AN INNOVATIVE APPROACH TO RECONCILE FORESTRY WITH ECONOMY WITH NEO VERTICAL AGRO-FORESTRY

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Abstract - Agronomic productivity is not matching up with the needs of the 21st Century. United Nations asserts India is expected to become the largest country in population size by 2022. Urbanization has been a potential threat to the tree cover and forests. Out of the many problems our paper intends to solve, this is just one. The primary purpose behind the study is to come up with a model that does not sacrifice forestry for economy or vice versa. It is based upon the conception of vertical farming, which refers to the cultivation of crops (or any other vegetation preferred; we chose to primarily grow medium size trees) on vertically stacked levels. In this paper, we present a four storied architectural structure that serves both agroforestry and corporate purposes. A critical assessment of the model is conducted in order to test its economic feasibility. The yields produced by the proposed model are not bounded by limited land, and is hence multiple folds. Every floor has a particular sort of vegetation chosen with tremendous care. The floors simultaneously provide services such as a library, a health improvement centre, an animal husbandry area, a playground and a forest. The building is powered by energy sources such as gravity light, biogas, and solar trees. And, the best part about it is that it can be in your neighbourhood.

Keywords - Library, Health Improvement Centre, Animal Husbandry Area, Playground, Forest, Gravity Light, Biogas, Solar Trees

I. INTRODUCTION

Substantial urban expansion has become a cause of adverse environmental problems worldwide, including deforestation, climate change, conversion of arable land into non arable land etc. In fact, a statistical analysis[1] conducted by the Government of India clearly states, "By the end of the 21st century, it is very likely that sea level will rise in more than about 95% of the ocean area. About 70% of the coastlines worldwide are projected to experience a sea-level change within ± 20% of the global mean."
Urbanisation has also caused segregation between the nature and modern settlements. Breathing "clean air" has become a potential subject of bragging. We, however, speculate the possibility of a forest in your neighbourhood. In this paper we present an architectural structure that establishes a harmony between nature and essential urban services.
A four-storied forest that serves as an animal husbandry area, a health improvement centre, a library, a playground, and a forest- all at the same time. That is only a mere description of what our paper offers. Nature is self-sustainable, and so is our model. Nothing that enters this forest is a waste. Every beam of sunlight that illuminates the farm is distributed evenly across the vegetation with the help of parabolic lenses. Beside the solar trees that provide the farm electricity for any urban activity, the farm also uses gravity lights and bio gas (produced from the waste of the cows reared in the special animal husbandry area built on the ground floor).
In table 1, we discuss the problems that the modern agroforestry sector is facing, and how our model aims to solve it.

Sl. No.	Problem	Solution	Proof
1	Irrigation -According to World Bank[2], only 35% of India's total land is reliably irrigated	• O.M.C • Rainwater harvesting • Zero Wastage	• O.M.C is the optimum moisture content required by a plant. We will study each plant's OMC and irrigate accordingly. • Just by rainwater harvesting, with an annual rainfall of 800mm rainfall on a terrace of 1000sq. m, we will accumulate 800000L. • The water will be properly stored, resulting in minimal to no evaporation of stored water.