

SMALL FIELDS TO LOCAL FORKS:


COMMUNITY-SUPPORTED AGRICULTURE FOR SMALL-SCALE AGROECOLOGICAL FARMERS IN SOUTHWEST MOROCCO

ABSTRACT: Local food systems around the world have become increasingly threatened by the resource extraction and ecological degradation of industrial agriculture and the climate crisis. Small-scale farmers are particularly affected by this, and experience multidimensional poverty through socio-economic, political, and ecological marginalization. This is certainly the case in Morocco, where agribusiness practices have led to land degradation, and pollution of commons that small-scale farmers need to grow food. In face of this, a growing movement of farmers has switched to alternative, agroecological methods of farming that use less water, no pesticides, and recover local food varieties. However, these methods have proven unsustainable for many farmers as they are unable to access markets and price their products fairly. This reluctantly led many of them back to industrial methods, to unemployment, or to leave their lands.


To meet this compounded challenge, we planned a Community-Supported Agriculture (CSA) model adapted to the Moroccan socioeconomic context, to connect small-scale agroecological farmers with nearby consumers. Drawing on principles of citizen social science, we conducted empirical research in Morocco, met with relevant stakeholders, and disseminated a survey to understand the needs for such a project in today's Moroccan food system. Small Fields to Local Forks (F2F) is conceptually inspired from Doughnut Economics, local Circular Economies, autopoietic systems, and rooted in indigenous and local knowledge. While empowering financial livelihoods for agroecological farmers in Southwestern Morocco in the short term, this intervention seeks to become a self-sustaining, collective bastion against a changing climate and multidimensional poverty, while championing alternative, sustainable food systems.




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“We stand now where two roads diverge. But unlike the roads in Robert Frost’s familiar poem, they are not equally fair. The road we have long been traveling is deceptively easy, a smooth superhighway on which we progress with great speed, but at its end lies disaster. The other fork of the road — the one less traveled by — offers our last, our only chance to reach a destination that assures the preservation of the earth.”

– Rachel Carson, *Silent Spring* (1962)

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Abbreviations and Acronyms

ADEME	French Agency for Ecological Transition
CE	Circular Economy
COPAG	Coopérative Agricole Marocaine
CSA	Community-Supported Agriculture
CSA-IP	Climate Start Agriculture Investment Plan
DE	Doughnut Economics
DSH	Dar Si Hmad
FAO	Food and Agricultural Organization of the United Nations
GCF	Green Climate Fund
GDP	Gross Domestic Product
GDP	Gross Domestic Product
HCP	Haut Commissariat au Plan
ICARDA	International Center for Agricultural Research in the Dry Areas
IMF	International Monetary Fund
IMF	International Monetary Fund
IPCC	Intergovernmental Panel on Climate Change
LCE	Local Circular Economy
MC	Mondragón Cooperative
NENA	Near East and North African region
OECD	Organisation for Economic Co-Operation and Development
OECD	Organisation for Economic Co-operation and Development
RIAM	Moroccan Network of Agroecological Initiatives
SDG	Sustainable Development Goal
SSP	Shared economic pathway

UAA	Useful Agricultural Area
UN	United Nations
UNEP	United Nations Environment Programme
WFP	World Food Programme

Currency Exchange Rates

As established by the latest UNCTAD calculations based on the UN Desa Statistics Division and the IMF¹, currency exchanges rates between the Euro, Moroccan dirham and the Swiss franc are the following:

1.07234 Swiss franc = 10.84726 Moroccan dirham (MAD).

1 euro = 10.84726 Moroccan dirham (MAD) = 1.07234 Swiss franc (CHF).

Approximatively:

10 CHF = 108 MAD.

¹ Table on UNCTAD Stat, "Currency Exchange Rates, Annual (2020)" United Nations Conference on Trade and Development - Beyond 20/20 WDS - Table View," accessed July 8, 2022, <https://unctadstat.unctad.org/wds/TableViewer/tableView.aspx>.

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Introduction

Small-scale farmers - also known as smallholders or family farms - are on an average low income, food insecure, with limited access to markets and services² and have seen worsening forms of multidimensional poverty in face of growing industrial farming. Despite this, it remains true that small-scale farmers feed a majority of the world. According to estimates from the UN Environment Programme (UNEP) and the Food and Agricultural Organization of the United Nations (FAO), about 90% of the world's farms are small-scale, holding on average 2.2 hectares, and yet produce up to 80% of food in non-industrialized countries.³ Despite their sheer quantity, the same organizations also report that a vast majority of farms are being squeezed onto less than a quarter of the world's farmland, getting smaller, and even closing operations, while big farms are expanding.

Larger farms, and particularly industrialized agribusinesses, primarily cultivate profitable export crops, biofuels, animal feed, and other commodities, maintained through the excessive use of pesticides, fertilizers, mass-produced seeds, monocultures, and communal water resources. Generating massive profits, agribusinesses often have the financial power and political support to occupy the best lands, use more natural resources, and access financial credit,⁴ ultimately leading to water pollution, soil degradation, and loss of biological diversity for nearby small-scale farmers.⁵ This has been compounded by the climate crisis and was made evident in the 2019 Intergovernmental Panel on Climate Change (IPCC) report, which states that extreme weather and climate events have exposed millions of people to food insecurity. Resulting droughts, desertification, and water scarcity worsen an already difficult situation. The climate crisis and agribusiness intersect as well with pre-existing forms of marginalization, particularly against rural populations, women, and indigenous communities, which are overwhelmingly represented among small-scale farmers.⁶

These challenges have been particularly present in Morocco, where the agriculture sector makes up 20% of the country's GDP, and employs 40% of the labour force, with 14 million rural Moroccans depending on the industry - directly or indirectly - for their livelihoods.⁷ Food systems in Morocco- which can be defined as the processes and infrastructure involved in satisfying a population's food security - are overwhelmingly dependent on small-scale farmers, as the Kingdom has mobilized resources disproportionately towards larger agribusiness. Between a dependence on imports to meet domestic consumption needs, record levels of drought and desertification,⁸ and the

² FAO, "Small Family Farmers | Family Farming Knowledge Platform," Food and Agriculture Organization of the United Nations, accessed July 13, 2022, <https://www.fao.org/family-farming/themes/small-family-farmers/en/>.

³ GRAIN, "Hungry for Land: Small Farmers Feed the World with Less than a Quarter of All Farmland" (GRAIN, May 28, 2014), <https://grain.org/article/entries/4929-hungry-for-land-small-farmers-feed-the-world-with-less-than-a-quarter-of-all-farmland#sdfootnote58anc>.

⁴ GRAIN; Vandana Shiva and Kartikey Shiva, *Oneness vs. the 1%: Shattering Illusions, Seeding Freedom* (White River Junction, Vermont: Chelsea Green Publishing, 2020).

⁵ John Gowdy and Philippe Baveye, "An Evolutionary Perspective on Industrial and Sustainable Agriculture," in *Agroecosystem Diversity* (Elsevier, 2019), 425–33, <https://doi.org/10.1016/B978-0-12-811050-8.00027-3>.

⁶ GRAIN, "Hungry for Land: Small Farmers Feed the World with Less than a Quarter of All Farmland".

⁷ Ministry of Agriculture, "Maritime Fisheries, Rural Development, Water and Forests. Plan Maroc Vert," Ministry of Agriculture, n.d., <http://www.agriculture.gov.ma/pages/la-strategie>.

⁸ Hamza Hamouchene and Mika Minio-Paluello, "The Coming Revolution: The Fight for Climate Justice & Survival" (Rosa Luxemburg Stiftung (RLS), Platform London, Environmental Justice North Africa (EJNA), April 2015), <https://www.rosalux.de/en/publication/id/4062/the-coming-revolution-the-fight-for-climate-justice-survival>.

ecological unsustainable agricultural sector, Moroccan food systems were built to fail. The Russian invasion of Ukraine acted as a spark, since the country relies heavily on grain imports, with Morocco World News reporting in March that the kingdom only had an estimated three months of reserves.⁹

Amidst this, small-scale farmers continue to struggle in their desire to grow food. However, the range of ecological and economic barriers they face has given many no choice but to adopt homogenized, industrial cultivation methods, since it produces short-term profits. All of these incur insurmountable costs for small-scale Moroccan farmers and have led many to abandon their trade and move to urban areas in search of employment. This rural exodus has even graver implications for Moroccan food systems and marginalized groups, who spend a majority of their earnings on food. In response to this, many small-scale farmers have attempted to shift towards agroecological practices - ancient, indigenous, sustainable, and traditional farming systems based on ecological principles¹⁰ - but struggle to accurately price their crops and market them against the industrialized competition.¹¹

Small Fields to Local Forks (F2F) addresses this specific problem, by connecting small-scale farmers using agroecological methods with local consumers, aiming to establish a Community-Supported Agriculture (CSA) model. Effectively rebuilding food systems at a local level in several national contexts, a CSA is “an alternative food marketing and distribution model in which consumers pay a membership fee in advance of the season in return for a share of a farm’s harvest.”¹² Taking place in Agadir Ida-Outanane Prefecture in Southwestern Morocco, this model allows small-scale agroecological farmers who struggle with land rights, transportation costs, and logistical difficulties to coordinate their own ecological and social benefits, build a coalition among each other, and foster relationships with individual households. As Section 5 outlines, this project would be built and implemented by our team, with a local agricultural NGO, *Dar Si Hmad* (DSH), and with the producers themselves over nine months in Agadir, following which operations would be handed over to the farmers and DSH. Contrasting with the several high-tech approaches throughout the development and agricultural sector in Morocco, our intervention advocates for a low-tech, collaborative, and community-based approach, that intends to establish a more sustainable, alternative, and localized food system. To this end, F2F has two primary objectives: **(1) to empower financial livelihoods for agroecological farmers, and reduce multidimensional poverty;** and **(2) to more resilience to worsening climate events and international market fluctuations** that increase food insecurity, contributing to more equitable, socially just, and food systems.

⁹ Rahhou, Jihane. 2022. “Morocco Opens Tender to Stockpile Grain.” Morocco World News. April 29, 2022. <https://www.morocoworldnews.com/2022/04/348686/morocco-opens-tender-to-stockpile-grain>.

¹⁰ Vandana Shiva, *Who Really Feeds the World? The Failures of Agribusiness and the Promise of Agroecology* (Berkeley, California: North Atlantic Books, 2016).

¹¹ Samira Ardjal and authors, Interview with Samira Ardjal - Dar Si Hmad, June 20th 2022.

Christina De Perfetti and authors, Interview with Christina De Perfetti, the Green Souk, June 24th 2022.

