

EMERALD STUDIES IN SUSTAINABLE  
APPROACHES TO POVERTY ALLEVIATION

# UNDERSTANDING THE MULTI-DIMENSIONAL NATURE OF POVERTY



EDITED BY

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# **Understanding the Multi-Dimensional Nature of Poverty**

# EMERALD STUDIES IN SUSTAINABLE APPROACHES TO POVERTY ALLEVIATION

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*Emerald Studies in Sustainable Approaches to Poverty Alleviation* serves as a hub for researchers, professionals and practitioners to share innovative research and effective solutions aimed at reducing global poverty.

Poverty is a major global issue that affects millions of people around the world. It poses a serious threat to human development, well-being and social fairness. Global poverty is a complicated and complex issue driven by different economic, social, political and environmental elements that vary by location. As per UNDP, today, one in every five people on the planet (1.2 billion) lives on less than a dollar a day. Fifty-six percent of the developing world lacks basic sanitation, and over 50 nations now have poorer real per capita incomes than they did a decade ago.

Drawing on a global authorship, *Emerald Studies in Sustainable Approaches to Poverty Alleviation* tells the stories of effective interventions and programmes that have made a difference, providing hope and inspiration for those working in the area and inspiring others to become involved. Also using various indicators like HDI, MDPI, Income Consumption index, Poverty headcount ratio, Ginni coefficient data & Welfare index this book series will try to cover even those masses who do not fall in the above criteria and will touch poverty from its grassroots level. It is critical to employ a combination of these methodologies and indicators when assessing poverty in order to present a full picture of the worldwide poverty situation.

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*Richa Goel, Tilottama Singh, Md. Mashiur Rahman, Quazi Tafsirul Islam, Sukanta Kumar Baral*

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INVESTOR IN PEOPLE

*Dedicated to all who played an important role in the development of this edition of the book: our families, friends, readers, authors, reviewers and of course the Emerald Team with whom this seems to be a true success and we are deeply grateful to all of them.*

– Prof (Dr) Sukanta Kumar Baral & Dr Richa Goel

*To my father, Quazi Takdirul Islam, and my mother, Samina Islam, whose sacrifices, aspirations and support have shaped me, and to Sonali Islam, Suhana Zaman and Taslima Haque, who have loved me like a son – each of you inspires me to become a better version of myself every day.*

– Quazi Tafsirul Islam

*To the Almighty who gives me a life on earth, my parents, wife, kids and siblings, those are inspiring and supporting me as and when required – I am grateful to you all.*

– Md. Mashiur Rahman

*For my kids, Aayra and Aveer, who inspire me to tell stories that matter.*

– Dr Tilottama Singh

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# Foreword

The book *Understanding the Multi-Dimensional Nature of Poverty* is a comprehensive reference source that will provide personalised, accessible and well-designed experiences. ‘No Poverty’ is the most crucial of the 17 Sustainable Development Goals (SDGs). Research perspectives, approaches and topic integration of studies on poverty reduction have significantly extended with the growth of practice in the 21st century.

This book’s first volume in *Emerald Studies in Sustainable Approaches to Poverty Alleviation* will bring the related topics of poverty eradication and comprehension to the forefront, as well as demonstrate how emerging economies are dealing with poverty challenges at their core. It focuses on the key concerns that nations throughout the world are experiencing, such as pandemic-related poverty, environmental-related poverty, energy crisis, implementation issues, and so on, and how new creative models and methods that use current technology may help make economies and enterprises more sustainable. Poverty is the greatest barrier to long-term development, which is why eradicating it has become one of the most pressing global concerns of the 21st century. It also provides an overview of current research and suggest that, in the future, cross-disciplinary collaboration and attention to the contribution of marginal fields to poverty reduction research should be prioritised. There has been a lot of debate on how developing economies’ economic development and structural transformation influence poverty. This book revisits these themes, using a newly constructed dataset of global poverty measures.

I assume that this book is anticipated to be highly valuable for a wide range of readers with a variety of interests, and it is not limited to academics, postgraduate students and research associates, but also to corporate executives, entrepreneurs and other professionals and masses in all fields who can improve and expand their knowledge with the learning of the basic trends and activities in this book. This book will have an edge over the other few existing books as it presents customised economic models, essential policy tools, suggestions and strategies designed to eradicate poverty with respect to innovative technology, sustainable development, Industry 5.0 especially within the context of the 2030 Agenda.

*xiv Foreword*

I am pleased to write this foreword as the editors of this book has given full hearted effort for a great solution and innovation. All chapters in this book have been selected based on peer review where reviewers were very much expert in the sector.

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# Preface

This first book in *Emerald Studies in Sustainable Approaches to Poverty Alleviation* talks about poverty as lack of sufficient material assets or money to meet a person's fundamental human requirements, which might include food, clothes and shelter. The poverty rate is the proportion of persons in a specific age group who earn less than the poverty threshold which may be a vicious cycle. It uses a variety of statistical techniques to examine past research on poverty alleviation conducted since 2000. It focuses on several economic research on growth and inequality as well as environmental studies on environmental management and protection systems. It also emphasises the significance of intergovernmental collaboration in fostering international harmony.

