

Agro Realty – A Sustainable Investment Model in India

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Biography:

Shabna .V is an architect currently pursuing her post-graduation in Masters of Architecture with a specialization in Real Estate Development at MEASI Academy of Architecture in Chennai. Interested in research and urban planning, she believes that sustainable development is not just a scenario but a way of progressive life which can be achieved through responsible real estate. Through the academic journey she has displayed the passion for writing at various forums and enjoys it during leisure as well.

Abstract:

In India, agricultural land has always been a symbol of social privilege and authority from ancient times. Land is an essential livelihood asset in the agricultural sector through which people gain potential and access to many opportunities and key socio-economic assets. In developing nations where the majority of people depend on agricultural production, land, the leading resource due to rapid urbanization is transforming into a commodity. The continued urban growth brought substantial peri-urban spatial transformation, leading to competition amongst actors for limited land resources. The process of urban expansion is responsible for the rapid conversion of extensive agricultural lands to urban land uses that accommodate large-scale developments in peri-urban areas. This resulted in a sharp decline of farmlands from 60.45% to 60.03% over the last five years in India and has led to varied influences on farmers' livelihood, support activities, and economic profile. Review of literature and best practices has documented that farmland conversion has adversely affected land tenure security and employment opportunities in agriculture sectors of peri-urban areas causing vulnerability and displacement of livelihoods of farming households.

The concept of agro-realty holds great potential in terms of responsive growth considering the need for agricultural land addressed by corporate investments and development which can greatly contribute to an effective economic model of sustainability. Furthermore, the development of agro-realty facilities hardly entails any environmental damage fulfilling the need for sustainable community development and contribution towards a green economy.

Through the implementation of SDGs' (Sustainable Development Goals – 8,9,11,12,13), agro realty ensures a balanced, holistic, and community-based ecosystem creation, integral to urban development. Through this research, the scale of intervention, the process, economic models, integrated facilities, and its impact on environmental development is studied. On a greater level, it symbolizes a conscious effort and interface of the realty sector and farming community to work in tandem with nature with the utmost concern for the future.

Keywords: Agro realty, economic models, SDGs, peri-urbanization, community development.

Introduction:

India is one of the major players in the agriculture sector worldwide and it is the primary source of livelihood for about 58% of India's population. The agriculture sector in India is the second-largest agricultural land in the world generating revenue and employment opportunities for about half of the country's population. Consumer spending in India will return to growth in 2021 post-pandemic-led contraction, expanding by as much as 6.6 % (source: Fitch solutions, Nov 2020). The food industry in India is projected for huge growth, increasing its contribution globally every year due to its high potential for value addition, especially within the food processing industry. Thus, farmers become a fundamental part of the sector for sustainable existence.

Agricultural real estate has unfolded new ways of economic generation, and can greatly impact the country's real estate sector. Further it will be of a vital contribution to the existing threat of food security in India. The scale of consumption on various avenues has considerably increased. Also, unprecedented natural disasters have significantly affected food security. Hence a solution addressing these issues on the grounds of providing technologically efficient infrastructure acknowledging the process of production and consumption and a built fabric addressing the same through various dimensions is the upcoming trend in this sector.

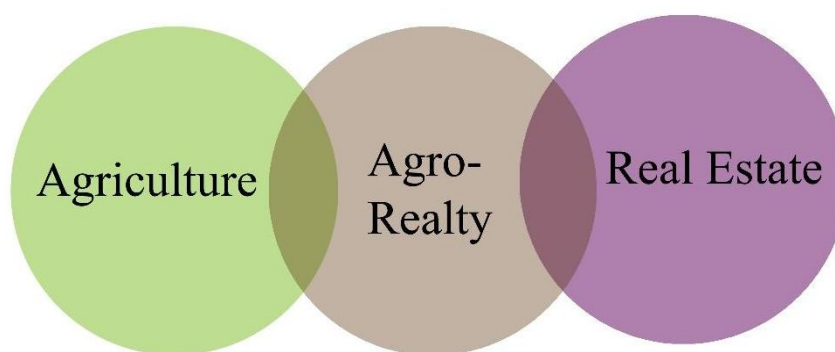


Fig 1: Showing the concept of Agro-realty.

(source: Author 2023)

Sustainable Development Goals – The future of global development

The scope of the Sustainable Development Goals is to create sustainable development for all people and aspects of businesses and look for them to fully immerse themselves in a new way of thinking that will benefit the people. Real estate is generally an area of a company's

responsible business goal that is overlooked, but because it has a significant impact on most of the SDGs (either directly or indirectly) and has cross-sectoral reach, it may be a major force for achieving the SDGs.

