A Model Approach to Achieving SDGs: A Case Study from Dayalbagh, India

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***Abstract*—**
The multiple crises that the world is facing – climate change, COVID-19 and war have halted or reversed the progress of the world towards the achievement of Sustainable Development Goals. Using a case study of Dayalbagh, a locality in metropolitan Agra, India, and headquarters of the Radhasoami faith, we examine the potential benefits of employing agroecology to achieve the United Nations Sustainable Development Goals (SDGs). The active, disciplined and cooperative community-based lifestyle followed in Dayalbagh with a strong focus on agriculture and service demonstrates how most of the SDGs can be achieved. It offers lessons for policy makers in terms of focus areas for policy support and reaching the last, lowest, least and the lost.

***Index Terms*—SDG, Dayalbagh Way of life, Agroecology, Sustainable Agriculture**

I. Introduction

The world is facing multiple and interlinked challenges- poverty, hunger, deprivation and rising inequality on the one hand, and climate change and ecological crisis, war and conflict on the other. The COVID-19 pandemic has exacerbated these issues. The need of the hour is to build equal, inclusive, and sustainable economies that are resilient in the face of these challenges. The United Nations Sustainable Development Goals (SDGs)[1] aim at transforming the financial, economic, and political system that governs our societies to guarantee human rights of all (SDG Report, 2020). The global goals are adapted to national and local context by considering several factors, such as level of development and existing national and local policies.

Unarguably, COVID-19 pandemic has slowed or reversed the progress that the world had made towards achieving SDGs (SDG Report,2021). In 2020, the global poverty rate rose for the first time in 20 years[2]. Projections indicate that global poverty is expected to be around 7% (600 million people) in 2030, missing the target to eradicating poverty. The prevalence of undernourishment increased from 8.4% in 2019 to 9.9% in 2020. Progress towards education, health and well-being, employment and income indicators has halted or reversed in the wake of the pandemic (SDG Report, 2021).

Given the above, the achievement of the SDGs by 2030 would require an additional effort and a novel approach. While the pandemic slowed or reversed the progress towards achievement of SDGs around the world and halted activity around the world, daily activity and life in Dayalbagh, a locality in metropolitan Agra, India, and headquarters of the Radhasoami faith[3], was almost unaffected by the pandemic ensuring that the communities efforts towards education, health and sustainable development progressed at a rapid pace. The community follows an active, disciplined, and cooperative community life conforming to the spiritual ideals of the faith. Sustainability and Sustainable Development have been the guiding principles for the residents of the colony. What differentiates Dayalbagh is that it provides a holistic approach, which is resilient to crises and pandemics, to furthering all SDGs relating to people and climate. Agriculture, a sector which has the potential to address the three greatest challenges- sustaining food and nutrition security, adaptation and mitigation of climate change and sustainable use of critical

[1] In 2015 UN defined 17 Sustainable development Goals (SDGs) that outline the path for ending poverty and other deprivations along with strategies that improve health and education, reduce inequality, and spur economic growth – all while tackling climate change and working to preserve our oceans and forests.

[2] An additional 119-124Million people were pushed back into extreme poverty in 2020

[3]The tenets of the Faith are based on a belief in the existence of God, oneness of the essence of God and the spirit entity in the human being and continuity of life after death. More details about the faith can be found at https://www.dayalbagh.org.in/radhasoami-faith/basic-concepts.htm

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resources such as water, energy and land is given prime importance in Dayalbagh. A systems approach to agroecology that is followed at Dayalbagh can help in global progress of the SDG goals.

Agriculture sector holds all the 17 SDGs together and has the potential to address the challenges relating to poverty, hunger, climate change, water and energy use and unsustainable production and consumption. However, industrial farming which focussed on increasing yields through use of chemicals and pesticides has failed to supply healthy and accessible food to 925 million people who are hungry and millions of others who are food insecure (de Schutter, 2011). The situation is aggravated by the fact that roughly one-third of food produced for human consumption is wasted globally (about 1.3 billion tons per year). In addition to having negative impacts on public health and ecosystem integrity, agricultural modernization has led to a loss of food security linked to the disruption of traditional rural communities and their diversified food production systems in developing countries (Frison 2016). Industrial agriculture contributes to about 25%–30% of greenhouse gas (GHG) emissions, further altering weather patterns and thus compromising the world's capacity to produce food in the future (Kesavan & Swaminathan, 2018).