The goal of sustainable approaches to poverty alleviation is to combat poverty in a way that encourages long-term economic and social growth while minimising adverse environmental effects. These methods acknowledge the interdependence of social well-being, the environment and poverty. A holistic strategy that takes into account economic, social and environmental variables is also necessary. While protecting the planet's resources for next generations, it seeks to end the cycle of poverty. Achieving these objectives will require cooperation from governments, non-governmental organisations (NGOs), communities and the commercial sector. Interventions may be more successful if you interact with the community and learn about its values.

This book will give an outline of the most recent studies and make the case for prioritising interdisciplinary cooperation and consideration of the peripheral fields' contributions to research on poverty reduction in the future. How structural change and economic growth in developing economies affect poverty has been a hot topic of discussion. With the use of a recently created dataset of global poverty metrics, this book revisits these concerns.

***The following chapters are listed under this book.***

*Chapter 1 talks about Costa Rican small Business Moving towards Sustainable Future—A Case of Varcli Pinares.* Among the major industries in Costa Rica, agriculture has contributed significantly to the country's economy. Felipe Vargas established 'Varcli Pinares' 11 years ago to produce good quality bananas through sustainable operations of natural systems. The company invests in circular economy by executing decarbonisation through the capture of CO<sub>2</sub> wastes and protection of forests. The business pioneered in reducing water consumption and implementing solar energy usage in banana production through innovative tools

and technologies while engaging in no-herbicide practices. The unique, sustainable packaging created through waste makes a visual impact and guides customers to online platforms. The company adheres to sustainable practices while impacting the community positively. However, as a small business, maintaining sustainable practices throughout the entire supply chain and competing with big companies is difficult for Varcli Pinares. Nevertheless, the company believes its simplicity and adaptability will help it thrive in the competitive industry.

*Chapter 2 talks about Sustainable Approaches to Poverty and Challenges from the 21st Century.* The Swedish International Development Cooperation Agency (Sida) (2019) explicated there are four dimensions of poverty, and they include (1) resources, (2) opportunities and choice, (3) power and voice and (4) human security (e.g. violence issues and concerns). Contrastingly, Ellis (1984) postulated dimensions of poverty are social, economic, legal and political poverty. The Organisation for Economic Co-operation and Development (OECD) (2015) stated poverty is not always about income, indicating ‘income poverty’. Deprivation factors can be broad, but reported poor health, inadequate living standards and lack of education are dimensions of poverty (OECD, 2015). Also, according to the World Bank, the world’s extremely poor are people who live on less than \$1.90 USD per day (Beck et al., 2020). The \$1.90 amount is at 2011 purchasing power parity levels. Additionally, the \$1.90USD amount has decreased significantly over the last decades (Beck et al., 2020). Nevertheless, entrepreneurship, UN SDGs and technology can be strategies for sustainable alleviation of poverty and pandemic global economic recovery, in the 21st century.

*Chapter 3 talks about Disentangling Critical Factors for Enhancing Female Entrepreneurship and Women Empowerment to Alleviate Poverty: Focus on BRICS Countries.* The 2030 Agenda for Sustainable Development states that eradicating poverty for people everywhere is a pivotal goal (Goal#1), as well as empowering women and girls (Goal#5), for creating sustainable and inclusive communities (Goal#11). Contemporarily, the World Bank suggests that female entrepreneurship can contribute to economic growth and poverty reduction and, at the same time, can represent a suitable means to promote gender equity and inclusion. This chapter aims to deepen the knowledge on this fascinating and challenging topic by uncovering the main barriers that inhibit female entrepreneurship and impede women from actively collaborating to alleviate poverty and create sustainable and inclusive communities worldwide. Public–private efforts that aid women in setting up start-ups, embracing new technologies, innovating, honing their digital skills and gaining improved access to financing and financial support in light of Industry 4.0 need to be actively supported and promoted. Specifically, this chapter focuses on women entrepreneurship in BRICS countries because these nations are experiencing very different growth paths, and their significance in the global economy remains an open question.

*Chapter 4 talks about Ubiquitous Business Model and Strategy of WeChat as A Platform in E-Commerce Development.* The key purpose of the study is to determine the ubiquitous role of WeChat as a platform in social-media-based co-creation and e-commerce development. The study consists of mixed methodology approach. First, an automatic search was performed which included the

Science Citation Index Expanded (SCIEXPANDED), Social Sciences Citation Index (SSCI) and Arts and Humanities Citation Index (A&HCI) databases of the Web of Science (WoS). From this, a Systematic Literature Review (SLR) was conducted. Also, an ethnographic approach was used to measure the ubiquitous role of WeChat as a platform in social-media-based co-creation and e-commerce development. The study findings revealed a few interesting managerial implications. A critical result of this study discovered the social media value co-creation with WeChat as a platform for e-commerce development. In addition, social networking sites (SNSs) such as WeChat attract managers and policymakers as a tool for business development. The findings inform practitioners that social media co-creation strategies may affect e-commerce development significantly due to powerful and popular platform such as WeChat.