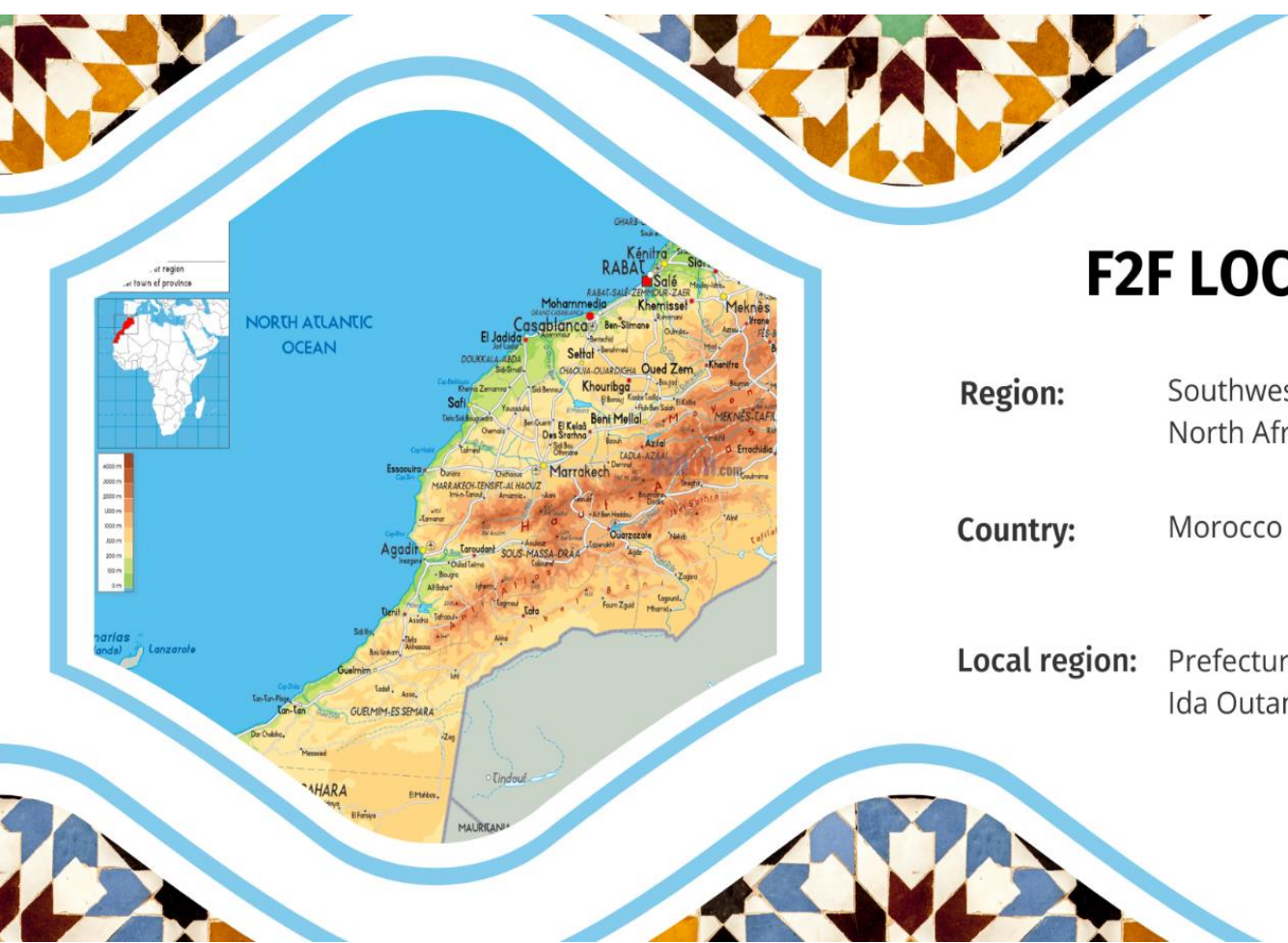
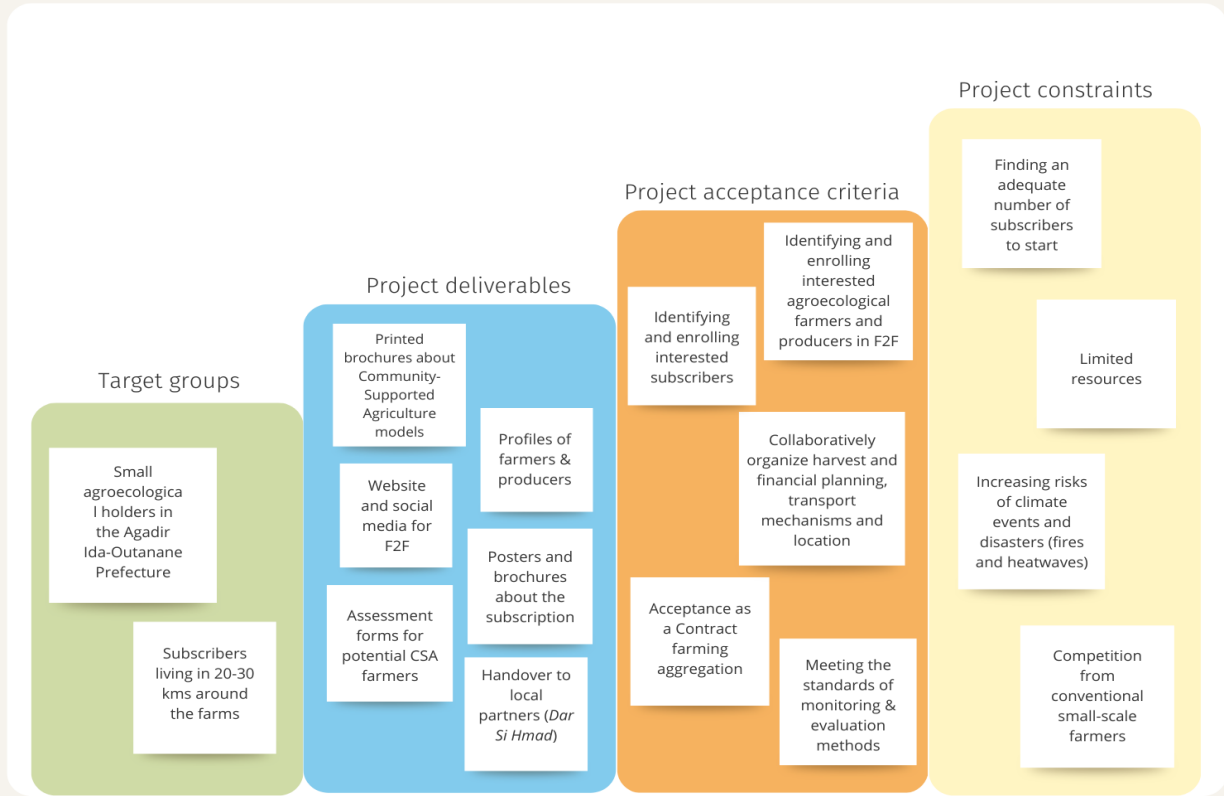
¹² Alison H. Harmon, “Community Supported Agriculture: A Conceptual Model of Health Implications,” *Austin Journal of Nutrition and Food Sciences* 2, no. 4 (April 2, 2014).

PROJECT SCOPE

Project Title:
Small Fields to Local Forks (F2F)

Timeframe:
within 9 months

Objective:
Create a recurring stream of income of locally agro-ecologically produced food boxes.



F2F LOCATION

- Region:** Southwest Asia & North Africa (SWANA)
- Country:** Morocco
- Local region:** Prefecture of Agadir Ida Outanane

1. Understanding Multidimensional Poverty in Rural Areas, among Farmers, and the Agricultural Context in Morocco

This first section offers insight into the broader context, practices, and policies contributing to poverty among small-scale farmers. It begins with a detailed overview of the policies and practices of Moroccan agribusiness, followed by general overview of multidimensional poverty among small-scale farmers, and concludes with State-led initiatives to adapt Moroccan food systems.

1.1 Policy and Practices of the Moroccan Agribusiness

The Kingdom of Morocco has been widely praised in recent years for its macroeconomic indicators, low inflation rates, openness to foreign investment,¹³ and overall economic growth over the past decade.¹⁴ This praise has also extended to the agriculture sector, which represents 20% of the Kingdom's GDP and 40% of employment. Turning towards industrialization and reliance on private investment in the 1970s, this "pillar of the economy" was organized to produce "the highest degree of productivity."¹⁵ Followed by the agrarian reforms encouraged by the International Monetary Fund (IMF) in the 1980s, Morocco shifted to focus on exporting water-intensive cash crops, while relying on imports for "cheap staples" like grain.¹⁶ Morocco currently brings in almost 2 billion euros of foreign currencies to the country per year.¹⁷ These policies were also pursued under the Green Morocco Plan (GMP), which, while creating thousands of jobs, ultimately exists to expand the agriculture industry and its profitability.¹⁸

While the Green Morocco Plan has managed to increase crop yields,¹⁹ the Kingdom remains in an agricultural trade deficit and continues to rely on imports to meet its consumption needs, rendering low-income Moroccans more vulnerable to subtle price increases.²⁰ Including all basic food products, but primarily wheat, sugar and oils,²¹ the volatility of the market was demonstrated through the 2008 "bread riots," when protests broke out across the country due to rising food prices. The origins of this dependency can be traced back to colonial development methods that stressed technical transformation and "modernization" in the region while marginalizing small farmers and

¹³ "Le Tourisme continue de porter la croissance au Maroc," *L'Economiste*, February 28, 2020, <https://www.leconomiste.com/flash-infos/le-tourisme-continue-de-porter-la-croissance-au-maroc>

¹⁴ Clémence Vergne, *Le Modèle de Croissance Marocain : Opportunités et Vulnérabilités*, 2014.

¹⁵ Ministère de l'agriculture, "AGRICULTURE EN CHIFFRES 2018 Investor's Guide in the Agricultural Sector in Morocco" (Agency for Agricultural Development, 2018), <https://www.agriculture.gov.ma/fr/publications/agriculture-en-chiffres-2018-edition-2019>.

¹⁶ Calenda, "Agricultures du Maghreb / Machrek à l'épreuve de la crise alimentaire et des révolutions arabes Agriculture in the Maghreb/Machrek to the test of the food crisis and the Arab revolutions," June 11, 2012, <https://calenda.org/208900>.

¹⁷ Ministère de l'agriculture, "AGRICULTURE EN CHIFFRES 2018 Investor's Guide in the Agricultural Sector in Morocco."

¹⁸ OECD, FAO, and UNCDF, *Adopting a Territorial Approach to Food Security and Nutrition Policy* (Paris: Organisation for Economic Co-operation and Development, 2016), https://www.oecd-ilibrary.org/urban-rural-and-regional-development/adopting-a-territorial-approach-to-food-security-and-nutrition-policy_9789264257108-en.

¹⁹ Strategic crops are those identified by the Government as being essential for national food security, notably cereals and oilseeds.

²⁰ OECD, FAO, and UNCDF, *Adopting a Territorial Approach to Food Security and Nutrition Policy*.

²¹ World Food Programme, Country Strategic Plan (2019-2021), June 6 2019 <https://docs.wfp.org/api/documents/WFP-0000104706/download/>

indigenous methods.²² Despite this glaring vulnerability in local food systems, there is a disproportionate concentration of land, resources, funding, and state support behind industrial agribusiness, as opposed to small-scale farmers producing mostly for local markets and subsistence farming for family consumption.²³ More than 70% of farmers have plots of land that are no more than 5 ha.²⁴ Among the farmers and producers in said rural areas, few of them have access to irrigated arable lands, while many lack formal title to land which increases income diversification and enables their access to credit.²⁵ In the case of water: irrigation sucks up an estimated 90 % of available freshwater resources in the country, and a disproportionate amount of that water goes towards larger industrial farms producing water-intensive exports, leaving small-scale farmers at an overwhelming disadvantage.²⁶ Industrial farming has also contributed to widespread ecological degradation through continued pesticide use, monocultures, overuse of fertilizers, and mass-produced seeds, which have resulted in water pollution, soil erosion, and extinction of local food varieties.²⁷ In response to towering environmental and economic challenges, many small-scale farmers have begun using industrial methods encouraged by the GMP. While this allows them to generate a much-needed short-term income, the longer-term environmental impact will render their land, and thus, their livelihood, useless.

1.2 Multidimensional Poverty among Small-scale farmers in Morocco

Made evident from the agricultural sector, small-scale farmers in Morocco are experiencing a microcosm of overlapping forms of marginalization, which often results in multidimensional poverty. The first of these dimensions concerns income, of which many threats were highlighted above. As of January 1st, 2022, in the industry, commerce and liberal professions, the guaranteed hourly minimum wage is 14.81 DH, while in agriculture the daily guaranteed minimum agriculture wage is 76.70 DH.²⁸ Meaning that a day worked in agriculture, corresponds to five hours worked in industry, commerce and liberal professions. Social protections are also different depending on the sector, and agriculture suffers from limited social safety nets.²⁹ According to the Haut Commissariat au Plan (HCP)

²² Angela Joya, "Food Sovereignty and the Struggle for Socio-economic Justice in North Africa," *Development and Change* 52, no. 1 (January 2021): 202–13, <https://doi.org/10.1111/dech.12628>.

²³ World Food Programme, "Morocco Country Strategic Plan (2019–2021)," June 6, 2019, <https://docs.wfp.org/api/documents/WFP-0000104706/download/>.

²⁴ Shinan Kassam, Patricia Biermayr-Jenzano, and Aden Aw-Hassan, *Understanding Gender and Poverty Dimensions of High Value Agricultural Commodity Chains in the Souss-Masaa-Draa Region of Southwestern Morocco*, 2014, https://www.academia.edu/21172719/Understanding_gender_and_poverty_dimensions_of_high_value_agricultural_commodity_chains_in_the_Souss_Masaa_Draa_region_of_southwestern_Morocco.

²⁵ Naoufel Telahigue, "Country Operations: Morocco," Investing in Rural People (IFAD), accessed July 11, 2022, <https://www.ifad.org/en/web/operations/w/country/morocco>.

