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FOOD-BASED JUST SUSTAINABLE INNOVATION ECOSYSTEMS: A GLOBAL SOUTH AND MEDITERRANEAN PERSPECTIVE.

Professor Christian Iaione
Supervisor

Professor Luna Kappler
Co- Supervisor

ADAEZE OLUCHI ASHAHEME
632153

CANDIDATE

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ABSTRACT

Food systems in the Global South and Mediterranean face increasing ecological, economic, and social pressures, with climate change, policy misalignments, and structural inequities threatening their resilience. This thesis examines Food-Based Just Sustainable Innovation Ecosystems (FJSIEs) as frameworks that integrate justice, sustainability, and innovation to transform food systems beyond technical solutions. The thesis integrated the local voice of the groups who have reimagined their environmental limitations and created solutions to shared problems. The thesis imitates the ideology of power in collective action similar to the phrase *"If you want to run fast, run alone but if you want to run far run together"*. Using a qualitative, comparative case study approach, it analyzes two initiatives: Terra di Resilienza (Italy) and the One Kindred One Business Initiative (OKOBI) (Nigeria), supplemented by semi-structured interviews with cooperative leaders and international agency staff.

Findings show that FJSIEs thrive when governance is participatory, knowledge and resources are treated as commons, and justice is central to innovation. Grassroots initiatives demonstrate deep cultural ownership and resilience, while enabling policies such as the EU Common Agricultural Policy (CAP) support scaling but also reveal structural contradictions. In the Global South, hybrid governance that combines local legitimacy with institutional support is key to long-term success (Teaching people how to fish instead of giving them fish). The study highlights that FJSIEs can operationalize AU–EU Innovation Agenda goals on green transition, capacity strengthening, and inclusive co-creation, while also exposing persistent barriers such as unequal resource access and policy fragmentation.By integrating theory and practice, this research advances FJSIEs as a lens for analyzing and designing equitable, resilient food systems, offering guidance for policymakers, donors, and civil society actors committed to sustainable and justice-centered food futures.

Keywords: Food-based Just Sustainable Innovation Ecosystems (FJSIEs), AU–EU Innovation Agenda, MOIP, grassroots innovation, justice, sustainability, hybrid governance, Global South, Mediterranean.

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Abbreviations

FJSIEs – Food-Based Just Sustainable Innovation Ecosystems

CAP – Common Agricultural Policy

SDGs – Sustainable Development Goals

SACDEP – Sustainable Agriculture Community Development Programme

OKOBI – One Kindred One Business Initiative

IPCC – Intergovernmental Panel on Climate Change

GHG – Greenhouse Gas

FAO – Food and Agriculture Organization of the United Nations

IFAD – International Fund for Agricultural Development

UNICEF – United Nations Children's Fund

WFP – World Food Programme

WHO – World Health Organization

NGO – Non-Governmental Organization

EU – European Union

AIS – Agricultural Innovation Systems

MLP – Multi-Level Perspective (on socio-technical transitions)

CAS – Complex Adaptive Systems

CAMA – Companies and Allied Matters Act

MOIP - Mission Oriented Innovation and Place Sensitivity

OHADA – Organisation pour l'Harmonisation en Afrique du Droit des Affaires (Organization for the Harmonization of Business Law in Africa)

UIS – UNESCO Institute for Statistics

UNCTAD – United Nations Conference on Trade and Development

HLPE – High Level Panel of Experts

HLPE - High Level Policy Dialogue

IPES-Food – International Panel of Experts on Sustainable Food Systems

FNSSA - Food and Nutrition Security and Sustainable Agriculture

SO - Specific Objective

EO - Earth Observation

IBF- Impact-Based Forecast

AMHEWEAS - African-owned Multi-Hazard Early Warning and Early Action System

GNSS - Global Navigation Satellite System

AfSA- African Space Agency

G1 - Gender Equality Objective 1

OCSG - Overall Coordination and Steering Group

MTG - Meteosat Third Generation.

CHAPTER 1: INTRODUCTION AND PROBLEM STATEMENT

1.1 Background and Context (Global South and Mediterranean)

The global food system, which is underpinned by the value chain, is a major contributor to ecological degradation. The food value chain accounts for c. 25–30% of total GreenHouse Gas emissions[1], making it a major contributor to climate change (IPCC, 2025). Increasing global temperatures, erratic rainfall, and extreme weather events are exacerbating these issues, especially in vulnerable regions like the Global South and Mediterranean. According to the Food and Agriculture Organization of the United Nations (2018), this food value chain is "...the entire range of actors and their interlinked value-adding activities involved in the production, aggregation, processing, distribution, consumption and disposal of food products that originate from agriculture, forestry or fisheries, and embedded within parts of the broader economic, societal and natural environments"[2]. Empirical evidence suggests that large firms in the value chain contribute about 80% of the total greenhouse emissions(e.g., Scope 3 emissions account for about 84% of a company's GHG footprint), whilst smallholder farmers produce negligible emissions.

Nonetheless, smallholder farmers produce more than a third (around 35 percent) of the world's food and provide up to 80 percent of the food supply in sub-Saharan Africa and Asia, according to the FAO[3], but they remain structurally marginalized in the discussions on how to develop the global food system and reduce the emissions embedded in the global food value chain. These farmers face challenges like limited access to funds, market, infrastructure,digital technologies and economic vulnerability in the supply chain that often favours large scale operators.

Beyond ecological footprints, big food companies also have social impacts on society. They shape and influence societal food tastebuds. As such, as argued by the FAO, "traditional food cultures are often now replaced by more convenient, westernised products, and perhaps more desirable, which are often highly processed and lower in dietary quality compared to locally cultivated fresh

[1] Intergovernmental Panel on Climate Change. (n.d.). *Intergovernmental Panel on Climate Change (IPCC)*. from https://www.ipcc.ch/

[2]Food and Agriculture Organization of the United Nations (FAO). (2018). *The 10 elements of agroecology: Guiding the transition to sustainable food and agricultural systems* (No. CA2079EN) [PDF]. https://www.fao.org/3/ca2079en/CA2079EN.pdf

[3] Bread for the World, *What Are the Challenges of Smallholder Farmers Around the World?*, June 2, 2023, accessed July 27, 2025, https://www.bread.org/article/challenges-of-smallholder-farmers/

produce[4]. It is safe to say innovation in this sector is often about speed and efficiency. The so-called "dietary transition" describes the increasing consumption of cheap, highly processed and energy-dense (westernised) diets in countries in Asia, Latin America, North and sub-Saharan Africa, and the Middle East (Popkin, 2001; Pingali, 2007). Alongside the transition, countries, communities and even individuals are increasingly experiencing the so-called double burden of malnutrition – that is, the co-existence of undernutrition, overweight and obesity (Popkin et al., 2019; Wells et al., 2020).

Following Popkin (2001) , the health consequences of this shift (dietary transition) are particularly acute among Indigenous Peoples, who now suffer from disproportionately high rates of infant mortality, maternal mortality, low birth weight, child stunting, malnutrition, child obesity and adult obesity, lower educational attainment, and economic status (Wong et al., 2015; Anderson et al., 2016;). Egeland et al. (2009) observed the replacement of traditional foods with unhealthy market foods in communities was accompanied by a high prevalence of metabolic syndrome (including diabetes), as well as substantial food insecurity. The change in many Indigenous Peoples' diets to the increased consumption of highly processed, low-nutrient foods has resulted in extensive increase of type 2 diabetes mellitus, cardiovascular disease, obesity, cancer and other chronic diseases (Johns and Sthapit 2004; Swinburn et al., 2011). Globally, over 50 percent of Indigenous Peoples above the age of 35 suffer from diabetes, attention-deficit hyperactivity disorder (ADHD), malnutrition or cardiovascular illnesses (FAO, Forthcoming)[5]. This highlights the deep-rooted injustice embedded in food systems, where access, affordability, and nutritional quality remain unequally distributed.

Critically, the environmental degradation driven by agriculture including biodiversity loss, soil fertility decline, and deforestation continues to accelerate, damaging the health of people and the planet, dislocating societies, and threatening food systems around the world. Global change and transformation in agricultural landscapes is a major sustainability concern. However, agricultural landscape change is driven by a multitude of (typically closely interlinked) processes. First, agricultural land is expanding globally, converting natural and semi-natural ecosystems and thus compromising biosphere integrity and ecological processes in land systems (Steffen et al., 2015). Second, rising societal needs for food, feed, fibres, and fuels also lead to an intensification of agriculture (Erb et al., 2013). Third, an increasing amount of (often fertile) agricultural land is sealed and converted to cities, with substantial impacts on agricultural production, biodiversity, and ecosystem services (Seto et al., 2012). Meanwhile, despite global commitments to eliminate

[4] Food and Agriculture Organization of the United Nations, *The White/Wiphala Paper on Indigenous Peoples' Food Systems* (Rome: FAO, 2021) https://openknowledge.fao.org/server/api/core/bitstreams/3462ba89-ea23-4d49-a3bf-e64bdcc83613/content

[5] Food and Agriculture Organization of the United Nations, *The White/Wiphala Paper on Indigenous Peoples' Food Systems* (Rome: FAO, 2021) https://openknowledge.fao.org/server/api/core/bitstreams/3462ba89-ea23-4d49-a3bf-e64bdcc83613/content

hunger by 2030, an estimated 690 million people were hungry in 2019, and over 2 billion lacked regular access to safe, nutritious food (IPES-Food, 2021, p. 4).

This complex crisis demands a radical rethinking of how food systems are designed, governed, and innovated to be inclusive and just. Scholars and practitioners now argue that sustainability must be coupled with justice. Kristin Reynolds, critical food geographer and scholar for a sustainable food system defined it as a system "that is environmentally, economically, and socially sustainable. He goes on to say that "Further, we can't consider a food system whether it is at a community or global scale to be sustainable if it doesn't ensure racial equity, economic justice, and human rights for everybody."(Yale Office of Sustainability, 2020)[6]. In line with this, the FAO (2018) defines Sustainable Food Systems as "A sustainable food system (SFS) is a food system that delivers food security and nutrition for all in such a way that the economic, social and environmental bases to generate food security and nutrition for future generations are not compromised.

Across the Global South and Mediterranean, family farming systems remain central to food sovereignty, rural employment, and cultural identity. Over 90% of the world's 570 million farms are managed by families and produce more than 80% of the world's food in value terms, underscoring the centrality of family farming in global food security (FAO, 2023). However, without strategic innovation that is ecologically sound, socially inclusive, and locally driven, these systems risk collapse under the weight of global pressures.

In order to avoid the risk of this collapse, continental discussions have sprung up through the AU-EU Innovation Agenda of 19th July 2023. This cooperation between the African Union and European Union aims to strengthen Research and Innovation across 4 priority areas of; Public Health, Green Transition, Innovation &Technology and Capacities for Science, with set out cross - cutting themes. However,for the sake of the thesis we will prioritize justice first, then equality, inclusion, capacity building etc. All 4 priorities are targeted towards contributing to sustainable and inclusive development, economic growth and job generation, thereby reducing poverty and inequalities. This agenda will be used as the principle policy benchmark throughout the thesis as it indicates a collaborative approach to solving issues in the Global South particularly in Africa[7].

In response, this thesis explores Food-Based Just Sustainable Innovation Ecosystems (FJSIEs) as a transformative approach using examples from the global south and mediterranean through cases from Nigeria and Italy. This is because these regions face acute vulnerabilities in their food systems (climate stress, economic fragility, governance gaps) *and* they are hotspots of innovation grounded in local knowledge, cultural traditions, and collective stewardship. These models

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[6] Yale Office of Sustainability. (2020, September 2). *Yale experts explain sustainable food systems.* Yale University. https://sustainability.yale.edu/explainers/yale-experts-explain-sustainable-food-systems

[7] The AU-EU Innovation Agenda
https://research-and-innovation.ec.europa.eu/document/download/c9c4eb8e-df0f-41e7-a322-891786fef29b_en?filename=ec_rtd_au-eu-innovation-agenda-final-version.pdf

recognize that innovation must be inclusive, ecologically grounded, and socially just. The goal is not merely to make food systems more efficient, but to reimagine them in ways that empower communities, reduce inequality,provide jobs and safeguard the planet.

1.2 Significance of Food-Based Just Sustainable Innovation Ecosystems (FJSIEs)

The concept of Food-based Just Sustainable Innovation Ecosystems (FJSIEs) builds on the growing recognition that food systems must evolve beyond mere efficiency and productivity toward equity, inclusion, and regeneration. FJSIEs integrate sustainable agriculture, climate resilience, and socio-economic justice especially in vulnerable regions such as the Global South.

This approach aligns with the broader framework of **planetary health**, which underscores the interdependence between human well-being and the natural systems on which it depends (Whitmee et al., 2015). The degradation of ecosystems due to unsustainable agricultural practices, biodiversity loss, and climate disruptions directly threatens food security and public health. As such, innovation in food systems must first go beyond speed, efficiency and economic performance to prioritize environmental, ecological integrity and social justice.

FJSIEs aim to address systemic inequalities and offer holistic solutions that empower smallholder farmers, recognize local knowledge systems, and strengthen food sovereignty. These ecosystems embrace values such as co-creation, community resilience, and environmental stewardship making them vital to sustainable development in regions facing overlapping crises of poverty, food insecurity, and ecological decline.

Iaione (2024) defines “just sustainable innovation” as innovation processes that are not only environmentally sustainable and economically viable but also socially just and inclusive particularly for vulnerable and marginalized communities. His shared stewardship model advocates for the redistribution of power in innovation, allowing local actors to co-design, co-own, and co-govern transitions in food systems and beyond.

Embedding planetary health into this model reinforces the urgency of systems that regenerate rather than deplete resources and engage those most affected by environmental and social injustice. FJSIEs, therefore, contribute directly to the achievement of several Sustainable Development Goals (SDGs), including SDG 1 (No Poverty) SDG 2 (Zero Hunger), SDG 12 (Responsible Consumption and Production), SDG 13 (Climate Action), SDG 10 (Reduced Inequality), and SDG 5 (Gender Equality).

1.3 Gaps in Current Food System Sustainability Approaches

While innovation is frequently proposed as a solution, many innovation models focus narrowly on technological advancement, market-based reforms and economic efficiency, often sidelining questions of justice, local knowledge, and environmental sustainability. These tend to overlook justice-oriented concerns such as community participation, cultural appropriateness, and equity and frequently impose top-down solutions that may not align with local realities or needs (Moore et al., 2015; Strasser et al., 2020).

In regions like the Global South, common factors such as rich agricultural traditions, biodiversity, the importance of smallholder & family farmers, marginalized or underrepresented communities, and the role of grassroots cooperative movements intersect with rapid urbanization. These challenges are often more pronounced due to historical inequities, economic vulnerabilities, and environmental degradation and climate change.

This research hopes to reimagine the food system not just through the lens of innovation but through just sustainable innovation that prioritizes inclusion, equity, and systematic stewardship across all relevant actors i.e. local communities, farmers, producers, suppliers, government, NGOs, consumers, and international agencies.

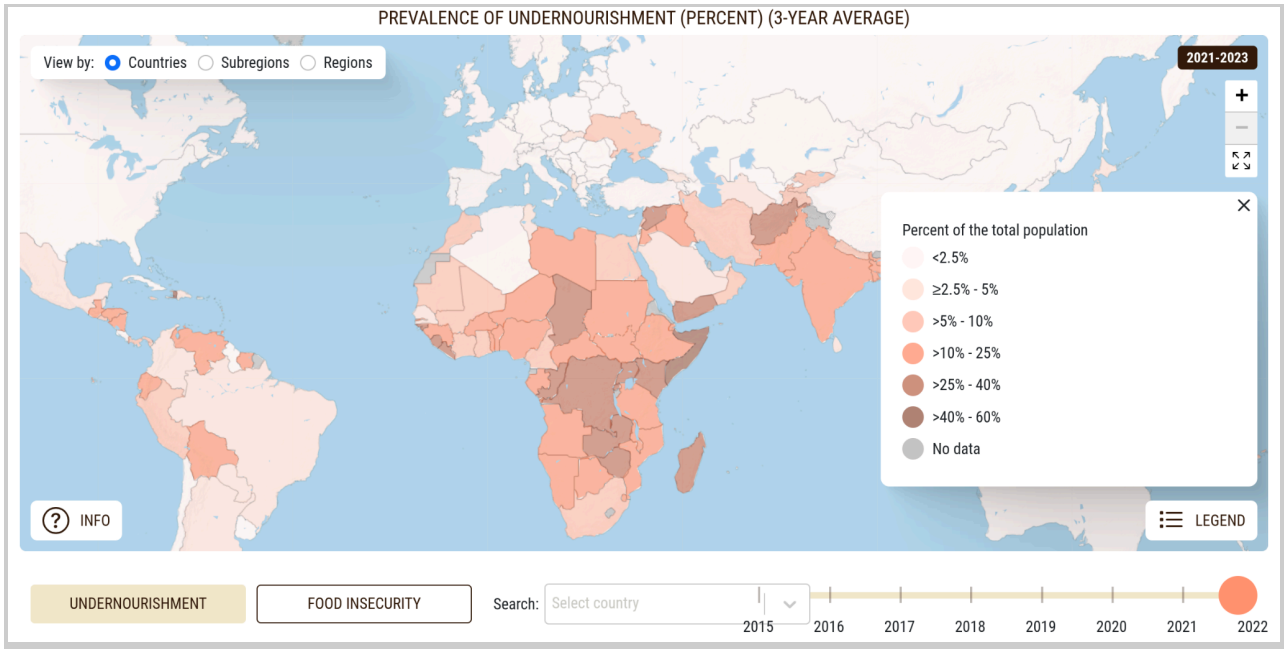
Furthermore, the research aims to explore a deeper understanding on why some initiatives brought by international agencies given how brilliant it is do not last for a long time or are not often fully internalized by the people Versus the effects of home grown or grassroot initiatives, their operation model and longevity. This gap limits the transformative potential of food system reforms and reinforces cycles of dependency on external interventions. The study also examines how these models operate, the challenges they face, possible solutions, enabling policies eg AU-EU Innovation Agenda and how they can be replicated in other geographical contexts. Case studies from the Global South will offer comparative insights about their growth and ability to scale up amid trends like climate change, population increase, poverty, policy shifts, and urbanization. Finally, the research explores the role of sustainable practices such as agroecology, regenerative agriculture, funding and impactful business models in strengthening just sustainable innovation ecosystems.

1.4 Research Problem Statement

According to FAO (2023), over 2.4 billion people globally experienced moderate or severe food insecurity in 2022, with more than 70% residing in the Global South particularly in Africa, Asia, and Latin America. Meanwhile, an estimated 2.8 billion people could not afford a healthy diet in the same year. In low-income countries, this figure rises to 71.5%, for lower-middle-income countries (52.6 percent), upper-middle-income countries (21.5 percent) compared to just 6.3% in high-income countries (FAO et al., 2024).

This growing disparity reflects deep structural problems in the global food system ranging from inequality and climate vulnerability to market exclusion and policy neglect. Many communities lack not only access to nutritious food but also the means to shape how food is grown, distributed, and governed.

The core problem this research addresses is the disconnect between dominant models of food systems innovation and the lived realities of vulnerable communities. How policy collaborations can better or worsen the system. It asks how food-based innovation ecosystems can be made more just, inclusive, and sustainable especially for marginalized populations in the Global South.



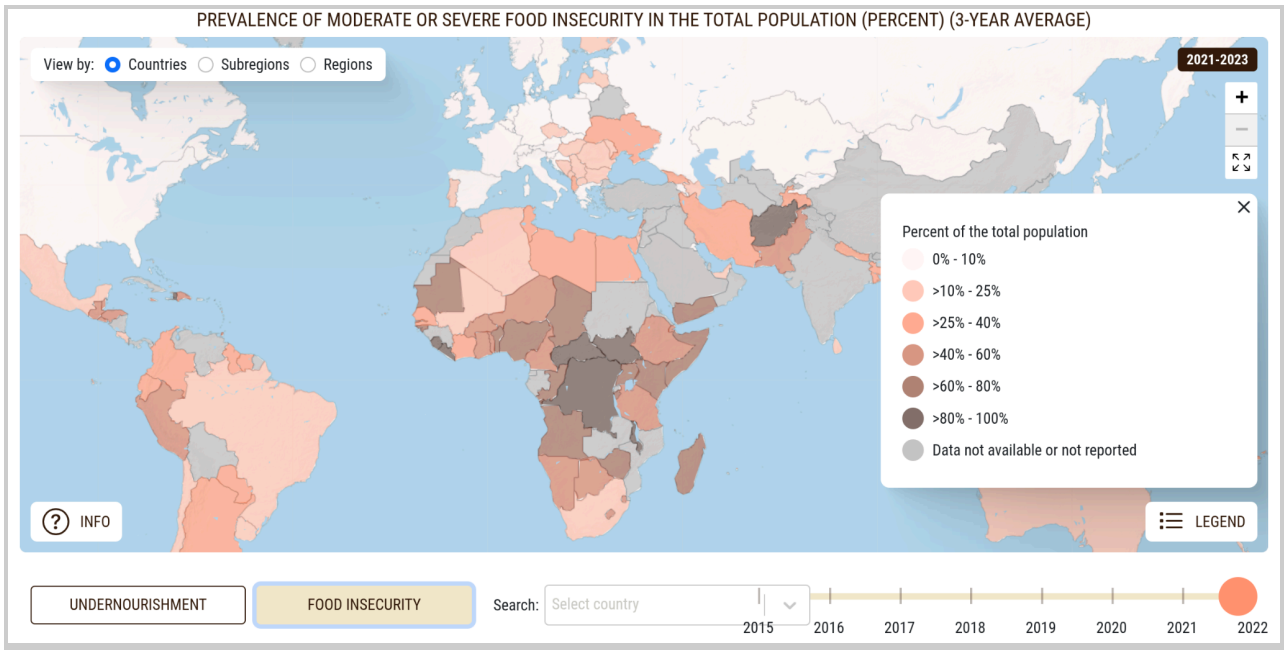


Figure 1: Is a graphical representation of Food Insecurity in Africa by the FoodAnd Agriculture Organization

1.5 Research Objectives and Questions

The Overall Research Question asks "*How can Food-Based Just Sustainable Innovation Ecosystems contribute to equitable and resilient agri-food systems in the Global South?"*

Subsequent sub-questions inquire about : *What governance models (e.g., shared stewardship) best support just and inclusive innovation in local food systems*? *What are the key differences in impact and longevity between grassroots food system initiatives and those introduced by international agencies? How do selected community-led agricultural cooperatives demonstrate principles of just sustainable innovation in practice?*

The objective of this is to explore the role of FJSIEs in enhancing food security, resilience, and justice. Compare the operational models, outcomes, and scalability of grassroots vs. externally-led initiatives. And, identify policy pathways for fostering co-governed, community-rooted innovation ecosystems.