It could be argued that the real estate sector is better suited to take a more prominent role in the movement towards sustainable environments and planning because sustainable development and green practices are more widely accepted than ever. The need to create more sustainable spaces is necessary to address the impact of climate change and occupant well-being. In addition, the 2030 Agenda for Sustainable Development, including the 17 Sustainable Development Goals (SDGs), are global objectives that will be responsible in shaping the national development plans for the next 15 years. From ending poverty and hunger to responding to climate change and sustaining our natural resources, food and agriculture contribute to an integral quotient of the 2030 Agenda. Broadly this concept thrusts upon sustainable development by bridging the sector of agriculture and real estate that evolves through envisioning the various possibilities of a responsive built fabric.



Fig 2: Showing the Sustainable Development Goals.

(source: <https://sdgs.un.org/goals>)

Research question

Can a sustainable investment model through a real estate approach that is resilient towards climate change and sensitive to ecosystem development be formulated in the sector of agriculture?

Aim

To formulate and develop a sustainable agro-realty model that addresses food security and climate change and holistic ecosystem development.

Objectives

- To analyze the need and feasibility for agriculture production in the peri-urban limits with the utilization of connectivity, infrastructure, and the local community – *Locational determinants*.
- To focus on the SDGs (SDG Nos - 8, 9, 11, 12, and 13) as an approach for futuristic development with an influence of vagaries of climate and culture – *Sustainability approach*.
- To analyze various sustainable economic models, policies, and schemes and involvement of the agriculture sector to responsive green intervention in the peri-urban areas – *Investments & returns*.
- Establishing allied agriculture sectors like agro-industries and tourism – *Economy generation*.
- The intervention of agricultural infrastructure (physical, cultural, social, etc.) and its demand – *Ecosystem creation*.

Methodology

This methodology shows the processes involved in this research towards the sustainable development in the sector of agriculture and real estate.

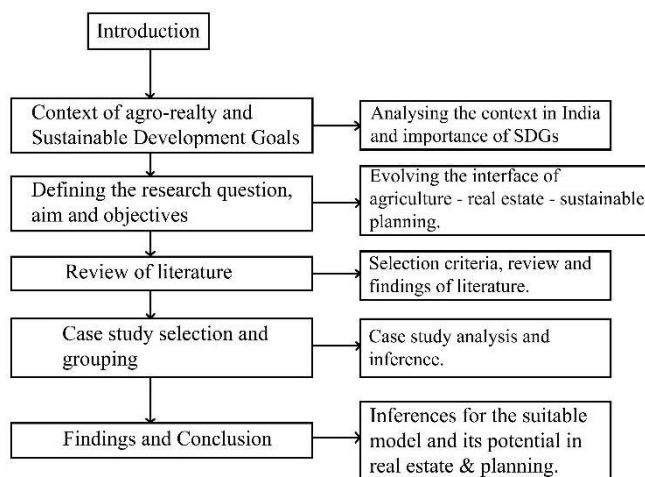


Fig 3: Showing the Methodology flowchart (Source: <https://ecovillage.org.in/>)

Review of literature

Review of the literature gives a comprehensive thought process and understanding of various scenarios and concepts quoted by sources across the globe in relevance to the proposed research enquiry. Here the works of literature have been selected based on the following parameters:

- Agriculture in the peri-urban context:
- Integrating tourism as an allied opportunity in this sector
- Understanding the relation between SDGs and food security
- Policy support and their implementations.

Agriculture in the peri-urban context:

The importance of urban and peri-urban agriculture (UPA) in supplying safe and wholesome food to urban residents as well as decreasing food loss and waste due to short supply chains is increasingly being acknowledged. In order to facilitate the transition to more effective, inclusive, resilient, and sustainable agrifood systems and to meet the UN Sustainable Development Goals, the Food and Agriculture Organization of the United Nations (FAO) places a high priority on the practice of urban peri-urban agriculture. Urban planners, policy advisers, practitioners, specialists, and others working in urban and peri-urban agriculture can use it as a reference tool. The themes of land (availability, tenure); water (irrigation, access); labour (seasonal versus full-time, worker profiles); and finance (expenses, revenues, access) are used to categorize these factors. (*Urban and peri-urban agriculture sourcebook, from production to food systems, published by the FAO, UN 2022.*)

This paper offers the themes to be analysed and integrated that serve to be integral for infrastructure management in the sector of agriculture. It involves the analysis of urban and peri-urban actors, communities, methods, places, policies, institutions, systems, ecologies, and economies, largely using and regenerating local resources to meet changing needs of local populations that are intrinsic while serving multiple goals and functions. UPA offers a fundamental strategy for building the resilience of a city's food supply that structures the interface of agriculture and real estate.