²⁶ Hafez Ghanem, "Agriculture and Rural Development for Inclusive Growth and Food Security in Morocco, Global Economy and Development," Working Paper 82 (Global Economy and Development at BROOKINGS, February 2015), https://www.brookings.edu/wp-content/uploads/2016/07/Agriculture_WEB_Revised.pdf.

²⁷ Hamza Hamouchene, "Challenging Agribusiness and Building Alternatives in Tunisia and Morocco," *North African Network for Food Sovereignty* (blog), July 2020, <https://www.siyada.org/en/siyada-board/research-and-publications/library/challenging-agribusiness-and-building-alternatives-in-tunisia-and-morocco/>.

²⁸ Khalil Machrafi, "SMIG Maroc 2022 | SMIG Maroc 2022 | BLOG OJRAWEB," January 1, 2022, <https://blog.ojraweb.com/gestion-de-la-paie-maroc-valeur-du-smig-au-01-janvier-2022/>.

²⁹ Diego F. Angel-Urdinola, Fatima El Kadiri, and Montserrat Pallares-Miralles, "Morocco: Social Protection and Labor Diagnostic" (Washington, DC: World Bank, May 26, 2015), <https://openknowledge.worldbank.org/handle/10986/23817>.

in 2021 cited in the Moroccan press, “50% of urban households earn an average monthly income of MAD 5,609 (\$631) while rural households earn MAD 4,237 (\$477).”³⁰

The second dimension hinges on rurality. While the notion of a “rural-urban divide” is much more nuanced and ambiguous in practice,³¹ official analyses from Moroccan state institutions and international organizations do not seem to challenge this notion. Limited access to roads, healthcare, and educational facilities and else present challenges to socio-economic mobility and meeting basic needs. In 2018, only 64% of the rural population was connected to a drinking water network, compared to almost all of the population in the cities.³² Incorporating these factors, as well as spending and consumption of Moroccan households, in 2014 OXFAM conducted the first cartography of multidimensional poverty in Morocco, and found that 1 out of 5 in rural areas.³³ These discrepancies between the urban and the rural, along with limited employment opportunities and worsening environmental conditions have led many to migrate toward the urban.³⁴ This is especially true for farmers, who find their lands contested and resources polluted, and often leave their homes and livelihoods as a result, in hopes of finding work in urban areas.

It is also important to consider gender as well since women are overrepresented as workers in agriculture and industry.³⁵ Women represent almost half of those classified as unpaid ‘contributing family workers and are almost four times more likely than men to be classified as such.³⁶ They are also likely to work at the lowest levels of the agriculture value chains, but only own 7% of the land.³⁷ Indigenous Amazigh communities as well, face continued “discrimination, structural exclusion, and racist stereotyping based on their Amazigh language and culture.”³⁸ The fact that most Amazigh lives on ancestral or communal lands³⁹ are more likely to expose them to land grabbing and dispossession from agribusiness, or limit them from accessing financial credit. This was codified into law in 2019, as

³⁰ Michael Sauer, “Study: Household Income Shows Large Inequalities in Morocco’s Society,” *Morocco World News*, April 29, 2021, <https://www.morocworldnews.com/2021/04/340971/study-household-income-shows-large-inequalities-in-moroccos-society>.

³¹ Alister Scott, Alana Gilbert and Ayele Gelan, “The Urban-Rural Divide: Myth or Reality?”, SERG Policy Brief, Number 2 https://macaulay.webarchive.hutton.ac.uk/ruralsustainability/SERP%20PB2_Final.pdf

³² HCP, Les cahiers du plan n°50, Pauvreté et prospérité partagée au Maroc du troisième millénaire, 2018, https://www.hcp.ma/Les-Cahiers-du-Plan-N-50-Janvier-Fevrier2018_a2152.html

³³ HCP, “Principaux Résultats de La Cartographie de La Pauvreté Multidimensionnelles,” 2014, https://www.hcp.ma/Principaux-resultats-de-la-cartographie-de-la-pauvrete-multidimensionnelle-2014-Paysage-territorial-et-dynamique_a2023.htm.

³⁴ Omar Bessaoud and Ahmad Sadiddin, “Chapitre 5 - Développement rural et migrations : une dimension environnementale,” in *MediTERRA 2018*, Annuels (Paris: Presses de Sciences Po, 2018), 103–26, <https://doi.org/10.3917/scpo.chea.2018.01.0103>.

³⁵ International Labour Organization, “Morocco: young women’s employment and empowerment in the rural economy https://www.ilo.org/wcmsp5/groups/public/---ed_emp/documents/publication/wcms_622767.pdf

³⁶ Kassam, Biermayr-Jenzano, and Aw-Hassan, *Understanding Gender and Poverty Dimensions of High Value Agricultural Commodity Chains in the Souss-Masaa-Draa Region of Southwestern Morocco*.

³⁷ “Spring Forward for Women Programme,” United Nations Entity for Gender Equality and the Empowerment of Women, 2014, <https://spring-forward.unwomen.org/en/countries/morocco>.

³⁸ “Morocco: UN Expert Urges Action on Anti-Discrimination and Racial Equality Commitments,” OHCHR, July 8, 2019, <https://www.ohchr.org/en/press-releases/2019/07/morocco-un-expert-urges-action-anti-discrimination-and-racial-equality>.

³⁹ Pedro Fiz Rocha Correa, “Land and Livestock Management in the Mountains of Maghreb” (MSc Thesis, 2013), <https://edepot.wur.nl/260277>.

Law No. 62.17⁴⁰ grants the Ministry of Interior full authority over the future of collective lands, their sales, leasing, or dispossession.

Between 2001 and 2014, the State-led poverty index decreased from 15,3 % to 4,8 % partly due to the policies of the National Initiative for Human Development (INDH) that worked towards poverty alleviation. While evaluations of the INDH's effectiveness are debated academically, these policies are inadequate to respond to the extractive and inequitable agribusiness practices taking place across Morocco. Additionally, the above-mentioned poverty rate only grants a limited conception of poverty - ignoring multidimensionality - which especially matters for households that are situated right above the poverty line.⁴¹ Indeed, these households are still highly vulnerable to any sort of social or economic shock, as the COVID-19 pandemic showed us.⁴²

1.3 Small-scale farmers and the Climate Crisis

Along with the rest of the world, climate change poses an existential challenge for Moroccan food systems and small-scale farmers. Evident by the 2016 drought - the worst in more than 30 years - which reduced cereal yield by 70 %, the Kingdom is facing a widespread loss of biodiversity, reduced yields of rainfed crops, increasing desertification, and worsening water scarcity.⁴³ By 2050, climate change is estimated to account for 22% of future water shortages in the region,⁴⁴ increasing mostly the vulnerability of people in drylands.⁴⁵ Over the last decades, North African countries have shown to have a much greater near-surface temperature caused by human activities.⁴⁶ Even if today's Moroccan agriculture provides a fifth of its GDP, its outputs depend mostly on rainfall. The International Center for Agricultural Research in the Dry Areas (ICARDA) underlines that within the 8.7 million ha of Useful Agricultural Area (UAA), irrigated areas are extremely limited as nearly 90% of the UAA is rainfed.⁴⁷

⁴⁰ Mohamed Sammouni and Amine Belghazi, "Terres collectives au Maroc: Une modernisation à tâtons?" (Rabat - Maroc: Heinrich-Böll-Stiftung, September 2020), <https://ma.boell.org/fr/2020/10/01/terres-collectives-au-maroc-une-modernisation-tatons>; Amyne Asmlal, "Terres soulaliyates: une loi qui, manifestement, ne passe pas," *Le360.ma*, December 10, 2021, <https://fr.le360.ma/societe/terres-soulaliyates-une-loi-qui-manifestement-ne-passe-pas-251034>; Bouteina Bennani, "La loi 62-17 relative à la tutelle administrative sur les communautés est discriminatoire," Portail L'ODJ, December 10, 2020, https://www.lodj.ma/La-loi-62-17-relative-a-la-tutelle-administrative-sur-les-communautes-est-discriminatoire_a104.html.

⁴¹ The poverty line was 4,667 dirhams of annual expenditure in urban areas and of 4,312 dirhams in rural areas.

⁴² Marie Verdier, "Au Maroc, la flambée de la pauvreté due au Covid-19," *La Croix*, March 29, 2021, <https://www.la-croix.com/Monde/Au-Maroc-flambee-pauvrete-due-Covid-19-2021-03-29-1201148279>.

⁴³ Hamza Hamouchene and Mika Minio-Paluello, "The Coming Revolution: The Fight for Climate Justice & Survival" (Rosa Luxemburg Stiftung (RLS), Platform London, Environmental Justice North Africa (EJNA), April 2015), <https://www.rosalux.de/en/publication/id/4062/the-coming-revolution-the-fight-for-climate-justice-survival>.

⁴⁴ P. Droogers et al., "Water Resources Trends in Middle East and North Africa towards 2050," *Hydrology and Earth System Sciences* 16, no. 9 (September 3, 2012): 3101–14, <https://doi.org/10.5194/hess-16-3101-2012>.

José M. García-Ruiz et al., "Mediterranean Water Resources in a Global Change Scenario.," *Earth-Science Reviews* 105, no. 3–4 (April 2011): 121–39.

⁴⁵ Alisher Mirzabaev et al., "Desertification," *Climate Change and Land: An IPCC Special Report on Climate Change, Desertification, Land Degradation, Sustainable Land Management, Food Security, and Greenhouse Gas Fluxes in Terrestrial Ecosystems*, January 1, 2019, https://www.academia.edu/41740792/Chapter_3_Climate_Change_and_Land_An_IPCC_special_report_on_climate_change_desertification_land_degradation_sustainable_land_management_food_security_and_greenhouse_gas_fluxes_in_terrestrial_ecosystems.

⁴⁶ Armineh Barkhordarian, Jonas Bhend, and Hans von Storch, "Consistency of Observed near Surface Temperature Trends with Climate Change Projections over the Mediterranean Region," *Climate Dynamics* 38, no. 9 (May 1, 2012): 1695–1702, <https://doi.org/10.1007/s00382-011-1060-y>.

⁴⁷ Communication Team Icarda, "Morocco and ICARDA" (Aleppo, Syria: International Center for Agricultural Research in the Dry Areas (ICARDA), September 7, 2005), <https://repo.mel.cgiar.org/handle/20.500.11766/7894>.

The water stress and droughts in the agricultural sector are likely to further impact Morocco's economic growth this year and in the coming ones.⁴⁸ The situation is worsening today, as the Ministry of Agriculture reported in May that this year's cereals harvest is down 69 % due to drought, following last year's temporary recovery.⁴⁹ In February, Morocco had declared an "exceptional drought year,"⁵⁰ with the King announcing a 1 billion euro financial support mechanism to combat the impact of insufficient rain on the agricultural sector.⁵¹ As small-scale farmers often rely more on rainfed crops and supply a vast majority of Morocco's food supply, their multidimensional poverty becomes everyone's food insecurity. Recently, environmental conditions such as droughts and rising temperatures have worsened the latent food prices crisis brought about by the Russian war on Ukraine, leading to a reported 70% drop in wheat and barley products during the 2022-23 agricultural season.⁵² As it was seen in other countries, Morocco's industrial agriculture is likely to become more fragile in the face of the climate crisis, and hence exposes small-scale farmers to increasing pressures, inequalities, and poverty.⁵³

1.4 State-led Initiatives to adapt Moroccan Food Systems

For about eighty years, subsidies have operated in Morocco as a "shield" to protect the poorest populations from high food prices. However, in 2007-2008, a global food crisis hit the Middle East and North African region and food prices increased on average between 21% to 115%.⁵⁴ Back then, despite the government subsidies, the prices of basic staples hit the roof in Morocco.⁵⁵ Following the 2007 Subprimes crisis and 2011 so-called Arab uprisings, price controls, and subsequent increases in subsidies for bread, fuel and electricity grew and ultimately reached 20% of Morocco's national budget.⁵⁶ Since the Russian invasion of Ukraine, and the war that came thereafter, Morocco's subsidy costs have increased again and the country is encouraged to diversify its cereal and fuel suppliers.⁵⁷ Morocco subsidizes the price of wheat, especially soft wheat, to protect both bakeries and consumers from excessive global market volatility.⁵⁸ Although subsidy policies are useful in protecting the

⁴⁸ Telahigue, "Country Operations: Morocco."