1.6 Thesis Structure Overview

This thesis is structured to explore how Food-Based Just Sustainable Innovation Ecosystems (FJSIEs) contribute to more equitable, resilient, and sustainable food systems in the Global South and Mediterranean. The chapters are organized as follows:

- Chapter 2 outlines the theoretical framework, drawing on concepts such as planetary health, just innovation, indigenous knowledge systems, systems thinking, and the AU-EU Innovation Agenda, Mission Oriented Policy and the Africa-EU Space Partnership in sustainable food systems.
- Chapter 3 offers a targeted literature review, highlighting key debates and gaps in current food system transformation efforts and discussions on the Food and Nutrition Security and Sustainable Agriculture.
- Chapter 4 presents the research methodology and case studies; detailing the comparative case study approach, data collection, and analyzing strategies used in the study. In-depth analysis of case studies from Italy and Nigeria, examining their governance models, impacts, scalability, and ownership structures; including the role they play in fostering FJSIEs.
- The subsequent chapters analyze these case studies (Chapter 5) and provide conclusions and policy recommendations (Chapter 6).

CHAPTER 2: THEORETICAL FRAMEWORK

2.1 Planetary Health and Sustainability Transitions

The concept of **planetary health** frames human well-being as inseparable from the health of Earth's ecosystems. Defined by Whitmee et al. (2015), planetary health is *"the health of human civilization and the state of the natural systems on which it depends."* In the context of food systems, this approach urges scholars and practitioners to view food not only as a commodity but as a biocultural link between people, land, and governance. Engulfing planetary health into food-based innovation ecosystems means acknowledging that the degradation of ecosystems through unsustainable agricultural practices, climate change, and biodiversity loss directly impacts food security, nutrition, and livelihoods.

Over the years, scholars such as Rockström et al. (2009) and Steffen et al. (2015) introduced the Planetary Boundaries Framework, identifying nine ecological thresholds including land-use change, biodiversity loss, and nitrogen cycles that are all directly impacted by current food production systems. The food sector alone accounts for up to 30% of global GHG emissions and drives major biodiversity loss (IPCC, 2023; FAO, 2024). According to the United Nations Environment Programme (UNEP, 2024), households across all continents wasted over 1 billion meals a day in 2022, while 783 million people were affected by hunger and a third of humanity faced food insecurity. Recent data from World Bank (2019) states that food loss and waste generates 8-10 percent of annual global greenhouse gas (GHG) emissions almost 5 times that of the aviation sector and significant biodiversity loss by taking up the equivalent of almost a third of the world's agricultural land.

Drawing inspiration from initiatives grounded in sustainability transitions theory such as the Multi-Level Perspective (MLP) by Geels (2002) emphasize the need for niche innovations to disrupt unsustainable socio-technical regimes. The MLP distinguishes between three analytical levels: Firstly, the Niches (micro-level), where radical innovations emerge e.g. grassroot innovation. Second, Socio-technical regimes (meso-level), representing the dominant practices, rules, and technologies. Third, Socio-technical landscape (macro-level), referring to deep structural trends (e.g., climate change, cultural values, demographics).

MLP explains that system change doesn't happen all at once; it involves the interaction between innovations at the bottom (niches), dominant systems in the middle (regimes), and long-term pressures from above (landscapes). In food systems, this translates to emerging local or grassroots models challenging dominant agro-industrial paradigms.

Food-based Just Sustainable Innovation Ecosystems (FJSIEs) respond to these planetary concerns by; rebuilding ecological health through agroecology and regenerative agriculture. Localizing

production-consumption loops and empowering communities to govern and co-create sustainable food futures

This aligns with Stirling's (2014) argument that transformative innovation must integrate justice and challenge incumbent power structures, otherwise it risks reinforcing the very inequalities and ecological harms it seeks to address.

2.2 Just Innovation and Shared Stewardship Governance

Just innovation refers to transformative change processes that intentionally embed equity, inclusivity, and participation alongside technological and ecological objectives (Leach et al., 2018). It challenges the dominant narrative of innovation as inherently positive and instead asks: *"Who benefits, who participates, and who decides?"* (Schot & Steinmueller, 2018).

This thesis draws particularly on the work of Iaione (2024), who introduces the concept of Just Sustainable Innovation grounded in shared systemic stewardship. According to Iaione, this model promotes: Redistribution of decision-making power as well as co-creation with marginalized communities; thereby ensuring collective governance of resources and innovation pathways.

This definition is grounded on the idea that innovation must be governed and implemented in ways that recognize and redistribute power, ensuring that those affected by transitions such as climate or digital technologies are also co-owners and co-governors of the solutions. Further aligning with Iaione's vision on a shared systematic stewardship model as governance for just sustainable innovation, ensures co-creation with marginalized communities who are often the most affected by environmental disruptions. Embedding the concept of planetary health into this model reinforces the need for holistic, inclusive, and regenerative practices that protect both people and the planet.

This aligns with commons-based governance and the Quintuple Helix Model of innovation, which emphasizes interaction between government, academia, business, public/civil society, and the natural environment (Carayannis & Campbell, 2012).

Shared stewardship contrasts sharply with top-down models where innovation is donor- or market-led. Instead, it insists on: Epistemic justice which focuses on recognizing diverse knowledge systems, Procedural justice which emphasises on fair processes while involving communities in design and governance, lastly Distributive justice; ensuring fair outcomes across generations and geographies. In relation to the food system, the principles of just innovation are particularly salient, where smallholders are often excluded from decision-making, traditional knowledge is commonly devalued and food insecurity intersects with structural injustice.

In this thesis, FJSIEs are understood as governance and innovation systems that center shared power, place-based solutions, and co-responsibility for sustainability outcomes. Leach et al. (2018) argue that innovation should go beyond novelty, and it must also be grounded in fairness, shared

ownership, and systemic transformation. Acknowledging the differences between worldviews and cultures is essential to achieve productive engagement and dialogue in different policy contexts, and lead to more effective, equitable policy outcomes for food systems sustainability (Cosciemea et al., 2020).

2.3 Indigenous Knowledge Systems and Decolonial Perspectives

The Secretariat of the Convention on Biological Diversity (n.d) defines indigenous Knowledge as

> "Developed from experience gained over the centuries and adapted to the local culture and environment, traditional knowledge is transmitted orally from generation to generation. It tends to be collectively owned and takes the form of stories, songs, folklore, proverbs, cultural values, beliefs, rituals, community laws, local language and agricultural practices, including the development of plant species and animal breeds. Traditional knowledge is mainly of a practical nature, particularly in such fields as agriculture, fisheries, health, horticulture, forestry and environmental management in general".

With their long-established foodways, Indigenous Peoples have experiential knowledge, skills, and storytelling practices to share and teach, including ways of gathering food, observing changes, and paying respect to the Creator and her gifts. The complex agroecosystems that Indigenous, pastoral, forest, and coastal peoples have developed and/or inherited throughout centuries are the primary source of evidence (Global Alliance for the Future of Food, 2021). Such complex farming systems, forever adapting to local conditions, have helped smallholder farmers, animal keepers, fishers, and food gatherers to sustainably manage harsh environments and meet their subsistence needs without having to depend on mechanization, chemical fertilizers, pesticides, or other technologies of modern agricultural science[8].

Here is a breakdown developed by the FAO's Global-Hub on Indigenous Peoples Food Systems in advance of the 2021 United Nations Food Systems Summit and outlines the following characteristics of Indigenous food systems[9].

Characteristics of Indigenous Food Systems:

[8] Timothy A. Wise, "Failing Africa's Farmers: An Impact Assessment of the Alliance for a Green Revolution in Africa" (Tufts University, 2020). Working Paper; and IPES-Food, "Too Big to Feed: Exploring the Impacts of Mega-mergers, Consolidation, and Concentration of Power in the Agri-food Sector" (2017). Website.
[9] See, for example, Wise, "Failing Africa's Farmers...," 2020; IAASTD, "Agriculture at the Crossroads: International Assessment of Agricultural Knowledge, Science and Technology for Development," n.d. Website; Eric Holt-Gimenez and Miguel A. Altieri, "Agroecology, Food Sovereignty, and the New Green Revolution," Agroecology and Sustainable Food Systems 37, no. 1 (2012): 90–102; Raj Patel, "The Long Green Revolution," Journal of Peasant Studies 40, no. 1 (2013): 1–63; and A. Mkindi et al., "False Promises: The Alliance for a Green Revolution in Africa" (AGRA and INKOTA-netzwerk and Rosa Luxemburg Stiftung, 2020). Website.

What is the problem?

> Indigenous Peoples and their food systems, knowledge, and practices have been and continue to be marginalized in policy. Numbering over 476 million worldwide, Indigenous Peoples live in over 90 countries and 7 sociocultural regions. They often reside in sites of rich biodiversity and possess rich biocultural diversity and knowledge that has been preserved for generations. Their participation in the drafting and implementation of food policy is crucial to the future continuation of their livelihoods (FAO 2021).

What are the main characteristics of Indigenous People's food systems?

> Indigenous Peoples' food systems are embedded in a biocentric approach that is intimately tied to nature. Compared to specialized, input-intensive systems of conventional food production, Indigenous Peoples generate a diversity of foods with minimal intervention on the ecosystems and make use of inputs endogenous to the local system. Indigenous Peoples' food systems are efficient in resource use, with little waste and wide circulation of resources. Material inputs tend to be fully used and recycled locally.
>
> Indigenous Peoples' food systems promote the equitable distribution of resources and power, and support Indigenous identities and values. Food-generative practices are often localized, making use of communal resources and supported by traditional governance systems. Exchange is often barter-based or founded on reciprocal agreements. Indigenous Peoples' lands, waters, and resources are often used, managed, or governed collectively as a common resource under community-based management. Indigenous Peoples' systems of collective ownership of resources and food sharing can thus support inter- and intra-community cooperation, the cultivation and maintenance of shared identities, and healthy, resilient, and culturally appropriate food systems (FAO 2021).

What can Indigenous Peoples' food systems bring to the debate?

> Indigenous Peoples' knowledge, practices, and worldviews differ from Western science and provide a valuable contribution to current debates on sustainable food systems. While the value of Indigenous Peoples' traditional knowledge has been recognized, Indigenous Peoples' views, cosmovisions, time-tested practices, and relational values continue to be excluded in science and policy. By itself, the contribution of systemic observation carried by Indigenous Peoples' traditional knowledge is a tested scientific approach. The sensitive inclusion of Indigenous Peoples' traditional knowledge in policy will support the sustainable management of natural resources and transformation of food systems for all.
>
> Indigenous Peoples occupy over a quarter of the world's land, and their food systems can help to preserve global biodiversity. There is evidence that lands and forests managed and governed by Indigenous Peoples are able to resist forest loss and experience lower rates of

land conversion than forests within protected areas and undefined national forests. Indigenous Peoples' communities have persisted as custodians of the planet's food and genetic resources.

Indigenous Peoples' food systems provide nourishment and healthy diets. Indigenous Peoples' food systems make use of several hundred species of edible and nutritious flora and fauna, including traditionally cultivated crops, crop wild relatives, and animal wildlife (including bushmeat, marine mammals, insects, and fish). Indigenous Peoples' communities are feeling the effects of the dietary transition, with increasing consumption of highly processed foods a growing public health concern. With Indigenous Peoples already suffering higher rates of malnutrition worldwide than their non-Indigenous counterparts, supporting the continuation of Indigenous Peoples' food practices is important to future nutritional health(FAO 2021).

In the context of Food-Based Just Sustainable Innovation Ecosystems (FJSIEs), indigenous knowledge systems are not peripheral but foundational; they represent place-based, ecologically embedded innovation that is both sustainable and socially just. The biodiversity that flourishes within Indigenous Peoples' territories derives from their governance practices that are informed by their cosmogony. Indigenous communal governance systems, whereby communities collectively and equitably make decisions, are underpinned by their relationships with the surrounding environment[10].

"Indigenous food systems are rooted in place, spirituality, reciprocity, and resilience, often resisting commodification and extractivism." - Mihesuah & Hoover (2019)

Indigenous Knowledge as Innovation

Contrary to the assumption that innovation is only technological or Western, many indigenous and traditional communities have long developed practices like: rotational farming and agroecological practices, seed saving and biodiversity conservation, water governance based on seasonal knowledge and collective decision-making around food production and land use. These knowledge systems represent generational adaptation, based on relational worldviews seeing humans as part of nature, not separate from it.

DECOLONIAL PERSPECTIVE

[10] Food and Agriculture Organization of the United Nations, *The White/Wiphala Paper on Indigenous Peoples'FoodSystems*(Rome:FAO,2021)https://openknowledge.fao.org/server/api/core/bitstreams/3462ba89-ea23-4d49-a3bf-e64bdcc83613/content

Moving towards a decolonial perspective, the Global Alliance for the Future of Food (2021) outlines that to accelerate systemic transformation that will build equitable, sustainable food systems, we need to decolonize and democratize knowledge systems within education, research, and innovation. The Contributors illustrated how diverse forms of evidence, including lived experience and traditional knowledge, must be considered hand in hand with case studies, scientific analyses, and peer-reviewed literature as both robust and valid to inform decision-making(Global Alliance for the Future of Food, 2021). Escobar (2018) argues for the development of an "autonomous design" that eschews commercial and modernizing aims in favor of more collaborative and placed-based approaches.

Decolonial thinkers argue for a plurality of food epistemologies, resisting the imposition of "one-size-fits-all" models (Escobar, 2018; Akbulut et al., 2019). This particularly leads us to questions like: *"whose knowledge counts?", "Who defines sustainability or innovation?", "What power changes are rooted in food governance?"*. However, embedding indigenous knowledge within innovation ecosystems directly addresses epistemic injustice. Still in line with the other types of justice in 2.2, this further aligns and strengthens the idea of Recognition justice which is the principle that all individuals and groups deserve to be acknowledged and respected for their unique identities, cultures, and experiences, and that this recognition is a crucial component of social justice.

This matters especially in the Global South, where colonial legacies continue to shape land access, agricultural priorities, and food security policies. For instance, in Nigeria things like the **Land Use Act of 1978** centralizes land ownership in state governors, effectively weakening customary communal land rights. This creates significant challenges for collective entrepreneurship, particularly in rural areas where land access is crucial. The lack of clear land titling, bureaucratic delays, and insecurity of tenure prevent communities from leveraging land as collateral or scaling their enterprises (Hennings, 2021; Adedipe et al., 1997).

The core of African living is communal and co-existing models like cooperatives, though the composition might be informal, but interestingly these groups are coming together to get registered as a cooperation but still, little or no legislative assistance is offered. Although Nigeria has seen legislative updates such as the **Companies and Allied Matters Act (CAMA) 2020**, which enables cooperative registration; the **1999 Constitution** still offers little formal support for communal or cooperative economic arrangements. Scholars like Akanji (2022) critique this legal gap, arguing for deeper structural reforms that embed community enterprise protections in constitutional and administrative law. Looking beyond Nigeria, comparative frameworks for the Mediterranean offer valuable lessons. For instance; The **Italian Constitution** provides formal recognition of cooperatives through **Articles 43 and 45**, mandating state support for enterprises with social purposes. Similarly, the **OHADA Uniform Act on Cooperatives** represents a regional African effort to harmonize legal frameworks for cooperative businesses. Though promising, enforcement

still remains inconsistent across member states, and uptake is often hindered by lack of awareness and institutional support.

FJSIEs, therefore, must recognize that innovation is not only technical but also cultural and political. The inclusion of indigenous voices strengthens resilience, especially in regions where climate change and market volatility disproportionately affect rural and indigenous populations.

2.4 Systems Thinking and Complex Adaptive Food Systems

Barry Richmond, a well-known leader in the field of systems thinking and systems dynamics, is credited with coining the term "systems thinking" in 1987. He writes (1991):

> "As interdependency increases, we must learn to learn in a new way. It's not good enough simply to get smarter and smarter about our particular "piece of the rock." We must have a common language and framework for sharing our specialized knowledge, expertise and experience with "local experts" from other parts of the web. We need a system Esperanto. Only then will we be equipped to act responsibly. In short, interdependency demands Systems Thinking. Without it, the evolutionary trajectory that we've been following since we emerged from the primordial soup will become increasingly less viable"(Arnold & Wade, 2015 pg 670).

Systems thinking is, literally, *a system of thinking about systems*. As with most systems, systems thinking consists of three kinds of things: elements (in this case, characteristics), interconnections (the way these characteristics relate to and/or feed back into each other), and a function or purpose (Meadows 2008). Notably, the least obvious part of the system, its function or purpose, is often the most crucial determinant of the system's behavior (Meadows, 2008).

Applied to food systems, this approach challenges linear problem-solving and reductionist methods by highlighting how social, ecological, technological, and economic components interact in complex, often unpredictable ways (Meadows, 2008). As Meadows points out, some of the biggest problems facing the world war, hunger, poverty, and environmental degradation are essentially system failures. They cannot be solved by fixing one piece in isolation from the others, because even seemingly minor details have enormous power to undermine the best efforts of too-narrow thinking..Transforming food systems, therefore, depends on transforming the political economy behind them" (IPES-Food, 2021, p. 5). In the context of Food-Based Just Sustainable Innovation Ecosystems (FJSIEs), systems thinking enables us to understand the dynamics, interconnectedness and changing nature of food systems. Therefore, instead of focusing on one part in isolation e.g. just technological innovation or land, system thinking teaches us to understand how all parts i.e. people, nature, policies, culture, markets work together or affect each other. It

also explains how food systems are **complex**: small changes can lead to big effects, and innovations grow best when many factors (like supportive laws, social values, or crises) align. Lastly, it helps us identify leverage points for change(Meadows, 2008) where small changes can lead to significant shifts, promote holistic, integrated interventions, and appreciate local-global dynamics and feedback loops.

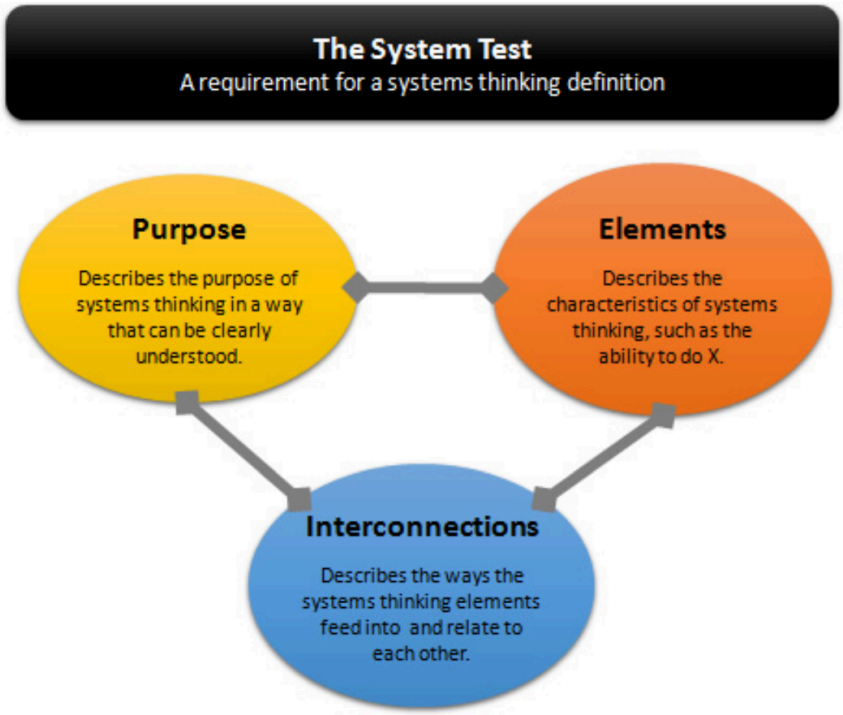


Figure 2: The System Test.

FOOD SYSTEMS AS COMPLEX ADAPTIVE SYSTEMS (CAS)

An adaptive system (or a complex adaptive system, CAS) is a system that changes its behavior in response to its environment. The adaptive change that occurs is often relevant to achieving a goal or objective. We tend to associate adaptive behavior with individual plants, animals, human beings, or social groups. However, relatively simple systems can also be adaptive[11]. Levin (1998) discusses Complex Adaptive Systems as systems made up of multiple interacting parts (agents) that adapt and evolve in response to changes in their environment. These systems are non-linear, dynamic,

[11] New England Complex Systems Institute. (n.d.). *Concepts: Adaptive*. Retrieved July 27, 2025, from https://www.necsi.edu/adaptive#:~:text=An%20adaptive%20system%20(or%20a,change%20the%20animal's%20future%20behavior

and characterized by emergence, feedback loops, and self-organization. The behavior of the system as a whole cannot be predicted simply by understanding its individual parts.

Because a CAS adapts to its environment, the effect of environmental change cannot be understood just by considering its direct impact. We must also consider the indirect effects due to the adaptive response. Recognizing the way that indirect effects arise from adaptation can help us understand how to influence complex systems in a desired way[12].

These systems exhibit properties such as: Nonlinearity: (meaning that small changes can lead to large and unpredictable changes in the overall system[13]. Emergence: System-level behavior emerges from patterns and properties that are not evident in the individual component Adaptation: adjust their behavior in response to changes in their environment, learning from experience and evolving over time. Self-organization: Patterns and structures arise without central control (Leach et al., 2010; Ingram, 2011).

