

## RESEARCH PAPER

# STATUS OF COFFEE PLANTATION IN INDIA : A HIGH TIME FOR INNOVATION AND SUSTAINABILITY TOWARDS MAKE IN INDIA

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## ABSTRACT

India produces about 2.5 per cent of world's coffee on almost the same percentage of coffee plantations. Thus India is an insignificant producer of coffee and stands nowhere when compared with Brazil (25%), Columbia (15%) and Indonesia (7%). India cultivates all of its coffee under a well-defined two-tier mixed shade canopy, comprising evergreen leguminous trees. Nearly 50 different types of shade trees are found in coffee plantations. Shade trees prevent soil erosion on a sloping terrain; they enrich the soil by recycling nutrients from deeper layers, protect the coffee plant from seasonal fluctuations in temperature, and play host to diverse flora and fauna. Coffee plantations in India are essential spice worlds too: a wide variety of spices and fruit crops like pepper, cardamom, vanilla, orange and banana grow alongside coffee plants. India's coffee growing regions have diverse climatic conditions, which are well suited for cultivation of different varieties of coffee. Some regions with high elevations are ideally suited for growing Arabica's of mild quality while those with warm humid conditions are best suited for Robusta's. This paper analyzes the present status, potential of sustainability standards, eco systems, impacts and cost of cultivations. The contribution made by coffee growing and trading to environmental and social issues is highly positive, certainly compared with most alternative economic activities. There is growing evidence that coffee cultivation is under threat in some regions that are most vulnerable to climate change

**Keywords:** *Coffee Cultivation, Sustainability, Eco Systems & Impact*

## 1. INTRODUCTION

Coffee is a truly global commodity and a major foreign exchange earner in many developing countries even in India. Deregulation, evolving corporate strategies, and new consumption patterns have transformed the global coffee chain dramatically in the last two decades. The economic clauses of the International Coffee Agreements collapsed in 1989. Market liberalization has taken place in most producing countries. A process of consolidation has taken place both at the level of roasting companies and of international traders. In the interim, the act of coffee drinking and its associated symbolism has also changed. New consumption patterns have emerged with the growing importance of specialty, fair trade, organic and other sustainable coffees. Coffee bar chains have spread dramatically, although the relative coffee content of the final consumption experience in these outlets is low. Consumers can now choose from hundreds of combinations of coffee variety, origin, brewing and grinding methods, flavoring, packaging, sustainability content, and ambience. This paper analyzes the present status, potential of sustainability standards, eco systems, impacts and cost of cultivations.

## 2. CURRENT STATE OF COFFEE CULTIVATION IN INDIA

The traditional coffee growing areas of India comprise of Karnataka, Kerala and Tamil Nadu, with Andhra Pradesh, Orissa and the North Eastern Region constituting the non-traditional areas. From 1950 to 2014, the total area under coffee cultivation in India has increased from 92,523

hectares to over 409,690 hectares, with Karnataka accounting for around 229,658 hectares (56.1 per cent) of the total area and 226,335 million tons (70.7 per cent) of total national production (Coffee Board, 2014). Although India is the only country that grows all its coffee under shade, by retaining the traditional practice of cultivating coffee under a three-tiered canopy; the expansion of coffee cultivation in the 1970's and 1980's took place at the expense of native vegetation cover and has been associated with the trend of replacing native shade trees with the exotic Silver due to economic pressures discussed in subsequent chapters of this report. There has been a marked by a shift from Arabica to Robusta cultivation over the years, with the area under Arabica cultivation declining from 73 per cent of total area under coffee cultivation to 49 per cent, and Robusta cultivation increasing from 27 per cent to 51 per cent to total area, from 1950 to 2014 (Coffee Board, 2014).

## 3. COFFEE AND ECOSYSTEMS

The long-term effects of climate change through variability in rainfall and underground water levels and their impacts on coffee growing practices in Karnataka are further taken into account. This is vital as a positive correlation between the existing farming practices on the plantations of the Karnataka Growers Federation and the ecosystem they inhabit is globally significant, as it could represent a best-practice example of coffee farming with low impacts on ecosystem services and biodiversity; a relationship that would then need to be preserved, scaled and replicated. A few important long term impacts as noted by the International Panel of Climate Change

(IPCC) are as follows:

- Changes in yield due to changes in seasonal climates, including erratic rainfall
- Changes in production potential in relation to factors such as yield, land availability and longer/shorter growing seasons
- Crop response to changes in atmospheric conditions
- Changes in price and trade patterns due to climate change
- Changes in food security and livelihood, i.e., number of people at risk of hunger and poverty
- Water run-off and related water stress

The four major impacts of climate change on coffee production in the short run are

- The fall in quality of coffee bean
- Reductions in yield
- Increase in incidence of pests and disease
- Increase in irrigation, fertilizer and pesticide costs

#### **4. PATTERNS OF PRODUCTION & SUSTAINABILITY**

The concept of sustainable development is mainly used at a macro level. However, most of the challenges depend on transformation of the patterns of production, consumption and social behavior. From the supply point of view, a relevant dimension is on the patterns of production, which depends on transformations at sector and firm level. This implies to consider sustainability also at these levels. The concept sustainable performance is a way to have an operative approach of sustainable development at firm and sector level. The core aim is to stress the idea of different challenges to be considered in a holistic and systematic approach. More precisely, sustainable performance is defined as the simultaneous achievement of desired scenarios of performance in three dimensions (economic, social and environmental). In operative terms a process towards sustainable performance can be understood as an evolutionary process of setting multidimensional targets and strategies to reach the targets. To evaluate the contribution of innovation and catch-up process on sustainable performance of the sectors, it would be necessary to consider specific indicators which characterize the challenges in the different dimensions.