⁴⁹ Jihane Rahhou, "Morocco's Wheat Production Down by 69% in 2022", Morocco World News, May 16, 2022 <https://www.moroccoworldnews.com/2022/05/349074/moroccos-wheat-production-down-by-69-in-2022> (accessed on April 14, 2022)

⁵⁰ Jihane Rahhou, "Morocco's Rainfall Is at a Record Low", Morocco World News, February 13, 2022 <https://www.moroccoworldnews.com/2022/02/347064/moroccos-rainfall-is-at-a-records-low> (accessed on April 14, 2022)

⁵¹ RédactionMedias24, "Le Roi Mohammed VI : 10 milliards de DH seront mobilisés contre le déficit pluviométrique," Médias24 (blog), February 16, 2022, <https://medias24.com/2022/02/16/le-roi-mohammed-vi-10-milliards-de-dh-seront-mobilises-contre-le-deficit-pluviometrique/>

⁵² Souad Anouar, "Drought, War in Ukraine Put Pressure on Morocco's Wheat Supply," Morocco World News, April 22, 2022, <https://www.moroccoworldnews.com/2022/04/348529/drought-war-in-ukraine-put-pressure-on-moroccos-wheat-supply>.

⁵³ Claire McGuigan, Rebecca Reynolds, and Daniel Wiedmer, "Poverty and Climate Change: Assessing Impacts in Developing Countries and the Initiatives of the International Community" (London School of Economics, 2012), <https://cdn.odi.org/media/documents/3449.pdf>.

⁵⁴ Imed Drine, "Global Food Crisis and Food Security in Middle East and North Africa," Harvard College Economics Review IV (2010): 26–27.

⁵⁵ Lamia Zaki, "Maroc : dépendance alimentaire, radicalisation contestataire, répression autoritaire," Centre tricontinental (blog), 2009, <https://www.cetri.be/Maroc-dependance-alimentaire>.

⁵⁶ Ishan Thakore, "Deficit Pushes Morocco to Cut Subsidies," Al Jazeera, May 2, 2014, <https://www.aljazeera.com/news/2014/5/2/deficit-pushes-morocco-to-cut-subsidies>.

⁵⁷ Shaquile Goff, "Morocco's New Finance Bill Allocates over \$1.7 Billion for Gas, Food Subsidies," Morocco World News, October 19, 2021, <https://www.moroccoworldnews.com/2021/10/345063/moroccos-new-finance-bill-allocates-over-1-7-billion-for-gas-food-subsidies>

⁵⁸ Francisco Serrano, "War in Ukraine and Drought at Home: A Perfect Storm in the Maghreb," Middle East Institute (blog), March 21, 2022, <https://www.mei.edu/publications/war-ukraine-and-drought-home-perfect-storm-maghreb>.

population from sudden price shocks and are said to ‘buy peace’⁵⁹, they are not sustainable in the long-term and fragilize the country if they were ever removed. Nonetheless, protests against the high cost of products are not uncommon, such as the ones in the spring of 2018 when Moroccans boycotted three products of basic necessity, milk, mineral water, and fuel distributed across the country.⁶⁰

In the last decade, Morocco has embraced a whole set of reforms to reorganize its agricultural model, but only partly engaged with alternatives. For example, the Minister of Agriculture launched the new Generation Green Plan 2020-2030 to better integrate farmers into the economic structure. The Declaration states the need for an "agrarian reform based on food sovereignty in the agricultural policies of member countries." Nonetheless, if Morocco is promoting food sovereignty it is mostly in light of market independence rather than putting into motion an entire overhaul of their conventional, highly profitable industrial agriculture.⁶¹ The Plan is two-fold: it (1) aims at creating a “rural middle class” and about 350,000 jobs in the agricultural sector; and (2) intends to boost “agricultural exports to 6 billion dollars while bolstering agricultural GDP to 25 billion dollars.”⁶²

Additionally, under the accreditation of the international Green Climate Fund (GCF), Morocco developed its own Climate Smart Agriculture Investment Plan (CSA-IP) in 2018.⁶³ In its infancy, this specific investment plan is using a “combined set of technologies and practices”, in its attempts to tackle three challenges at the same time, i.e. farm productivity and monetary return, climate change adaptation, and mitigation.⁶⁴ While previous investment plans in Morocco saw limited results, the current initiative employs an advanced form of technological solutionism and “high-tech” projects, rather than “low” or “no” tech as explained later. According to local activists, there is a “great resistance within the Ministry” to tackle environmental issues, such as the use of pesticides. Only recently the Ministry start to express interest in an industrial form of organic agriculture rather than agroecology.⁶⁵

⁵⁹ Markus Loewe and Tina Zintl, “State Fragility, Social Contracts and the Role of Social Protection: Perspectives from the Middle East and North Africa (MENA) Region,” *Social Sciences* 10, no. 12 (November 23, 2021): 447, <https://doi.org/10.3390/socsci10120447>.

⁶⁰ Rachida El Azzouzi, “Au Maroc, un boycott contre la vie chère,” *Mediapart*, June 5, 2018, <https://www.mediapart.fr/journal/international/050618/au-maroc-un-boycott-contre-la-vie-chere>.

⁶¹ Agency for Agricultural Development, “Investor’s Guide in the Agricultural Sector in Morocco,” 2018, https://www.agriculture.gov.ma/sites/default/files/19-00145-book_agricultures_en_chiffres_def.pdf

⁶² North Africa Post, “Morocco’s King Launches New Strategies for Inclusive Agriculture & Forestry – The North Africa Post,” *North Africa Post*, February 13, 2020, <https://northafricapost.com/38029-moroccos-king-launches-new-strategies-for-inclusive-agriculture-forestry.html>.

⁶³ Abir Lemseffer et al., “Morocco Climate-Smart Agriculture Investment Plan” (World Bank; FAO; AAA, November 2018), <https://www.aaainitiative.org/sites/default/files/2021-01/CSAIP-Morocco.pdf>.

⁶⁴ Sajjad Hussain et al., “Climate Smart Agriculture (CSA) Technologies,” in *Building Climate Resilience in Agriculture: Theory, Practice and Future Perspective*, ed. Wajid Nasim Jatou et al. (Cham: Springer International Publishing, 2022), 319–38, https://doi.org/10.1007/978-3-030-79408-8_20.

⁶⁵ Ghita Zine, “L’agroécologie, Une Alternative Aux Intrants Chimiques.,” in *Maroc : Justice Climatique, Urgences Sociales*, ed. Hicham Houdaïfa (En toutes lettres, 2021), 123–39.

"We are already there. Even if the presence of environmental issues is still marginal in the media, the problem is there and is imposed in all its harshness to the most fragile populations."

"No social justice without climate justice" petition, October 4, 2021. Signed by Morocco's journalists and researchers, on environmental and social issues.

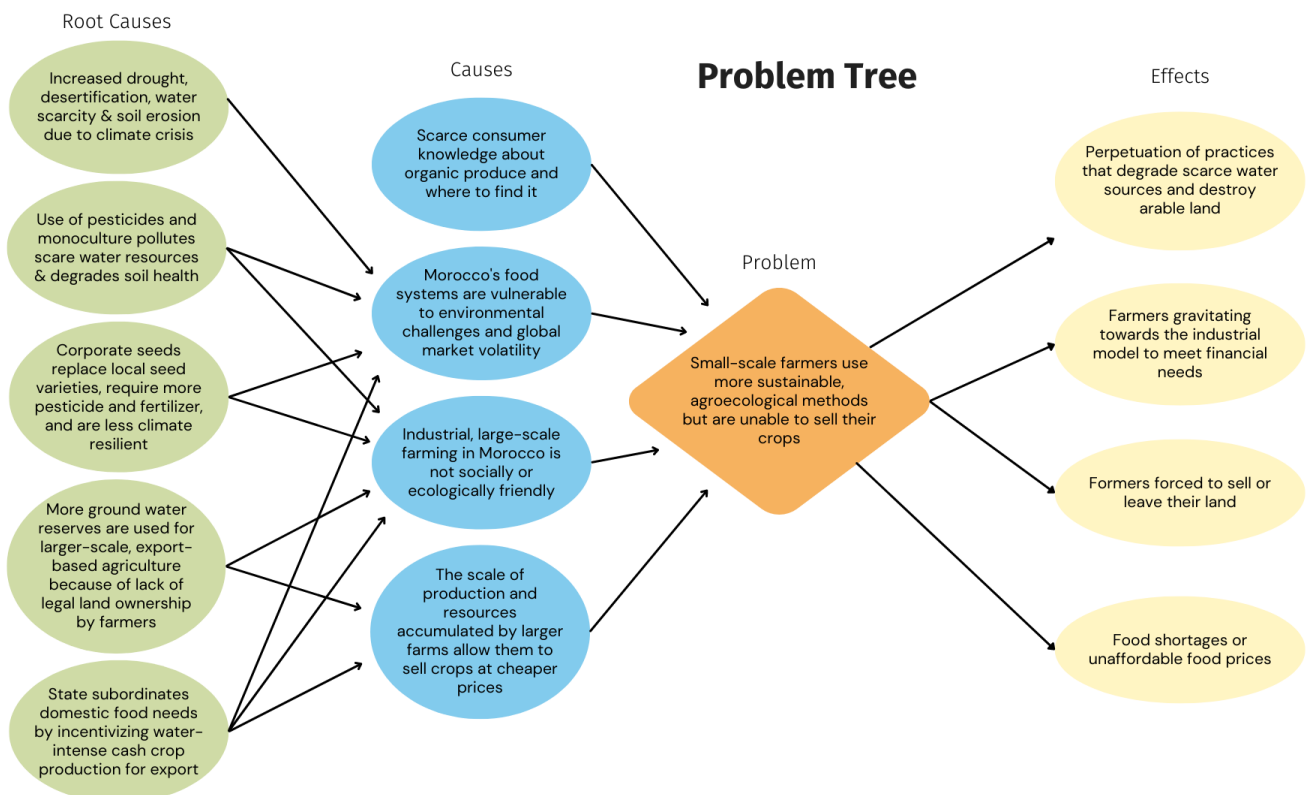
PESTLE Summary

Political	Economic	Socio-cultural	Technological	Legal	Environmental
The government pursues a policy on "food sovereignty" to gain market independence	New loans for young entrepreneurs in rural areas (under the Green Generation Plan 2020-2030)	Need to coordinate the project with already established agroecological network	Several high-tech solutions to the transform industrial agriculture are underway	Different types of business models, such as the service-oriented aggregation, can be used in the agricultural sector	Droughts, land degradation and water scarcity threaten the current industrial agriculture and smallfarm holders
The State is looking to diversify its option and modernize the industrial agricultural sector	Wide gaps between rural and urban standards of living and income	Labour concerns for access to a decent work	The Climate Smart Agriculture Investment Plans aims at combining technologies and practices	Need to establish minimum standards for agroecological production	Desertification is advancing, especially in semi-arid region like the Prefecture-Agadir-Ida Outanane
Attempts to close the poverty gap between rural and urban areas are underway	Agriculture represents around 20 percent of Morocco's GDP today	Agroecological initiatives are flourishing and organizing around Morocco	Morocco's Water Plan establishes a roadmap for the construction of dams and irrigation systems	Cooperatives are a common mode of association in the agricultural sector	Indigenous and local knowledge can help adapt against climate change impact
Poverty and unemployment (especially for young people) are high and a source of discontent	International donors and organizations channel funds to transform the industrial agriculture	Several, more or less, niche initiatives are using agroecological practices around the country		Communal land management is now managed under the Ministry of Interior	Agroecological initiatives are available all across the country and sometimes organized in networks
Organic agriculture is starting to be included in the policies of the Ministry of Agriculture	Subsidies on food prices does not necessarily protect from sudden global price shocks	Need to establish a recognizable and trusted agroecological label via a participatory guarantee systems			

Table 1. Summary of the operational context following the PESTLE model. (Table by authors)

1.5 Assessing the Needs of Small-scale Farmers nearby Agadir, Southwest Morocco

To assess the needs of small-scale farmers in the Agadir-Ida Outanane Prefecture, we need to zoom out and understand the state of multidimensional poverty across the region, Souss-Massa. Representing 7,6% of the national territory, 2.8 million inhabitants during the census of 2020, with almost half of them living in rural areas, communes, or villages.⁶⁶ The unequal distribution of infrastructures and essential services between urban and rural areas in Morocco strengthens these disparities. Limited access to roads from remote rural regions⁶⁷, and access to healthcare, and education are among a few examples. Rural areas throughout the region are also home to indigenous Amazigh communities, who have been historically marginalized in Morocco. This region is home as well to widespread industrial agricultural practices, primarily to exporting citrus fruits and watermelons to Europe. The challenges that small-scale farmers face are outlined from left to right in a “problem tree” below.