*Chapter 5 talks about A Comparative Study of Different Poverty Alleviation Programmes undertaken in India and the Middle East: An Overview.* Initiatives to reduce poverty aim to reduce the number of people living in poverty by ensuring that those with low-income households and families have appropriate access to food, assistance and essentials. According to the World Economic Forum, poverty is a significant loss of well-being that can appear in a variety of ways. Two instances of this are low wages and the difficulty to access the necessities for daily living in the form of goods and services. Poor physical and mental health, insufficient access to sanitary services, lack of a voice and a lack of resources to improve one's situation are all characteristics of poverty. The goal of this study is to provide insight into the various poverty eradication programmes undertaken in India and the Middle East, i.e. Yemen.

*Chapter 6 talks about Economic Dependency Ratio as a Dimension of Poverty and Vulnerability.* 'Ending poverty in all its forms everywhere' is the very first Sustainable Development Goal (SDG), to be achieved by 2030. However, the progress made in reducing poverty has been reversed due to the spread of the COVID-19 pandemic. The worsening poverty, inequality and vulnerability call for identifying the acuteness of the problem with the help of dimensions like the economic dependency ratio along with other sources like poverty line, access to social security, healthcare, basic services, food security and asset ownership and social networks at the village to name a few. The economic dependency ratio goes beyond the age dependency ratio and tries to capture the dependency better by incorporating the number of dependants and employed ones in the calculation. In this study, an attempt has been made to highlight the importance of the economic dependency ratio to measure vulnerability better in India. Unemployment data provided by the Centre for Monitoring Indian Economy (CMIE) have been utilised to understand the severity of dependency at the country level. Primary data have been collected with the help of the Proportionate Stratified Sampling method from 600 notified, non-notified slum households staying in the western part of India, and in-depth interviews have been conducted with a few homeless families. Quantitative data have been analysed using SPSS and Stata software. This study will be immensely useful as it aims to improvise the methodology to identify the poor and vulnerable. Better identification can take us a step closer to achieving SDG 1.

*Chapter 7 talks about Exploring Poverty Measurement Techniques Across Diverse Economies: A Cross-Country Study.* Millions of people all over the globe are impacted by poverty, which is a serious global issue. It is a complicated problem with many facets that has important consequences for society, the economy and politics. Poverty is a barrier to achieving sustainable development goals and reducing inequality across the world. Poverty can be measured in several ways, each with its strengths and limitations. Some of the commonly used measures include absolute poverty, relative poverty and multidimensional poverty. However, measuring poverty across different economies is a challenging task due to differences in social, economic and political contexts. The objective of this chapter is to examine the idea of poverty and how it is measured in various economic contexts. In this chapter, we will look at the various methods of calculating poverty, the difficulties in doing so and the efficacy of various poverty measures in capturing poverty in various economies. The chapter will also discuss how the findings may affect policy and practice and propose new lines of inquiry for future studies on how to measure poverty in various economies. The importance of this chapter lies in its potential to improve our knowledge of poverty and its measurement while also offering advice to practitioners and policymakers working to reduce poverty and promote sustainable development. Examining poverty in different economies, this chapter will help to shed light on the complex and dynamic nature of poverty and the need for tailored poverty reduction strategies in different contexts.

*Chapter 8 talks about Self-Help Groups in Afghanistan: A Ploy of Economic and Social Empowerment of Women for Sustainable Development.* Women's empowerment is not new; it has been recognised as a crucial component of poverty reduction and economic progress. However, it remains problematic in most developing countries, such as Afghanistan. This research evaluates women's empowerment experiences by utilising self-help groups (SHGs) as a fundamental development method to empower women economically and socially. The findings indicated that SHG involvement is closely associated with families' socio-economic well-being, meaning that SHG participants are more empowered than those who do not engage or are oblivious to SHGs. SHGs confront various obstacles in Afghanistan, including (but not limited to) erroneous cultural norms, security issues, inadequate financial assistance and poor member participation, all of which influence operations. The study suggests growing social awareness, civil society and government support, laws and regulations supporting women and strategies to enhance women's economic and social empowerment and linking groups to commercial banks as critical recommendations to foster and realise women's integration and active engagement in SHGs.

