IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429
Volume 5, Issue 2, October 2025
Impact Factor: 7.67

AgroConnect+: Platform for Agrowaste utilization and Carbon Credits Management

Ms. C. A. Phirke[1], Srushti Nirmal[2], Saumya Gholap[3], Shrutika Kolhe[4], Yukta Sonavane[5]
Lecturer, Department of Information Technology [1]
Students, Department of Information Technology [2,3,4,5]
Pimpri Chinchwad Polytechnic, Pune, Maharashtra, India

Abstract: *The agricultural sector of India generates a huge amount of agro-waste every year, most of which are either less utilized or disposed off improperly. This creates serious environmental problems such as soil degradation, air pollution, and carbon emissions leading to unsustainable means such as stubble burning. AgroConnect+ is a digital platform that aims to bring together farmers and industries for adequate agro-waste utilization and carbon credit management. The system enables the farmer to sell directly his agricultural waste to industries demanding it as raw-material, therefore reducing waste and adding to the income of farmers. The platform also enables carbon offsetting by tracking and managing carbon credits by industries in a transparent manner. The connection thus formed between agro-waste producers and industrial consumers is one of the vital contributors to the circular economy and sustainable rural development.*

Keywords: Agro-waste utilization, Carbon credit management, Sustainable agriculture, Ecosystem conservation

I. INTRODUCTION

Agriculture is one of the prime sectors in the Indian economy, yet it also produces a large volume of agricultural residues that are often wasted or burnt. Unorganised waste management systems in rural areas throw up both environmental and economic challenges. Most farmers are unaware of the commercial potential of their agro-waste while industry looks for eco-friendly substitutes for raw materials.

AgroConnect+ was developed to meet such challenges. The platform provides an integrated interface where farmers can display their offer of available agro-waste and Indian industries can put forward their needs. The entire procedure ensures openness and access in the exchange process, and adds traceability in the process. A carbon credit module has been integrated, which allows industries to generate offsets for their emissions because they will be rewarding farmers for sustainable waste disposal. Thus, it is potentially a source of income for rural communities while also protecting the environment.

The idea suits the vision of India on sustainable development and carbon neutrality. AgroConnect+, through real-time web and mobile technologies, optimises waste trading and introduces different but very exciting ways of managing carbon credits in a verifiable form and, importantly, digitally.

II. OBJECTIVES

- To forge a platform of the farmers with the industries for efficient agro waste utilization.
- Encourage sustainable agriculture practices and minimize environmental pollution.
- Make a transparent carbon credit tracking and trading system.
- Empower farmers by providing them an additional income stream through waste sales.
- Enhance industry efficiency in achieving carbon offset targets.
- Promote circular economy practices in the agrarian sectors.
- Create a user-friendly interface accessible through both web and mobile applications.
- Perfect real-time conversation and tracking between the buyer and seller of agro-waste.

IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429
Volume 5, Issue 2, October 2025
Impact Factor: 7.67

III. LITERATURE REVIEW

Agro-waste management in existing agricultural systems has continued to face several challenges. Practices such as open burning of stubble or crop residue severely pollute the air and waste organic material. Studies in recent times and the government's push highlight the urgent need for sustainable waste management systems integrating technology and accountability to the environment.

Digital solutions are available for agricultural marketing today, but very few focus specifically on wastage utilization and carbon credit management. Such applications include online farm marketplaces and platforms that allow trading with crops yet lack modules for waste recycling or emission tracking. The AgroConnect+ platform builds on all these ideas by combining waste exchange with carbon credit management.

Carbon trading has been implemented throughout the world in industries such as energy and manufacturing, but it has not yet found its way into agriculture. AgroConnect+ aims to fill this gap through the establishment of a transparent and traceable feature called credit management and, perhaps, greener behavior from farmers and industries.

IV. PROBLEM STATEMENT

The agricultural sector is still in its infancy despite the digital transformation of most businesses today. Agro-waste disposal and management are still among its major problems. Agricultural residue is produced in large amounts by farmers all across India after every harvest. The bulk of this waste is either burned or dumped, which pollutes the air and robs it of possible value due to lack of awareness and proper systems. On the other hand, many industries that could potentially use this waste as a raw material have difficulties reaching the right sources.

A common platform that directly connects farmers with industries is missing for agro-waste exchange and carbon credit management. Consequently, both parties lose potential benefits: farmers miss an extra income stream while industries find it hard to meet their sustainability obligations. Moreover, the lack of transparency and traceability in the existing systems further demotivate participation.

With the AgroConnect+ platform, we aim to bridge this gap by creating a simple and reliable digital space where farmers can list their agro-waste for industries to purchase at fair rates. A tracking system for carbon credits is also launched, documenting each transaction and its environmental benefits. The features of real-time data updates, secure communication, and easy registration make it easier for farmers and industries to work together towards sustainable development.