On the other hand, we also identified organizations fighting against this in Agadir. Dar Si Hmad, for example, is committed to enabling sustainable livelihoods, protecting local ecosystems, and creating educational, and cultural agroecological opportunities for low-income, majorly rural Amazigh communities in the Souss-Massa region. In the land that was donated to them, they have taught both

⁶⁶ Région de Souss Massa en Chiffres 2020 , *Direction Régionale de Souss Massa, Haut-Commissariat du Plan*. Document citing the *Annuaire Statistique Régionale Souss Massa 2019* and *Annuaire Nationale 2014, 2020*, <https://www.hcp.ma/region-agadir/docs/REGION%20DE%20SOUS%20depliant.pdf>

⁶⁷ World Bank <https://web.worldbank.org/archive/website00819C/WEB/PDF/MOROCCO .PDF>

young men and women to “revive this now dry, desiccated piece of land” and transform it through permaculture and agroecology.⁶⁸ With their fog-harvesting nets, their “*CloudFishers*” deployed across the surrounding 16 villages and on the *Agdal Id Achour* farm, they were able to create a successful irrigation system to start planting in 2020.⁶⁹

⁶⁸ “Agdal Id Achour Educational Farm Project – Dar Si Hmad.”

⁶⁹ Dar Si Hmad, “A Ground-Breaking Project: Harvesting Water from Fog – Dar Si Hmad,” accessed May 22, 2022, <http://darsihmad.org/fog/>.

2. Methodology: A community-based learning process

Sieglinde Snapp and Barry Pound argue that participatory approaches when researching agroecology and rural innovation for development are fundamental, as it helps bridge gaps between researchers, smallholder farmers, and other rural stakeholders. Furthermore, it has the potential to better value both scientific input and indigenous knowledge, largely informed by empirical experience. As they point out, through indigenous knowledge, small farm holders “know their resources, such as soils and priorities, better than anyone.”⁷⁰ However, researchers external to the context, although working with farmers, might increase the risks of progressively modifying local knowledge and result in its loss. Hence our project tends more towards understanding and “empowering” individual knowledge, rather than adopting top-down activities.⁷¹ Overall, principles of citizen social science are particularly insightful to inclusively co-construct and co-evaluate projects, and in turn, increase their sustainability and resilience.⁷²

2.1. Empirical Research

To that end, half of our team members spent between two and five months in Morocco to connect with local and national stakeholders and have a more precise idea of challenges around poverty reduction, the development of agroecological initiatives, and the socio-economic and ecological context to implement a project of this magnitude.⁷³ By discussing with local stakeholders, including academics, journalists, social enterprises, nonprofit foundations and a network of cooperatives in Morocco in different areas across Morocco, the Souss-Massa Region, Casablanca, and Rabat, we have been able to pinpoint the areas in each of our projects would be the most relevant and effective to support farmers using agroecological practices. We conducted interviews in French and English, that lasted approximately an hour, covering the activities of interviewed organizations, and their context of operations narrowed our topic, and learned about challenges, and opportunities for capacity-building. These interviews enabled us to move away from preconceptions and initial ideas, go beyond the literature through first-hand testimonies and engage in collaborative feedback loops.

2.2. Survey Results⁷⁴

To better assess the needs we disseminated a Survey for a month and a half on social media, throughout messaging apps, and with the help of our local focal points, the Green Souk and Dar Si Hmad. Between June and July 2022 we created, tested, and disseminated a survey in French using Google forms. We received 27 answers. The targeted population of our survey were francophone individuals residing in Morocco and the survey aimed at assessing the needs of potential subscribers to our “Subscription to organic food baskets”, hence clarifying requirements that participants in our CSA-based project should fulfil. Among the responses, gender parity was maintained, and ages ranged from 18-45 years old, majorly living in urban areas. Among them, all of them bought produce from their local food market, but 75 per cent never participated in a subscription to agroecological food

⁷⁰ Sieglinde S. Snapp and Barry Pound, *Agricultural Systems: Agroecology and Rural Innovation for Development*, Second edition (London, United Kingdom: Academic Press, 2017), p.473.

⁷¹ Nadine Saad, “Farmer Processes of Experimentation and Innovation: A Review of the Literature,” Working Paper (Cali, Colombia: CGIAR, 2001), <https://cgspace.cgiar.org/handle/10568/75857>.

⁷² Anna Cigarini, “STSM: Citizen Social Science - Co-Evaluation of Citizen Science Projects,” STSM Report, COST Action (Citizen Science; Cost Action, January 7, 2019), <https://cs-eu.net/news/stsm-citizen-social-science-co-evaluation-citizen-science-projects-anna-cigarini>.

⁷³ Appendix (1) and (2): Behind the Scenes (1) and (2)

⁷⁴ Appendix (3): Survey Design

baskets. The three most cited reasons behind this non-participation were that individuals did not know about a similar initiative (50 per cent), followed by being unaware of what it entails, or they did not know farmers and producers doing it. Among the reasons most cited to support local farmers and producers were, in this order, polluting less via local consumption, supporting the local economy, and an equal motivation, in receiving quality and seasonal produce, less important appeared for our participants to know the farmers and producers behind the produce.

From our survey, we discovered that all participants were interested to learn more about the seasonal production of vegetables and fruits, and a majority, about 75 per cent, hoped to know in advance what was available in the food baskets before receiving them. Among our operational food baskets distribution, we learned that participants preferred either to receive the food baskets twice or four times a month, rather than one time. Participants preferred subscribing to a precise number of food baskets rather than subscribing from one week to another. Additionally, the subscription length seems to tend more towards a seasonal preference, as we could see from the example of 6 to 16 food baskets subscribed to between September and December, in comparison to a monthly subscription (2 to 4 food baskets), and an annual one (26 to 52 food baskets). The participants had no clear idea if the food baskets would be more or less expensive than supermarkets, but believed that they were more expensive than local food markets. Concerning the payment, “One or the other” payment was the preferred response, as participants did not seem to have a preference for cash or credit card (and vice-versa). Some of the reasons cited for not joining a future CSA were: not having time to pick up the food baskets or buying produce elsewhere.

3. Small Field To Local Forks (F2F): Principles and Considerations

This section presents the principles and considerations of the literature, our analyses and data collection at the origin of the development of our Community-Supported Agriculture farms. Among those, we looked at agroecological and indigenous methods, followed by our conceptual frameworks.

3.1. Agroecology: Indigenous, Sustainable, and Equitable Methods

All relevant IPCC Chapters on desertification, food security and sustainable development all emphasize that Indigenous and Local Knowledge (ILK) in drylands often augments resilience against desertification and contributes to climate adaptation strategies.⁷⁵ Methods like tillage, permaculture, agroforestry, or exchanges of local seeds are all ILK, and thus, all agroecological.⁷⁶ While there is an abundance of definitions, Snapp and Pound define agroecology as “the science of applying ecological concepts and principles to the design, development, and management of sustainable, semi-close, and resilient agricultural systems.” Unlike open, conventional agricultural systems, semi-closed systems have low requirements for external inputs, and thus efficiently cycle energy and nutrients.⁷⁷ Principles of agroecology must also be relevant for farmers, and produce “reasonable yield for humans”, but also have “feasible requirements for labour, land, capital, and other investments.”⁷⁸ In Morocco, plenty of examples of local environmental management, and indigenous knowledge have persisted to maintain livelihood systems in drylands, despite worsening climate conditions and limited or non-existent support from state institutions. Take the Berber Mesioua tribe of the Moroccan High Atlas for example; they use an *agdal* - locally produced agro-sylvo-pastoral governance system - to establish limitations on natural resources for a set period, to ensure sustainable and equitable use, and optimize its yield without endangering the seeds for the following generations.⁷⁹

These traditional ecological knowledge and practices are also disappearing, especially in a context dominated by conventional and ecologically damaging models of agriculture. Despite their local conservationist and egalitarian principles, the *agdals* are currently declining in the face of global agricultural trends, such as market integration or State infrastructures.⁸⁰ However, this knowledge is “not lost or forgotten, only hidden by the shadow of progress.”⁸¹ For instance, *Dar Si Hmad* highlighted during our interview that they simultaneously aimed at “preserving the know-how” of Amazigh rural indigenous practices, while “maintaining the biodiversity of the region in a natural reserve” via peasant seeds, agroecology, regenerative agriculture and fog harvesting.⁸²

⁷⁵ Miguel A. Altieri and Clara I. Nicholls, “The Adaptation and Mitigation Potential of Traditional Agriculture in a Changing Climate,” *Climatic Change* 140, no. 1 (January 1, 2017): 33–45, <https://doi.org/10.1007/s10584-013-0909-y>.

⁷⁶ Clara I. Nicholls and Miguel A. Altieri, “Pathways for the Amplification of Agroecology,” *Agroecology and Sustainable Food Systems* 42, no. 10 (November 26, 2018): 1170–93, <https://doi.org/10.1080/21683565.2018.1499578>.

⁷⁷ J.M.H. Knops et al., “Effects of Plant Species Richness on Invasion Dynamics, Disease Outbreaks, Insect Abundances and Diversity,” *Ecology Letters* 2, no. 5 (September 1999): 286–93, <https://doi.org/10.1046/j.1461-0248.1999.00083.x>.

⁷⁸ Snapp and Pound, *Agricultural Systems*.

⁷⁹ Safia Alaoui, “Les Pelouses Humides Dans Le Haut Atlas: Biodiversité Végétale, Dynamique Spatiale et Pratiques de Gestion Coutumière” (PhD diss., Marrakech, Université Cadi Ayad, 2009).

⁸⁰ Dominguez.

⁸¹ Julia Watson and Wade Davis, *Lo-TEK: Design by Radical Indigenism* (Cologne: Taschen, 2019), p.29.

⁸² Samira Ardjal, *Dar Si Hmad*, interview by authors, June 20th, 2022

3.2. Conceptual Frameworks

Doughnut Economics

The Doughnut Economics (DE) framework coined in 2012 by the economist Kate Raworth in collaboration with the Oxfam initiative initially drew our attention.⁸³ The combination of parameters for planetary⁸⁴ and social boundaries⁸⁵ in a ‘global-scale compass’ shows what a sustainably operating economy would look like while challenging our current normative, linear, and growth-based economic models.⁸⁶ To make sure that ‘no one is left behind’, in line with the second principle of the 2030 Agenda, we need to think of any sort of social foundation under the ecological ceiling of our planet to ensure a “safe and just space for humanity”, where lies a “regenerative and distributive economy”.⁸⁷ However, the Doughnut model is criticized for being “too comprehensive” that is rendering its practical implementation difficult or impossible, especially regarding specific legal requirements and limitations in corporate governance.⁸⁸

Short Circuits of Consumption and Local Circular Economy

In this project, we best attempted to make a proposal using the principles of a local circular economy. Circular economy (CE) is initially based on three pillars: reducing, re-using, and recycling.⁸⁹ During the 2022 World Circular Economy Forum, CE was depicted as essential to achieve the 2015 Paris Agreement and redesign “stronger, greener, and “better economies.”⁹⁰ Although mainstreamed in a variety of sectors, government, corporate and NGOs alike, the circular economy is a relatively recent concept that remains “unclear, inconsistent, and contested” in the literature.⁹¹ Calisto and al. point out that the concept is currently facing a “validity challenge”, as it is still quite widely dominated by non-academic sectors promoting it as a “narrative device for greenwashing”. However, as Calisto and al. conclude in their critical literature review that the concept still has a lot of relevance “as a tool for transformative change.”

Furthermore, they argue that a typology enables us to have a more holistic approach to different models of circular economies, and imagine “a plural circular future.” In that regard, the US-based nonprofit Plant Chicago helped us draw new insights into local circular economies (LCE). They define

⁸³ Kate Raworth, “A Safe and Just Space for Humanity CAN WE LIVE WITHIN THE DOUGHNUT?,” *Oxfam*, February 2012, https://www-cdn.oxfam.org/s3fs-public/file_attachments/dp-a-safe-and-just-space-for-humanity-130212-en_5.pdf.