*Chapter 9 talks about Factors Affecting Poverty Dynamics: A Conceptual Study.* The poverty rate in India is still very high despite considerable economic reforms over the past 20 years and a rapid decline in that rate. Even if the accomplishments have received much praise, it is crucial to comprehend the dynamics of poverty by recognising those who entered and emerged from it. The literature on multidimensional poverty dynamics is not as well established as that on poverty entry and leave, despite the wealth of available empirical research on

both topics. This chapter uses the multidimensional measure of issues related to health, education and infrastructure; social barriers to advancement; a lack of resources and a lack of competence to make decisions for the benefit of the household to investigate the dynamics of poverty and its underlying causes.

*Chapter 10 talks about From Resist to Privilege: Rising Psychological Empowerment and Gender Equality for Poverty Alleviation.* ‘Poverty is well-being deprivation’, declares the World Bank. There is no clear, widely accepted definition of well-being, although the World Bank provides some clues, ‘to be impoverished would be to be starving, to lack shelter and clothes, to be unwell and uncared for, and to be illiterate and untutored’. Poverty is much more than this for poor people. Psychological empowerment and gender equality are among the most emphasised areas, and specific tactics will be developed to enhance psychological empowerment and gender equality. ‘Psychological’ empowerment, abbreviated as ‘PE’, denotes empowerment at the specific intensity of analysis. It is a multidimensional concept derived from the integration of various dimensions determined by three realms: (a) personality, which also includes self-attribution of the outcomes of one’s actions and internal locus of control, (b) cognitive, one that contains self-efficacy perception, and (c) motivational, which describes the interest in participating in the activity and control of the factors involved. Gender equality is the equivalent involvement of males and females in utter facets of a lifetime. Gender equality manifests in business, collective relationships, politics and academics. Women’s civil rights activities affiliated with the rights movements worked to establish gender equality in place of an essential human right. In many nations, indicators such as the gender-linked development indicators, the gender break index and the gender fairness index provide measurements of complete gender equivalence. Gender fairness encourages women’s involvement in the above-mentioned domains, improving the quality of life for those in poverty. This chapter discusses the positive impact of psychological empowerment and gender equality on human well-being based on evidence.

*Chapter 11 talks about Revamping Economic Parameters in an Innovative Digital World in 21st Century: An Interventive Study on Banking Practices.* The banking sector is an essential component of any economy and plays a key role in its growth and development. The banking sector’s growth and reputation can be linked to the fact that it responds to people’s financial needs and correspondingly provides customised solutions. The banking sector has seen transformation in the new millennium. The pace and trend of transformation is all set to accelerate in the coming decade. The process of Liberalisation, Privatisation and Globalisation Model (LPG Model) banking practices which being unleashed a few decades back will reach to greater heights as we step into the next decade. The innovative technology has brought about a paradigm shift in all aspects of banking like routine operations, transactions, products and processes, delivery of services in terms of various e-channels, credit administration and credit management, audit and compliance and FinTech partnership. Digital transformations in the banking sector have received much needed trust because of ‘The Digital India Moment’. The chapter makes an attempt to highlight the role of technology in banking and how technology-led innovations and initiatives will determine the business of

banking as a whole. The significance of these technology-driven innovations and transformations is that they put both banker and customer in a win-win situation.

*Chapter 12 talks about Sustainable Poverty Reduction Model – Need-Surveillance and Psycho-Social Support Practices among Migrant Workforce.* Migrants have been posed with less familiarity in their new environment during COVID times, faced with various social, psychological and emotional traumas. Research indicates that they may have been originating from apprehension of being abandoned by their neighbours. Most of them were precarious with little wages, competing for their basic need fulfilment; putting them under more mental stress. Looking forward to the ancient principle, ‘Athithi Devo Bhavah’ (Visitors are Gods) and immediate response; measures were taken to promote community shelters and kitchens; maintaining social distancing and ensuring physical safety. The governments of different countries took proactive initiatives to study and assess their needs. The study here includes the cases being evaluated in regard to migrants’ need for surveillance and psycho-social support given by the government and non-profit associations during the pandemic at the global level. Remarkably, certain countries proved the working of their sustainable poverty reduction model by evaluating factors like (i) catering to the basic necessities by providing them with free kits, (ii) providing free accommodation, (iii) providing medicines to the needy, (iv) quarantining the COVID-affected migrant patients at separate places and (v) ensuring the safe reach of migrants at their native places. The purpose behind this movement was accomplished and the model proved satisfactory, highlighting their best practices across the world.

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It's as challenging as it sounds to take an idea and convert it into a book. The experience is mentally taxing and satisfying. We want to express our sincere gratitude to everyone who made this possible. The success of this book was made possible by the collaboration of many outstanding researchers, who genuinely provided a new path for this book.

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*Editors*

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# Introduction

In order to address the enduring and complex problem of poverty while ensuring long-term societal and environmental well-being, sustainable approaches to poverty reduction are crucial. In order to be sustainable, inclusive economic growth must be encouraged. We may achieve a more equitable distribution of wealth and resources by promoting economic development that benefits all facets of society, particularly marginalised and disadvantaged communities. This strategy frequently entails spending money on healthcare, education and skill-building to enable people and communities to end the cycle of poverty. Supporting small-scale business owners and advancing sustainable agriculture can also boost regional economies, generate employment opportunities and eradicate poverty in a way that is favourable to the environment.