Design and assessment of several alternatives for a whole system is complicated by the fact that food systems are Complex Adaptive Systems (CAS) (Chapman et al., 2017, 2; Nesheim et al., 2015, 233). These kinds of systems lack central command and ownership (Holland, 1995) but may be affected by different kinds of force fields: policies, regulations, preferences, social norms, cultures, beliefs, worldviews etc. When such systems experience major changes, a large number of local and non-linear interactions take place at various levels and parts of the system, giving rise to emergence and self-organisation (Byrne and Callaghan, 2014). The fundamental reconfiguration of a CAS is 'pulled' by attractors (Gerrits, 2012, 157; Room, 2011, 130). Attractors can be e.g. shared visions (Vasileiadou and Safarzynska, 2010, 1178), new technologies (Geels, 2005) or biophysical entities such as climate (Brunetti et al., 2019).

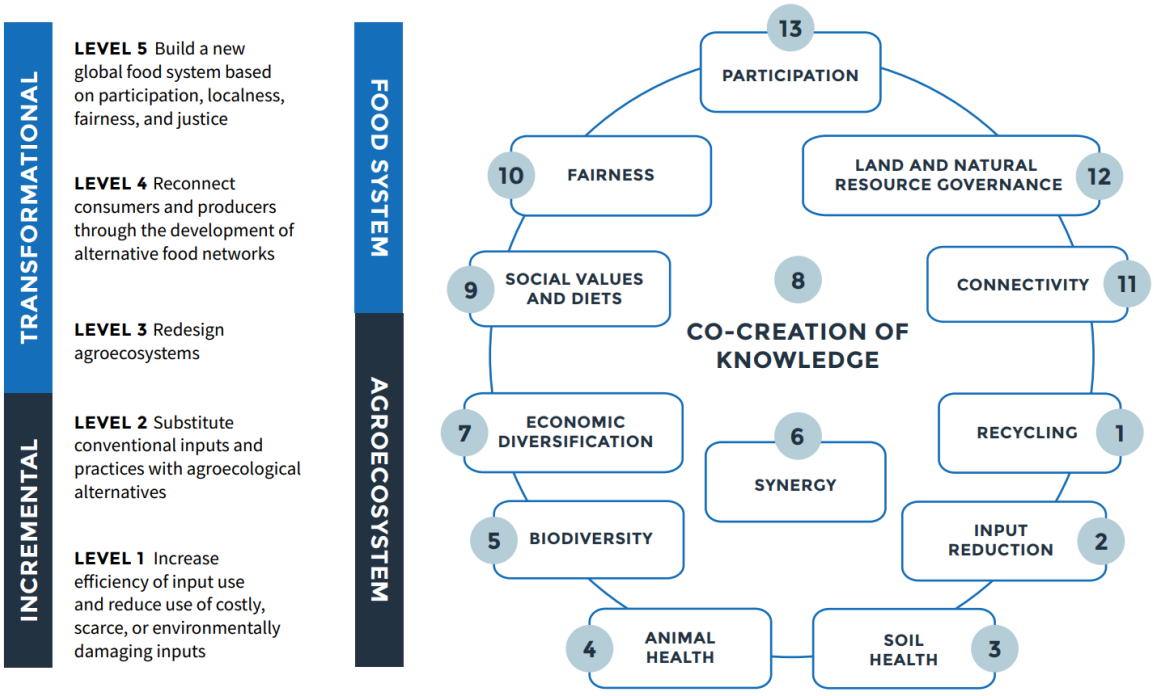
Linking systems theory, Geels' Multi-Level Perspective (MLP) in 2.1 it offers a framework to understand socio-technical transitions. Transitions result from interactions between processes at different levels; for example, niche innovations build up internal momentum, while changes at the landscape level put pressure on regimes" (Geels, 2002, p. 1261).

A systems thinking lens enables us to see food systems not as isolated components but as complex, interconnected, and adaptive systems. However, understanding complexity alone is not enough. When combined with justice (recognition, distribution, and procedural) and sustainability (environmental, economic, and social), systems thinking becomes a transformative tool, not just a diagnostic one. This triangulation of : systems × justice × sustainability is what distinguishes

[12] New England Complex Systems Institute. (n.d.). *Concepts: Adaptive*. Retrieved July 27, 2025, from https://www.necsi.edu/adaptive#:~:text=An%20adaptive%20system%20(or%20a,change%20the%20animal's%20future%20behavior

[13] Theoretical Bio- and Neurophysics Research Group, University of Bremen. (n.d.). *Complex Adaptive Systems.* Retrieved July 22, 2025, from https://www.uni-bremen.de/en/theoretical-bio-and-neurophysics/research/complex-adaptive-systems

Food-Based Just Sustainable Innovation Ecosystems (FJSIEs). They go beyond surface reforms to confront power imbalances, ecological limits, and exclusion in food systems. Strategic "leverage points" (Meadows, 2008) like land reform access in 2.3, seed sovereignty, or inclusive governance can trigger deeper systemic shifts. These interventions are not random; they align with core justice principles and local realities, making FJSIEs both effective and equitable.



Source: HLPE, "Agroecological and Other Innovative Approaches for Sustainable Agriculture and Food Systems that Enhance Food Security and Nutrition," page 51 (2019). Website.

Figure 3: Key Pathways in the transition to sustainable Food Systems

2.5 Towards a Policy Bench-mark: AU-EU Innovation Agenda.

In order to achieve a Food -Based Just Sustainable Innovation Ecosystem in Africa, the role of policies cannot be undermined, as it is a major driving force for the actualization of a tangible result. Policies serve as both enablers that could drive innovations and initiatives, It can also be a constraint that restricts agendas from attaining their full potential. In line with the conversations in 2.2 and 2.3 regarding justice and decolonization, Africa's breakthrough in its future food system transformation will require frameworks that balances global collaboration with local ownership.

Africa through the AU Agenda 2063 has set out a detailed plan to better the continent, and create "the Africa We Want". The Agenda adopted in 2013 with a strategic 50 years framework targeted towards socio-economic development in Africa, lays out strategic seven aspirations of: developing livelihood in Africa through inclusive growth and sustainable development; an integrated continent based on Pan-Africanism; good governance, democracy, and human rights; peace and security; a strong cultural identity; people-driven development that harnesses the potential of youth and women; and a resilient Africa as a global partner[14]. Relevant to the thesis, the agenda aims to achieve modernization of agriculture for increased production, productivity and value addition through science, technology, innovation and indigenous knowledge that contributes to farmer and national prosperity and Africa's collective food security. This alignment of the AU 2063 Agenda to FJSIEs acknowledges local knowledge and players which indicate justice (Epistemic) and sustainable food innovation pathways.

Yet, despite the bold vision of the Au Agenda 2063,the realization of these aspirations has faced implementation challenges such as weak institutional capacity, inadequate infrastructure, limited finance etc. For instance, the goal to fully banish the use of hand hoes by 2025(AU Agenda 2063; pg 3) is yet to be accomplished. Rather than diminishing the Agenda, these challenges highlight the importance of building more resilient and inclusive innovation ecosystems that leverage both internal and external partnerships.

To curb this hurdle, and improve the effectiveness of the AU Agenda 2063, Africa adopted the Science, Technology and Innovation Strategy for Africa 2024 (STISA-2024), its first priority program was the *"eradication of hunger and food security";* which displays actions taken by the AU to improve rural economy and agriculture through programs like the Comprehensive Africa Agriculture Development Programme(CAADP)[15]. Statistics show that food insecurity directly affects 239 million Africans, with 30% to 40% of children under the age of 5 years continuing to suffer from chronic under-nutrition at a critical stage for both survival and cognitive and physical development(STISA,2024 pg. 22). STISA also recognizes the importance of integrating indigenous knowledge and grassroots innovation, reinforcing the justice dimension of FJSIEs

[14] African Union Commission (AUC). Agenda 2063: The Africa we want (Popular version). https://au.int/Agenda2063/popular_version

[15] AUC. Science, Technology and Innovation Strategy for Africa-2024 (STISA-2024). https://au.int/web/sites/default/files/documents/29957-doc-stisa-published_book.pdf

Together, the AU Agenda 2063 and STISA 2024 provide a vision of a sustainable/ innovative food system, but the gap between aspirations and implementation has made clear that collaboration with external partners is an important complementary pathway. This is the policy space into which the AU–EU Innovation Agenda (2023) enters.

2.5.1 AU-EU INNOVATION AGENDA:

The AU - EU Innovation Agenda provides a pathway in which these issues are addressed through joint collaboration. The framework combines Africa's development priorities with Europe's innovation resources, to address systematic barriers, addressing 4 focused priority areas of; Public Health, Green transition, Innovation & Technology, and Capacities for Science which was chosen after the ministerial dialogue of High Level Policy Dialogue on Science, Technology and Innovation (HLPD on STI) in July 2020[16]. In order to foster positive impacts that will yield results through products, services, businesses and jobs, in both Africa and Europe. This agenda is deeply rooted in collaboration as it cuts across a wide range of stakeholders, such as the private sector, business enterprises (industries), public and private research and higher learning institutions as well as non-governmental and civil society organisations similar to the quintuple helix model of (Carayannis and Campbell 2010).

The objective of the agenda is targeted towards principles of co-ownership and co-creation to promote sustainability and openness. With a set out time frame and cross-cutting themes, the objective targets 4 major aspects to ensure tangible results in the research and innovation cooperation of the 2 continents. The first objective is to Make it Real; this involves translating research and innovation capacities to tangible outputs of products,services, business and employment. Relating this objective to FJSIE, it takes into account local innovation and grassroot initiatives making it real and inclusive for tangible food security outcomes. The second is to Generate Impact by Design; this objective aims to foster an innovation ecosystem by socio/economic impacts. Through Public Private Partnership, joint ventures and entrepreneurship enhanced science and innovation aiming for just twin i.e. digital and green transition. However, this just twin may be a mismatch risk for grassroot actors as they often lack infrastructure. The third objective is Strengthen people, communities, and institutions; this objective overlaps strongly with the FJSIE and the chosen case studies of this thesis due to the strong emphasis of justice and inclusivity. The AU & EU by this objective aim to develop sustainable long-lasting foundations for resilient knowledge economies and societies, through partnerships and involvement with African diaspora, citizen science, communities and training of youths and women. The fourth objective is to Learn, monitor, and scale it up; the agenda enables successful projects to scale up, promote

[16] EU-Africa cooperation in research and innovation | European Commission (europa.eu). https://ec.europa.eu/info/researchandinnovation/strategy/strategy-2020-2024/europe-world/international-cooperation/eu-africa-cooperation_en

public participation, inclusion, transparency and prevent "talent drain" by creating opportunities locally. This objective will be relevant in accessing the scalability of our case studies in chapter 4.

2.5.2 THE GREEN TRANSITION AND FOOD SYSTEMS:

Moving towards FJSIE and sustainable food systems, the priority that overlaps the most is the Green transition. It emphasizes climate-resilient agriculture, sustainable food value chains and the protection of cultural food practices. The AU and EU share a similar stand on the issues of food security and nutrition. Drawing insights from the EU-AU research and innovation partnership in 2016 on Food and Nutrition Security and Sustainable Agriculture(FNSSA),(which is under the objectives of Green transition) and the jointly developed R&I theme of; Sustainable Intensification of agriculture; Agriculture and Food System Nutrition;and Expansion and improvement of agricultural markets and trade. Research and Innovation (R&I) Partnership on FNSSA is based on a shared vision and common objectives of the EU-Africa Submit in 2014 and HLPD-STI to foster long-term, jointly funded and co-owned research &innovation[17].

The R&I theme 2 ie Agriculture and Food System Nutrition highlights that while the average diets and nutritional conditions of Europeans and Africans may differ, and levels of under-nutrition in Europe are below those in Africa, the regions do have common nutritional challenges(European Commission & African Union, 2016, p. 10). Globalization is fostering some convergence of African and European food systems, creating shared challenges and opportunities. Many communities in Africa and Europe for instance have diets high in cheap, energy dense foods such as refined carbohydrates and fats which contribute to obesity and non-communicable diseases (NCD) (European Commission & African Union, 2016, p. 10). This is similar to the double -burden of nutrition mentioned in chapter 1.

Research on improving agriculture for nutrition in both Africa and Europe will place particular emphasis on increasing the availability, accessibility and affordability of micronutrient-rich foods through improving sustainable production systems for nutritious crops, livestock and marine and freshwater fish[18]. The R&I theme 2 has targeted areas to improve such as the food value chains (conventional and organic), nutritional value of crops and animal products through advances in breeding and biotechnological innovation; understanding consumer behaviour with respect to healthy diets and nutrition, and the role of education and incentive systems for improved nutrition

17 https://research-and-innovation.ec.europa.eu/document/download/13c79b47-cc74-4a88-9f7e-b8c435344c3c_en?filename=eu-africa_roadmap_fnssa.pdf

18 https://research-and-innovation.ec.europa.eu/document/download/13c79b47-cc74-4a88-9f7e-b8c435344c3c_en?filename=eu-africa_roadmap_fnssa.pdf

and public-private partnerships on improved nutritional quality of foods, particularly horticultural products and processed foods, in the marketplace(European Commission & African Union, 2015).

Regarding the goal of the AU-EU innovation agenda (2023) to result in a positive outcome of either products, services, businesses or jobs. The Food and Nutrition Security and Sustainable Agriculture addresses this through the R&I theme 3 i.e Expansion and improvement of agricultural markets and trade. Enhanced trade within and between the two regions will have benefits for the farmers, consumers, and governments of both. In Africa in particular, agriculture remains a principal means of economic growth for many African countries. Markets and trade play an important role in future growth at domestic, regional and international levels(European Commission & African Union, 2016).

Strengthening Africa's local food market is a holistic approach for the AU-EU cooperation for more sustainable agriculture (Ibrahima Hathie, 2024). The European Commission and African Union(2016; pg 11) highlighted a pathway to improving the AU-EU trade markets this includes elements of - Non-tariff trade barriers, addressing lack of harmonisation of import and export requirements constitutes an impediment to regional and international trade,collaborative development and broad application of methodologies for food safety issues, standardisation and traceability would permit improved trade in food products. Lastly, Global value chains and markets; joint research & innovation activity could include, among many others, mechanisms for linking smallholder farmers and rural communities to markets; access to credit and investments; adding value to respond to market opportunities including horticultural, organic, fair-trade and other quality label production and through the processing chain; the impact of urbanisation on trade and rural-urban linkages; and new approaches to food safety[19].

The AU- EU Innovation Agenda thus represents both an opportunity and a challenge for Africa's food systems. On one hand, it offers resources, partnerships, and policy support for innovation aligned with the vision of FJSIEs. On the other hand, its strong orientation toward digitalization, markets, and large-scale trade risks sidelining the justice, inclusivity, and local knowledge dimensions that grassroots initiatives embody.

19 https://research-and-innovation.ec.europa.eu/document/download/13c79b47-cc74-4a88-9f7e-b8c435344c3c_en?filename=eu-africa_roadmap_fnssa.pdf

2.6 Mission Oriented Innovation and Place Sensitivity (MOIP)

Mission-oriented innovation, also third generation innovation, is a strategic framework for developing new or improved technologies, social solutions, or organizational changes to address complex, ambitious, and cross-sectoral societal challenges like climate change or health inequities (OECD Observatory of Public Sector Innovation [OPSI], n.d.). This comprises setting out clear and measurable goals that address complex and cross-sectoral societal problems. This involves having a clear societal goal, putting in place direct funding and innovation efforts towards the goal and encouraging collaboration across sectors (academia, industry, government). Wanzenbock et al. (2020, p. 3) define mission-oriented innovation policy (MOIP) as "a directional policy that starts from the perspective of a societal problem and focuses on the formulation and implementation of a goal-oriented strategy". Rather than total reliance on incremental improvement, mission oriented approach redirect innovation systems toward bold, outcome-driven objectives that run across direct sectors like mobility, clean energy and sustainable food systems.

Despite the competence of mission oriented innovation approach, scholars have criticized the framework as being **spatially blind**, as it is usually designed for national scales and often fails to translate how the missions reflect in local contexts. Uyarra et al. (2025) in his work on the geographics of mission oriented innovation firmly articulates the implications of spatial blindness as it undermines legitimacy, reproduces territorial inequalities, and weakens the transformative capacity of missions. Scholars like Wennberg and Sandstrom,(2022) and Kirchherr et al., (2023) have cautioned against the top-down bias of state-led interventions, which may lead to policy failures, stifling bureaucracy and a neglect of bottom-up experimentation and diversity. This lack of spatial sensitivity not only devalues the role of cities and regions as arenas for innovation and policy implementation, but also limits the societal and democratic legitimacy of MOIP (Wanzenbock ¨ and Frenken, 2020) and risks being a pipe dream (Larsson, 2022). However, Uyarra et al. (2025) proposes a framework identifies three mechanisms that are essential for spatializing missions: **problem framing and reframing**, to ensure that high-level goals resonate with local realities; **inclusive and adaptive implementation**, where citizens and stakeholders actively shape projects; and careful attention to the **politics of scale**, balancing tensions between local, regional, national, and supranational levels.

In the Global South context, **Africapitalism** is a philosophy of hybrid governance; Africapitalism enriches the MOIP debate by showing how missions can be both transformative and locally legitimate. It insists on place-based enterprises that root innovation in cultural traditions, justice, and long-term investment (The New Institute, 2024). Amaeshi et al (2018) in his work in rethinking business in Africa urges businesses to reimagine their corporate sustainability engagement with communities where they are located by truly involving the people and making impacts rather than just maximizing profits. Africapitalism is a call for private sector–led

development in Africa that prioritizes long-term investments, entrepreneurship, and social wealth creation *beyond profit*.

Towards the policy aspect in the AU-EU Innovation Agenda(2023), the MOIP aligns in the aspect of co-creation, context specific innovation, strategic change, funding, promote knowledge exchange & learning, accelerates transformative technologies etc On the part of Africa, gaps in resources, capacity and misalignment of priorities may lead to uneven participation risking the agenda to be perceived as Euro-centric. There is also a risk of the agenda coming off as a top-down approach and African farmers and communities may reject innovations that are misaligned with local contexts, leading to reduced effectiveness. Relating this to Food systems, third generation innovation policies such as the European Union Farm to Fork Strategy[20] given how brilliant it is, may not succeed if they are pursued only through top-down directives, it fits well in the European context for precision in agri-tech which may rub-off as not being place sensitive in the African context due to infrastructural and knowledge issues.

Wesseling and Meijerhof, (2023) advocates that 'Third generation' innovation policy approaches emphasise societal problems as key drivers for intervention and advocate a shift from generic innovation support measures often based on R&D towards policies that seek more transformative system changes through not just technical solutions but also social or behavioural changes (Wesseling and Meijerhof, 2023). The effectiveness of missions will depend on how well they are rooted in specific places through stakeholder engagement, place-based leadership and local legitimacy, ensuring that broad directionality is transformed into context-specific actions that resonate with local priorities and resources.

Translating broad missions into equitable and resilient food system transitions requires mechanisms that are sensitive to place, governance, traditions, and cultural norms. Food-Based Just Sustainable Innovation Ecosystems (FJSIEs), such as through the grassroots cooperatives and agroecological practices examined in this thesis, provide precisely such mechanisms. By anchoring innovation in collective ownership, stewardship, and social justice, FJSIEs illustrate how missions can gain legitimacy and durability when connected to local agency.

[20] Farm to Fork Strategy- A Fair Healthy and Environmentally Friendly Food System. https://food.ec.europa.eu/document/download/472acca8-7f7b-4171-98b0-ed76720d68d3_en?filename=f2f_action-plan_2020_strategy-info_en.pdf

2.7 Operationalizing the AU-EU Innovation Agenda: The Africa-EU Space Partnership

In line with the priorities of the AU-EU Innovation Agenda 2063, the Africa-EU Space partnership is a cross-cutting theme in the AU- EU Agenda, considering that it is interlocked across innovation and technology, green transition and capacity for science in 2.5. Providing a multiannual plan by the EU favouring Sub-Saharan Africa from 2023-2025. This mechanism, is set for an indicative operational period of 72 months (six years), specifically targets the convergence of digitalization and the green transition in Sub-Saharan Africa (SSA) (European Commision, 2023). Translating its high-level objectives into a funded, mission-oriented policy framework. The EU dedicated 45 million euro to 3 regions ; West, East& Central and South Africa. Targeting 3 main objectives to ; (1)EU-Africa Space & Partnership: support to institutional partnership and decision-making processes. (2) Space & Green Transition – Focus on Early Warning Systems of hazardous weather and climate-related events. (3) Space & Private Sector to boost space industry and economy[21]. The action provides a concrete benchmark against which the viability, justice, and place sensitivity of mission-oriented innovation policy (MOIP, discussed in 2.6) can be measured within the context of Food-Based Just Sustainable Innovation Ecosystems (FJSIEs).