Integrating tourism as an allied opportunity in the agriculture sector:

Thanjavur district- "the Rice bowl or Granary of Tamil Nadu" is one of the 32 districts of Tamil Nadu in South India and is well known for its domination in agriculture, architecture, music, arts, and handicrafts. An exploratory cum descriptive study has been carried out to identify the existing potential for promoting agro cum rural tourism in the district.

Details required for this study were collected from different sections of society including Government Departments and experts through direct interviews, field visits, and focused group discussions and the findings were summarized and presented in the form of a case study. It broadly explains linkages and explores the various aspects under the broad spectrum of agriculture (detailing the seasons, cropping, infrastructure – education, R&D, processing, etc..) culture (elaborating the heritage areas, rural activities, art and handicrafts, thus exploring the concept of Agro- tourism specific to Thanjavur. (*V. Badrinath**, *S. A.Scope for Promoting Agriculture cum Rural Tourism in Thanjavur District- A Case Study*)

This paper regulates the identification of parameters for analyzing case studies in relevance to the concept of agro realty. In addition to establishing the understanding of various activities that co-exist to contribute or that are possible co-existing for a sustainable ecosystem to evolve and function beneficially.

Understanding the relation between SDG's and food security:

This report offers detailed analyses and trends on indicators across eight SDGs (1, 2, 5, 6, 10, 12, 14, and 15), highlighting areas of progress and areas where further effort is needed. It further explains the SDGs that are oriented toward food and agriculture.

The report stresses the need to: take urgent actions to avert the increase in world hunger; build more resilient agricultural systems to achieve a healthy and sustainable food future for all; tackle the growing challenges linked to degraded ecosystems. It addresses the issue of food insecurity supplementing with the statistics as follows

- The increase in the number of undernourished people in the world has practically eroded all progress that had been made during the preceding decade, bringing the world back to hunger levels that prevailed in 2005.
- Food insecurity has increased significantly from 10.9 percent of the global population in 2020 to 11.7 percent in 2021 with the International prices of food items soaring in the second half of 2020.

- Also, the percentage of food lost after harvesting on farms and at transport, storage, wholesale and processing levels continues to increase.
- Water stress remains alarmingly high in many regions, threatening progress toward sustainable development. (*Tracking progress on food and agriculture-related SDG indicators 2022*)

A holistic understanding of the SDGs impacting the sector of agriculture that throws light on sustainability impact and methods evaluation and assessment in addition to methods of implementation is provided.

Policy support and their implementations:

The Indian agricultural sector is also on the verge of a significant transition. The government, through the new agricultural policy, allows farmers to sell their produce to whomever and wherever they want. Farmers would have to harness new innovations to match the changing dynamics and stay updated with market knowledge.

New Agricultural Policy: The Three Agri Reforms

- The Farmers' Produce Trade and Commerce (Promotion and Facilitation) Bill, 2020 - to build an environment wherein farmers and traders can enjoy the freedom of choice regarding selling and purchasing of produce; open and barrier-free interstate and intrastate trade.
- The Farmers (Empowerment and Protection) Agreement of Price Assurance and Farm Services Bill, 2020- to provide a national agricultural agreement system that protects and empowers farmers to interact equally and transparently with agribusiness companies, processors, wholesalers, exporters, or major retailers.
- The Essential Commodities (Amendment) Bill, 2020 –to help accelerate investments in cold storage and food supply chain modernization. It will benefit farmers and customers alike, while at the same time bringing in price stability. (*New farm acts, understanding the implications, NITI working paper series, November 2020.*)

Some of the important policies that can be grouped under the spectrum of “economy – environment – ecosystem” are listed below to understand the extent of policy support in this sector.