⁸⁴ Raworth underlines in the ‘ecological ceiling’ 9 aspects: climate change, ocean acidification, chemical pollution, nitrogen and phosphorus loading, freshwater withdrawals, land conversion, biodiversity loss, air pollution, ozone layer depletion.

⁸⁵ Raworth underlines in the social foundations, 11 socio-political: water, food, health, education, income and work, peace and justice, political voice, social equity, gender equality, housing, networks, energy.

⁸⁶ George Monbiot, “Finally, a Breakthrough Alternative to Growth Economics – the Doughnut,” *The Guardian*, April 12, 2017, sec. Opinion, <https://www.theguardian.com/commentisfree/2017/apr/12/doughnut-growth-economics-book-economic-model>.

⁸⁷ “About Doughnut Economics: Meet the Doughnut and the Concepts at the Heart of Doughnut Economics | DEAL,” accessed July 8, 2022, <https://doughnuteconomics.org/about-doughnut-economics>.

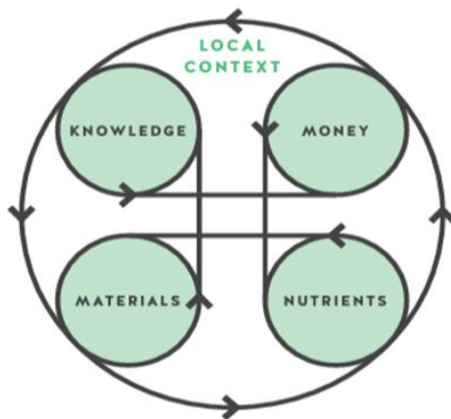
⁸⁸ Markus Stopper, Anja Kossik, and Bernd Gastermann, “Development of a Sustainability Model for Manufacturing SMEs Based on the Innovative Doughnut Economics Framework,” in *International MultiConference of Engineers and Computer Scientists: IMECS 2016: 16-18 March 2016, The Royal Garden Hotel, Kowloon, Hong Kong. Volume 2*, ed. S. I. Ao et al., Lecture Notes in Engineering and Computer Science (Hong Kong: IAENG, International Association of Engineers, 2016).

⁸⁹ Florent Arthur et al., “Circular Economy: Dictionnaire d’agroécologie,” December 12, 2019, <https://dicoagroecologie.fr/en/dictionnaire/circular-economy/>.

⁹⁰ United Nations Climate Change, “Shifting to a Circular Economy Essential to Achieving Paris Agreement Goals,” April 15, 2022, <https://unfccc.int/news/shifting-to-a-circular-economy-essential-to-achieving-paris-agreement-goals>.

⁹¹ Martin Calisto Friant, Walter J. V. Vermeulen, and Roberta Salomone, “A Typology of Circular Economy Discourses: Navigating the Diverse Visions of a Contested Paradigm,” *Resources, Conservation and Recycling* 161 (October 1, 2020): 104917, <https://doi.org/10.1016/j.resconrec.2020.104917>.

an LCE as a “collaborative economic practice sustained by the local circulation of resources.”⁹² The model of LCE echoes the 1970s concept of the ‘autopoietic system’ of Humberto Maturana and Francisco Varela cited in Vandana Shiva’s.⁹³ According to both Chilean biologists, autopoietic systems are comprised of self-creating processes, or in other words, organized from within.⁹⁴ Within such systems, components are part of “self-creating circular networks because they create other components to maintain themselves and the structure in its entirety.”⁹⁵ Both autopoietic systems and local circular economies have played a role in the creation of our CSA model of a farm.



Graph: Plant Chicago highlights 4 types of resources needed

Low-tech approaches

Rather than turning to climate-smart agriculture, and genetically-modifying seeds while keeping ‘business as usual’ in Morocco’s current food systems, we decided to plan, implement and assess a ‘low-tech’ project. Thibaut Faucon and Anne-Charlotte Bonjean recently published about low tech on the OECD

Forum Network. In short, the authors say “a low-tech approach involves questioning needs and refers to the notion of energy sobriety. It is about reducing technological intensity and complexity, maintaining what exists rather than replacing it.” Nonetheless, they point out that ‘low-tech’ is often wrongly opposed to ‘high-tech’ by no means, low-tech aspires to backwardness and rejects “technology and progress”. Instead, they remind us that, instead, low-tech aims at having a critical and systemic lens towards technological solutionism, and our relationship with technological systems as a whole.

Additionally, they specify that ‘low-tech’ solutions cannot be called such if they are unsustainable. The authors underline that these strategies are “fundamentally linked to territories” in establishing physical commons (resources, biodiversity, etc.) and social commons (knowledge, know-how, information, etc.). Dar Si Hmad’s seed library is one example of low-tech, that uses a simple brick room to safely store indigenous ‘peasant seeds’, and exchange them among a network of local farmers before adapting them to the climate. Unlike ‘Seed banks’, seed libraries are founded to protect local biodiversity, and combat a global monoculture of mass-produced seeds -collectively vulnerable- that challenges today’s globalized food systems.⁹⁶

⁹² Plant Chicago, “Circular Economy,” Plant Chicago, accessed July 10, 2022, <https://www.plantchicago.org/circular-economy>.

⁹³Shiva and Shiva, *Oneness vs. the 1%*.

⁹⁴ Humberto R. Maturana and Francisco J. Varela, *Autopoiesis and Cognition: The Realization of the Living*, Boston Studies in the Philosophy of Science, v. 42 (Dordrecht, Holland ; Boston: D. Reidel Pub. Co, 1980).

⁹⁵ Debra Straussfogel and Caroline von Schilling, “Systems Theory,” in *International Encyclopedia of Human Geography*, ed. Rob Kitchin and Nigel Thrift (Oxford: Elsevier, 2009), 151–58, <https://doi.org/10.1016/B978-008044910-4.00754-9>.

⁹⁶ Nina Lakhani, Alvin Chang, Rita Liu, Andrew Witherspoon, “Our food system isn’t ready for the climate crisis”, *The Guardian*, April 14, 2022, <https://www.theguardian.com/food/ng-interactive/2022/apr/14/climate-crisis-food-systems-not-ready-biodiversity>.

3.3 Existing Models of Organizing

We conducted a thorough review of successful, alternative agricultural structures that we considered to base our intervention upon, including cooperatives, CSA models, and Aggregations.

Cooperatives

The phenomenon of cooperatives in Morocco initially appealed to us, even more as they are said to play a key role in the fight against poverty.⁹⁷ Historically, solidarity and “cooperatives” practices have been distributed in Morocco for centuries, especially via indigenous groups, the first inhabitants of this territory, the Amazigh. Between 2015 and 2019, the number of cooperatives in Morocco almost doubled, with 66% of those (17,500) being in the agriculture and food industry.⁹⁸ Despite being praised for their labour-centric and democratic principles by State institutions and development organizations, cooperative models in Morocco still face difficulties to become “autonomous, responsible, and independent.”⁹⁹

Take the example of the Mondragón Cooperative (MC), currently called the “most outstanding example of worker cooperatives in history.”¹⁰⁰ Created in the Basque country, the origins of their now international success stemmed from a championing of local identity, and fostering a sense of cooperation among small enterprises. In 2019, MC reached 11,608€ million of total sales, via 96 separate and self-governing cooperatives; however, it was also the sheer scale of Mondragón that resulted in past failures to rescue a cooperative from bankruptcy, despite their solidarity mechanisms.¹⁰¹ This is particularly important for our intervention, first for strong adherence to regional identity and local, biodiverse products, and second, to carefully understand the implications for expansion, and what impact that could have on our initial and immediate subscriber base. We also located other shortcomings in popular Moroccan coopératives like Coopérative Agricole Marocaine (COPAG). Gathering 72 cooperatives, and nearly 24,000 small-scale farmers, COPAGs agricultural methods are primarily geared towards exports; ultimately organizing towards an “efficient, profitable and value-creating agriculture” approach. While creating economic livelihoods for small-scale farmers, the continued focus on conventional agriculture is not sustainable, and their focus on exports does not empower localized less harmful food systems.

The Green Souk

Founded in Casablanca in 2019 by the Italian woman Cristina de Perfetti, the Green Souk is a small enterprise promoting agroecological practices, producing from small-scale farms, and short-circuits consumption. De Perfetti lived there for about 30 years before founding the Green Souk. During that time, she developed a web of smallholder farmers and producers following a variety of traditional agroecological practices despite worsening arid conditions. Markus Stopper and al. point out that small and medium enterprises, such as the Green Souk, are particularly suited for

⁹⁷ Malak Bouhazzama and Mssassi Said, “Cooperative Benchmarking at the Heart of Public Policies,” *E3S Web of Conferences* 229 (2021): 01028, <https://doi.org/10.1051/e3sconf/202122901028>.

⁹⁸ International Cooperative Alliance (COOPs4dev), “Morocco | Country Factsheet,” ICA, accessed June 28, 2022, <https://coops4dev.coop/en/4devafrica/morocco>.

⁹⁹ Malak Bouhazzama and Mssassi Said, “Why Are We Not Always Witnessing a Take-off of the Moroccan Cooperative Model?,” *E3S Web of Conferences* 229 (2021): 01027, <https://doi.org/10.1051/e3sconf/202122901027>.

¹⁰⁰ Teresa Morlà-Folch et al., “The Mondragón Case: Companies Addressing Social Impact and Dialogic Methodologies,” *International Journal of Qualitative Methods* 20 (January 2021): 160940692110586, <https://doi.org/10.1177/16094069211058614>.

¹⁰¹ Le Figaro and AFP, “Mondragon renonce à Sauver Fagor,” *LEFIGARO*, October 30, 2013, <https://www.lefigaro.fr/flash-eco/2013/10/30/97002-20131030FILWWW00610-mondragon-renonce-a-sauver-fagor.php>.

implementing concepts such as the Doughnut Economics framework, “due to their (small) structure and long-term orientation.”¹⁰² Since its foundation, De Perfetti intends, with her coworkers, to bring organic “high-quality products to the people of the city.”¹⁰³ During our interview, she further outlined the importance of ensuring traceability and making the origin and processes behind the existence of these products known to consumers. The Green Souk relies almost exclusively on Mr Abdellah located in the periphery of Casablanca, *Dar Bouazza*, to produce vegetables without pesticides or chemical fertilizers continuously. Abdellah’s trajectory was already known to us from *Maroc : Justice Climatique, Urgences Sociales*, a book that retraces ongoing environmental and social injustices in Morocco. Back in the early 2000s, Abdellah joined a training by *Terre et Humanisme* on agroecological practices, where he became passionate.¹⁰⁴ As De Perfetti shared with us, “Abdellah is the only smallholder locally left in the market of agroecological production since the training.”

Other agroecological initiatives along with the Green Souk and *Dar Si Hmad’s* experiences revealed that the priority in Morocco was not to provide a toolkit of agroecological practices to more farmers but to create market opportunities for those already trained to persevere and become self-sufficient. As our interview reminded us, *Dar Si Hmad’s* mission to create a new generation of ‘agents of change’ via their *Agdal Id Alchour* farm is cut short when the newly-trained small-scale farmers cannot access market opportunities and valorize their products. This echoed the literature, such as 2018’s IPCC report on Sustainable Development.¹⁰⁵ It underlined the necessity to create diverse livelihood strategies “on-farm” and “off-farm” to strengthen climate resilience in rural households. Some of these strategies include collective action and rural advisory services, such as F2F intends to apply. Additionally, it underlines that one of the most important policies to adopt would be to increase access to markets, which can, in turn, stimulate investments in climate change adaptation. Snapp and Pound also emphasize this aspect to transform food systems. To tend toward more climate-responsive and agroecological-friendly agriculture, they advise developing an Agricultural Innovation Systems (AIS) approach that supports the four following aspects:¹⁰⁶



¹⁰² Stopper, Kossik, and Gastermann, “Development of a Sustainability Model for Manufacturing SMEs Based on the Innovative Doughnut Economics Framework.”

¹⁰³ *L’idée de The Green Souk: votre petit souk paysan sur Casablanca*, 2022, <https://www.youtube.com/watch?v=o9GAc-D48sQ>.

¹⁰⁴ “Maroc: justice climatique, urgences sociales | Heinrich-Böll-Stiftung | Rabat - Maroc,” Heinrich-Böll-Stiftung, September 21, 2021, <https://ma.boell.org/fr/2021/09/21/maroc-justice-climatique-urgences-sociales>.