Linking the cooperation with the thesis principles, the most direct contribution to FJSIEs lies in Specific Objective 2 (SO 2): Space for Early Warning, which aims to enhance capacity to produce and deliver space-based services and information related to hazardous weather or climate events(European Commision, 2023). The program illustrates distributive justice as it explicitly seeks to strengthen climate and disaster resilience in a region that warms more than the global average and lacks sufficient early warning capabilities. Through improved access, processing, applicability and use of Earth Observation (EO) data, enhanced coordination with institutional framework for hazardous weather & climate Early Warning and shared knowledge across regions. Strengthened human capacities, knowledge and community shapes across the Early Warning value chain with a focus on space-based data and technologies (European Commission, 2023). The Action contributes directly to SDG 2 (End Hunger) and SDG 13 (Climate Action). The financial commitment targets distributive justice by providing concrete tools to strengthen the rights and security of vulnerable people whose livelihoods including food production are most affected by climate variability

The core output is the co-design and delivery of Impact Based Forecast (IBF) services and tools integrated into the African-owned Multi-Hazard Early Warning and Early Action System (AMHEWAS). This technology leverages new-generation meteorological satellite data (e.g., METEOSAT Third Generation ie MTG) and Copernicus data is essential for providing

[21]European Commission (2023) *Annex 20: Action Document for 'Africa – EU Space Partnership Programme' (multiannual plan)*, in *Commission Implementing Decision on the financing of the multiannual action plan in favour of Sub-Saharan Africa for 2023–2025*. Brussels: European Commission. https://international-partnerships.ec.europa.eu/document/download/dac72a53-16b1-45c3-8702-a64311e710e2_en?filename=C_2023_8225_F1_ANNEX_EN_V2_P1_3077849.PDF

risk-informed, evidence-based decisions crucial for agriculture, water management, and disaster risk reduction (DRR). The deployment of these space technologies, including Earth Observation (EO) and Satellite Navigation (GNSS), serves as a sine qua non for evidence-based policies in areas like land use, agriculture, and water monitoring(European Commission, 2023) .The Space Partnership aims to strengthen the African space private sector ecosystem, acknowledging that the region suffers from insufficient technical, entrepreneurial, and financial support for space start-ups.

Specific Objective3 offers scaling potentials to accelerate the use of technologies, generating innovative local solutions to solve local problems, and creating employment. Activities include providing training for the private sector, organizing competitions (Hackathons, Awards), and establishing and operating Business Innovation / Acceleration Labs in selected African countries, complemented by grants, mentoring, and matchmaking events for African and European innovators[22].

While the Space Partnership represents a significant investment in technology and innovation (SO 2 and SO 3), its structure raises questions on just innovation and challenging top-down MOIP frameworks. The "just twin" transition (digital and green) of the AU- EU Innovation Agenda may be a mismatch for grassroot actors due to lacking infrastructure. The Space Partnership confirms that weak infrastructure, insufficient equipment for data access/storage, and skill shortages (e.g., lack of space curricula) hamper African capacity across the space value chain. The program aims to promote Galileo/EGNOS-based SBAS services for sectors including sustainable agriculture and land management, requiring an evaluation of whether these high-tech solutions address the local realities of smallholder farmers and groups like OKOBI(see more about OKOBI in chapter 4).

The Action attempts to integrate justice by focusing on inclusion. Gender equality and women's and girl's empowerment is labeled a Significant Objective (G1). The Action mandates the development of joint African-European use cases and training sessions focusing on women and youth, as well as joint business support schemes with a focus on women empowerment(European Commission, 2023). This focus is intended to support governance models that prioritize inclusivity, which is a foundational element of FJSIEs.

The Action attempts to mitigate the risk of coordination failure and limited institutional capacity by establishing an Overall Coordination and Steering Group (OCSG) co-chaired by the AUC and the European Commission. This polycentric model is designed to ensure strategic orientations and monitor performance, but it simultaneously emphasizes top-down political dialogue (Output 1.1) and institutional capacity building for the African Space Agency (AfSA), which must be assessed for genuine co-creation and local power distribution, as advocated by shared stewardship governance.

[22] European Commission (2023) *Annex 20: Action Document for 'Africa – EU Space Partnership Programme' (multiannual plan)*, in *Commission Implementing Decision on the financing of the multiannual action plan in favour of Sub-Saharan Africa for 2023–2025*. Brussels: European Commission. https://international-partnerships.ec.europa.eu/document/download/dac72a53-16b1-45c3-8702-a64311e710e2_en?filename=C_2023_8225_F1_ANNEX_EN_V2_P1_3077849.PDF

The Africa-EU Space partnership programme is the policy instrument that articulates the collaboration between the AU and EU in the STI sector. The Action presents a Mission-Oriented framework funding EWS to address climate risk that must be scrutinized through the lens of place sensitivity (MOIP). The implementation of high-tech space solutions and business labs risks being "spatially blind" if African actors are treated as implementers rather than co-designers.

CHAPTER 3: LITERATURE REVIEW

3.1: Food Systems Transformation in the Global South and Mediterranean

The development of food-based just sustainable innovation ecosystems, particularly in the Global South and Mediterranean regions, is influenced by a variety of historical, economic, and social factors. This chapter explores the challenges and opportunities shaping food systems in these regions, reviewing academic and institutional literature across key themes such as food systems transformation, agri-tech, innovation governance, and justice in scaling sustainable practices.

This section reviews the existing literature on food systems transformation in the Global South and Mediterranean. It highlights the region-specific vulnerabilities and structural challenges such as climate stress, weak governance, and economic fragility, while also examining the emerging opportunities for equitable, sustainable innovation in these contexts.

3.1.1 - Mediterranean Region: Fragility, Biodiversity, and Regional Cooperation

The Mediterranean has long been recognized for its rich agricultural heritage, which has shaped trade dynamics and food systems over centuries. Its agri-food sector, while historically central to regional trade, has faced challenges from global economic shifts and crises, impacting competitiveness and export patterns. Research indicates that the economic crisis significantly affected the agri-food sector's resilience and competitiveness in key Mediterranean countries, highlighting the intricate links between economic conditions and food production systems (Garrido, 2020).

Following conversations with scholars like Abis & Demurtas(2023), they highlight that on a global level, the Mediterranean is the scene of numerous geopolitical tensions which are reflected, in part, like agriculture, a highly strategic but at the same time fragile sector. Considering that farming is essential for the life and the development of societies and peoples in this area. Mediterranean food security is threatened by several factors, with climate change at the top of the list, causing rising sea levels and temperatures across most of the region as well as over exploitation of natural resources. The southern Mediterranean is particularly affected, experiencing hotter and drier conditions with direct implications for ecosystems, agriculture, animals, and public health (IPCC, 2014). The region is most critically affected by global environmental changes, in particular by soil degradation and water shortages (Underwood et al. 2009). The increase in temperature is predicted to negatively affect agricultural yields and food supply regardless of other factors. By 2050, droughts could affect every second year on EU Mediterranean shores, with average rainfall projected to decline by 4% in the North and 27% in the South (Mombiela, 2010).

Interestingly, the Mediterranean is also a hotspot of agrobiodiversity and cultural knowledge. With the Mediterranean diet recognized as an Intangible Cultural Heritage of Humanity (UNESCO, 2013), the region continues to serve as a model for holistic food practices rooted in tradition, sustainability and biological diversity (Myers et al., 2000). Mindful that food systems and food security have a direct impact on the overall stability of the region and in the wake of the recent global crisis, Mediterranean countries are playing a key role at both the regional and global levels in terms of advancing collaboration among stakeholders and different agrifood-related sectors (Food and Agriculture Organization of the United Nations, 2023). Stakeholders are increasingly recognizing this potential. The 4th Global Conference of the One Planet Network's Sustainable Food Systems Programme (2023) emphasized the importance of cross-country and multi-sectoral cooperation to transform food systems in the region especially in light of the UN Food Systems Stocktaking Moment of July (2023).

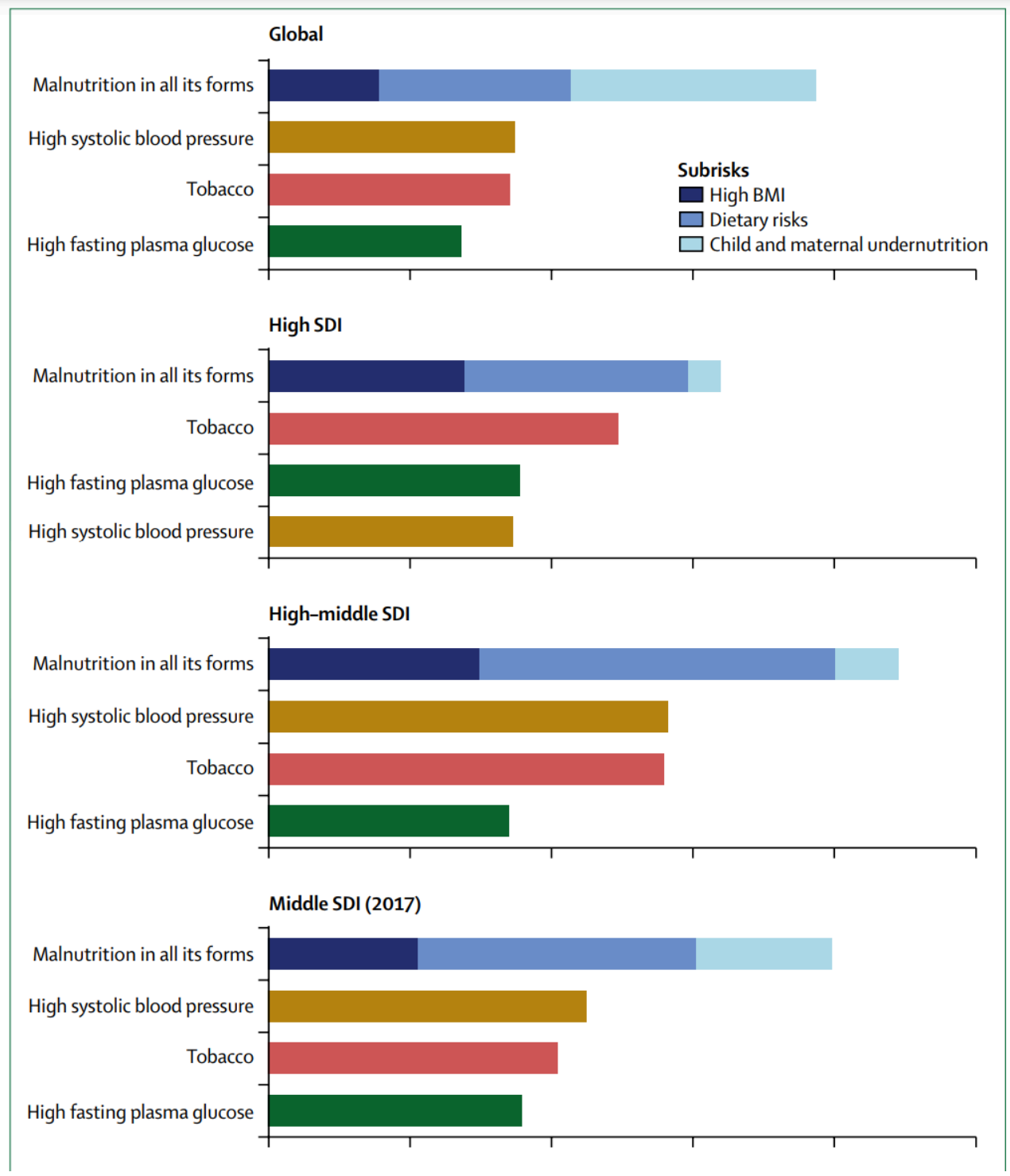
These dynamics present a critical opportunity for fostering Food-Based Just Sustainable Innovation Ecosystems (FJSIEs) that are grounded in cooperation, cultural heritage, and ecological resilience.

3.1.2 - Global South: Vulnerability Meets Innovation Potential:

The Global South encompassing Africa, Latin America, parts of Asia, and the Middle East, hosts some of the most ecologically diverse yet socio-economically vulnerable food systems in the world. Food security is characterized by regular access to a sufficient, safe, and nourishing food supply, which is integral to maintaining physical health and overall well-being (Ogwu et al. 2023a,b). These regions face recurring challenges such as food insecurity, poverty, weak infrastructure, and increasing climate vulnerability. Despite these difficulties, the Global South also provides fertile ground for transformative, locally grounded innovation in food systems.

Recent data shows that the region is still far off track to achieve Sustainable Development Goal (SDG) 2, Zero Hunger, with the global prevalence of undernourishment persisting at nearly the same level for three consecutive years after having risen sharply in the wake of the COVID-19 pandemic. In 2023 between 713 and 757 million people may have faced hunger – one out of 11 people in the world, and one out of every five in Africa. Hunger is still on the rise in Africa, but it has remained relatively unchanged in Asia, while notable progress has been made in the Latin American and Caribbean region. (FAO, IFAD, UNICEF, WFP, & WHO, 2024).

At the same time, the Global South is not merely a site of deficiency, it is also a site of opportunity. Community-based farming systems, cooperative enterprises, and decentralized innovation hubs are actively experimenting with context-specific solutions to food insecurity and ecological degradation. This reinforces the idea that transformation in these regions is possible but must be rooted in justice, participation, and ecological stewardship. Supporting FJSIEs in the Global South thus requires enabling these local innovations while addressing systemic injustices in food access, governance, and climate adaptation.


Global
Malnutrition in all its forms
High systolic blood pressure
Tobacco
High fasting plasma glucose
Subrisks
High BMI
Dietary risks
Child and maternal undernutrition
High SDI
Malnutrition in all its forms
Tobacco
High fasting plasma glucose
High systolic blood pressure
High–middle SDI
Malnutrition in all its forms
High systolic blood pressure
Tobacco
High fasting plasma glucose
Middle SDI (2017)
Malnutrition in all its forms
High systolic blood pressure
Tobacco
High fasting plasma glucose

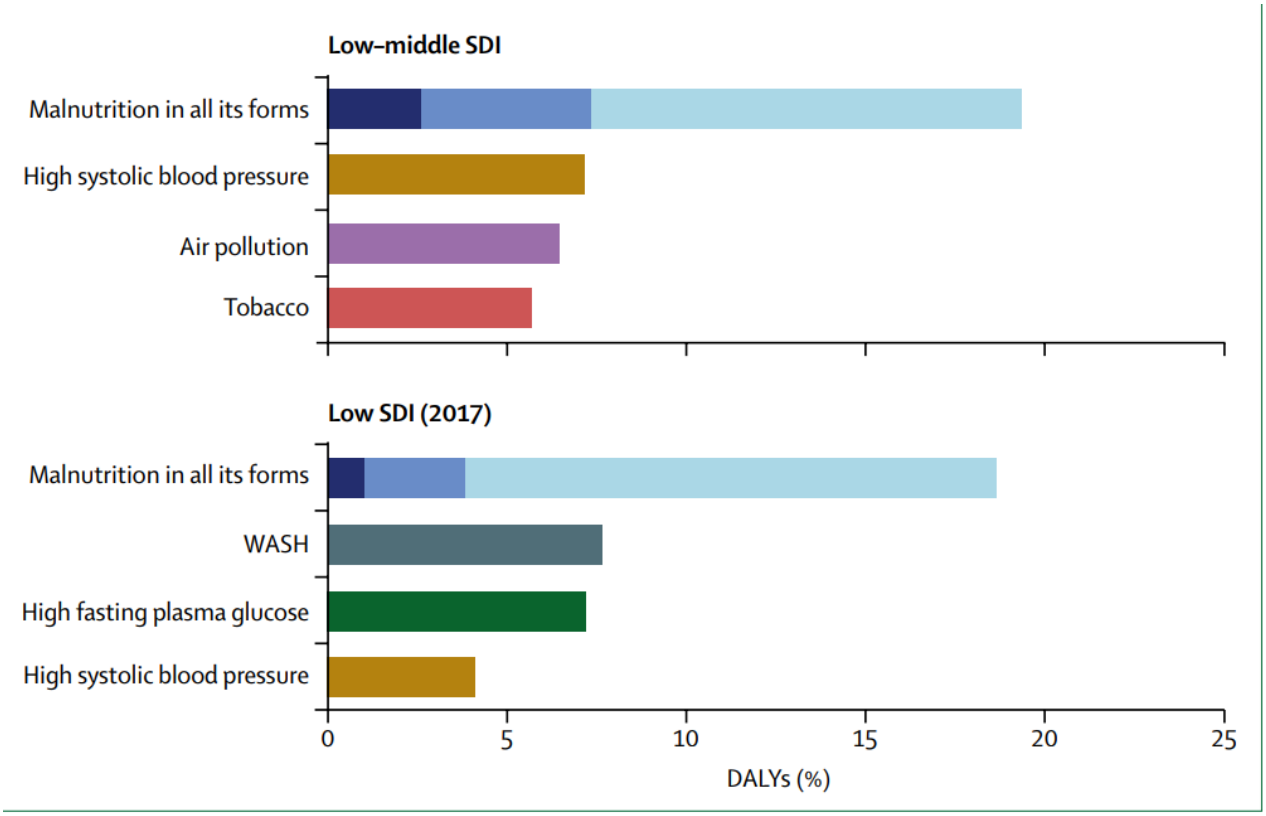


Figure 5: The Burden of malnutrition in all its forms. Source[23]

3.2 Grassroots vs. Top-Down Innovation Ecosystems

In the quest to build Food-Based Just Sustainable Innovation Ecosystems (FJSIEs), the type of innovation process whether grassroots or top-down goes a long way in shaping the outcomes. Grassroots innovations can be described as home-grown inventions or novelties created by everyday people and used to address challenges that directly or indirectly influence their lives. Formally, we define GIs as "indigenous solutions, created by actors in civil society and supported by limited resources, which aim to address local situations and often achieve sustainable

[23] Swinburn, B. A., Kraak, V. I., Allender, S., Atkins, V. J., Baker, P. I., Bogard, J. R., Brinsden, H., Calvillo, A., De Schutter, O., Devarajan, R., Ezzati, M., Friel, S., Goenka, S., Hammond, R. A., Hastings, G., Hawkes, C., Herrero, M., Hovmand, P. S., Howden, M., … Dietz, W. H. (2019). *The global syndemic of obesity, undernutrition, and climate change: The Lancet Commission report. The Lancet, 393*(10173), 791–846. https://doi.org/10.1016/S0140-6736(18)32822-8

development[24]. These innovations refer to bottom-up, community-led solutions to social, economic, and environmental problems often context - specific to the community where it originates. They draw on local knowledge, traditions, and networks, and are often more inclusive and adaptable than externally imposed solutions. For instance;

Farmer-led seed systems have a critical contribution in responding to current global ecological and social threats enhancing agricultural biodiversity, strengthening food security and sovereignty, increasing dietary diversity, and recognising and honouring indigenous knowledge and the key roles of women(Greenberg, Pelser, & Ranqhai, 2021). Indigenous agroecology schools that fuse ancestral farming methods with sustainability principles (Altieri & Nicholls, 2017). Moving beyond adaptation the scholars point to the potentials of traditional farming systems to mitigate climate change. Another prominent example is La Junquera Regenerative Farm in Spain, which operates as a learning ecosystem involving local farmers, international researchers, students, and EU-level networks. Through its Regeneration Academy and partnerships with academic institutions, La Junquera fosters bottom-up knowledge while aligning with broader European regenerative agriculture goals, illustrating effective multilevel coordination[25].

Grassroots innovations tend to promote equity, sustainability, and long-term resilience because they are rooted in the lived realities of the communities they serve. However, they often face structural constraints such as limited funding, weak policy support, and poor access to digital infrastructure.

Top-Down Innovation: State and International Interventions:

In contrast, A top-down approach involves a hierarchical decision-making process where senior management sets goals and objectives and lower-level employees execute[26]. Top-down innovations are typically led by governments, international organizations, and large-scale private sector actors. These approaches are usually well-funded, data-driven, and institutionally formalized. They often target productivity, efficiency, and scalability. One prominent example is the Common Agricultural Policy (CAP) which unintentionally limits grassroots innovation in the agricultural ecosystem by prioritizing larger farms and conventional practices, potentially hindering smaller, innovative farms and agroecological approaches(Bianchi et al., 2013). Pe'er et al. (2017) present a preliminary summary of the CAP Fitness-Check assessment saying that while CAP has contributed

[24] London School of Economics and Political Science, Master of Public Administration candidates, and UNDP Accelerator Labs, *Grassroots Innovation: An Inclusive Path to Development* (Draft report, UNDP, August 9, 2021), accessed July 27, 2025, https://www.undp.org/sites/g/files/zskgke326/files/migration/acceleratorlabs/Grassroots-Innovation---An-Inclusive-Path-to-Development.pdf.

[25] La Junquera Regenerative Farm Spain. https://www.lajunquera.com/

[26] Velosio, "Top-down or Bottom-up Innovation? A Hybrid Model Is the Key," *Velosio Blog*, May 12, 2023, accessed August 8, 2025, https://www.velosio.com/blog/top-or-bottom-a-hybrid-model-is-key-to-business-innovation/

to modernization and rural development, it has also faced criticism for disproportionately benefiting large-scale farms, reinforcing monocultures, and neglecting agroecological diversity[27].

In many cases, these top-down interventions risk overlooking local knowledge systems, context-specific needs, and participatory governance structures. Furthermore, technological solutions imposed from above may not align with local capabilities or priorities, reducing uptake and long-term sustainability (Leach et al., 2020).

Towards Hybrid Ecosystems

There is clearly a tension between the two approaches above as the grassroot approach emphasizes inclusivity and justice while top-down strategies offer reach and resource intensity. Bridging these requires a "Hybrid model" where both approaches meet each other in the middle to improve and enhance their scalability in all ramifications. These approaches seek to combine local participation with institutional support, enabling both context sensitivity and scalability. Such synthesis is central to FJSIEs, which seek to ensure that innovation is not only efficient but also fair and contextually appropriate.

In the upcoming chapters, this thesis will explore how these dynamics unfold in real-world initiatives such as the OKOBI cooperative model in Nigeria and other selected case studies. These cases offer critical insights into the convergence and divergence of grassroots and top-down innovation pathways. Showing that food system innovation ecosystems can emerge from both grassroots movements and top-down institutional strategies. Understanding the differences and potential synergies between these models is essential for the development of Food-Based Just Sustainable Innovation Ecosystems (FJSIEs).

3.3 Governance Models and Policy Frameworks for FJSIEs

To achieve a truly just sustainable innovation ecosystem, effective governance is central for development. Governance here refers to the structures, rules, and processes that shape decision-making, power distribution, accountability, and coordination in food systems (Pereira et al., 2020). The UN Food Systems Summit Community (2021) emphasizes the need for inclusive governance in transforming food systems which they defined as " Food Systems Governance is a tailored process by which societies negotiate, implement, and evaluate collective priorities of food systems transformation while building shared understanding of synergies and trade-offs among diverse sectors, scales, and stakeholders". This section reviews literature on governance and policy

[27] Guy Pe'er et al., *Is the CAP Fit for Purpose? An Evidence-Based, Rapid Fitness-Check Assessment – Preliminary Summary of Key Outcomes. Leipzig* (Leipzig: BirdLife Europe, European Environmental Bureau, NABU, iDiv, UFZ, and University of Göttingen, June 2017).

mechanisms that influence how innovation, justice, and sustainability are embedded in food systems particularly across the Global South and Mediterranean regions.

