Iosr Journal Of Economics And Finance (Iosr-Jef)
E-Issn: 2321-5933,P-Issn: 2321-5925.Volume 14, Issue 4 Ser. III (July. – August. 2023),Pp 15-17
Www.Iosrjournals.Org

Role Of Circular Economy In Agriculture Leveraging Long Term Growth And Prosperity- An Overview

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Abstract
Objectives: To study the role of circular economy in agriculture leveraging long term growth and prosperity. To determine the challenge that is faced while implementing a circular economy in agriculture
Method: Various aspects of circular economy in recycling and reducing solid wastes and sewages have been reviewed and basic facts are elaborated systematically to grass root level.
Findings: The implementation of the circular economy helps in developing a recycling economy that primarily circulates planting and breeding so that there is a reduction of solid wastes and sewage. The current study examines the concept and role of circular economy in agriculture that leverages long term growth and prosperity. It also provides valuable information about the challenges that are faced while implementing a circular economy in agriculture. The facts related to models of the circular economy on agriculture that leverage long term growth and prosperity are discussed in the study.
Novelty: The current study will be beneficial to the people that are associated with the conservation of environment and disposal of wastes as they will get better learning about role and models of the circular economy on agriculture that leverage long term growth and prosperity.
Keywords: *circular economy, solid wastes, sustainable growth, agriculture leveraging, conservation of environment*

Date of Submission: 26-07-2023 Date of Acceptance: 06-08-2023

I. Introduction

The term 'circular economy' is the general term for an industrial economy that produces no waste or pollution, and in which material flows are divided into two categories: biological nutrients, which are designed to safely re-enter the biosphere, and 'technical' nutrients, which are designed to circulate at high quality in the production system while also being restorative and regenerative by design [1]. The circular economy creates a closed-loop system which includes different processes such as reuse, recycles, repair, remake, and refurbishment so that there is the proper utilization of inputs and reduction in generation of waste. Hence it is the path to achieve a balanced economic and environmental development. The amount of agricultural resources that have been recycled must be amazing. The basic goal of circular agriculture is to encourage the use of agricultural resources in a cyclical manner. The circular economy focuses on removing/reducing wastes along with making continuous use of the resources. This recycling economy revolves mostly between planting and breeding, with the goal of recycling and reducing solid waste and sewage.

Biogas is at the heart of this recycling system. Planting, biogas, breeding, and farmers' living are the four subsystems that work together to minimise investment in planting and breeding, enhance production, improve resource and energy efficiency, reduce waste, improve the economy's efficiency, and improve the environment's health. The current evaluation will examine the circular economy idea and determine its function in recycling and reducing solid waste and sewage [2].

However, challenges such as lack of adequate infrastructure, underdeveloped product processing levels, lack of technological awareness among farmers, and low quality of farm products are faced while implementing the circular economy practices in the agriculture sector. As a result, there is the creation of huge pollution levels, low utilization of agriculture wastes, and problems in waste disposal. Additionally, challenges related to integration and active involvement of different parties such as farmers, recycling units, and governing agencies create issues in implementing a circular economy. Thus, it is essential to introduce different models of the circular economy on agriculture such as recycle economy mode in family and recycle economy mode in villages so that the challenges that faced while implementing circular economy reduces.

The main aim of this article is to study the role of circular economy in agriculture leveraging long term growth and prosperity. To understand the concept of circular economy in agriculture that is leveraging long term growth and prosperity, to ascertain the role of circular economy in recycling and reducing solid wastes and sewage, to determine the challenge that is faced while implementing a circular economy in agriculture and study the models of the circular economy on agriculture that leverage long term growth and prosperity.

Importance in the implementation of the circular economy

According to Hu et al. circular economy plays a major role in imitating and creating the natural ecosystems in which the wastes are converted into secondary raw materials. It helps in the effective management of wastes, reducing pollution, preserving the natural environment, creating job opportunities, and boosting the economy. The implementation of the circular economy is highly beneficial as it helps in mitigating climate changes, maintaining ecological crises, and making the nations more competitive [3].

Mair et al. examined that circular economy helps in recycling and reducing solid wastes and sewage by actively involving industrial firms, eco-industrial parks, and agriculture-based units so that there is the production of clean energy that reduces pollution to minimum levels. The adoption of the circular economy helps in attaining cleaner production (CP) opportunities, reducing consumption of non-renewable resources, and lowering the emission of wastes and pollutants in the environment [4]. The circular economy promotes reuse and recycles wastes and helps in the disposal of wastes by forming eco-chains. It is also responsible for integrating the manufacturing and consumption frameworks that promote the use of a renewable source of energy among industries.