The preservation and prudent management of natural resources are essential components of long-term poverty reduction. Many underdeveloped communities rely largely on ecosystems for their survival, including forestry, agriculture and fishing. Sustainable resource management practices help to reduce the negative consequences of climate change, which frequently disproportionately affect the poor and ensure the long-term availability of these resources. Reforestation, clean energy sources and encouragement of sustainable agricultural methods can all help to end poverty and advance environmental sustainability.

In addition, social safety nets and focused interventions are essential parts of long-term plans to reduce poverty. These initiatives offer a safety net for the most vulnerable and can aid in ending the poverty cycle that passes down through generations. However, it's important to properly plan such programmes, taking into account their long-term effects and the ability to promote independence rather than dependence. To reduce poverty in a way that benefits both current and future generations while protecting the resources of our world, a sustainable path must ultimately combine economic growth, environmental stewardship and social support systems.

When evaluating poverty, it is important to take a global perspective and acknowledge that factors like commerce, finance and climate change frequently impact the problems that people and communities confront around the world. To accomplish this effectively, international institutions and organisations must work together to provide standardised measurements and indicators that include aspects such as access to social equity, healthcare, clean water and other non-economic resources in addition to economic metrics. A sustainable method of analysing global poverty should also stress the significance of international

cooperation and development aid. Richer countries can significantly contribute to the fight against poverty by supporting efforts to enhance the capacity of underdeveloped areas, advocating fair trade and providing targeted aid. In summary, a holistic and sustainable approach to studying global poverty reduction acknowledges that poverty is a complex web of social, economic and environmental concerns that call for coordinated global action and is not just a problem of the economy.

## Chapter 1

# Costa Rican Small Business Moving Towards Sustainable Future: A Case of Varcli Pinares

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### Abstract

Among the major industries in Costa Rica, agriculture has contributed significantly to the country's economy. Felipe Vargas established 'Varcli Pinares' 11 years ago to produce good quality bananas through sustainable operations of natural systems. This case study explores the complex dynamics surrounding the Varcli Pinares agricultural farming, aiming to shed light on its multifaceted nature and provide insights into its outcomes. The company invests in circular economy by executing decarbonisation through capture of CO<sub>2</sub> wastes and protection of forests. The business pioneered in reducing water consumption and implementing solar energy usage in banana production through innovative tools and technologies while engaging in no-herbicide practices. The unique, sustainable packaging created through waste makes a visual impact and guides customers to online platforms. The company adheres to sustainable practices while impacting the community positively. However, as a small business maintaining sustainable practices throughout the entire supply chain and competing with big companies is difficult for Varcli Pinares. Nevertheless, the company believes its simplicity and adaptability will help it thrive in the competitive industry. Through a rigorous and systematic approach, the case study aims to contribute to the existing body of knowledge in sustainable agricultural farming and provide valuable insights for practitioners and stakeholders alike.

*Keywords:* Costa Rica; Vareli Pinares; sustainable practices; environmental sustainability; small business

## **Introduction**

The United Nations (UN) is working to transform the world with progress and prosperity by establishing different goals throughout the world. The 12th Sustainable Development Goal (SDG) of the United Nations aims to foster ethical patterns of production and consumption throughout the world. This goal highlights the significance of waste reduction and the promotion of sustainable practices in both the public and private sectors. In the context of Costa Rica, a small country located in Central America, the government and private sector have implemented policies and programs to achieve this goal. Despite its relatively smaller size, it receives a bigger portion of the foreign direct investments (FDIs) in that region (Rica, 2019). Like other agro-based nations, agriculture is one of Costa Rica's main industries. It contributes significantly to the country's economy, making up about 6.5% of its total GDP and employing about 14% of its workforce. On just under 10% (505,000 hectares/1,248,000 acres) of the total land area, crops are grown. Costa Rica increased banana volume exports by 7% in 2020 generating a total of US\$ 1.12 billion despite the pandemic, according to the National Banana Corporation of Costa Rica (Corbana). The 7% increase comes from 129.6 million boxes that were exported in 2020, compared to 120.7 million in 2019. This generated US\$ 1.12 in 2020 compared to US\$ 1.105 billion in 2019. Chiquita, Del Monte, Dole, and the local business Grupo Acon dominate the production and export of bananas in Costa Rica. Over 40,000 people are directly employed by the sector.

Costa Rica has taken significant steps to promote responsible consumption and production patterns. One of the most notable initiatives is the country's commitment to renewable energy sources. Statistics mentioned that 99.99% of Costa Rica's electricity will come from renewable sources by 2021 where hydropower, wind, and solar energy being the most significant contributors (MINAE, 2021). This focus on renewable energy has helped to reduce the country's dependence on fossil fuels and contributed to a decrease in greenhouse gas emissions. Moreover, the government has implemented a carbon neutral programme that encourages companies and organisations to reduce their carbon footprint and invest in renewable energy sources.