1. Multilevel Governance and Polycentric Approaches

FJSIEs inherently involve multiple actors like; farmers, governments, NGOs, private sector players, and researchers operating at different levels either local, national, regional or global. Similar to the Quintuple helix model mentioned in chapter 2, this context is very similar to polycentric governance; the interaction of multiple centers of decision-making now emerges as a promising model. It allows for decentralization, local adaptation, and cross-level learning while maintaining coherence (Ostrom, 2010). Polycentric systems tend to enhance innovation, learning, adaptation, trustworthiness, levels of cooperation of participants, and the achievement of more effective, equitable, and sustainable outcomes at multiple scales, (Toonen, 2010).

For example, food policy councils, community seed networks, and farmer cooperatives often operate locally but interact with broader institutional frameworks. This approach is more dynamic and inclusive than linear, centralized governance and has been linked with stronger food sovereignty and adaptive capacity (IPES-Food, 2021). A clear illustration is the case study of SACDEP–Kenya functions across counties and even into Tanzania, facilitating decentralized farmer-led knowledge sharing while integrating with donor organizations and national agricultural policy actors. This multilevel approach has enabled over 450,000 rural families to benefit from sustainable agriculture initiatives.

2. Commons-Based Governance:

Commons-based governance highlights the collective stewardship and shared ownership of food, land, water, and natural resources. It aligns closely with indigenous practices and local food sovereignty movements. As observed in the two main case studies of One Kindred One Business Initiative(OKOBI) initiative in Nigeria, which illustrates a modern reinterpretation of the commons governance, rooted in traditional Igbo “Umunna” systems where businesses are co-owned, co-managed, and co-governed by kindreds (community,family, agegrade, friend etc units). In the Mediterranean, **Terra di Resilienza** operates as a social cooperative where collective decision-making governs everything from seed distribution to harvest (e.g., Monte Frumentario model). Collective ownership and decision-making enhance accountability, cultural preservation, and innovation that respects ecological boundaries. These case studies are explored further in Chapter 4 .

Legal frameworks and policies that recognize and support the **"commons"** are increasingly seen as essential for just innovation ecosystems by scholars like; (Carayannis & Campbell, 2010; Bollier & Helfrich, 2012; Iaione, 2015[28]).

3. Policy Coherence for Justice and Sustainability:

To achieve a just and sustainable system, the role of policy should not be undermined as it provides guidance, consistency, efficiency and accountability. However, despite increased attention to food systems, many countries still operate with fragmented policies which will affect agriculture, health, trade, and the environment as they often function in isolation. This lack of policy coherence undermines holistic and transformative food innovation.

Studies suggest that effective governance for FJSIEs requires policy integration across sectors and levels, as well as alignment with international frameworks such as the Right to Food, Agroecology principles, and the UN Sustainable Development Goals (SDGs) (De Schutter, 2014; Sage, 2014). Terra di Resilienza agroecological practices align with the EU's Common Agricultural Policy (CAP) indicators for biodiversity, pesticide reduction, and youth inclusion. Its recognition by the EU CAP Network demonstrates how coherent policy alignment can support agroecological innovation. To achieve this, a transformative governance must be made to include historically marginalized actors such as smallholder farmers, women, youth, and Indigenous Peoples/ Communities not just as beneficiaries, but as co-creators of innovation. Participatory mechanisms (e.g., multi-stakeholder platforms, citizen juries, community innovation labs) help ensure legitimacy and relevance.

When communities are empowered to lead and shape decision-making, innovation systems are more just and sustainable (Leach et al., 2020). However, participation must be **meaningful** not symbolic and supported by access to information, capacity building, and resources.

4. State-Led vs. Community-Led Policy Models:

Ultimately, tensions often arise between centralized state-led models and decentralized community-driven governance. While the former can offer resources and scale, they may suppress local knowledge and context. The latter promotes justice and flexibility but may lack influence or funding.

FJSIEs demand **hybrid governance**, which is not just about who rules, but **how**, **with whom**, and **to what end**.Where states create enabling environments (legal recognition, financial support, data transparency), and communities drive innovation based on local values and needs. For example,

[28] Christian Iaione, *Governing the Urban Commons*, *Italian Journal of Public Law* 7, no. 1 (2015): 170–, paper presented at the Second Thematic Conference of the IASC on "Design and Dynamics of Institutions for Collective Action: A Tribute to Prof. Elinor Ostrom," 29 November–1 December 2012, https://doi.org/10.2139/ssrn.2589640

the CAP (Common Agricultural Policy) has been criticized for limiting agroecological transitions, while emerging reforms now emphasize environmental and social performance (Pe'er et al., 2017).

5. The EU - AU Innovation Agenda - Towards Equitable Partnerships:

There has been a remarkable and actionable realization of the need to engage further in equitable partnership between the European Union and Africa Union through structured research and innovation cooperation. Discussed in 2.5, the ambition is targeted at creating a shared ecosystem in research and innovation that supports the SDG goals across the two continents. In principle, the AU–EU Innovation Agenda reflects a recognition that global challenges such as food security, climate adaptation, and just transitions cannot be solved unilaterally. The Horizon Europe mission of improving soil health and food by restoring 75% of soils by 2030 is unique to the EU cases however, this practice is also prevalent in the Global South cases but the overlap is that it is often EU - focused.

Drawing inspiration from *The Lancet Global Health* (2024), equitable partnerships require end-to-end systems; the EU - AU collaboration is not only a joint research rather it also poses as a local regulatory framework, building capacity, financing instruments and giving African leadership a voice in decision making. This agenda offers opportunities in the food systems by providing suitable frameworks like OKOBI to connect with EU-funded projects under Horizon Europe Cluster 6.

Despite the promises of transcontinental cooperation the AU - EU innovation agenda holds, for it to significantly contribute to the Food- Based Just Sustainable Innovation Ecosystem(FJSIEs) the partnership must prioritize justice and reciprocity. This goes beyond funding African participation in European projects but also recognizing African-led models of innovation such as cooperative entrepreneurship in OKOBI and agroecological stewardship as legitimate pathways of transformation in their own right.

3.4 Emerging Agri-Tech Services and Digital Innovation Solutions

Digital and technological innovations definitely play a huge role in transforming food systems globally. However, their impact depends on who accesses them, how they're used, and whether they reinforce or reduce inequalities. The core of this work is to ensure that agri-tech must go beyond productivity to support justice, participation, and sustainability. Across the Global South and Mediterranean regions, new tools such as mobile advisory platforms, climate-smart agriculture, blockchain traceability, and digital extension services are emerging. These offer the potential to support smallholders, reduce food waste, and strengthen food system resilience (FAO,

2022). Unfortunately, Women, Indigenous Peoples, and rural youth often face further digital exclusion (UNCTAD, 2020).

The integration of agri-tech and digital innovations into food systems offers transformative potential for building Food-Based Just Sustainable Innovation Ecosystems (FJSIEs). Digital tools can bridge the gap between smallholder farmers and markets, enhance resource efficiency, and improve resilience to climate change (Trendov et al., 2019). But in order to achieve this, literacy plays a huge rule. Although literacy is one of the high priorities of the SDGs, the United Nations Educational, Scientific and Cultural Organization Institute for Statistics (UIS) (2017) data show that 750 million adults (two-thirds of whom are women) still lack basic reading and writing skills. Of the illiterate population, 13.6 percent were between the ages of 15 and 24 years (UIS, 2017).

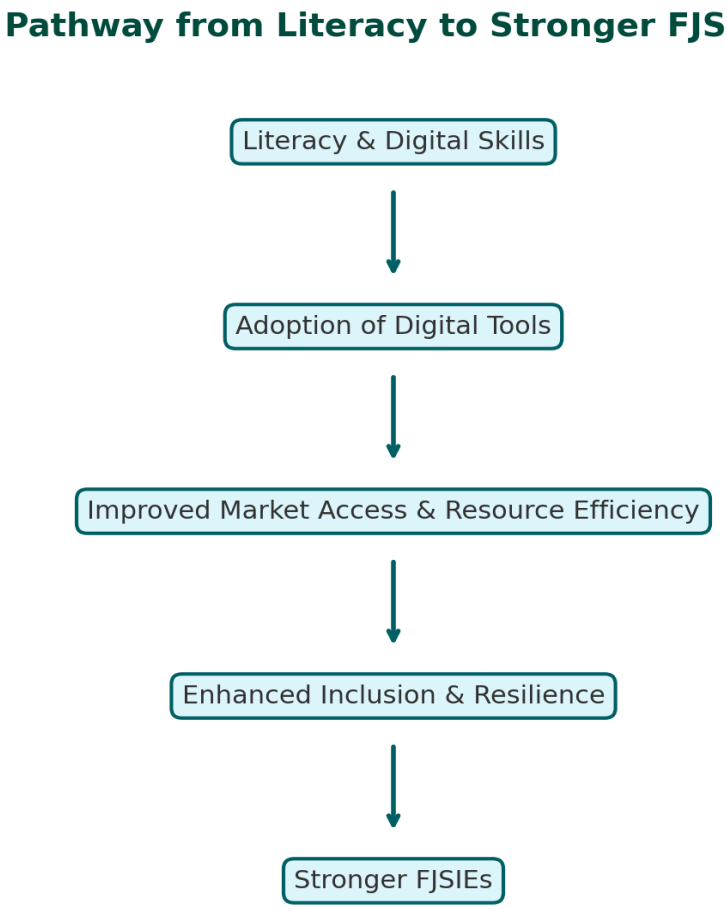


Figure 7: FJSIEs pathways

Trendov et al (2019) discusses that digital technologies are fundamentally changing the way people live, work, learn and socialize everywhere. In Europe, The European Commission is advancing to implement the digital farming revolution, especially for small and medium-sized farms (Giua et al., 2022). Innovation and technology is also a priority of the joint AU-EU Innovation Agenda. The adoption of tech in vulnerable areas has helped to improve all areas of their lives, including access to information, knowledge management, networking, social services and economic opportunities. The FAO (2022) talks about how agricultural automation can raise productivity, build resilience, improve product quality and resource-use efficiency, reduce human drudgery and labour shortages, enhance environmental sustainability. This contribute to achieving the Sustainable Development Goals (SDGs) by 2030, not only SDG 1 (No Poverty) and SDG 2 (Zero Hunger) but also SDG 5 (Gender Equality), SDG 8 (Decent Work and Economic Growth) and SDG 10 (Reduced Inequalities), SDG 7 (Affordable and Clean Energy), SDG 12 (Responsible Consumption and Production), SDG 13 (Climate Action), SDG 14 (Life below Water) and SDG 15 (Life on Land) all contributing to enhancing environmental sustainability.

The process of technological change in agricultural production is not new. History shows how humankind has constantly striven to reduce the toil of farming by developing ingenious tools and harnessing the power of fire, wind, water and animals. By 4000 BCE, Mesopotamian farmers were using ox-drawn ploughs[29],and water-powered mills emerged in China around 1000 BCE[30]. Currently, these technologies range from agriculture tools and climate-smart advisory platforms to digital marketplaces and mobile-based financial services. These services democratize access to real-time agricultural knowledge, enabling farmers to make informed decisions on planting cycles, pest control, and water management etc.

Agricultural, market, and weather information is critical to agricultural productivity, especially for reducing uncertainty and risk associated with extreme weather events and disease (Baumüller, 2013). The use of Digital advisory platforms such as SMS-based weather alerts, soil health recommendations, and crop disease detection apps are increasingly deployed to support smallholder farmers (FAO, 2022). These services democratize access to real-time agricultural knowledge, enabling farmers to make informed decisions of agri-based services. Most importantly the use of platforms for sales can help link farmers directly to buyers which can help reduce dependency on exploitative intermediaries and ensure fairer prices, thereby improving the economy and empowering the farmers. Digital marketplaces like *Twiga Foods* in Kenya and *AgroMarketplace* in West Africa exemplify how technology can shorten value chains while increasing transparency (Krell et al., 2021). Agri-tech companies have a key role in the implementation of food security and agriculture productivity. In recent years various agri-tech companies have been created in the MENA region to address the challenges of food scarcity and sustainability (Capone et al., 2021).

[29] Mazoyer, M. & Roudart, L. 2006. *A history of world agriculture: From the Neolithic Age to the current crisis*. New York, NYU Press.
[30] Pingali, P. 2007. Chapter 54 Agricultural mechanization: Adoption patterns and economic impact. In: R. Evenson & P. Pingali, eds. *Handbook of agricultural economics*, pp. 2779–2805. Amsterdam, Elsevier. https://doi.org/10.1016/S1574-0072(06)03054-4

Inclusion of digital technologies also helps to improve financial transactions for instance; Mobile banking and fintech solutions facilitate access to credit, savings, and insurance for smallholder farmers, particularly women and marginalized groups. Jack & Suri(2014) identifies services like *M-Pesa* in East Africa that have been instrumental in improving financial inclusion, enabling investments in farm productivity. Other technologies like Internet of Things (IoT), blockchain, satellite imagery and drones etc.

While digital solutions can enhance inclusivity and sustainability, challenges remain around the digital divide, data ownership, affordability, and gender inequities. The FAO (2022) argues that Automation can also create inequalities if it remains out of reach for some, especially small-scale and female agricultural producers. If it is not well managed, it can also have negative environmental consequences by contributing to, for example, monoculture. And without deliberate governance mechanisms, digital innovations risk reinforcing existing inequalities (Díaz et al., 2021). For digital agri-tech to contribute to FJSIEs, solutions must be co-designed with farmers, integrated into participatory governance structures, and supported by policy frameworks that protect data rights and ensure equitable access (Barrett et al., 2020).

3.5 Success Factors and Barriers in FJSIEs

To achieve a Food-Based Just Sustainable Innovation Ecosystems (FJSIEs), the performance and sustainability are influenced by a combination of enabling factors and systemic barriers. Understanding these dynamics is crucial for designing governance and policy frameworks that help foster equitable, just, resilient, and innovative food systems across both the Global South and Mediterranean regions.

3.5.1 Success Factors

1. **Participatory and Inclusive Governance**
   Participatory structures where farmers, consumers, civil society, and policymakers co-design solutions enhance legitimacy, equity, and adoption rates (Leach et al., 2020; IPES-Food, 2021). This is also similar to Iaione's(2022) commons and shared stewardship idea. Initiatives like community seed banks and cooperative societies in particular thrive when decision-making is transparent and locally embedded. Locally driven initiatives rooted in cultural traditions and indigenous knowledge systems are more likely to sustain community engagement (Altieri & Nicholls, 2017). Which leads to strong local ownership and cultural alignment; for example governance models anchored in traditional institutions, such as the Igbo *Umunna* system in Nigeria, ensure trust and continuity beyond donor cycles (Ijere, 1992).

2. **Supportive Policy and Legal Frameworks**

National and regional policies that recognize and protect commons-based resources, incentivize agroecology, and integrate justice into food policies are critical enablers (De Schutter, 2014; Sage, 2014). Legal recognition of cooperatives and land tenure security further strengthens innovation ecosystems. For instance, the Italian system has a long tradition of supporting **social cooperatives**, recognized under **Law 381/1991**, which provides a legal framework for cooperatives promoting social inclusion, community services, and sustainable practices (Borzaga & Defourny, 2001). Under the **Nigerian Cooperative Societies Act (2004)**, cooperatives are legally recognized as registered entities, giving them the ability to own property, enter contracts, and access credit. For instance in Imo State Nigeria, registered cooperative business benefits from tax exemption (Interview with Cooperative head.). This benefits the OKOBI businesses.

Within the EU, the **Common Agricultural Policy (CAP)** reforms include incentives for young farmers and those investing in sustainable land management. Terra di Resilienza benefits from EU-level recognition of agroecological innovation, enabling young farmers and researchers to commit to long-term regenerative farming practices. Another notable policy within the EU is the Farm to Fork strategy (F2F) aiming to create a fair, healthy and environmentally friendly food system,which is part of the European Green Deal launched by the European Commission (2020).The policy set target to achieve a 50% reduction in pesticide use, a 20% reduction in fertilizer use, a 50% cut in antimicrobials used in farming and aquaculture, and at least 25% of farmland under organic cultivation. This policy moves a step further from other agricultural policies by not only addressing the issue of production; it runs across distribution, consumption, and waste. Its aim is to align food policy with climate neutrality, biodiversity protection, and human health objectives .

From the perspective of **mission-oriented innovation policy**, Farm to Fork demonstrates strengths as it articulates a bold societal mission that mobilizes diverse policy instruments and research agendas. With the aid of the Horizon Europe Cluster 6 funding mechanism the actualization of a sustainable afri-food system is achievable.

3. **Access to Finance and Resources**

The role of finance definitely cannot be underestimated. Financial inclusion through microfinance, cooperative banking, and impact investment supports scaling and resilience. Platforms like M-Pesa in Kenya demonstrate how mobile banking can empower smallholders to invest in productivity (Jack & Suri, 2014). Same goes to capacity building and knowledge sharing; Farmer-to-farmer exchanges, regenerative agriculture schools, and innovation hubs enable horizontal learning and context-specific adaptation (Hivos, 2022;

FAO, 2022). This strengthens both technical skills and social capital. This role of capacity building is very important as it not just keeps the business going, it encourages and empowers the people to do better and handle situations. In interactions between local communities and international agencies, capacity building plays a huge role in ensuring continuity after the foreign agents must have left. Also, digital advisory services, precision farming tools, and online marketplaces enhance efficiency, reduce transaction costs, and expand market access when tailored to local literacy and affordability levels (Trendov et al., 2019; Barrett et al., 2020).

Within the EU and Mediterranean context, the Horizon Europe Cluster 6 which focuses on; "Food, Bioeconomy, Natural Resources, Agriculture, and Environment"; serves as a core vehicle for funding research and innovation within sustainable food systems, regenerative agriculture, biodiversity restoration, and rural development (European Commission, 2025). With a budget of over **9 billion euros** for 2021- 2027, cluster 6 provides multi annual work programmes with periodic thematic calls for projects with universities, research centers, civil society groups, and farms across EU member states and, increasingly, with international partners. Mediterranean initiatives like La Junquera and Terra di Resilienza can access these funds by aligning their regenerative practices with EU priorities such as carbon farming, biodiversity conservation, and rural resilience. Unfortunately access is more limited to grassroot initiatives in the Global South. For this reason, a **hybrid model** is necessary, while Cluster 6 can provide enabling resources and legitimacy, grassroots Food-Based Just Sustainable Innovation Ecosystems (FJSIEs) ensure that innovation remains grounded in justice, stewardship, and cultural context. Thereby, escaping the risk of spatial blindness as Uyarra et al. (2025) described.

3.5.2 Barriers

1. **Policy Fragmentation and Misalignment**
   Policy fragmentation and misalignment pose significant challenges to creating holistic agri-food systems.As Pe'er et al., (2017) discusses that disconnected policies between agriculture, trade, environment, and health create conflicting incentives that undermine holistic approaches for instance; CAP is still criticized for favouring large-scale farms and limiting agroecological transition. There is a need for policies to be more aligned in order to better empower and support the people. Though grassroots initiatives often operate with minimal resources, limiting scalability and innovation, these funding constraints can lead to donor dependency. Heavy reliance on external donor funding can undermine autonomy (Ostrom, 2010). This raises questions about power dynamics between local communities and international funders. Towards the tech side, limited internet penetration, high costs of devices, and low digital literacy especially among women exclude vulnerable groups from

benefiting fully from agri-tech innovations (UIS, 2017; FAO, 2022). Despite platforms like Twiga or SACDEP , many farmers in Sub-Saharan Africa still lack internet access. Also, smallholders face challenges in accessing fair markets due to poor infrastructure, lack of storage facilities, and dominance of exploitative intermediaries (Krell et al., 2021).

The Farm to Fork strategy, despite its positive ambition to better agri-food system, risks being spatially blind as it applies a uniform policy to diverse agricultural regions and social contexts. This may exacerbate inequalities within regions and undermine social and geographical contexts. As Uyarra et al. (2025) argue, mission-oriented strategies require place-sensitive mechanisms of problem framing, inclusive implementation, and multi-scalar governance. Structural barriers, including discriminatory land rights and cultural norms, restrict women's and marginalized groups' participation in governance and entrepreneurship (FAO, 2018). Extreme weather events, soil degradation, and biodiversity loss disproportionately affect communities with limited adaptive capacity, threatening the stability of local innovation ecosystems (Altieri & Nicholls, 2017).

3.6 Gaps in Current Research

Despite the growing body of literature on the transformation of food systems, sustainability transitions, and innovation ecosystems, significant gaps remain in understanding and operationalizing Food-Based Just Sustainable Innovation Ecosystems (FJSIEs).

1. Limited Integration of Justice in Sustainability, and Innovation

Drawing from Leach et al.(2020) and HLPE (2019), while studies on agricultural innovation and sustainability are abundant, justice dimensions,equity, inclusion, and power redistribution are often treated as secondary or explicit. Most frameworks tend to prioritize efficiency, productivity, or ecological resilience without adequately addressing how marginalized actors (women, youth, Indigenous communities) are included in decision-making or benefit distribution.

2. Fragmentation Across Scales and Sectors

Research often isolates grassroots innovations from top-down interventions, without exploring hybrid models that integrate both approaches. This creates blind spots in understanding how local knowledge can be scaled, or how institutional frameworks can remain flexible enough to support context-specific practices (Ostrom, 2010; Scoones & Stirling, 2020). There is a need to shift away from the "One size fits all" ideology and try to meet each other in the middle. Similarly, sectoral silos persist studies on agriculture, environment, trade, and health rarely interact, resulting in fragmented insights. The core of sustainability should be "*leaving no one behind"*. Hence the need for everyone to unite and put all hands on deck in order to save the planet and better the lives of its inhabitants. A clear pathway to achieving this is adopting the Hybrid model.