	Policy
Economy	Government plans to triple the capacity of the food processing sector in India from the current 10% of agricultural produce and has also committed Rs. 6,000 crores (US\$ 936.38 billion) as investments for mega food parks in the country, as a part of the Scheme for Agro-Marine Processing and Development of Agro-Processing Clusters (SAMPADA). (10th Sep 2020) Agriculture Export Policy, 2018 -New export policy was cleared by the Government of India in December 2018
Environment	National Mission for Sustainable Agriculture (NMSA) 2014 has been formulated for enhancing agricultural productivity through integrated farming, water use efficiency, soil health management, and synergizing resource conservation.
Ecosystem	The farm sector development department, NABARD-focus has been on programs that enable the development of skills, promote avenues for market opportunities, foster collectives of producers of the small, cottage, and village industries, handloom, handicrafts, and other rural crafts and service sector in rural areas.

Table 1: Showing the policies grouped under the listed categories

The review of the literature comprehensively revolves around evolving concepts and criteria that are essential to be considered for case study analysis and the aspects that are crucial for supplementing this concept of agro-realty.

Evolving the parameters

The literature review paves a new direction where certain aspects of the case study require critical analysis to be done and compared to draw inspiration and inferences from various successful and distinctively existing models. The following table shows the parameters and the grouping of the broader collective where each impacts effectively.

S.no	Parameter	Groups
1.	Location	Locational determinants (WHERE?)
2.	Region of the location (Tier I/ Tier II/ Tier III)	
3.	Climate	

4.	Typology of asset class	Development mixes (WHAT?)
5.	Asset classes involved	
6.	Scale	
7.	Arena of activities	Activities relevant spatial analysis
8.	Spatial requirement	
9.	Agriculture services	
10.	Crop variety	
11.	Business model	Financial models (HOW?)

Table 2: Showing the list of parameters for case study analysis.

Through these parameters case studies are selected that can be of certain distinct typologies as listed below.

S.no	Case study	Typology
1.	Govardhan Eco village , Palghar Maharashtra	Community based recreational ecosystem (T1)
2.	Sahyadri farms, Nasik , Maharashtra	Infrastructure and industrial development (T2)
3.	Organo Nandi , Hyderabad	Self-sustained farmhouse and eco habitat(T3)
4.	Organo Antharam ,Hyderabad	Self-sustained farmhouse and eco habitat (T3)
5.	Marudham Eco village, Chennai	Recreational eco village resort (T1)
6.	Mahindra Realty - Agribusiness	Infrastructure and service based realty groups. (T4)
7.	Godrej Agrovet	
8.	Adani Realty	

Table 3: Showing the list of case studies and their typology selected for analysis.

These typologies are analysed with respect to the listed parameters which highlights the critical findings and elements to be integrated / incorporated.

T1: Community-based recreational ecosystem

Case study: Govardhan Eco-village, Palghar Maharashtra.- Owned and managed by ISKON.

Approximately 90 acres, this ecosystem promotes sustainable living through a simple and spiritual lifestyle. It offers extensive agriculture services and rural development through organic farming in addition to research and training, waste, and energy management. They primarily engage in symbiotically enhanced agricultural solutions, organic farming (cultivation of fruits and vegetables), livestock development, and farmer's training. Through the emphasis on the concept of "Product - prototype - process – promotion" they ensure stabilizing tribal farmers through climate resilient, economically viable, and sustainable agriculture nested in ecological infrastructure. A collective association of High Net Individuals (HNIs) with flourishing ideas who have an element to give back to society from corporate organizations came together and developed this proof of concept for the world.

It is a model which focuses on sustainable development and the goals (SDGs) which include environmental advocacy through setting up a circular economy model and educating people about green technologies.

Case study: Marudham Village resort, Mahabalipuram.

Designed elegantly in a traditional pattern, each cottage proposes the guests a true and unique ecotourism experience, away from the bustling of the city with hands-on farming, raising cattle, or simply walking through the farmlands and engaging with nature. It offers a complete rural living with organic production and self-sustainable consumption giving exposure to the concept of "Guests on Agriculture". This project is owned, invested in, and developed by the architect that is open to staying on vacation and recreational activities like farming activities village stay, traditional games, animal husbandry, and eat street.

These typologies or models are examples of integrating tourism and agriculture with aiding infrastructure facilities. Though it varies in scale they focus primarily on production and consumption based on self-sustenance with the former ensuring rural development and that does majorly focus on post-production or an impactful supply chain value for large-scale development.



Fig 4: Showing the services offered at Marutham village resort, Mahabalipuram.

(Source: Pictures clicked at Marudham village by Author)

T2: Infrastructure and Industrial facility.

Case study: Sahyadri farms, Nashik, Maharashtra.