¹⁰⁵ Roy et al., “Sustainable Development, Poverty Eradication and Reducing Inequalities.”

¹⁰⁶ Snapp and Pound, *Agricultural Systems*, p.473.

Community Supported Models

According to our research, community-based solutions are particularly relevant for climate change adaptation responses in drylands, while providing a wide array of economic, and social benefits to small agroecological farm holders. To respond to multidimensional poverty touching the nearby semi-arid area of Agadir, we chose the model of Community-Supported Agriculture (CSA). Indeed, they can be approached under the umbrella terms of ecosystem or community-based adaptation measures to climate change. Both are known to create outcomes that are “cost-effective, inclusive of indigenous and local knowledge and easily accessible by the poor.”¹⁰⁷

The narration of the emergence of contemporary CSA farms is often said to have originated in Japan in the mid-1960s¹⁰⁸ attributed to Teruo Ichiraku, founder of the Japanese Organic Agriculture Association (JOAA) which enabled the *teikei* (“partnership”) system or a “contract” between producers and consumers through direct distribution, which did not rely on the conventional market.¹⁰⁹ More than an alternative system, *teikei* also embraced a dynamic philosophy, where producer(s) and consumer(s) strengthened their relationship and provided both time and funds to support the delivery system. Not long after the *Seikatsu Club Consumers’ Co-operative (SCCC)* was awarded as Changemakers by the Right Livelihood in 1989 “for creating the most successful, sustainable model of production and consumption in the industrialized world.”¹¹⁰

In recent years, contemporary CSAs have gained momentum and been positively mainstreamed. In its ideal conception, the central aspect of CSA is “the open support of households whose members are not actively farming but who share the responsibility, the costs, and the produce with the active farmers.”¹¹¹ A CSA is “an alternative food marketing and distribution model in which consumers pay a membership fee in advance of the season in return for a weekly share of a farm’s harvest”¹¹² Hence, CSAs simultaneously have integrated social, environmental, and economic implications. They enable community-building, environmental respect, and financial risk-sharing.¹¹³ Nonetheless, CSAs face criticism for their restricted accessibility and affordability in the absence of structures to integrate low-income families, provide different payment plans, and work shares or develop outreach strategies to seek new members.¹¹⁴ Additionally, it is important to think about the type of CSA to establish: according to Mert-Cakal and Miele, producer-led CSAs are considered to be the most self-sufficient, while community-led ones are the most vulnerable.¹¹⁵ Indeed, vulnerable distribution systems may put unnecessary pressure on farmers in case the production is not enough, due to poor compensation.¹¹⁶ Identified by the authors in the available literature, the following table

¹⁰⁷ Roy et al., “Sustainable Development, Poverty Eradication and Reducing Inequalities.”, p.458.

¹⁰⁸ Kazumi Kondoh, “The Alternative Food Movement in Japan: Challenges, Limits, and Resilience of the Teikei System,” *Agriculture and Human Values* 32, no. 1 (March 1, 2015): 143–53, <https://doi.org/10.1007/s10460-014-9539-x>.

¹⁰⁹ Cayce Hill and Hiroko Kubota, “Thirty-Five Years of Japanese Teikei,” in *Sharing the Harvest: A Citizen’s Guide to Community Supported Agriculture*, ed. Elizabeth Henderson and Robyn Van En, 1999.

¹¹⁰ “Seikatsu Club Consumers’ Cooperative,” Right Livelihood, accessed July 11, 2022, <https://rightlivelihood.org/the-change-makers/find-a-laureate/seikatsu-club-consumers-cooperative/>.

¹¹¹ Groh and McFadden, *Farms of Tomorrow Revisited*, p.31.

¹¹² Alison H. Harmon, “Community Supported Agriculture: A Conceptual Model of Health Implications,” *Austin Journal of Nutrition and Food Sciences* 2, no. 4 (April 2, 2014).

¹¹³ Melea Press and Eric J. Arnould, “Legitimizing Community Supported Agriculture through American Pastoralist Ideology,” *Journal of Consumer Culture* 11, no. 2 (July 2011): 168–94, <https://doi.org/10.1177/1469540511402450>.

¹¹⁴ Cristin B. Forbes and Alison H. Harmon, “Buying into Community Supported Agriculture: Strategies for Overcoming Income Barriers,” *Journal of Hunger & Environmental Nutrition* 2, no. 2–3 (April 15, 2008): 65–79, <https://doi.org/10.1080/19320240801891479>.

¹¹⁵ Tezcan Mert-Cakal and Mara Miele, “‘Workable Utopias’ for Social Change through Inclusion and Empowerment? Community Supported Agriculture (CSA) in Wales as Social Innovation,” *Agriculture and Human Values* 37, no. 4 (December 1, 2020): 1241–60, <https://doi.org/10.1007/s10460-020-10141-6>.

¹¹⁶ Laura B. DeLind, “Close Encounters with a CSA: The Reflections of a Bruised and Somewhat Wiser Anthropologist,” *Agriculture and Human Values* 16, no. 1 (March 1, 1999): 3–9, <https://doi.org/10.1023/A:1007575521309>; Ryan E. Galt, “The Moral Economy Is a Double-Edged Sword: Explaining Farmers’ Earnings and Self-Exploitation in Community-Supported

summarizes the key features of sustainable food systems, relying on community-supported agriculture:¹¹⁷

Resilient	Equitable	Ecologically-sound	Healthy	Decentralized
Distributive	Democratically-governed	Cooperating between people and communities	Collectively management resources	Solidarity-based

Types of CSA	Description
Collaborative CSA	<p>There is a “partnership” between farmer(s) and member(s), that creates a sense of community, responsibility and management of the farm and financial risks.</p> <p>Members prioritize social benefits over economic ones, saving money or making a profit is not a priority for farmer(s) and member(s).</p> <p>Examples: <i>Indian Line Farm, Temple-Wilton Community Farm.</i></p>
Functional CSA	<p>There is a conventional exchange of money for goods, the community-building aspect only happens during the delivery.</p> <p>Members prioritize receiving locally grown, chemical-free, quality produces. Community-building is not an incentive.</p> <p>Examples: <i>CSAs in the eastern United States.</i></p>
Instrumental CSA	<p>There is a solidarity-based relationship between farmer(s) and member(s) but it is limited to specific circumstances.</p> <p>Members prioritize their ecological beliefs, resist conventional agriculture, and form a community of interest.</p> <p>Example: <i>Seeking Common Ground.</i></p>

Agriculture: The Moral Economy Is a Double-Edged Sword,” *Economic Geography* 89, no. 4 (October 2013): 341–65, <https://doi.org/10.1111/ecge.12015>.

¹¹⁷ Mert-Cakal and Miele, “‘Workable Utopias’ for Social Change through Inclusion and Empowerment?”

Since their inception, CSAs have expanded all over the world, including in the United States, Canada, Croatia, Australia, China, Ghana, Iran and Morocco.¹¹⁸ Although they exist under different names, “the essence is the same.”¹¹⁹ However, nowadays, most CSA models resemble a ‘vegetable box scheme’. Members pay farmers ahead throughout a membership fee and receive their vegetables weekly, but community and participation are not the priority.¹²⁰ This multiplication implied that a diversity of models and principles emerged, which have evolved into a typology of CSAs:¹²¹

Contract-farming and Aggregation Models

Under the Green Morocco Plan (GMP), the country is putting an emphasis on “solidarity agriculture” to further reduce rural poverty, meanwhile, the FAO calls for a ‘locally-led’ version of it rather than a centralized one.¹²² In light of this, our F2F can make use of this (legal) framework to facilitate the sustainability of our CSA farms rather than pursuing cooperative or nonprofit roads. *Aggrégation* models aim at encouraging greater coordination between agricultural actors and enable ‘unrealised agricultural potential’.¹²³ At the core of their deployment is the pursuit of an “equitable distribution of the profits and revenues among the participating actors”. Among the two types possible, we believe that the “service-oriented” one in which the ‘aggregator’ is ‘providing assistance and support to ‘agregés’. Additionally what is called “contract farming”, is also the most adequate model for us to encourage farmers' cooperation among farms, and facilitate access to credits, markets and downstream packing. The model is summarized below:

Table 5.3. **Aggregation models in Morocco**

Aggregation models	Objective
Nonprofit farmers' associations	Share and disseminate improved agricultural practices, promotion of the supply chain and seeking market opportunities.
Production-oriented co-operatives	Joint enterprises for farmers engaging in the production of goods, supplying services and inputs, investments and market promotion, operated by its members for their mutual benefit.
Marketing-oriented co-operatives	Profit-based co-operatives, whose main objective is the collection, storage and marketing of agricultural products.
Commercial contracts	Based on individual contracts between suppliers and processors or distributors.
Contract farming	Commercial agreements between a buyer and farmers that establish conditions for the production and marketing of a farm product or products. Typically, the farmer agrees to provide agreed quantities of a specific agricultural product. These should meet the quality standards of the purchaser and be supplied at the time determined by the purchaser. In turn, the buyer commits to purchase the product and, in some cases, to support production through, for example, the supply of farm inputs, land preparation and the provision of technical advice.
Integrated facilitation project (<i>Projet d'animation intégré</i>)	Public or private organisation appointed by the government to support the promotion of good agricultural practices and market development.

Reference: OECD, FAO, and UNCDF, *Adopting a Territorial Approach to Food Security and Nutrition Policy*, p.124

¹¹⁸ Claudio Vitari and Erin Whittingham, “Tackling Conventional Agriculture: The Institutionalization of Community Supported Agriculture’s (CSA) Principles,” Post-Print (HAL, 2018), <https://ideas.repec.org/p/hal/journal/halshs-01923789.html>.

¹¹⁹ Henderson, “The World of Community Supported Agriculture.”, p.1.

¹²⁰ W. Wodraska, “Three CSAs, Three Economies | Personal, Practical Comparison of Three Models of Community Supported Agriculture,” 2008, <https://library.wur.nl/WebQuery/groenekennis/1875233>.

¹²¹ Robert Feagan and Amanda Henderson, “Devon Acres CSA: Local Struggles in a Global Food System,” *Agriculture and Human Values* 26, no. 3 (September 1, 2009): 203–17, <https://doi.org/10.1007/s10460-008-9154-9>.

¹²² OECD, FAO, and UNCDF, *Adopting a Territorial Approach to Food Security and Nutrition Policy*, p.124.

¹²³ OECD, FAO, and UNCDF, *Adopting a Territorial Approach to Food Security and Nutrition Policy*, p. 124.

Table 2. Advantages of the aggregation system. (Table by authors)

The Aggregation System	(1) Integrates smallholders and family farmers into the market economy
(2) Facilitates risk sharing	(3) Allows family farmers to benefit from financial markets
(4) Provides improved technologies and capacities to smallholders	(5) Is viable in contexts of land fragmentation and poorly defined land property rights

4. Small Fields to Local Forks (F2F) Implementation

Contrasting to many high-tech, top-down poverty alleviation initiatives, a low-tech, **community-based approach to poverty reduction** must be implemented with stakeholders on the ground to ensure its success. This final section highlights F2F’s project objectives and visions, along with a timeline in which they take place, a SWOT and stakeholder analyses, a list of expected deliverables, and risk analysis and mitigation strategies.

Connecting This Project to the Sustainable Development Goals




4.1. Project Objectives and Vision

Objectives and Vision




The **CSA aggregation** aims to connect **small-scale farmers** with **subscribers** in the Prefecture of Agadir-Ida-Outanane to create a **recurring stream of income** through locally, agro-ecologically produced food boxes within **nine months**.