Rapid agricultural export production is the cause of the nation's growth and development. Two main farming techniques are used by both local Costa Rican farmers and multinational companies there: Plantation agriculture includes sustainable/permaculture methods used by multinational corporations like Dole, Chiquita, Del Monte, etc. Additionally, many indigenous communities use subsistence farming methods. With the increasing challenges of climate change, the need to adapt to sustainable business practices has become crucial. Businesses are a significant contributor to environmental pollution worldwide, yet some are recently engaging in practices to reduce their operations' impact on the

environment. Implementing sustainable actions not only helps small businesses make profits but also develops a ‘positive brand’. Small businesses, starting from restaurant owners to homebuilder manufacturers, are establishing sustainable operations to save money and reduce their operations’ impact on the environment (Hodges, 2021). However, the reality seems to be more complicated as, according to ACCA (2021), small businesses are trying to combat the aftermath of the pandemic has had on their operations. A report on 16,300 SME clients by the SME Tracker states that businesses are tackling the financial challenges after wounding down government-backed loans post-pandemic. Only 40% of the small businesses have reported returning to their pre-pandemic productivity state. Additionally, the proprietors of SMEs have noted that they lack knowledge and understanding of how, to begin with sustainability plans. Due to the struggles of keeping their operations running smoothly, small businesses are putting sustainability as the last thing on their mind.

However, despite these efforts, Costa Rica still faces challenges in achieving SDG 12. One of the most significant challenges is the lack of awareness and education around sustainable consumption and production patterns. The government and private sector need to work together to educate the public on the importance of reducing waste, promoting sustainable practices, and supporting environmentally friendly products. These efforts require the collaborative efforts of both the government and private sector to create a sustainable and responsible future.

## **Sustainability in Agriculture Farming**

The SDGs are a set of 17 objectives that were adopted by the UN General Assembly in 2015 with the intention of enhancing both human life and the environment of the planet. The two SDGs that support the use of sustainable agriculture are SDG 2: Zero Hunger and SDG 12: Responsible Consumption and Production.

SDG 2 expects to eradicate hunger and achieve security in food habits while promoting sustainable agriculture practices. Indicator 2.4.1 states that assessing agricultural instruments and conducting farm surveys will help the country rank the challenges and priorities aligned with sustainable agriculture’s economic, environmental, and social factors. Over the past 30 years, there have been numerous discussions to clarify what is meant by sustainable agriculture. Determine whether a farm is in line with sustainable agriculture by looking at the environmental criteria of the soil quality and water management practices (Food and Agriculture Organization of the United Nations, n.d.).

Moreover, SDG 12 mentions responsible production practices where indicator 12.3 indicates reduced food losses in production and supply chain level and also to cater to post-harvest losses. The goal’s aim is to ensure that consumption and production patterns are sustainable and to reduce negative environmental impacts. This includes promoting sustainable agriculture practices that minimise waste and pollution and conserve natural resources (United Nations Statistics, n.d.).

Sustainability in agriculture farming is a critical component of the SDGs in Costa Rica. The SDGs were adopted by the United Nations in 2015 as a blueprint for sustainable development, and Costa Rica has made significant progress towards achieving these goals, particularly in the area of sustainable agriculture. Costa Rica is known for its strong commitment to environmental sustainability, and sustainable agriculture is a key element of this commitment. The country has implemented a number of policies and programs aimed at promoting sustainable agriculture practices, such as the National Plan for Agroecology and Organic Agriculture, which was launched in 2017. One of the key practices of sustainable agriculture in Costa Rica is agroforestry. Agroforestry is the integration of trees into farming systems, which has been shown to improve soil health, conserve water and promote biodiversity. Costa Rica has been a leader in the promotion of agroforestry, with programs such as the Payment for Environmental Services (PES) programme, which provides incentives for farmers to plant trees on their land. Another important practice in sustainable agriculture in Costa Rica is the use of integrated pest management (IPM). IPM involves the use of a variety of techniques, such as biological control and crop rotation, to manage pests and reduce the need for pesticides. Costa Rica has been successful in promoting the adoption of IPM practices, particularly in the production of coffee, one of the country's main exports. In addition to promoting environmental sustainability, sustainable agriculture in Costa Rica also promotes social equity. For example, the Fair-Trade certification system has been successful in promoting fair labour practices and improving the quality of life for small-scale farmers in the country.

Overall, sustainable agriculture is essential for achieving the SDGs in Costa Rica. Through the promotion of practices such as agroforestry and IPM, Costa Rica is not only promoting environmental sustainability but also economic viability and social equity. As such, sustainable agriculture is an important component of the country's efforts towards achieving the SDGs and ensuring a sustainable future for all.