Sahyadri is India's largest integrated platform for fruits and vegetables via its unique inclusive partnership with farmers and has built a strong capability over the years in areas of production, processing, and value-integrated supply chain. The intent was to build a sustainable, scalable, and profitable agri-enterprise anchored by marquee Indian and global investors. It provides a holistic solution to farmers so that farming becomes a profitable activity for all the smallholder and marginal farmers associated with Sahyadri Farms. They have a self-contained infrastructure encompassing an agro-advisory team, a world-class pack-house, cold storage facility, and a technology backbone to help achieve scale meaningfully. With time, Sahyadri Farms became a hub of value addition by building and operating an agri-value chain that was efficient, expedient, and innovative. With a revenue of Rs 525 crore, Sahyadri has become the country's largest farmer-producer company (FPC) and a role model for others to follow, besides the largest grape exporter. The FPC is developing a retail footprint across the state and is also building a pan-India presence through its e-commerce platform and is a hybrid of cooperative society and a private limited company.

Sahyadri Farm's vision is to make every farmer member of the company a profitable and sustainable venture by providing end-to-end solutions for all crops with efficient and sustainable infrastructure and making an impact in a rural area by an uplift of rural people through the implementation of Sustainable Development Goals. These models are functioning successfully in the regions of the state where sustainable planning is ensured.

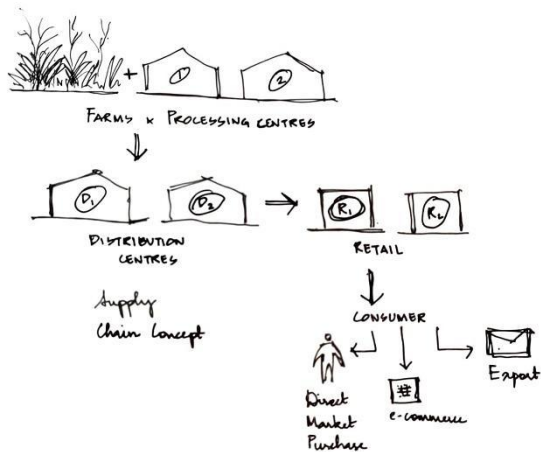


Fig 5: Showing the conceptual supply chain at Sahyadri farms, Nashik.

(Source: Author, 2023)

T 3: Self-sustained farmhouse and eco habitat.

Case study: Organo Nandi, Hyderabad, and Organo Antharam, Hyderabad – FHD Hyderabad.

The concept is to create replicable community development models built on triple-bottom-line success and net-zero thinking. Combining the benefits of urban and rural, creating a 'Rurban' way of living (streetscape + farmscape) it aims to create a "Prosumer community" where production and consumption happen in parallel to ensure sustainable holistic living. It is designed on the concept of Saptapatha, or the 'Seven strands (water/food/energy/earth/shelter/air/people) of sustainable living' help to focus on sustainable development in each of these distinct areas. It holds facilities like a farm unit module(villa), agricultural land, farm infrastructure, sports area, clubhouse, spa, slow down area, etc catering to the attributed diverse activities of Community living, organic farming nursery, forest plantations, medicinal plantations, animal husbandry, eat street, leisure, etc.

This model largely focuses on a "net zero approach" ensuring development within a scale of 50 acres distinctively. Also through the inception of FPO (Farmer Producer Organizations), Organo has successfully attempted to build a bridge between the urban consumers and aims to become a largely self-reliant community for energy, water, and food, with communal farming as its heart of sustainable development.

T 4: Infrastructure and service based realty groups.

Case study: Mahindra Realty, Godrej Agrovet, Adani realty.

Inspired by the United Nations 17 Sustainable Development Goals, these major realty players are providing technology-enabled products, services, and Agri initiatives delivering solutions to millions of farmers, enabling prosperity and helping them to rise. Investing in cutting-edge infrastructure like a Production Facility, Aeroponics facilities, Polyhouses, Greenhouses, and Research & Development has been adopted to improve farm productivity and profitability through sustainable planning and an integrated green value chain. In addition to CSR (Corporate Social Responsibility), they seek to deliver market-rate venture capital returns while impacting the lives of Indian smallholder farmers and rural communities with technically aided efficient infrastructure like:

- Block chain integrated farm to fork traceability and supply chain management
- Fully integrated and IT-enabled operations make sure state-of-the-art technology for storing food grains.
- Partnering government towards food security.
- Joint Venture with various other prominent organizations with arena-specific ventures.

Understanding the contribution of the realty sector that largely drives nation-level development, they predominantly focus on a comprehensive approach where the integration of ecosystem-environment-economy is largely addressed through various sustainable measures of planning and development. This when enhanced on a larger scale, focuses on areas of economy and green value chain striving to become one of the workable models of agriculture and real estate.