#### **5. ENVIRONMENTAL AND SOCIAL ISSUES**

The contribution made by coffee growing and trading to environmental and social issues is highly positive, certainly compared with most alternative economic activities. On the environmental side coffee is an ever green shrub, hence an important contributor to carbon sequestration, and is effective in stabilizing soils. It also permits the preservation of much of the original biodiversity in planted areas. It is vital that coffee production and processing should take into account environmental needs to ensure sustainability. It is also necessary that the economic environment should encourage stability and reasonable living standards for the populations involved with coffee, and ensure the maintenance of quality - Coffee also makes a positive contribution on the social side to maintaining substantial rural employment and stable communities. Improving the living standards of

coffee producers, especially smallholders, is a priority for Governments. As far as marketability is concerned Certification also ensures certain degree of sustainability.

#### **6. SUSTAINABLE CERTIFICATIONS**

Sustainable Certifications arise from the fact that marketing partners demand a certain degree of accountability and monitoring, usually through producer organizations. These organizations can help improving the bargaining position of farmers even for the part of the coffee harvest that is not sold through the sustainable channel. These organizations can also become an anchor for other rural development activities, such as micro-finance. However, sustainability certification is a costly and sometimes lengthy exercise. It requires setting rules and monitoring compliance. In the right circumstances and with the right dynamics, this can create a virtuous circle of empowerment and organizational strengthening. At the same time, farmer organizations may find it difficult to wade through rough times if the expected benefits do not materialize in the short-term. The hidden costs of coordination (i.e., time spent in meetings, transport), uncertainty, and the limitations of collective action may dramatically decrease the overall net benefits of certification efforts.

#### **7. CLIMATE CHANGE - COFFEE**

There is growing evidence that coffee cultivation is under threat in some regions that are most vulnerable to climate change. Areas currently suitable for coffee will decrease substantially by, as soon as, 2020, with the potential to disrupt current production and trade practices significantly. Whereas climatic variability has always been the main factor responsible for fluctuations of coffee yields in the world, climate change, as a result of global warming, is expected to result in actual shifts on where and how coffee may be produced in future. Several adaptation and mitigation strategies for coffee producers have been put forward in response to the challenges facing the sector. Short-term adaptation strategies include improved farming practices and better post-harvest processing. Longer-term strategies include capacity-building, improved monitoring of climate data, enhancing soil fertility, introducing or preserving different production models, and developing drought and disease-resistant varieties. In more extreme cases, the solution may be to diversify out of coffee or shift production to more suitable areas. Mitigation strategies include calculating and reducing greenhouse gas emissions on the farm, and facilitating the creation of carbon sinks.

#### **8. COST OF COFFEE CULTIVATION**

The establishment costs of coffee cultivation are quite substantial and include cost of renovation pits, contour drains, planting and cost of seedlings. In addition, there are fixed costs by way of irrigation investments and fencing costs. Recurring costs include material costs such as fertilizers, manure and pesticides and labour costs for applying fertilizers, manure and pesticides, repairs and maintenance, supervision, berry picking, etc. Average daily capital expenditure of INR 9,515 per ha per day is

obtained by summing the average expenditure incurred on diesel (required for tractors, irrigation and processing) of INR 6,426 per ha per day and the average cost of maintenance of equipment and machinery of INR 3,089 per ha per day. Hence average total cost of coffee cultivation (capital cost + labour cost) for our sample estates was INR 25,323 per ha per day, in 2012. Wage rates of coffee workers have risen steadily over the years, increasing from INR 27 per day in 1994 to INR 140 per day in 2014 (Coffee Board, 2014). These numbers are important as they demonstrate the extent of earnings of the local communities and the livelihoods that would need to be compensated if climate change affects the production capacity of the estates.

## 9. CONCLUSION

With the global coffee industry having undergone a transition in the latter half of the preceding century, marked by an increase in coffee production at the cost of the environment in major producing countries such as Brazil and Vietnam; the case for eco-friendly practices and biodiversity conservation potential of Indian, especially Karnataka's, coffee agro forests are growing. Building up resilience to increasing climate variability is the most significant challenge facing coffee farmers. It appears that most adaptation measures are in line with sustainable development approaches common in the sector. It is clear that the coffee industry has to take more responsibility to invest collectively in the adaptation process, communicate transparently, and ensure effective and long-term support for coffee farmers in all producing countries. The plans and investments of key stakeholders, including producer governments, roasters, traders, VSS, NGOs, producer organizations, unions and financial institutions should be coordinated, in order to build a shared understanding and approaches to sustainability at the global level at large and Indian level in particular since it is a high time for innovations. Manufacturing currently contributes just over 15% to the national GDP. The aim of the Make in India campaign is to grow this to a 25% contribution as seen with other developing nations of Asia. In the process, the government expects to generate jobs, attract much foreign direct investment, and transform India into a manufacturing hub preferred around the globe.

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