In the face of such global trends, the concept of agroecology has gained much attention in the last three decades as a basis for the transition to an agriculture that would not only provide
rural families with significant social, economic, and environmental benefits, but would also feed the world, equitably and sustainably. The potential benefits of employing agroecology as a tool to achieve SDGs has been discussed in literature but many of the connections between agroecology and SDGs has not been recognized (Si and Scott, 2020). However, case studies found in literature generally demonstrate how a certain agroecological practice helps in achieving one or more SDGs.

In this paper, we take a case study approach to demonstrate how the principles and practices followed in Dayalbagh may help in achieving the SDGs at the global level. Section 2 briefly outlines the principles, practices, and outcomes of agroecological practices and how these can lead to fulfilment of SDGs. Section 3 of the paper highlights the principles that guide the residents of Dayalbagh and the followers of the faith and the agroecology model followed in Dayalbagh and section 4 concludes.

II. Agroecology And SDGs

The agriculture sector is crucial to attaining the SDGs, not only to address hunger and nutrition but also as a significant determinant of natural resource sustainability, GHG emissions and environment quality. Specifically, for India, agriculture has been a mainstay of the Indian economy despite the declining share of agriculture in GDP. It has been a source of livelihood for the majority (45.7% of the population) and this sector has important implications for poverty reduction and increasing per capita income (Virmani, 2008). Green revolution of 1960s focused on increasing the yields by using chemicals and pesticides and as a result India's agriculture sector faces huge environmental challenges—from chemical fertilizers, to water pollution, and soil erosion—and social and health challenges, from widespread food safety concerns. These environmental, health and social concerns present a huge challenge for India in achieving the SDGs.

Due to the fundamental importance of agriculture, achieving agricultural sustainability lies at the heart of achieving SDGs. The global agricultural production is faced with the problem of meeting the increased demand for food[4], feed and fuel production without the overexploiting natural resources, deforestation and land degradation. The development of agroecology offers vital opportunities and a promising approach to promote a sustainable food system in support of the SDGs (FAO 2018). Agroecology has been defined as "the application of ecological concepts and principles to the design and management of sustainable agroecosystems, or the science of sustainable agriculture"(Altieri 1995). Climate change, growing concerns for more healthy food systems and inter-generational justice led to agroecology gaining

4 From an estimated 7.7 billion people worldwide in 2019, the global population is estimated to grow to around 11 billion in 2100 with almost all the increase occurring in developing countries (UN World Population Prospects, 2019).

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momentum as a scientific discipline, sustainable farming approach and social movement.

Agroecology can be found in traditional practices adopted by farmers, in grassroots social movements for sustainability and in public policies around the world. FAO (2018) first described the 10 elements of agroecology which are diversity, co-creation of knowledge, synergies, efficiency, recycling, resilience, human and social values, culture and food traditions, responsible governance, and circular and solidarity economy. Agroecology relies on principles, which, when applied in a particular region, take different technological forms depending on the local socioeconomic needs of farmers and their biophysical circumstances (Altieri, 2002). Thus, agroecology does not promote technical recipes, but rather uses indigenous knowledge system and integrates modern scientific principles within it depending on the socio-economic needs of the farmers or the region. Therefore, agroecological designs are site-specific and what may be applicable elsewhere are the principles rather than the techniques (Altieri, 2019).

TABLE I
LIST OF AGROECOLOGICAL PRACTICES

Crop Diversification
Intercropping
Crop Rotation
Animal Integration into Farming
Green Manure
Cover Cropping
Fallowing
School Feeding Programs
Consumption of diverse range of cereals, crops and legumes
Credit to Small Farmers
Fair Trade and Fair Employment
Public Goods Research
Local Producer's Markets

Each practice is linked to one or more principles, thus contributing to its manifestation in the function of the agroecosystems. In other words, the agroecological principles translate into management practices which set in motion ecological interactions that lead to better agroecosystem outcomes. These applied practices drive the processes that ensure that the agroecosystem functions in a sustainable manner. For instance, the practice of crop rotation encompasses the principles of diversity, recycling, efficiency, and resilience and leads to increased productivity and better resource use.