3. Lack of Longitudinal and Comparative Case Studies

Most available studies are project-based or short-term evaluations, which fail to capture the long-term resilience and adaptability of innovation ecosystems. There is also a scarcity of comparative analyses across regions of the Global South and Mediterranean. For example, while European literature emphasizes CAP reforms and agroecological transitions, African and Latin American scholarship often highlights grassroots and commons-based approaches. Rarely are these perspectives analyzed together to draw broader lessons.

4. Weak Policy-Practice Linkages

Although policy coherence and governance frameworks are widely discussed, there is limited research and study on how policies actually translate into practice at the community and grass-root level. For instance, reforms promoting agroecology or cooperatives movements are often documented at the legislative stage but rarely studied in terms of their actual impact and uptake by smallholders (De Schutter, 2014; Pe'er et al., 2017). For example "As highlighted by a practitioner working with a UN food agency, global programs often design ambitious policies but lack mechanisms to ensure uptake by local cooperatives and smallholders (Expert interview, 2025)."

5. Marginalization of Indigenous and Local Knowledge

While indigenous practices are increasingly acknowledged in sustainability debates and current studies, they remain underrepresented in mainstream innovation ecosystem literature. Local governance traditions such as the Umunna system of the Igbo land in Nigeria or communal land stewardship models in Latin America are rarely analyzed as systemic enablers of innovation. This leaves a gap in theorizing innovation ecosystems beyond Western-centric frameworks (Altieri & Nicholls, 2017; Ijere, 1992).

Addressing these gaps requires interdisciplinary, multi-scalar, and justice-centered research that bridges the divide between grassroots and institutional innovations. It also helps in rethinking what innovation truly is for different groups i.e. human betterment and empowerment or technological transformation?. It also calls for comparative longitudinal studies that can identify transferable lessons while respecting local specificities. These gaps justify the need for empirical exploration through case studies, which this thesis provides in the following chapter.

CHAPTER 4: RESEARCH METHODOLOGY AND CASE STUDIES

4.1 Research Philosophy and Approach

This chapter outlines the methodological approach adopted to examine Food-Based Just Sustainable Innovation Ecosystems (FJSIEs) within the Global South and Mediterranean regions. It talks about the research philosophy, case study design, selection criteria, data collection techniques, analysis strategy, and ethical considerations.

This study adopts a qualitative approach rooted in a constructivist epistemology. It seeks to understand how justice, innovation, and sustainability manifest in real-life food systems through the lived experiences of groups and communities. Recognizing that food systems are complex adaptive systems influenced by socio-political, ecological, and cultural factors, a qualitative lens allows for an in-depth, context-sensitive exploration of these dynamics.

A comparative case study methodology was selected to explore the design, governance, impact, and scalability of selected cases. This approach enables the researcher to identify cross-case patterns while preserving the uniqueness of each context. The selected case studies focus mostly on grassroots initiatives across key regions each in the Global South and the Mediterranean. The comparative approach allows for cross-case learning, illustrating how local initiatives interpret and operationalize broader frameworks such as the AU–EU Innovation Agenda and Mission-Oriented Innovation Policy (MOIP).

4.2 Case Selection Rationale

The following criteria guided case selection: (1)The initiative must be located within the Global South or Mediterranean region. (2)It must be community/group-led or heavily community-involved.(3) It must demonstrate key principles of justice, sustainability, and innovation.(4) It must have publicly available documentation or primary data through interviews.

The two selected cases are Terra di Resilienza (Italy), and One Kindred One Business Initiative (OKOBI, Nigeria). The two cases were selected to enhance analytical depth and theoretical coherence. These cases offer diverse insights into cooperative / group governance, regenerative practice, agroecological practices, and community-led entrepreneurship. The case studies also aligns with the AU–EU Innovation Agenda's Green Transition objective, which emphasizes the joint transformation of African and European food systems through knowledge exchange, inclusivity, and sustainability.

While the initial study included two additional cases SACDEP (Kenya) and La Junquera Regenerative Farm (Spain) both of which exemplify grassroots engagement and justice-oriented innovation, the final selection of OKOBI (Nigeria) and Terra di Resilienza (Italy) offered a greater analytical homogeneity. These two cases share more comparable structures of cooperative governance, local ownership, and community-led innovation, making them better suited for a focused comparative exploration. However, the initial additional cases were mentioned in few places in the thesis as further examples on engagements in the Global South and Mediterranean.

4.3 Data Collection and Analysis

The data collection is a combination of policy document analysis and semi-structured interviews. The document analysis involved a systematic review of policy papers(e.g., AU Agenda 2063, STISA-2024, and the AU–EU Innovation Agenda), program reports, NGO documentation, and academic literature produced by FAO, WFP, IFAD, the EU CAP framework,AU-EU Innovation Agenda 2063 and relevant national agencies. These documents provided the institutional, legal, and policy context against which the case studies could be interpreted. My knowledge from university lessons, personal involvement in one of the selected cases (OKOBI), and drive to promote sustainable and safe food systems as well as grassroot empowerment also influenced this research.

In addition, three semi-structured interviews were conducted online to deepen the empirical base. One interview involved an international agency professional from the United Nations system (WFP) which offered a top-down insight on food system innovation. The other two were conducted with youth leaders from the OKOBI multi-purpose cooperative. These interviews offered insights into both top-down (international) and bottom-up (community) perspectives, allowing for a richer triangulation of evidence. Direct interviews with Terra di Resilienza actors were limited due to access constraints, so this case relied primarily on secondary materials such as project reports, cooperative publications, and local development records

The qualitative data were analyzed thematically to identify patterns across the selected case studies. The analysis focused on four interrelated dimensions: first, the governance and innovation models underpinning each initiative, exploring how decision-making structures and innovation processes are organized; second, the social and environmental impacts, including issues of inclusion, equity, and ecological outcomes; third, the longevity and scalability of the initiatives, assessing whether they demonstrate resilience over time and potential for replication or expansion; and finally, the balance between local and external ownership, examining the extent to which control and benefits are rooted in the communities versus driven by outside actors. Together, these dimensions provided a structured lens to interpret how Food-Based Just Sustainable Innovation Ecosystems (FJSIEs) operate and the conditions that shape their effectiveness.

Policy Analysis: The Role of the Common Agricultural Policy (CAP) and The AU-EU Innovation Agenda:

In addition to qualitative data and case studies, this research draws comparative insights from the European Union's Common Agricultural Policy (CAP). The CAP offers a structured and measurable policy framework for food system governance, and serves as a conceptual benchmark to analyze and operationalize the principles of Just Sustainable Innovation Ecosystems (FJSIEs) within a top-down, policy-driven context.

While the primary focus of this thesis is on the Global South and Mediterranean regions, incorporating the CAP allows for a cross-regional policy comparison. This comparison is particularly valuable in identifying how European frameworks support or constrain innovation, and how such structured systems can offer mutual learning opportunities for policymakers and practitioners in the Global South. Conversely, grassroots models from the Global South may reveal the limitations or gaps in externally imposed policy frameworks like the CAP.

Specifically, the CAP performance indicators are employed to evaluate the selected case studies across the three thematic pillars that frame this thesis: sustainability, justice, and innovation. In relation to sustainability, the analysis draws on economic, environmental, and social indicators, including R.12–R.24PR, R.9PR, R.16, R.26, R.29PR, and R.32, which collectively capture outcomes ranging from resource efficiency to rural vitality and environmental protection. Justice and equity are assessed through indicators such as R.6PR, R.7PR, R.36PR, and R.41PR, focusing on the distribution of benefits, renewal, and support for women and disadvantaged groups. Finally, the dimension of innovation ecosystems is examined using indicators R.1PR, R.2, R.3, R.10PR, R.11, and R.28, which track knowledge exchange, advisory services, digitalization, and collaborative innovation processes.

The AU-EU Innovation Agenda's four objectives and Green Transition priority, allows the researcher to assess convergence and divergence between local realities and policy ambitions. Taken together, these indicators offer a structured and comparable framework to interpret the performance and transformative potential of the case studies within the broader context of EU agricultural and rural policy. Ultimately, the inclusion of CAP in this thesis enriches the comparative analysis and allows for evidence-based policy reflection that bridges the local and global, the grassroots and institutional, and the Global South and European contexts.

4.4 Ethical Considerations, Limitations, and Validity

Ethical integrity guided all stages of this research. Interviews were conducted with the informed consent of participants, who were fully briefed on the purpose of the study and their right to anonymity and withdrawal at any stage. Cultural sensitivities and potential power imbalances were

carefully respected, particularly when engaging with community leaders and youth participants in cooperative settings.

Several limitations must be acknowledged. Access to some interviewees especially in non-English speaking regions was constrained, and in certain cases, no response was received despite repeated contact. The availability of secondary data also varied across the selected case studies, which may have influenced the depth and richness of comparative analysis. The two cases, while promising, may not capture grassroots dynamics of justice and innovation in policy frameworks like the AU-EU agenda and the CAP. Consequently, the findings should be interpreted as context-specific rather than universally generalizable.

Nonetheless, steps were taken to enhance the validity and reliability of the results. Data triangulation was applied by combining multiple sources, including interviews, policy documents, and program reports, to ensure a more robust interpretation. In the OKOBI case, member-checking was used to allow interviewees to review key interpretations, thereby increasing credibility. While the qualitative nature of the research prioritizes depth over statistical generalization, the transparent case logic and methodology employed provide a solid foundation for future research and policy design that seeks to support just and sustainable innovation ecosystems.

4.5 Overview of Selected Cases

This chapter analyzes two case studies that illustrate the dynamics of Food-Based Just Sustainable Innovation Ecosystems (FJSIEs) across different geographical and socio-political contexts. The selected cases Terra di Resilienza in Italy, and the One Kindred One Business Initiative (OKOBI) in Nigeria; reflect diverse pathways through which justice, sustainability, and innovation converge in food systems.

The cases were chosen for three main reasons. First, they provide regional diversity, representing both Global South (Nigeria) and Mediterranean/European contexts (Italy), enabling comparative insights across socio-economic environments. Second, they capture different scales and governance structures, from grassroots community-led cooperatives to hybrid models that integrate international networks and academic partnerships. Finally, these cases illustrate innovative practices in action, ranging from agroecology and regenerative practices to cooperative entrepreneurship and indigenous knowledge integration.

- **Terra di Resilienza (Italy):** A social cooperative reviving traditional agricultural practices in Southern Italy, combining agroecology with community empowerment and local resilience strategies.

- **OKOBI (Nigeria):** A cooperative model rooted in Igbo indigenous governance traditions, promoting community/ group -based entrepreneurship and sustainable livelihoods through the “One Kindred One Business Initiative” approach.

Together, these cases highlight how FJSIEs emerge from varied socio-political contexts while addressing shared challenges such as policy alignment, access to resources, climate resilience, and community empowerment. This chapter provides concrete insights into the theoretical frameworks, illustrating how innovation ecosystems can be both **place-based and globally connected**.

Terra di Resilienza (Italy)

1. BACKGROUND(GOVERNANCE AND INNOVATION MODEL):

Terra di Resilienza is a social cooperative based in Caselle in Pittari, in the province of Salerno, in Cilento, dedicated to reviving traditional agricultural practices and fostering community development. They have been included in the map on Agroecology in Europe among the 20 Italian examples for social innovation and agroecological practices implemented (CGM – Confederazione Generale Mutualistica, n.d.).

Established in June 2012, Terra di Resilienza focuses on social farming, particularly the recovery and cultivation of indigenous grain varieties at risk of disappearing. The cooperative collaborates with local farmers to promote sustainable agriculture and preserve the area's rich biodiversity.[31]

According to the co-founder of the co-operative Antonio Pellegrino : “We are back to eating our bread”. It all started with a Palio, the Palio del Grano , which every year since 2005, in the third week of July, involves the communities of the area around the harvest. The Palio is a real competition in which 120 participants divided into the eight districts of Caselle in Pittari, twinned with other communities in the area, challenge each other to be the first to harvest the wheat, armed only with sickles. Palio gave birth to the Biblioteca del Grano , an experimental field that changes shape every year, enabling members to equip themselves and learn about over 100 varieties of wheat but local from other territories(CGM, 2023).

Operating as a social cooperative, Terra di Resilienza emphasizes participatory governance, involving members in decision-making processes. A notable initiative is the "Monte Frumentario" system, a mutualistic model where the cooperative provides seeds to farmers, who then cultivate them without chemical inputs. After harvest, the cooperative purchases up to 70% of the grain, allowing farmers to retain the remainder for personal use. This approach not only supports sustainable farming but also strengthens community ties (Redazione CGM, 2023).

2. IMPACT

Terra di Resilienza has generated a multidimensional impact that runs across the social, environmental, and economic spheres. Socially, the cooperative has revitalized local traditions and

[31] cooperativa sociale terra di resilienza

strengthened community bonds through events such as the "*Palio del Grano"*, an annual grain-harvesting festival that celebrates cultural heritage and fosters intergenerational participation (Redazione CGM, 2023). These activities contribute directly to rural vitality and align with the EU Common Agricultural Policy's (CAP) focus on job creation and youth inclusion, particularly under indicator R.37 (growth and jobs in rural areas) and R.36PR (generational renewal). By actively involving young farmers in cooperative decision-making and agricultural learning, Terra di Resilienza exemplifies how social innovation can drive rural regeneration. The cooperative's impact is deeply aligned with the objectives of the Farm to Fork strategy and Cluster 6 priorities on biodiversity, rural jobs, and organic farming.

Environmentally, the cooperative has prioritized biodiversity conservation and sustainable land use by reintroducing traditional grain varieties and promoting chemical-free cultivation. These actions resonate with CAP indicator R.32, which encourages investment in biodiversity, and R.24PR, which focuses on reducing pesticide use. Given its emphasis on wheat production, Terra di Resilienza's practices can also be categorized under the sectoral type of organic production (Article 47(1)(d)), contributing to the EU's broader objectives for agroecological transition.

Economically, Terra di Resilienza has strengthened the local value chain by adding value to agricultural products through initiatives such as stone milling, which produces high-quality flours for local businesses. This localized production system not only supports the regional economy but also aligns with CAP indicator R.42 by fostering social inclusion and empowering individuals across the agricultural value chain, ensuring that no one is left behind. However, while these EU frameworks provide an enabling policy environment, their emphasis on uniform targets risks overlooking the specific socio-cultural value of community traditions such as the "Palio del Grano".

3. LONGEVITY AND SCALABILITY

Terra di Resilienza is a clear example of people doing things for themselves, looking back in time when our ancestors were able to organize and manage themselves before the advent of technology and innovation. The uniqueness and longevity of this initiative is evident through its traditional roots as the cooperative has been operating sustainably for over a decade, expanding both its agricultural initiatives and cultural programs.

Regarding scalability, while the model remains local, its recognition on the European agroecology map and inclusion in national networks of social farming shows clear potential for scaling horizontally, from the increasing growth that led to the birth of other initiatives like Biblioteca del Grano and notable initiatives like Monte Frumentario leading replication by other rural cooperatives. Also the initiative has the capacity to provide employment to people thereby strengthening their ability to lift people out of poverty and improve the economy.

4. LOCAL VS. EXTERNAL OWNERSHIP

Terra di Resilienza is a community-born and community-led initiative. All key decisions emerge from local needs and aspirations, rather than donor or policy agendas.
This deep local ownership contributes to the initiative's resilience and relevance, contrasting with externally imposed models that often fail to root.

Building strong relationships with local farmers and residents is crucial for the success of social enterprises in rural areas. Integrating cultural events and traditions into business models can enhance community identity and support also, accentuating environmentally friendly practices not only benefits the ecosystem but also appeals to markets interested in sustainable products. Terra di Resilienza is a truly amazing and resilient initiative but as usual it faces challenges common to many rural cooperatives, such as securing consistent funding, navigating complex regulatory environments, and encouraging young people to engage in agriculture. Balancing traditional practices with modern economic demands also requires continuous adaptation, learning and relearning.

In conclusion, Terra di Resilienza demonstrates how smaller, socially rooted cooperatives can anchor innovation in cultural traditions. Through initiatives like the Biblioteca del Grano and Palio del Grano, the cooperative restores agro-biodiversity while strengthening community identity. Its reliance on Italy's cooperative legal framework shows that legal recognition and cultural embeddedness are powerful enablers of sustainability. Unlike La Junquera's scaling ambitions, Terra di Resilienza emphasizes resilience and solidarity at the local level, proving that innovation is not only technical but also deeply social.

One Kindred One Business Initiative (OKOBI) in Nigeria.

1. BACKGROUND: GOVERNANCE AND INNOVATION MODEL

The One Kindred One Business Initiative(OKOBI) launched by the Imo State Government and championed by the Office of the Chief Economic Adviser under the supervision of Professor Kenneth Amaeshi in Nigeria in early 2023, is an economic development program designed to foster prosperity through community-based enterprises. It leverages traditional Igbo socio-economic structures, known as Umunna or kindred systems, to promote collective business ownership. An OKOBI business takes shape when individuals, either family, relatives, kinsmen, or community members, unite to explore business ideas tailored to address local needs[32]. By encouraging groups of family members or community affiliates to establish cooperatives, OKOBI aims to harness collective resources and entrepreneurial spirit for mutual benefit.

The model reflects what Iaione (2015) describes as *urban/commoning governance*, where communities co-manage resources with collective accountability. Similar to cooperative traditions in Europe (Borzaga & Defourny, 2001). Given the high level of unemployment, underemployment

[32] https://imostatecea.ng/okobi/

and increased growth in population, plus heavy reliance on the government, this initiative is very vital as it teaches people how to fish rather than giving them fish. The businesses are solely set up, owned and managed by groups of people with similar interests. Bringing it into the Nigerian context, the very increasing population and with cities like Lagos exceeding the threshold of megacities. If proper precautions are not enacted there will be a spike in the rate of food insecurity, poverty, low living conditions,marginalization and injustice. Adopting the OKOBI model is a good way to mitigate these vices and build resilience.

GOVERNANCE AND INNOVATION MODEL

OKOBI builds on deep-rooted Igbo values of cooperation, mutual prosperity, and collective strength. The OKOBI model is rooted in the Igbo phrase of “UMUNNA WU IKE, O WUGHI AGHA!” which translates into "Unity in kindred is strength, not conflict”. Also, the Igbo philosophy of “Igwebuike” emphasizes the idea that "there is strength in unity”. The Igbos occupy the South East Nigeria population of over forty million people (Ekwe-Ekwe, 2006). Prior to the British’s annexation of Nigeria, collective action in the Igbo traditional system was culturally embedded and rooted in community practices (Ijere, 1992).There was a great sense of collectiveness,trust and the society and the wealth around it were regarded as belonging to everyone. It also promoted a culture of respect and sharing as a way of preserving and maintaining equity in the community (Onyeiwu, 1997). However colonial administration played a role in this by making trust gave way to individualism. For generation[s], the Igbo cooperated in many aspects of their economic and social activities in ways that defied standard neoclassical assumptions of self-interest and utility maximization.

OKOBI reflects the **Africapitalism** ethos by combining profit orientation with collective ownership and community empowerment. As Observed by the New Institute (Hamburg), OKOBI represents a living laboratory of Africapitalism, translating Igbo communal traditions into a scalable cooperative model with global resonance See more . OKOBI demonstrates Africapitalism in practice, it anchors entrepreneurship within kindred structures, ensuring that profit generation directly supports social inclusion and collective resilience. Unlike. The One Kindred One Business Initiative has come to revitalize the system that originally worked for us. Participation in the OKOBI initiative is open to kinsmen, family members, friends, social groups, clubs, and community members sharing common affiliations. The requirement is a joint business venture owned by two or more individuals. The group-owned business model aligns with the bible verse that says, “one can chase a thousand, two can chase ten thousand,” leveraging diverse ideas for informed decision-making.

Drawing from the Office of the Chief Economic Adviser, the “Setting Up Stage” and “Identification Criteria” of the One Kindred One Business Initiative (OKOBI) provide a clear framework for participation. Ownership is structured around joint participation by at least two and up to ten individuals, ensuring a collective model of entrepreneurship. The businesses must be profit-oriented with a clear focus on generating employment, whether through production, supply, sales, or skills-based service provision. To formalize their operations and access benefits,

participating groups are required to register as cooperatives with the Cooperative Department of the Ministry of Commerce and Industry, which grants them tax exemptions within the state. Other forms of legal registrations are also recognised on the criterion that is it group-owned.

Enrolment under OKOBI takes place through the Office of the Chief Economic Adviser, which provides identification, mentorship, and progress monitoring, reinforcing accountability and capacity-building. The businesses must also be domiciled in Imo State to ensure that the benefits of economic activity remain local and contribute to state development, this really emphasises on place-based entrepreneurship. While the model is anchored in Imo, its design is adaptable and can be replicated or redefined in other regions or countries, provided the core principle of group-owned, shared prosperity is preserved.

The "Setting Up Stages" of the One Kindred One Business Initiative (OKOBI) provide a step-by-step framework for transforming local entrepreneurial ideas into functioning, cooperative/ group businesses. The process begins with team formation, where participants are encouraged to assemble a dedicated group of three to ten individuals committed to collaborative entrepreneurship. Once a team is formed, they jointly identify and assess local economic needs to determine the most relevant business or service opportunity the can venture into. This is followed by solution identification, during which potential ventures are evaluated for commercial viability and profitability. The groups then develop a business plan, budget, and structural framework designed to ensure long-term sustainability before formally registering their venture with the responsible government body then follows the recognition as an OKOBI cooperative. A final step involves opening a business bank account, often in partnership with recommended financial institutions, which anchors the enterprise financially and facilitates transparency and accountability.