## **Case Study Methodology**

This study examines the potential for sustainable business models to align with SDGs, as demonstrated by a case study of a small business in Costa Rica. The case study approach was utilised to explore the unique strategies of Varcli Pinares, which has been widely recognised as a pioneer and exceptional sustainable business within the sustainable agriculture farming (Stake, 2005). Case studies offer an advantageous approach for exploring the 'how' and 'why' questions of research inquiries (Yin, 2013). By focusing on a single instance, researchers can engage in creative problem solving and achieve a rich understanding of the organisation being studied (Denscombe, 1998; Easton, 1992). For this reason, the case study method is particularly well-suited to exploratory research of innovative and pioneering sustainable business models.

Considering the sustainable business model of Varcli Pinares is proven to be a pioneer and exceptional in the food business world with creative strategies;

therefore, this case study takes on the company as an objective of the study (Stake, 2005). The case generally involves quite different concepts on how the social world could and should be studied from those inferred approaches (Hakim, 1987; Simons, 1996), contrary to the beliefs of some researchers who view it as the study's object (Stake, 2005). Various methods like archival records, documentation, interviews, and physical artefacts are employed while conducting case studies (Ahmed et al., 2020; Fylan, 2005; Yin, 2013). Sustainable business and sustainable development regarding human beings and the planet could harmonise with each other as well as stay sustainable economically, as was found in a single case study on a small business from Costa Rica (Ahmed et al., 2023).

To gather data, the researchers employed various methods, including archival records, documentation, interviews and physical artefacts (Ahmed et al., 2020; Fylan, 2005; Yin, 2013). By using data triangulation, including email communication, documentary research and interviews, the study aimed to provide in-depth contextual information that can increase understanding levels superiorly (Seale, 2000; Yin, 1984).

In conclusion, the case study approach employed in this research provides an effective means of exploring innovative and pioneering sustainable business models. Findings indicate that sustainable business practices can align with SDGs while remaining economically sustainable. Moreover, this study highlights the potential for small businesses to serve as a model for larger businesses and corporations to adopt sustainable business practices.

## **The Case: Varcli Pinares**

### ***Background***

Family businesses are available in most of the countries of the world, but the percentage of the existing family business in Costa Rica is comparatively more. According to a study by the Chamber of Industries of Costa Rica (CICR), family businesses make up 90 out of every 100 businesses in the nation (Rico, 2013).<sup>1</sup> From SMEs to major corporations, there are over 30,000 family businesses in Costa Rica. According to research director Guillermo Salazar, family businesses are the driving force behind the growth of the Costa Rican economy. According to International Labour Organization (ILO), family businesses contribute 69% of Costa Rica's total gross domestic product (GDP) as well as 70% of the nation's total employment field (Arias, 2016).

### ***Inception***

The journey of Varcli Pinares started in 2009 as a family business producing bananas in Costa Rica with the motto to produce good quality bananas. By using effective management and cost-cutting measures, the company was able to expand its project

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<sup>1</sup>The businesses in which there exist more than one member of a family having the ownership of the company.

from 30 hectares in 2009 with only 15 workers to 120 hectares in 120 days, quadrupling its size and providing employment for more than 60 families in the Matina area. The principles for the company are quality and productivity, through the three added values of innovation, sustainability and simplicity.

The founder, Felipe Olman Vargas, believes that ‘waste’ involves everything: waste of products, energy, time and natural resources. Therefore, the company has understood that sustainability is about doing things in the right way. Simplicity is the means to sustain key performance indicators (KPIs) such as quality and productivity in optimal conditions while reducing the consumption of resources. The goal of Varcli Pinares is to change the status quo by creating a process of sustainable innovation for the environment in addition to providing premium bananas with exquisite flavours and quality.

In addition to searching for new markets and adapting to shifting paradigms, the company is currently exporting to the Middle East, Spain, Italy, Japan and the United States. Varcli Pinares has been the only commercial off the grid farm in Costa Rica for almost 12 years now, proving that it is possible to excel in other parameters such as production (3,800 boxes a year, close to being the top performer) and with recognitions for the quality, changing the paradigms for harvesting and packing techniques; utilising only sustainable energy sources.

### ***Sustainable Operations***

Varcli Pinares ensures sustainable production of bananas through sustainable management and proper use of natural resources. This family business is ensuring sustainable operation through the use of solar energy, water consumption and reduction in the use of herbicides and chemicals. The company is fully invested in clean energies. To keep up with the growth and diversification programmes, in 2020, Varcli has renewed its solar panels and batteries doubling the packing house energy production capability. The founder has said,

We are conscious about our carbon footprint, and in Varcli’s vision, we must protect and grow. We have protected 120 hectors of forest and, as the most active way to reduce our CO2 footprint, we have set up 50 hectares of woodlands to assure that, no matter what, we can compensate for all of the CO2 that comes out from the process, capturing it with our own efforts.

