run cost effective plantation, increase the productivity and better Income to FMUs in Rotation Period.
- **Maintain the cultivation and felling** for the Sustainable Forest management to meet out the raw Material and reduce Burdon level on raw material procurement from the other sources/control wood Chips.



- **Management plan 2018-2022** with model to development for more involvement of a farmers by own crop cultivation process development and assured Rate Contract per MT in agreement on felling.
- **Need to implement the CEPA (Communication, education and public awareness) program** in FMUs for strong bonding between stakeholders and Company by farmer meeting programme.
- **Intercropping of leguminous crops using suitable crop in the area** should be promoted in the initial years.
- **Time bound silviculture operations in plantation** should develop in the plantation areas.
- **Incorporation of micro-organism** (*Microbial biomass C, ninhydrin-N, Albizia, etc.*) in to soil to increase the rate of decomposition of litter fall.
- **Selective felling** is better than clearly felling in the plantation areas.
- **Trenching at regular interval to improve** the water level through checked runoff.
- **Use intercropping instead of mono culture.**
- **Need to incorporate and implement the Bio-Diversity Policy and Landscaping & ecological Restoration Policy** for year 2018 to sustain the conservation or preservation of Sara plantations. Refer our Detail Study Report.

Place : Dandeli

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(Associate Director-Sara Plantations)