Beyond its procedural framework, OKOBI operationalizes Christian Iaione's (2024) quintuple helix model of governance, which emphasizes collaboration among government, industry, academia, civil society, and the environment. The Imo State Government plays an enabling role by providing legitimacy, a policy framework, and facilitation of resources, including recommended participation for all 655 autonomous communities in the state, while maintaining a supportive rather than directive stance. The initiative engages multiple industries within the local economy, including agriculture, livestock farming, processing, exports, and renewable energy, thereby diversifying economic opportunities.

Academia has also shown increasing interest in OKOBI, with institutions such as The New Institute in Hamburg studying its scaling potential. Plans are underway to establish a dedicated knowledge hub to provide resources and guidance for aspiring cooperatives, as well as to launch an OKOBI Student Club as an extracurricular activity in universities, nurturing a culture of cooperative entrepreneurship among young people. This educational dimension embodies the principle that "if you want to run fast, run alone; if you want to run far, run together," encouraging a mindset of shared enterprise.

Civil society remains the bedrock of OKOBI, as the initiative is rooted in the traditional Umunna/Kindred structure, which drives planning, ownership, and governance, with AfriBA playing a key supporting role. Finally, OKOBI aligns with the environmental dimension of the quintuple helix model by encouraging businesses that promote sustainable agriculture,

agro-processing, and other activities that contribute to environmental stewardship. In doing so, OKOBI exemplifies Iaione's concept of stewardship in just sustainable innovation, placing community members at the center of co-design, co-ownership, and co-governance of enterprises to foster shared prosperity.

2.IMPACT (SOCIAL INCLUSION ,EQUITY AND ENVIRONMENTAL)

OKOBI has generated transformative social and economic outcomes by embedding collective entrepreneurship at the heart of community life. Social inclusion is ensured through the program's mandate that every autonomous community and kindred in Imo State participates, creating a truly broad-based economic movement (Punch, 2023). This participatory model empowers communities to take ownership of their economic futures, strengthening local cohesion and reducing rural–urban migration. Through targeted training, OKOBI equips members with market-ready skills, enabling them to register formally, access grants and loans to scale their ventures, and even qualify for legitimate employment opportunities abroad thereby reducing the pressure for irregular migration.

The initiative also reinforces cultural identity by preserving and modernizing traditional communal values. By framing entrepreneurship as a shared responsibility, OKOBI sustains cultural heritage while positioning communities to navigate contemporary economic challenges. Its impact on employment generation is significant: over 450 businesses have been established under OKOBI, engaging more than 15,000 members across the state[33]. These enterprises have contributed to job creation, poverty reduction, and strengthened local economies. Moreover, OKOBI fosters economic diversification by supporting ventures across agriculture, transportation, processing, and manufacturing, ensuring that community livelihoods are not reliant on a single sector.

Environmental Impact:

Sustainable Practices: Many OKOBI enterprises focus on agriculture and related sectors, it goes on to encourage practices like small-scale sustainable farming, agro-processing (e.g., cassava, oil palm, poultry, fish farm etc), Local supply chain development, encouraging sustainable farming practices and responsible resource management. Furthermore, the OKOBI initiative stimulates local agricultural initiatives, supporting land regeneration and reduces reliance on unsustainable imports (Imo State CEA, 2024).

3.LONGEVITY AND SCALABILITY:

In terms of longevity, the institutionalization of OKOBI by the Imo State Government has made participation a prerequisite for all 655 autonomous communities, embedding it in state economic policy (Punch, 2023). Also, due to the uniqueness of the model whereby the groups set-up the businesses themselves first without the initial help of the government, this ensures that change in power or government will not limit or stop the initiative from moving ahead. Most importantly, is

[33] https://imostatecea.ng/

it good to acknowledge that the OKOBI idea is not entirely new, and has been practiced by the ancestors ie the Umunna. Therefore, this culture of collectivity is already deeply rooted. The kindred system's deep cultural roots make the model inherently sustainable, beyond electoral cycles.

Scalability wise, OKOBI scales through horizontal replication whereby every kindred autonomously sets up its own enterprise without centralized control. This scaling wide context of the model allows for context-specific innovation while maintaining shared stewardship principles. The model's early success suggests potential for replication across other Nigerian states and similar socio-cultural contexts in West Africa (The New Institute, 2024).

4. LOCAL VS. EXTERNAL OWNERSHIP

OKOBI is rooted in the primacy of local ownership, with kindreds/groups directly owning, governing, and benefiting from the businesses they establish. This model ensures that wealth generation and decision-making remain within the community, reinforcing accountability and shared responsibility. The role of the Imo State Government is deliberately limited to that of an enabler rather than a controller; it provides legitimacy, policy support, and facilitation without displacing community authority.

Crucially, OKOBI minimizes dependence on external donors or international NGOs, relying instead on community mobilization, indigenous governance systems, and collective stewardship (Co-Cities Project, 2024). This approach enhances resilience, strengthens legitimacy, and promotes self-determination key attributes of a just and sustainable innovation ecosystem. While OKOBI demonstrates a justice-centered model through collective entrepreneurship, its absence from frameworks like Cluster 6 or the Farm to Fork Strategy reflects broader AU–EU asymmetries. For the AU–EU Innovation Agenda to succeed, models like OKOBI must be recognized not as peripheral implementers but as co-designers of innovation pathways.

As a hybrid model of Food-Based Just Sustainable Innovation Ecosystems (FJSIEs), OKOBI bridges grassroots cultural traditions with formal state-backed cooperative structures. Unlike Terra di Resilienza, which foreground ecological sustainability, OKOBI's primary contribution lies in advancing justice and economic empowerment through indigenous governance. In doing so, it demonstrates how traditional institutions can be repositioned as vehicles for sustainable innovation and inclusive development.

COMPARATIVE TABLE SUMMARIZING THE CASE STUDIES

CASE STUDY	GOVERNANCE MODEL	TYPE OF SCALING	ALIGNMENT WITH AU-EU AND CAP FRAMEWORK	MISALIGNMENT WITH AU-EU AND CAP FRAMEWORK.
Terra di Resilienza (Italy)	Cooperative governance with strong civic participation; emphasis on solidarity economy and agroecology	Scaling deep – embedded in local culture and ecology	Directly aligns with CAP indicators (R.32, R.24PR, R.36PR, R.37), Farm to Fork, Cluster 6; supports EU–AU agenda on rural empowerment and agroecology	CAP uniform targets may overlook socio-cultural value of local traditions like Palio del Grano.
OKOBI –Nigeria	Kindred/Group -based governance; decentralized collective ownership with government facilitation and potential to be replicated across different locations in the country and globe.	Scaling wide – through mandatory participation across all Imo State kindreds.	Strongly supports AU–EU agenda on justice-centered innovation, youth empowerment(reducing talent drain) and inclusive economic development.	CAP and EU frameworks focus on regulatory and standardized targets and EU uniform metrics may not fit the OKOBI contexts of entrepreneurship. OKOBI needs to strengthen its structure

CHAPTER 5: ANALYSIS AND DISCUSSION

5.1 Cross-Case Themes: Governance, Stewardship, Justice

The four case studies illustrate different yet interconnected pathways toward building Food-Based Just Sustainable Innovation Ecosystems (FJSIEs). Despite contextual differences across the Global South and Mediterranean i.e. Europe and Africa in this case, common themes emerge around governance, stewardship of resources, and justice in innovation processes.

1. GOVERNANCE STRUCTURES

Governance mechanisms vary from formalized cooperatives in Italy and Nigeria, to multi-actor knowledge platforms in Spain, and NGO-driven coordination in Kenya.

Italy (Terra di Resilienza) and Nigeria (OKOBI) demonstrate the importance of cooperative governance, where decision-making is embedded in community/group participation and traditional structures. The Umunna/Igwebuike -inspired model in OKOBI, for instance, anchors legitimacy in cultural norms as well as a growing interest from national/ international firms,corporates, academic institutions and government organizations which aligns with the thoughts behind the hybrid model, while Italy relies on legally recognized cooperative frameworks (Law 381/1991).

2. STEWARDSHIP OF LAND, SEEDS, AND KNOWLEDGE

Stewardship emerges as a unifying thread across cases, where communities treat land, seeds, and knowledge as commons. The Terra di Resilienza Cooperative revives traditional crops and farming systems, highlighting cultural stewardship as a means of resisting industrial homogenization. While OKOBI, demonstrates social stewardship, where shared entrepreneurship ensures equitable benefit distribution across kindreds, groups and communities including women and youth. Reports from an interview with a cooperative head stated that “decisions are made collectively, with general agreement for or against” this formalizes governance.

3. JUSTICE AND INCLUSION

Justice is operationalized differently across the case studies but remains a central dimension of their innovation ecosystems. Gender inclusion is prominent in Terra di Resilienza Cooperative and in OKOBI’s women-led cooperative clusters, where women not only participate actively but also take up leadership roles within community enterprises. Youth empowerment also emerges as a strong theme, where innovation ecosystems create spaces for generational renewal and facilitate intergenerational knowledge transfer.

At the same time, equity in access to resources presents uneven outcomes across contexts. The EU-supported case of Italy benefits from CAP incentives and more secure tenure rights, while the Global South case Nigeria must navigate fragile land rights regimes and limited state support. This

contrast highlights the importance of contextual governance arrangements in shaping the inclusiveness of just sustainable innovation ecosystems.

Across the two cases, FJSIEs thrive when governance is participatory, stewardship is collective, and justice is integral not peripheral to innovation. Yet, systemic inequalities in resources, policy support, and recognition remain barriers, particularly in the Global South, where grassroots initiatives often operate with limited institutional backing. Also, most Global south countries like sub-saharan africa are still stuck with the western type of entrepreneurship and market-based system, which is usually anchored on individualism with one person thriving as a unicorn and others below as workers. Community/collective rooted governance helps to counter balance the prevalence of these market - driven and individualistic kind entrepreneurship.

5.2 How Local Knowledge Shapes FJSIEs

Across the two case studies, traditional practices, community knowledge, and experiential know-how do not merely supplement scientific or policy frameworks; they also constitute the foundation upon which innovation becomes just, sustainable, and adaptable.

For instance the OKOBI initiative, decision-making draws heavily on the **Igbo Umunna/Igwebuike system**, where collective deliberation and kinship-based accountability guide cooperative practices. As one cooperative leader described, “decisions are made collectively, with general agreement for or against,” emphasizing that governance reflects inherited cultural processes rather than imported models. This embeddedness in cultural norms provides legitimacy, ensures trust, and strengthens continuity beyond donor cycles (Ijere, 1992).

A similar scenario applies to Terra di Resilienza in Italy which demonstrates how reviving traditional crops and agroecological practices is a form of innovation, where cultural memory is mobilized to counter industrial homogenization. The stewardship of ancient grains becomes both a cultural act and a strategy for biodiversity resilience.

The transfer of Local knowledge is often horizontal, it is mostly sustained and transferred through farmer-to-farmer exchanges and intergenerational learning. Interview insights from the Okpofe Youth Empowerment Scheme (OYES, an OKOBI affiliate): The young members reported gaining *“agricultural skills, entrepreneurial capacity, and financial literacy”* through cooperative farming and training sessions. Such knowledge strengthens self-reliance, combats unemployment, and equips youth to shape their own futures within the food system.

Bridging Local and Global Knowledge

In all selected cases, local knowledge acts as a counterweight to external market and policy pressures. For example, OKOBI youth emphasized that farming is not only an income strategy but also a "food revolution within their vicinity,"(OYES;2025) where community-driven production resists dependence on exploitative intermediaries. However, from the perspective of international organizations, the recognition of such knowledge remains limited. An interview with a staff member from WFP highlighted that while agencies increasingly promote participatory approaches, "policies often fail to align with community realities," it is safe to say that local knowledge is still undervalued in formal innovation frameworks.

The strength of FJSIEs lies in our collective ability to bridge local experiential knowledge with external scientific and institutional inputs. OKOBI's combination of indigenous governance with digital marketing platforms and cooperative financing opportunities, as well as interaction with other external corporations and institutions demonstrates hybrid innovation pathways.

Local knowledge is not peripheral to innovation; it is constitutive of it. Whether through Igbo cultural governance, Italian crop heritage, Spanish farmer-researcher collaboration, or Kenyan agroecology schools, FJSIEs show that sustainability and justice cannot be achieved without grounding innovation in the lived experiences, practices, and traditions of local actors. The challenge, however, remains ensuring that such knowledge is recognized, supported, and integrated within broader policy and global frameworks, rather than marginalized as "informal" or secondary.

5.3 Scaling Challenges and Opportunities

The Concept of Scalability

As noticed in the thematic areas used in classifying the case studies, scaling was mentioned a couple of times. Scaling has long been seen as an essential benchmark for success in humanitarian and social innovation, frequently serving as a measure of an innovation's broader impact. Riddell, Moore, and Vocinsano (2015) propose a three-tiered approach to scaling of innovations:

- Scaling out: The conventional route, which involves replicating successful interventions across different geographies or communities to reach a greater number of people
- Scaling up: Achieving policy or legal changes to support the adoption of an innovation.
- Scaling deep: Targeting shifts in cultural norms, values, and social beliefs to drive change.

Scaling locally-led innovations necessitates a more nuanced approach, one that considers multiple pathways and reflects local principles and practices (Taylor and Salmon, 2022). In response,

various frameworks have been developed to foster more holistic scaling practices. One example is the SCALE3D Framework (Strasser et al., 2020), a model designed to support networks and organisations seeking to scale social impact while driving systemic, lasting change. SCALE3D stands for Strategic Capacity-Development, Leadership, and Evaluation for Transformation in Three Dimensions and proposes three dimensions to guide the scaling of innovations:

> Scaling Deep: Focuses on creating fundamental shifts in rules, values, and discourses. Here, leadership advocates for structural and cultural transformation by promoting policy changes and building the innovation team's capacity for impactful, lasting shifts in the cultural and structural landscape. This dimension aims to embed changes deeply, resulting in "depth impacts" that reflect the innovation's cultural and structural influence.
> Scaling Long: Emphasises sustaining and evolving innovations over time. Strategic leadership clarifies objectives and the means to achieve them, providing long term guidance. This approach builds a group's capacity to sustain and accelerate transformation, fostering "length impacts" that ensure the innovation persists, adapts, and evolves within the community and beyond.
> Scaling Wide: Aims to broaden reach across diverse communities, geographies, and contexts. Community weavers play a central role by connecting people to foster learning and mutual support. This leads to "width impacts," expanding the innovation's influence widely and coherently across diverse spaces and people.

Scaling is often presented as the ultimate measure of success for social and food system innovations. Drawing from the above knowledge from the renewed scholars, we will explore the opportunities and challenges as it relates to food systems and the case studies.

Challenges of Scaling

Resource and Finance Constraints: Limited access to finance, infrastructure, and capacity-building resources has been one of the major challenges grassroot initiatives face . For instance in an interview, OKOBI cooperative leaders emphasized that finance and capacity remain key bottlenecks, they stated : *" some policies restrict access to loans for cooperative members and rather help CAC registered organizations more"* also, "*alignment of interest and members' dedication is sometimes a challenge."*(Interview; Ideal Farmers Cooperative Leader). In the European Union, scaling is largely supported through **top-down mechanisms** such as the Common Agricultural Policy (CAP), the Farm to Fork Strategy, and Horizon Europe's Cluster 6 funding streams; as much as it benefits the Mediterranean cases, it also is a lesson for the Global South policy makers to put in place more actionable policies that will improve legitimacy and financial competence for these cases. AU policies like the Malabo Declaration of 2014[34]; should be strengthened through stronger political will, better policy alignment and increased investment in small holder support.

[34] https://www.nepad.org/caadp/publication/malabo-declaration-accelerated-agricultural-growth

Policy and Legal Barriers: Weak or fragmented policy frameworks obstruct scaling. For instance, despite Nigeria's Cooperative Societies Act (2004), interviewees reported bureaucratic obstacles in accessing credit and limited government support for youth-led cooperatives. In contrast, EU-backed initiatives (benefit from structured CAP incentives, illustrating policy asymmetries across contexts. Despite this, there are limitations of top-down mission-oriented strategies such as Farm to Fork and Cluster 6. While they excel at mobilizing resources for scaling up, they often remain **spatially blind** (Uyarra et al., 2025), applying uniform criteria that overlook diverse local realities even in the Mediterranean context.

Cultural and Structural Barriers: Scaling deep requires changing social norms and values but it faces resistance in contexts dominated by market-driven, individualistic entrepreneurship models. As noted in 6.1, many Sub-Saharan African economies remain tied to Western-style "unicorn" models, where collective entrepreneurship is often undervalued. Shifting such paradigms requires long-term cultural work and recognition of indigenous systems like the Umunna system.

Knowledge Fragmentation: Scaling often struggles with balancing context-specific knowledge with external frameworks. WFP interview feedback highlighted that *"policies often fail to align with community realities,"* suggesting that attempts to scale without anchoring in local knowledge risk failure or superficial adoption. This despites the long term sustainability agenda so instead of giving them fish, it is best to teach them how to fish.

Opportunities for Scaling

Scaling in Food-Based Just Sustainable Innovation Ecosystems (FJSIEs) cannot be reduced to replication or rapid expansion alone. It requires a multidimensional approach that balances breadth, institutional support, cultural transformation, and temporal resilience.

Scaling out refers to replication across communities. OKOBI's affiliate model of youth-led, women-led, and farming cooperatives demonstrates how innovation can spread horizontally across different kindreds and groups, with potential to expand further across Nigeria in response to the country's growing population. Such initiatives provide proactive strategies for preventing socio-economic crises.

Scaling up involves institutional integration. Terra di Resilienza exemplifies this process through formal recognition under Italian cooperative law (Law 381/1991), which strengthens its legitimacy. For OKOBI, opportunities lie in lobbying for stronger cooperative recognition and the development of group-specific agricultural policies in Nigeria, which would create an enabling environment for long-term impact.

Scaling deep captures the transformative power of cultural change. OKOBI's anchoring in Igbo traditions of collective entrepreneurship illustrates how cultural values can sustain innovation, while Terra di Resilienza focus on indigenous seed and stewardship embraces cultural knowledge, preservation and empowerment These examples show that embedding innovation in cultural systems creates resilience against external shocks and donor withdrawal.

Finally, scaling long, what some scholars describe as **SCALE3D** underscores continuity over time. Interviews with youth leaders in OKOBI emphasized the importance of professionalism, mentorship, and financial literacy in securing long-term engagement. Similarly, Terra di Resilienza's intergenerational knowledge transfer demonstrates how leadership pipelines can sustain innovation ecosystems across decades.

Taken together, these cases suggest that true scaling of FJSIEs requires a hybrid model that connects grassroots knowledge with supportive policy frameworks and, increasingly, with digital platforms. The challenge lies in overcoming systemic inequities in resources, policy support, and recognition, but the opportunities point toward resilient, justice-centered pathways for sustainable innovation.

5.4 Policy Implications for the Global South and Mediterranean

The case studies and interviews highlight that policy is both a critical enabler and a limiting factor in advancing Food-Based Just Sustainable Innovation Ecosystems (FJSIEs). Policies can legitimize community-led initiatives, provide access to resources, and create enabling environments, but misalignment and rigidity can stifle grassroots innovation.

Insights from International Agency on Just Innovation

International agencies such as the WFP emphasize that justice must be at the center of innovation, not an afterthought. In an interview, a UN staff member mentioned that while international programs increasingly recognize local knowledge and structures:

> *"There is a recurring challenge in the innovation landscape, particularly in donor-driven projects. Whether the donors are public or private, there's often a strong emphasis on cutting-edge technologies like AI or digital tools solutions that may be impressive at the headquarters level but are often detached from the realities of local communities*".

The interviewee further stated that;

*"Fortunately, there's a growing recognition of this issue. We're starting to see a shift towards more **community-led innovation** models, even within donor-funded frameworks. This involves engaging communities from the idea stage through to implementation, ensuring that solutions are not just designed for them but with them. From my perspective, socially just innovation means identifying real problems, co-creating solutions with those affected, and, most importantly, listening. That is where innovation becomes meaningful and sustainable."*

Also,during the interview, and discussions about the challenges of bottom-up and top-down innovation, the UN staff stated that:

"*In practice, neither Bottom-Up nor Top-Down works effectively in isolation; the most impactful approach is a hybrid model that combines both. One of the major challenges organizations like WFP faces is misalignment between donor intentions and community needs. Externally driven solutions often reflect what donors think communities need rather than what communities actually need. This disconnect is worsened when communication flows through multiple layers: community to field staff, to HQ, to donors causing the original message to be lost or distorted, like in a game of telephone. True sustainability and effectiveness come when communities are not only consulted but actively involved in the design and decision-making process. Passive participation, such as appointing local committee members without genuinely listening to them, doesn't lead to real ownership. Instead, empowering community members to lead discussions and shape implementation fosters deeper investment and better outcomes.*

The key is mutual openness and collaboration; donors must be willing to understand the local context, and communities must be given a voice and leadership role from the outset".

5.4.1 CAP Indicators and Comparative Review

In the Mediterranean, the EU's Common Agricultural Policy (CAP) provides an instructive case of how top-down frameworks shape food innovation ecosystems. In this case, CAP reforms, particularly those targeting young farmers, rural development, and agri-environmental schemes, have enabled initiatives such as La Junquera (Spain) and Terra di Resilienza (Italy) to thrive. By recognizing land tenure rights and providing targeted subsidies, CAP creates long-term security for regenerative farming and cooperative models.

Yet, CAP is not without its contradictions. As Pe'er et al. (2017) argue, its subsidies often disproportionately benefit large-scale farms and conventional systems, marginalizing smaller, agroecological, or community-based initiatives.

By contrast, in the Global South, legal and policy recognition of cooperatives is still fragile. For example, under Nigeria's Cooperative Societies Act (2004), cooperatives gain legal status and tax benefits (as confirmed by interviews with OKOBI cooperative leaders), yet systemic barriers persist. Leaders cited challenges such as restrictive loan policies, lack of alignment between cooperative goals and government funding schemes, and inconsistent access to infrastructure and markets. These barriers reflect broader issues of policy fragmentation and weak enforcement, common across sub-Saharan Africa (FAO, 2018).