Findings:

An extensive case study analysis helps in investigating a business problem, examining alternative solutions, and proposing the most effective solution using supporting evidence. Through the analysis, the following findings under the parameters discussed can be derived.

Any proposal or infrastructure entity supporting agriculture is predominantly looked at peri-urban precincts where there is an interface between rural resources and urban connectivity. These case studies shed light upon various scales of production and consumption from which the majority of the population benefitted. Hence large impactful developments (Industrial

&infrastructure typology, with support of major realty players) contributing to the value chain ensure more scope in terms of land, infrastructure, and sustainable planning and economy).

Also, agriculture when integrated with tourism acts as a value addition to the sector which can serve a dual purpose of sustenance and open horizons to community development. Further owing to the integration of real estate and agriculture, large-scale models of infrastructure, and tourism, these categories can be more impactful and contribute to consistent development at large.

Conclusion:

This paper explores the various models of agro-realty and analyses the potential model that is one of the most suited for real estate approach and sustainable planning and development.

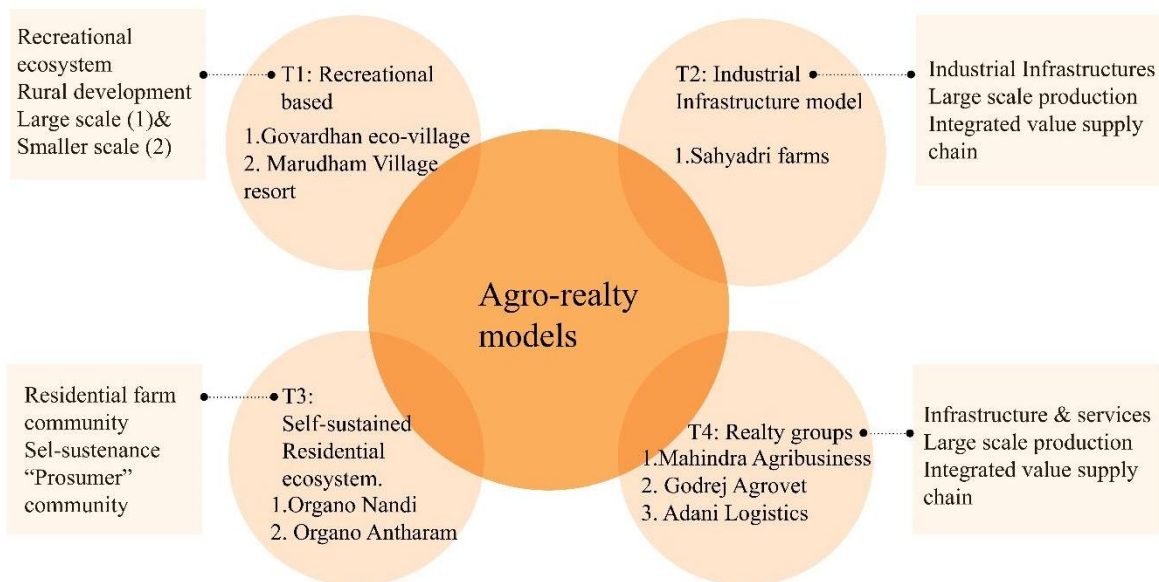


Fig 6: Showing the various models and its distinct attributes.

(Source: Author 2023)

S.no	Typology	Key aspects (Real estate potentials)
1.	Community based recreational ecosystem (T1)	Recreational typology with thrust on tourism and self-sustainability
2.	Infrastructure and industrial development (T2)	Scope for large scale production with industrial infrastructure also open to integration to other allied asset classes (residential + commercial) while evolving an ecosystem approach. Impact on supply value chain network, sustainable development and economy.
3.	Self-sustained farmhouse and eco habitat(T3)	Residential asset class involving the property transaction of buyer and developer. Net zero approach and self-sustainable community
4.	Infrastructure and service based realty groups. (T4)	Scope for large scale production with industrial infrastructure services and partnerships, and joint ventures. Impact on supply value chain network, sustainable development and economy.

Table 4: Showing the model and the key aspects.

This table shows that a proper integration between industrial infrastructure and service based typology through the concepts of green value chain and green economy (T1&T4) and also the addition of tourism aspects would enable the sector to thrive for an overall sustainable

development through the interface of environment, economy and ecosystem impacting the nation at large.

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