As mentioned above, agroecology can help in attainment of the SDGs. Principles of agroecology could have a direct impact on the attainment of SDG1 (No Poverty), SDG2 (zero hunger), SDG3 (good health and well-being), SDG5(gender equality), SDG6 (clean water and sanitation), SDG8 (decent work and economic growth), SDG9 (Industry, Innovation and Infrastructure), SDG11(sustainable cities and communities), SDG12 (responsible consumption and production) and SDG13 (climate action) while impacting other SDGs indirectly. For example, providing credit to small farmers can ensure sufficient financial resources to the small farmers which may enable them to implement adaptation practices and diversify income and investments, which has the potential to affect household income and food security (De la Torre et al 2007). Similarly, access to local producer's markets can help in increasing the incomes of the producers who can profit from getting a higher share of revenue if less is taken by intermediaries over a long supply chain for marketing and distribution of produce. A just food system addresses wages and working conditions within it (principle 10 of agroecology—fairness) creating a direct link to food and nutrition security and hence SDG1 and SDG2.

Agroecological principles of diversity through crop rotation, intercropping and integration of animals into farming strengthens ecological and socio-economic resilience, including by creating new market opportunities and hence helps in achieving SDG 1 and 2.

Thus, agroecology can be thought of as an entrypoint and instrument for achieving SDGs.

TABLE II
ELEMENTS OF DAYALBAGH WAY OF LIFE AND THEIR RELATION TO SDGS

Elements of Dayalbagh Way of Life	**Corresponding SDGs**
Community Living	
Simple Living	SDG1, SDG12, SDG10

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Lacto-Vegetarian Diet	SDG3, SDG12, SDG13
Regular Agriculture and Farming Activity by members of community on Voluntary Basis	SDG1, SDG2, SDG3, SDG10, SDG11, SDG13
Community Kitchen	SDG1, SDG2, SDG3, SDG10
Products of daily use made available to all at a fair price through Fair Price shops	SDG1, SDG2, SDG10
Charitable Health and Medical Facilities	SDG3, SDG10
Ownership of Property by the Society rather than individuals	SDG1, SDG10
Simple Marriages	SDG1, SDG5, SDG10
Shelter for the Old Women	SDG1, SDG5, SDG10
Women Empowerment through education and self defence	SDG5, SDG10
Self Employment through Cottage Industries	SDG1, SDG8, SDG10
Subsidised Milk	SDG1, SDG2, SDG3, SDG10
Nutritional Supplements to children	SDG1, SDG2, SDG3, SDG10
Affordable and accessible education for all	SDG4, SDG5, SDG10
Evolutionary Superman scheme	SDG4
Principle of "Waste Nothing"	SDG11, SDG12
Regular Monitoring of Air and Water Quality	SDG13
Waste Segregation	SDG11, SDG12, SDG13
Ban on use of non-bio-degradable materials	SDG11, SDG12, SDG13
Solar Electrification of farms, households, Community and Prayer Halls	SDG7, SDG11, SDG12, SDG13
Restricted use of private vehicles in the Colony	SDG11, SDG12, SDG13
Electric vehicles for intra-colony travel	SDG7, SDG11, SDG12, SDG13
Solar thermal cooking in community kitchen	SDG7, SDG11, SDG12, SDG13
Clean and Green Colony	SDG11, SDG12, SDG13
Agroecology and Precision Farming	SDG11, SDG12, SDG13
Educational Initiatives of Dayalbagh under the Aegis of Dayalbagh Educational Institute (DEI)	
Compulsory and Free Education for Children up to Grade 12-	SDG4, SDG5,SDG10
Scholarships On the basis of merit and need	SDG4, SDG10
Earn while you Learn schemes	SDG9
DEI Medical and Rural Assistance Camp :charitable activities undertaken to assist economically and socially deprived sections in neighbouring villages	SDG3
Quantum Jugad: Promotion of practical, cost-effective solutions, safety, security, and healthy, sustainable practices to solve all local problems	SDG9
Non-denominational prayer and uniform	SDG16
Agriculture and Dairy serve as a forum for live and experiential observations and skill development of the students. DEI has set up High Tech Green houses for growing exotic vegetables, fruits and plants	SDG3, SDG4, SDG9

Source: Compiled by Authors

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