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### ***Environmental Sustainability***

Water consumption and degradation are two critical factors of human footprint in our ecosystem. The company’s first step, almost 11 years ago, was to reduce consumption. For this, their team redesigned the whole system so that their

packing water consumption was reduced from 145 litres to 5 litres per banana box (95% reduction). Doing this did not solve the degradation problem, so in 2020, they installed a water purification plant in their packing house which allows them to clean their water, securing the quality of water that they send back after their use. In comparison to conventional packing plants, Varcli Pinares S. A. has pioneered the reduction of water consumption from 145 litres per banana box to just 5 litres. This was made possible using a novel production technique called 'New Millennium', which entails the production of banana boxes without the use of water tanks.

By employing this methodology, the business was also able to decrease the quantity of chemicals required for the use and recycling of water in the banana tanks, as all that was required to make the water potable was the addition of chlorine.

Varcli Pinares S. A., which generates all of its energy needs using solar energy, takes pride in being a pioneer in the use of this energy to produce bananas. The management has dedicated itself to becoming a no herbicide farm, with 100% of its undergrowth being controlled only with scythes. This is because they are aware that environmental sustainability involves more than just water and energy supplies to produce bananas, including maintaining the biodiversity of the soil, preventing erosion, and reducing the acidity of the soil. This practice keeps the diversity of the soil's microorganisms intact, prevents erosion, acts as an organic fertiliser when the grass is cut, keeps the soil from drying out during droughts, lessens soil acidification and promotes soil transpiration and oxygenation.

Varcli Pinares S. A. has additionally established itself as a pioneer in the application of 'Agricultural Precision' in Costa Rica by being the first business to use a new technology introduced by the fertiliser company Abopac S. A. This technology includes all the equipment needed to know the chemical, physical, biological and electrical information of the soils of the farm, the meteorological data for roughly 100 hectares of the plantation, as well as the equipment. By utilising these technologies, the business is now able to produce knowledge on a minute-by-minute basis, assisting in deciding when and what to apply to the soil in order to become sustainable over time.

The company also owns 150 hectares of additional land that will not be used to grow bananas. Instead, 50 hectares will be set aside for cattle farming, giving the business the opportunity to produce organic matter for the upkeep of the soil of the banana plantation. Through a partnership with the Costa Rican Electricity Institute, the remaining 100 hectares will be devoted to the preservation of the fauna and flora, with a commitment to plant 5,000 trees annually.

### ***Idea Sharing Hub***

After 10 years of pushing and pulling the limits of banana production systems, the company has realised that it is not all about hi-tech solutions but about doing things the right way. The company shares the conviction that ideas come from everywhere; for which they have endorsed an 'open doors policy' to lead creativity and maximise information flow through their system.

As part of their ‘Open Doors Policy’, anyone coming from any background within or outside the organisation can share their ideas and knowledge. The company believes that to be better growers they need fresh ideas, so they kept their doors open with no filters or weird policies, ‘If you want to learn, ask, if you want to share, we’ll listen’. Any cost-effective, productive or new sustainable idea is always welcomed and encouraged within the company.

### ***Smart Packaging***

Varcli Pinares has a strong value chain, and its packaging is quite unique. Due to their work and experience in logistics, the company has spotted that most people are involved directly in the supply chain of production. Hence, Varcli has smartly designed its packaging with quick response (QR) code. Therefore, when a customer or stakeholder scans the QR code, then they can see photos and information about the company’s process and know about their special neighbour, Agami Heron.<sup>2</sup> The company has felt that they can do something to honour this amazing bird, so they designed their packaging Agami box for Varcli’s premium bananas so that all people involved in the value chain can have a close look at it by using the QR code.

Thus, by creating a box with high visual impact that integrates tools that guide them into Varcli’s web page and other media platforms, the company has transformed the waste (boxes) into a media platform and has created a positive impact among the people with Varcli’s message of sustainability.

### ***Ecological Conserver***

The reduction of pesticides is part of the company’s core principles. For this, they have implemented agricultural practices that allow them to use insecticides in ultra-low volume, trapped in the bags to protect bunches in the fields. This helps beneficial insects to thrive in their crop areas. The company also permits its employees to start their own independent farms by giving them free access to several acres of land where they can cultivate crops like corn, cucumbers, papayas, chayote, and watermelons.

### ***Sustainability Through Partnership***

Through the sustainable partnership, Varcli Pinares is strengthening the means of implementation and creating a positive impact within the community. Varcli Pinares S. A. is helping both the community people and the wildlife by partnering with the Pacuare Reserve to maintain a sustainable ecosystem.<sup>3</sup> The partnership

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<sup>2</sup>Agami heron is a rare kind of bird that honours Varcli Pinares with one of the prime nesting zones in the world at their neighbour’s ‘Reserva Pacuare’.

<sup>3</sup>Pacuare Reserve, created by John Denham, is the organisation responsible for guarding the biggest hatching post for the Leatherback turtles, from poachers that go to the beach to steal their eggs.