Guerra-Rodríguez et al. reported that examined that certain challenges such as lack of adequate infrastructure, underdeveloped product processing levels, and lack of technological awareness among the farmers are faced while implementing circular economy in agriculture that decreases the efficiency of the entire system [5]. The lack of infrastructure in the agriculture sector creates a lot of issues in the adoption of circular economy as it requires establishment of solid waste and sewage collection units, biogas extracting units, excrement and life rubbish units, planting units, and sewage treatment system units. In the absence of adequate infrastructure, the adoption of circular economy process becomes difficult. Additionally, issues related to low quality of agriculture produce is faced while implementing circular economy, due to human factors (social atmosphere, pressure of population), technical factors (traditional methods of cultivation, old implements, insufficient irrigation facilities), and institutional factors (small landholdings, defective land tenure system) the quality agriculture productivity is low in India. Due to poor quality of agricultural products, there is low degree of processing that reduces the income-earning levels of the framers.

Oinglan et al. examined that lack of technical knowledge among the farmers also causes issues in implementing circular economy process (recycle, reuse, remake, make and use) [6]. Due to lack of technological awareness among the farmers, they could effectively participate in the establishment of different processing units. Lack of technical learning also reduces the ability of farmers to synchronize the planting, biogas, breeding, and extraction processes that restricts the spread of agricultural technology. Additionally, issue such as gap between the poor quality and good quality products also hamper the implementation of circular economy. Due to poor quality produce, it is not consumed in large quantities which create a surplus condition and demand of good quality agriculture produce is high which creates deficiency in the market. Thus, due to improper balance between the poor and good quality agriculture produce, there is creation of a gap that impedes circular economy adoption. Thus, due to challenges in the circular economy implementation, there is high use of pesticide in agriculture that harms water, soil and agricultural products. The increasing use of toxic chemicals and fertilizers pollutes the water bodies and causes eutrophication which blocks crop growth. Thus, it can be said that the implementing of circular economy is beneficial as it helps in reducing wastes and maintaining ecological balance by reducing pollution and preserving natural environment.

Zhongxun et al. examined that recycle economy mode in family (model) is to be adopted to strengthen the implementation of circular economy in the agriculture sector on a large scale [7]. This mode includes active involvement of rural agriculture communities for the circular implementing that circulates resources between planting and breeding. It helps in recycling and reducing solid wastes and sewage so that there is promotion if greener environment and resolving of waste disposal issues. The model based on recycle system helps in generation of biogas by making effective use of four subsystems such as biogas, farmers' living, breeding, and planting. The entire system adopts logistics relationship which helps in reducing breeding and planting investment costs. It also helps in augmenting output, enhancing efficacy of resources, and reducing wastes. The implementing of logistics relationship of recycle economy mode in family also helps in improving the health status of family environment and enhancing the efficacy of economy. For example, recycle economy mode in family is adopted by the agricultural based families in Yunnan province as it helps in decentralization of the family business. The adaptation of the model also helps decreasing agricultural non-point source pollution and enhancing the family economy. Xi et al. examined that recycle economy mode in villages (model) is also adopted as it helps in acquiring organic fertilizer, biogas and reducing the waste disposal issues. In this model

there is establishment of double-chamber heap decomposed manure system (DCHDS) and a separate unit for dry faeces [8]. There is installing of a centralized unit known as vertical-oxygen system in which the sewage of the entire village is discharged. By the deployment of system, there is attainment of large amounts of wastes for the conduction of breeding process. It helps in attainment of organic fertilizer and reducing the pesticide intake in agriculture process.

Xue et al. analyzed that Recycle economy mode in ecological agriculture parks (model) is related to large scale production of biogas and natural fertilizer that helps in increasing agricultural produce cost-effectively [9]. The model involves active participation of agricultural product processing units, farmers, and companies that perform planting and breeding activities so that there is recycling of agricultural wastes, solid wastes and sewage. Thus, by the implementing of the model there is effective planning of waste management, monitoring of planting and breeding activities, and promotion of agricultural ecological balance.

II. Conclusion

Circular economy practices are adopted by developing economies to manage solid wastes and promote sustainable growth globally. The implementation of the circular economy helps in developing a recycling economy that primarily circulates planting and breeding so that there is a reduction of solid wastes and sewage. The current study examines the concept and role of circular economy in agriculture that leverages long term growth and prosperity. This review also provides valuable information about the challenges that are faced while implementing a circular economy in agriculture. The facts related to models of the circular economy on agriculture that leverage long term growth and prosperity are discussed in the study. While focusing on the scope of the circular economy, it can be applied to different sectors such as agriculture, infrastructure, automobile, equipment, and services. It helps in the effective utilization of technical resources such as fossil fuels, minerals, and biological resources such as food, timber, and fibers. Thus, implementing the circular economy helps in reducing solid wastes and sewage and generating alternative energy such as biogas. The current study will be beneficial to the scholars and researchers researching a similar topic to take references from the current research study and carry out their study processes in an effective manner. The study will also be useful to the farmers, ecologists, and recycling units, and governing agencies that are associated with the conservation/preservation of environment and disposal of wastes as they will get better learning about role and models of the circular economy on agriculture that leverage long term growth and prosperity.

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