Thus, while CAP demonstrates the importance of policy alignment and long-term frameworks, the Global South reveals the risks of fragmented or under-implemented policies. Together, these contexts underscore the need for hybrid governance models where international and national policies support and do not replace community-led innovation.

5.5 Relevance to Planetary Health and SDGs

As stated in chapter 2, Planetary Health emphasizes the interdependence between human well-being and the integrity of natural systems (Whitmee et al., 2015). Food-Based Just Sustainable Innovation Ecosystems (FJSIEs) are not only local solutions to food insecurity but also key contributors to the Planetary Health agenda and the achievement of the Sustainable Development Goals (SDGs). By integrating justice, stewardship, and innovation, FJSIEs act as pathways for simultaneously addressing ecological crises and social inequalities.

Contributions to Planetary Health

Across the two case studies, ecological regeneration and social justice emerge consistently; Terra di Resilienza restores degraded land and preserves agrobiodiversity, contributing to planetary boundaries on land use and biodiversity. Their work reflects agroecology and regenerative practices as a response to climate change, reducing reliance on synthetic inputs and promoting soil health. The OKOBI (Nigeria) initiative demonstrates how social equity particularly for groups notwithstanding the gender or age e.g. youth and women empowerment can reduce poverty and vulnerability, creating healthier communities more resilient.
By linking human and ecological systems, these initiatives embody the principle that planetary health cannot be achieved without social justice.

Alignment with SDGs

The Food-Based Just Sustainable Innovation Ecosystems (FJSIEs) examined in this study demonstrate clear alignment with several of the United Nations Sustainable Development Goals (SDGs). All two cases contribute directly to SDG 2 (Zero Hunger) by improving local food security through agroecology, regenerative practices, cooperative structures, and community-driven farming models. They also advance SDG 5 (Gender Equality), as women's active participation across the case underscores the centrality of gender-inclusive innovation. In

terms of economic development, these initiatives support SDG 8 (Decent Work and Economic Growth) by generating dignified livelihoods, particularly for youth, thereby countering unemployment and reducing migration pressures. Their production systems are also consistent with SDG 12 (Responsible Consumption and Production). For instance, Terra di Resilienza promotes circular, low-input farming models, while the majority of OKOBI's agri-based cooperatives emphasize organic farming with minimal or no reliance on synthetic substances.

Environmental sustainability is embedded in their practices, contributing to SDG 13 (Climate Action) through agroecological and regenerative approaches that enhance resilience and adaptive capacity. In parallel, initiatives such as SACDEP and La Junquera advance SDG 15 (Life on Land) by supporting biodiversity conservation and soil restoration. One significant thing observed from this study is the economic empowerment these groups have been about to attend for themselves, this points towards attaining SDG 1 (Zero Poverty). Taken together, the case studies illustrate how grassroots and hybrid innovation ecosystems simultaneously address multiple dimensions of sustainable development, linking social justice, economic opportunity, and ecological regeneration.

5.6 Revisiting Research Questions and Hypotheses

This thesis aimed to understand the contribution of Food-Based Just Sustainable Innovation Ecosystems (FJSIEs) to building equitable and resilient agri-food systems in the Global South and Mediterranean regions. The analysis of the case studies, complemented by interviews with practitioners and international agency staff, provides grounded insights into the main research question and sub-questions.

Main Research Question

How can Food-Based Just Sustainable Innovation Ecosystems contribute to equitable and resilient agri-food systems in the Global South and Mediterranean regions?

The findings suggest that FJSIEs contribute in three interrelated ways. First, they embed justice, inclusion, and equity at the core of their operations. This is evident in women- and youth-led cooperatives within OKOBI and in SACDEP's gender-sensitive training programs, which place social justice at the center of innovation. Second, they strengthen resilience through shared stewardship of land, seeds, and knowledge. Terra di Resilienza, for example, preserves traditional grain varieties, while La Junquera advances regenerative agricultural practices, and OKOBI promotes collective entrepreneurship rooted in indigenous traditions. Third, FJSIEs create hybrid governance structures that connect community agency with institutional recognition. Mediterranean cases benefit from supportive CAP policies, while in Nigeria, the legal recognition of cooperatives provides a formal framework for scaling grassroots initiatives.

Taken together, these findings indicate that FJSIEs function as models in which social justice, ecological sustainability, and innovation mutually reinforce one another, thereby contributing to systemic resilience in both the Global South and Mediterranean contexts.

Sub-Question 1

What governance models (e.g., shared stewardship) best support just and inclusive innovation in local food systems?

Cooperative governance as seen in the Italy and Nigeria case, demonstrates the strength of collective ownership and shared decision-making where everyone has a voice. Hybrid governance in Spain's La Junquera, as well as OKOBI shows how multi-actor networks can integrate research, policy, and grassroots actors. The NGO-mediated governance in Kenya highlights the importance of bridging organizations that align community needs with institutional frameworks.

Therefore, Participatory and hybrid governance models foster inclusivity and legitimacy, while top-down or donor-driven governance may risk alienating communities.

Sub-Question 2

What are the key differences in impact and longevity between grassroots food system initiatives and those introduced by international agencies?

Grassroots initiatives (OKOBI, Terra di Resilienza, SACDEP) show strong cultural legitimacy and local ownership, making them adaptable and resilient, even though they are often under-resourced. Though International agency-driven initiatives (e.g., WFP-supported frameworks, CAP) bring resources, visibility, and institutional support, they sometimes risk misalignment with community needs if not co-created. As noted in the WFP interview, donor-driven innovation often prioritizes "cutting-edge technologies detached from realities," whereas hybrid approaches combining top-down resources with bottom-up legitimacy prove most effective.

However, as much as grassroots models excel in legitimacy and social cohesion and international frameworks excel in resources and policy leverage. Longevity is strongest when the two intersect in hybrid models.

Sub-Question 3

How do selected community-led agricultural cooperatives demonstrate principles of just sustainable innovation in practice?

The principle of just sustainable innovation in practice cuts across all the case studies; OKOBI demonstrates social justice and inclusivity, through youth and women cooperatives (no restriction to age and gender) empowered through farming, training, and access to finance and markets. Also,the OKOBI idea promotes free will and the groups / communities are encouraged to decide

and choose what works for them. Terra di Resilienza showcases cultural and ecological justice, through reviving traditional crops, boosting farmers' economic status and resisting industrial homogenization. SACDEP promotes knowledge justice, by training smallholders in agroecology and ensuring local knowledge is valued. La Junquera integrates environmental justice, advancing regenerative agriculture while involving youth in education and training.

Community-led cooperatives demonstrate FJSIE principles by blending justice, innovation, and sustainability, while tailoring solutions to local socio-ecological contexts.

5.7 Limitations and Reflexivity

Similar to other research work, this thesis is faced with certain limitations. Acknowledging these is key to ensuring transparency and strengthening the validity of the findings.

Limitations

Initially, the study focused on four selected cases (Italy, Spain, Kenya, Nigeria) to represent diverse geographical and institutional contexts about groups of individuals revitalizing the food system and creating empowerment. However, upon closer analysis, the cases of **OKOBI (Nigeria)** and **Terra di Resilienza (Italy)** were retained as the most analytically coherent pair. This narrowing enhanced conceptual depth but also limited the breadth of regional diversity. While these provide diverse geographical and institutional contexts, they cannot capture the full spectrum of Food-Based Just Sustainable Innovation Ecosystems (FJSIEs) globally. Other important cases, particularly from Latin America or Asia, remain unexplored.

Given the timeframe of the thesis, deeper impacts could not be fully assessed, considering that FJSIEs often evolve over decades, and short-term research risks missing deeper structural changes, improvements or longer-term resilience. For the Italian case, secondary sources dominated (e.g., academic literature, policy reports, and information from their websites as well as testimonies), while primary data was stronger in Nigeria (OKOBI) due to field interviews. This imbalance could affect the depth of comparative analysis.

While policies such as CAP , EU Green Deal, AU–EU Innovation Agenda, Farm to Fork Strategy and Nigeria's Cooperative Societies Act were reviewed, a full legal analysis was beyond the scope of this thesis. The discussion of these frameworks therefore remains interpretive rather than exhaustive, serving primarily as a benchmark to evaluate the alignment (or misalignment) between local initiatives and international innovation agendas.

With regards to representation of voices; despite including interviews with cooperative leaders, youth, and an international agency staff member, not all voices were captured ;e.g., rural women, small-scale farmers in Spain and Italy, or marginalized groups without cooperative access. Their exclusion may risk biasing findings towards more organized actors. However these limitations

were addressed by: combining secondary sources (literature, reports) with primary data (interviews), cross-checking interpretations against multiple cases across regions. Being explicit about positionality and avoiding claims of universal generalization.

Finally, the AU–EU Innovation Agenda itself presents limitations that influence this research. While the agenda promotes co-creation and co-ownership, its operational frameworks often remain Eurocentric and technocratic, privileging formalized partnerships and measurable outputs (e.g., startups, products) over informal or indigenous innovation forms. This structural imbalance raises questions about how effectively such high-level policies engage with grassroots realities like OKOBI or Terra di Resilienza both of which embody *justice-based, place-sensitive innovation* beyond traditional R&I metrics.

Reflexivity

As a Nigerian researcher based in Italy, my positionality inevitably shaped the framing and interpretation of this study. The insider–outsider dynamic positioned me with empathy toward the challenges faced by grassroots communities in the Global South, while my European context provided unique access to Mediterranean cases and literature uch as the AU–EU Innovation Agenda, MOIP, and CAP, providing an analytical bridge between the Global South and Europe.

. This dual perspective enriched the comparative dimension of the thesis but also framed the balance between local realities and institutional narratives. My academic background in Law, Digital Innovation, and Sustainability also influenced the analytical emphasis. It oriented the study towards normative and governance questions like justice, accountability, and institutional equity rather than purely technical or productivity-oriented dimensions. Recognizing this bias is crucial, as it underscores that research on just sustainable innovation is not neutral but shaped by value commitments and positional worldviews.

Ultimately, this reflexive stance strengthens the thesis by acknowledging that the pursuit of "just" innovation must also extend to how research itself is conducted ie who speaks, who is represented, and whose knowledge counts. In this sense, this thesis is not only an academic inquiry into Food-Based Just Sustainable Innovation Ecosystems but also a personal journey of navigating between continents, epistemologies, and power structures that define this very field it studies.

Chapter 6: Conclusion and Recommendation

6.1 Summary of Key Findings

This research thesis consists of literature review, theoretical frameworks, policy analysis, and two comparative case studies (Terra di Resilienza – Italy and ÓKÓBÌ – Nigeria). That is set out to explore how Food-Based Just Sustainable Innovation Ecosystems (FJSIEs) can contribute to equitable and resilient agri-food systems in the Global South and Mediterranean regions. These several key findings emerged from this research:

Governance Model:
Cooperative and participatory governance structures were proven to enhance legitimacy, trust, and collective ownership. The most resilient approaches were hybrid models that blend grassroot agency with institutional frameworks,thereby bridging gaps between top-down policy and bottom-up innovation.

Stewardship as a Unifying Principle:

Across contexts, stewardship of land, seeds,businesses and knowledge sufficed as a central principle. In the Mediterranean case, stewardship was expressed through agroecology and regenerative practices, while in Nigeria, it was embedded in social solidarity and cultural traditions.

Justice and Inclusion are Critical for Resilience:

Justice is a cornerstone for resilient food systems; active participation from Youth and women strengthens both equity and innovation. The cases showed that justice cannot remain a secondary consideration where equity and inclusion were central.

Scaling Challenges and Opportunities

Scaling proved to be multidimensional, involving “scaling out” through replication, “scaling up” through policy integration, and “scaling deep” by embedding cultural transformation. The Mediterranean case benefited from supportive policy frameworks such as CAP incentives and the Cluster 6 which provides a funding framework for scaling up innovation in Europe, while the African case relied more on social capital and collective entrepreneurship to scale deeply. Interviews with cooperative leaders highlighted persistent barriers to scaling, particularly in finance, policy alignment, and infrastructure. However, digital innovations such as OKOBI’s online marketplace and radio program show promising avenues for expanding reach.

The Role of International and Hybrid Models

Insights from international agencies confirm that donor-driven, top-down innovation often risks misalignment from community realities. However, a hybrid model where bottom-up and top-down approaches meet emerges as the most effective pathway. Co-creation, listening, and empowering communities from idea to implementation are crucial for ensuring justice-centered and sustainable innovation.

6.2 Theoretical and Practical Contributions

Theoretical Contributions:

This thesis advances the literature by explicitly integrating justice (equity, inclusion, power redistribution) into innovation ecosystem theory, where it is often marginalized (Leach et al., 2020; HLPE, 2019). By comparing Global South and Mediterranean cases, the study contributes to understanding hybrid governance, where indigenous traditions (*Umunna*, commons stewardship) and formal policies (CAP, cooperatives law, AU-EU Innovation Agenda) converge. The analysis extends scaling debates (Riddell et al., 2015; Strasser et al., 2020) by showing that "scaling deep" transforming cultural norms is as critical as scaling out/up, especially in fragile policy environments. The cross-case reflections provided a lens for comparing Global South and Mediterranean food system innovations, highlighting systemic inequities and contextual specificities often overlooked in Western-centric frameworks.

Practical Contributions:

Case study evidence shows that grassroots cooperatives are effective vehicles for food security, employment, and justice. The CAP demonstrates how coherent long-term policies can sustain grassroots initiatives, while Nigeria's cooperative challenges highlight the risks of fragmented governance. Insights from the UN interview emphasizes that justice-centered innovation requires meaningful community participation; donors must co-create with local actors rather than impose top-down solutions. Practical lessons also emerge on financing, capacity-building, and governance design that can be adapted by policymakers, NGOs, and international agencies working to build equitable and resilient food systems.

6.3 Policy and Practice Recommendations with Implementation Pathways

Building Food-Based Just Sustainable Innovation Ecosystems (FJSIEs) requires policies and practices that encourage justice, inclusivity, and ecological resilience. The case studies and interviews point to several recommendations. Regarding, policy frameworks for cooperatives and commons; Governments in the Global South should further improve cooperative laws to ease registration, access to credit, and tax incentives, similar to Italy's *Law 381/1991* on social cooperatives. As suggested by the Food Agricultural Organization (2018) Land tenure reforms are critical to secure long-term investments in agroecology; and policies should explicitly recognize commons-based governance, including community enterprises, seed banks, shared land stewardship, and cooperative-owned enterprises.

Practice Recommendations

1. Promotion of Hybrid Governance Models:

There is a great need for attention to be drawn to policies that facilitate collaboration between grassroots actors and state/international agencies, as they often thrive better and are more sustainable. The lessons from CAP (EU) reforms show that targeted subsidies and youth incentives can boost rural innovation. The Farm to Fork strategy when properly implemented through a collaboration with local agencies makes the strategy more adaptable within different social contexts. Frameworks should be put in place to ensure bottom-up participation is institutionalized, not tokenistic, in decision-making processes.

2. Investment in group-owned businesses (Youth and Women Leadership) in Agriculture:

Youth cooperatives, like OYES under OKOBI, demonstrate the transformative role of young people when given resources, mentorship, and leadership opportunities. As this group has been able to make tremendous achievements on their own at first without external help, imagine how far such groups can go with extra support. Also to further encourage inclusivity, women-led groups should receive direct access to training, markets, and finance, addressing gendered barriers in land ownership and cooperative membership.
Digital literacy training and access to markets is also a way of empowering the local farmers and reducing market issues like monopolies etc. Policymakers should create spaces for communities, academics, and private sector actors to co-create food system transitions.

3. Encourage Long-Term Scaling Pathways

Beyond short donor cycles, policies must support "scaling deep" by embedding local cultural values and indigenous practices into agricultural innovation. Horizontal scaling (e.g., OKOBI's

replication across kindreds) should be encouraged alongside vertical scaling (policy reforms) for balanced, systemic transformation.

Implementation Pathways

To avoid the recurring gap between policy ambition and practical reality. It is first important to disassociate from the "*one size fits all*" mindset and know that implementation pathways must prioritize:

Achieving successful implementation involves Hybrid models of scaling by combining grassroots innovation with top-down enabling policies. For example, CAP reforms in Europe show how targeted incentives can support cooperatives, while OKOBI illustrates how community-led structures ensure continuity. There is a need to understand that sustainability goes beyond one-off training, capacity building as a continuous process, long-term farmer-to-farmer exchanges, leadership mentoring, and cooperative education are necessary for sustainability.

The role of finance can not be overemphasised blended finance approaches through mix donor support, government incentives, microfinance, and community pooling (e.g., village savings in SACDEP) to ensure financial sustainability, increased adaptation and scalability. The iterative process of monitoring, learning, and adaptation systems where communities track progress, share lessons, and adapt strategies over time must be put in place. This shifts evaluation from being donor-driven to community-led.

6.3.1 Policy Learnings From Cap, Farm to Fork, AU-EU Partnership And Grassroots Convergence

The European Union's Common Agricultural Policy (CAP) illustrates how long-term, structured support can enable innovation ecosystems by providing subsidies for young farmers, land tenure incentives, and targeted sustainability measures. At the same time, CAP has been critiqued for its bias toward larger, industrial farms, revealing the risks of top-down overreach in agricultural policy (Pe'er et al., 2017). In contrast, grassroots models in the Global South, such as OKOBI in Nigeria and SACDEP in Kenya, illustrate how resilience can emerge from cooperative ownership structures and cultural norms, even in contexts of scarce resources and limited state support; displaying how legitimacy and collective stewardship are often the key drivers of sustainability.

The most promising pathway lies in a convergence between these approaches. Hybrid governance models can combine the enabling conditions of international frameworks such as funding, legal recognition, and policy coherence with the ownership and legitimacy of grassroots actors. Such a synthesis would mitigate the risks of donor dependency and policy misalignment, while strengthening the inclusiveness and adaptability of just sustainable innovation ecosystems. Also,

within the European Union reforms like the Farm to Fork and the Horizon Europe Cluster 6 project, demonstrates an advancement in moving toward a more mission oriented approach. However, for this initiative to attain its maximum potential and be truly sustainable; the emphasis on place and bottom-up legitimacy should not be undervalued as it promotes inclusivity and mitigate the risks of donor dependency and policy misalignment, while strengthening the adaptability and justice orientation of food innovation systems across both the Global South and Mediterranean regions. Furthermore, the AU-EU innovation agenda attempt to bridge the gap between EU missions and African realities, but attention should be paid to avoid risk of African actors as implementer not co-designers; insights from the OKOBI case through their collective entrepreneurship models serves as a key in strengthening the AU–EU partnership to be just and sustainable. The Africa - EU Space Partnership Programme(2023) component provides a formal policy pathway for grassroots innovation initiatives, such as the collective entrepreneurship championed by OKOBI, to potentially scale up and scale out. These business support schemes, if implemented with place-sensitivity, could mitigate the recurrent financial and capacity challenges highlighted by cooperative leaders.

6.4 Concluding Reflections

This thesis set out to explore how Food-Based Just Sustainable Innovation Ecosystems (FJSIEs) can contribute to building equitable, resilient, and ecologically grounded food systems in the Global South and Mediterranean. Through the comparative analysis of case studies in Italy and Nigeria, and the integration of insights from international agencies and grassroots voices, it has become clear that innovation alone is not enough. Justice in the form of inclusion, equity, and cultural recognition must be the foundation on which sustainability and innovation rest. European mechanisms such as CAP, Farm to Fork, and Horizon Europe's Cluster 6 provide resources, incentives, and legitimacy, but risk spatial blindness and insufficient attention to justice and inclusion.

Space-driven technologies such as remote-sensing and downstream services could play a supportive role if co-designed with the locals, by delivering early-warning, crop monitoring and climate services at scale. But to ensure continuity, investment in human capital development must be made. Interestingly, the EU has moved beyond only innovation and sustainability, and has taken a step further by including "security" this includes prioritizing health, clean and drinkable water sources, healthy and affordable food, education and job empowerment etc these areas amongst others ensure global stability, reduce migration and curbs talent drain.

The findings demonstrate that community-rooted initiatives such as Terra di Resilienza and OKOBI are not marginal alternatives but vital laboratories of systemic change. They illustrate that food systems transformation flourishes where local knowledge and cultural traditions are recognized as assets, and where governance frameworks create space for genuine participation. Yet, the challenges of limited policy coherence, unequal resource distribution, and fragile institutional support persist, particularly in the Global South, highlighting the urgency of more deliberate and justice-centered interventions.

Personally, this research journey has underscored the importance of humility and listening in reimagining food systems. Interview conversations from international staff reflecting on donor-community tensions to cooperative leaders and youth voices in Nigeria revealed that sustainable innovation is as much about relationships, trust, and shared vision as it is about technology or funding. For me, the work affirms that rethinking food systems is not simply an academic pursuit but a moral and political responsibility. Aligning with the Bolivian (2010, October 8) concept of living well by paying more attention to ensuring others are well too, that is to say meeting each other in the middle and ensuring others are able to live as well. Acknowledging that; "He who is richer is not who has more, but who needs less" (Zapotec saying, Oaxaca, Mexico).

Also, this thesis has allowed me to reconcile my academic training with my identity and roots. As someone deeply connected to Nigeria and passionate about Africa and the Global South, I felt both the weight of systemic barriers and the hope of community-led transformation. Documenting the OKOBI initiative, in particular, has been more than academic; it has been a reaffirmation that our cultural heritage holds answers for contemporary challenges. It is a reminder that sustainable futures are not imported; they are cultivated within, nurtured by people who believe in collective prosperity.

Ultimately, FJSIEs offer a hopeful path forward: one that does not choose between grassroots ingenuity and institutional frameworks but seeks to bind them together into ecosystems where justice, innovation, and sustainability co-exist. By amplifying community voices and aligning them with supportive governance, the possibility of food systems that truly leave no one behind moves from aspiration to achievable reality. A convergence pathway lies in **hybrid governance models** that combine the resource intensity of European missions with the justice-centered legitimacy of grassroots systems.

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