V. PROPOSED SYSTEM

Here are the details of AgroConnect+ having three major modules. An interactive platform developed to include both farmers and industries to register for and participate in agro-waste exchange.

User Registration and Authentication:

They can create profiles that list the resources or requirements via the platform. The system performs verification tomaintain a level of trust and transparency among users.

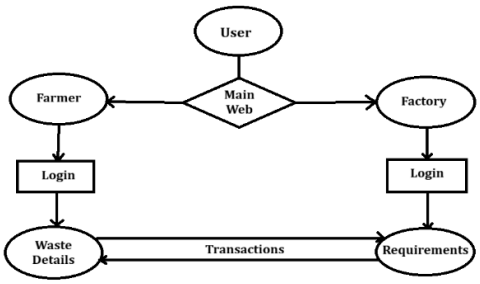
Waste Resource Matching:

Depending on the types of agro-waste available, for example husk, straw, or residue, the matching is done with industry requirements on the type of materials, location, and quantities. This minimizes the logistics costs involved so that the waste could also be used in a better way.

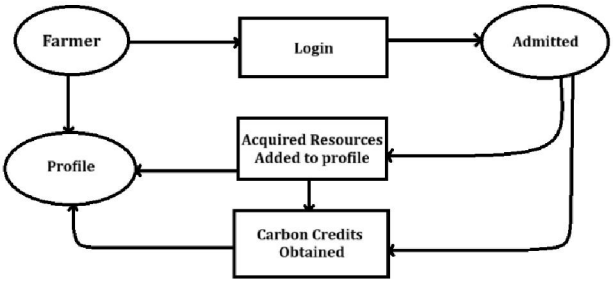
Carbon Credit Calculation and Tracking:

For each transaction, the system checks for the carbon offset equivalent value. Industries purchasing agro-waste will be able to maintain their data regarding offsets, and farmers will gain corresponding carbon credits for environmentally friendly disposal of waste.

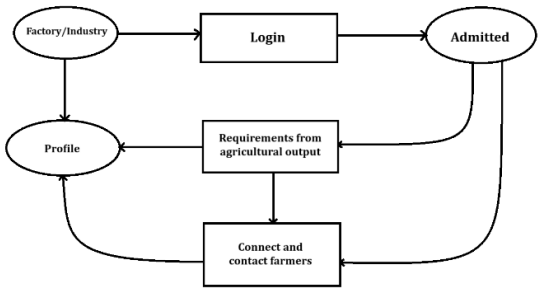
IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429
Volume 5, Issue 2, October 2025
Impact Factor: 7.67



Data Flow Diagram For user logic



Farmers View DFD



Factory/Industry view DFD

VI. ADVANTAGES OF THIS SYSTEM

- Reduces environmental pollution from agro-waste due to burning and improper disposal.
- Ensures higher earnings for farmers because of the generation of income by selling digital wastes.
- Enables industries to offset their carbon footprints and achieve their sustainability goals most cost-effectively.
- Promotes circular economy by transforming waste into a value-adding resource.
- Transparent and traceable digital ecosystem for all transactions.
- Bridging the gap between rural producers and the industrial consumers.
- Awareness creation on carbon credits and their environmental impacts.

VII. FUTURE SCOPE

AgroConnect+ can grow into a national agro-waste management and carbon trading ecosystem. Further developments in the future would include:

- Linking to government agricultural databases and carbon databases for authenticity verification

IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429
Volume 5, Issue 2, October 2025
Impact Factor: 7.67

- Using AI matching algorithms for waste to automate and optimize resource mapping
- Tracking credits securely and in a tamper-proof manner by using blockchain technology
- Mobile payment gateways and the e-wallets that allow seamless financial transaction
- Extension for cross-border carbon credit exchange and collaboration with environmental organizations
- Real-time analytics dashboards for policymakers and researchers to examine trends in waste management
- Such advancements would fortify India's environmental initiatives and make AgroConnect+ a central piece in sustainable agriculture.

VIII. CONCLUSION

The AgroConnect+ platform is a modern and practical solution to the age-old problems of underutilization of agro-wastes and unavailability of easily accessible carbon credit systems. It links farmers with industries for a mutual circular flow of resources. The platform not only reduces pollution and waste but also fosters economic empowerment and climate action. It innovates agri-tech and patents the approach for a future where agriculture will not be only greening India but would also be the ultimate in sustainability.

REFERENCES

[1] Ministry of Agriculture and Farmers Welfare, Government of India. https://agricoop.gov.in
[2] Carbon Credits Information Portal. https://carboncredits.com
[3] ResearchGate, "Utilisation of Agro Waste-A Sustainable Approach", 2023