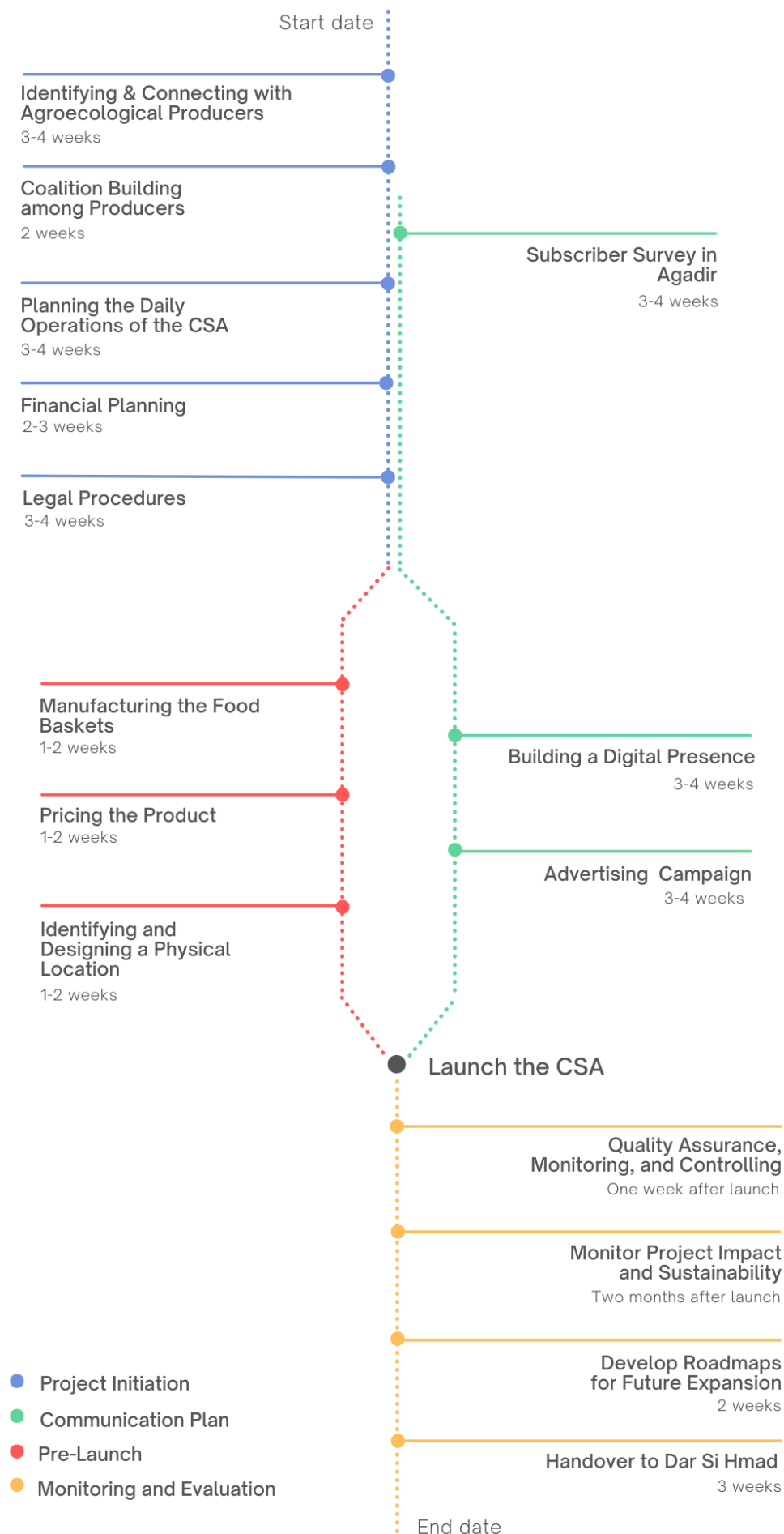
Serving a wide range of stakeholders, this project will **establish a reliable financial livelihood** for small-scale farmers and ensure the **continuation of environmentally-sustainable agricultural methods**, while providing subscribers with **better-tasting, healthier, and longer-lasting produce**.



In the long-term, the early installment and continuation of this project will **enable the region and its marginalized populations to better withstand future environmental and economic challenges to the Moroccan food system**, mitigating future food insecurity and multidimensional poverty resulting from the climate crisis and market fluctuations.

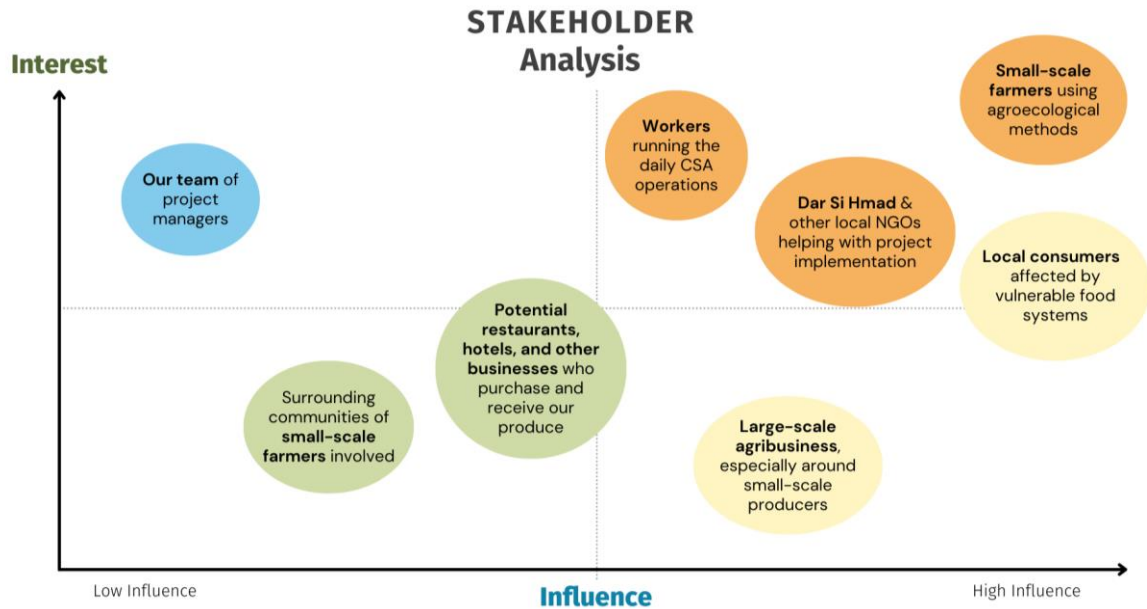


4.2. Timeline of activities



4.2. Stakeholder Analysis

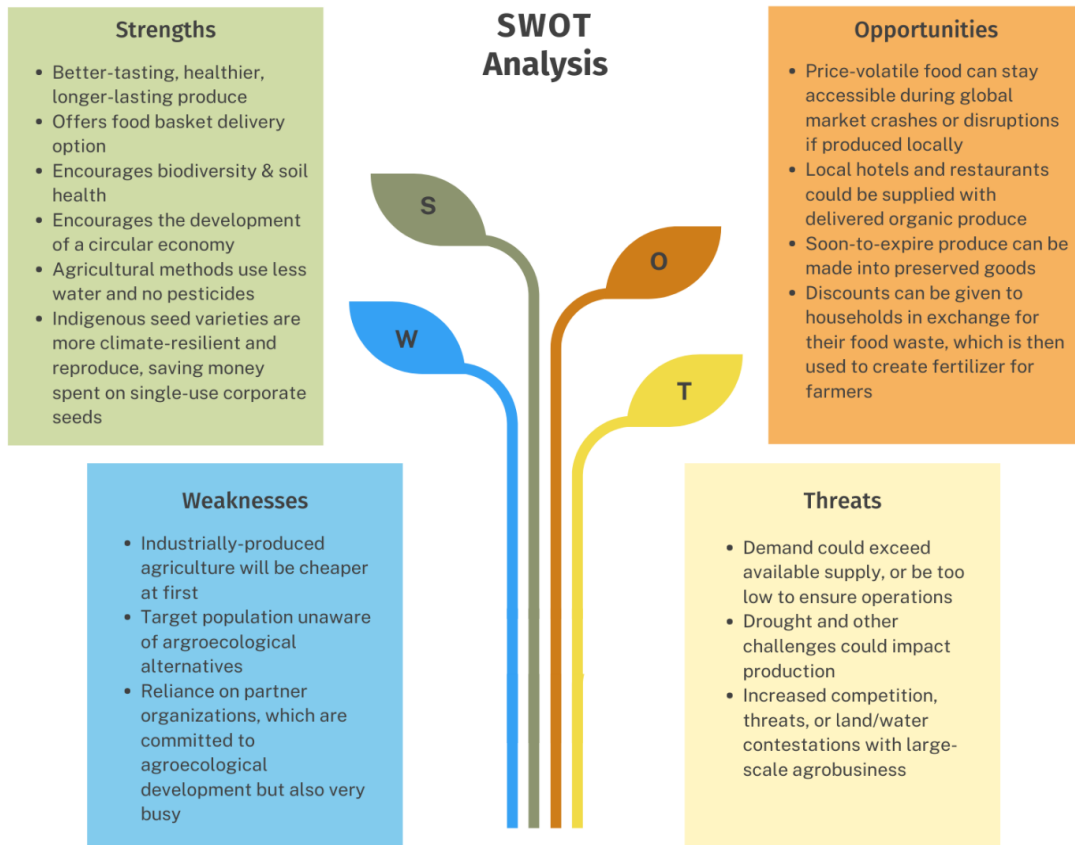
All in all, the above desk and empirical research enabled us to determine the different stakeholders that we would encounter when deploying F2F in the Agadir-Ida Outanane Prefecture. The **analysis** underlines **8 types of stakeholders**.¹²⁴ Its most striking element is the fact that, in the end, our team of project managers is intending to have low influence, in comparison to **small-scale farmers and local consumers who have the highest influence**. Indeed, in a community-led project, we aim to only provide enough nudge for the identified target groups to pursue the activities.



¹²⁴ Appendix (4) Mapping of Relevant Actors

4.3. SWOT Analysis

This analysis of the F2F project shows 4 subsuming categories necessary to understand for a successful implementation of our activities.



4.4. Activity Roadmap

Project Initiation

Identifying & connecting with Agroecological producers

Intending to find local small-scale farmers, we plan to connect with identified local organizations to create a list of farmers and producers using agroecology practices who are interested in building a CSA model. This will be done in coordination with local organizations like Via Campesina, ATTAC, and *Dar Si Hmad*. Our team will design a brochure to showcase the benefits and information about the CSA model, along with an assessment form for farmers to fill, out concerning logistical information about their farms and produce. Producers will be selected according to agricultural experience, location of their farm, adherence to agroecological and social principles, diversity of produce, interpersonal skills, and interest in the CSA model. Information collected will also be used to create a database of interested producers.

Coalition-building among Farmers

To build solidarity among farmers, we will invite producers to come together to meet with each other, and participate in a storytelling circle about their use of, a transition towards, and challenges of agroecological practices. Moderated by *Dar Si Hmad*, the meeting will take place in their office in Agadir or their farm in the Rural Commune of Tnine Amellou, Caidat Mesti, Province Sidi Ifni, which they have offered for such meetings through the project.

Planning the Operations of F2F

To create a framework upon which the F2F can stand on its own, our team, *Dar Si Hmad*, and producers will have a series of meetings to organize operations. While details are subject to change following collaborative meetings, our team recommends that baskets be distributed at the physical locations every two weeks on Saturday - identified as the most likely shopping day from our preliminary survey - by a group of producers. Since this space will function as both a packing/distribution centre and a gathering space, this will give the consumer the chance to learn more about where, and how, their food is produced. Taking six hours, two for packing and four for disseminating, the farmers will also be joined by a worker at a makeshift “front desk” who welcomes subscribers, takes attendance, and keeps track of sales during the day. The central pillar of the CSA, and the main factor in its success, is the relationship forged between the producer and their consumers. Thus, farmers must be present during distribution, to connect with their subscribers.

These meetings will also cover the transportation of produce, our digital presence (website and social media management), financial management, and potential expansion of operations or target consumers. This meeting will also produce a crop plan, to assist producers in regulating their supply against subscriber demand. The first season of production will be a trial of having too much of one product and not enough of another and experienced CSA producers claim the first 6 to 24 months are needed to adapt to this. Thus, a crop plan that accounts for the current demand of subscribers allows producers to approximate how much is needed for each basket bi-weekly.

Financial Planning

To ensure the financial viability of this project’s inception and future management, our team and Dar Si Hmad will determine sources of start-up costs and funding until F2F can sustain itself. Both are visualized below in Figure 7. Following this, we will coordinate with producers to determine the cost of production for crops supplied to the CSA, including labour, agricultural inputs like fertilizer, and transportation of produce. These meetings will also establish several options for subscribers to pay for food baskets, along with frameworks to fairly and efficiently distribute the money among producers.

Figure 7. Summary of the costs and funding.

Costs	Funding
<ul style="list-style-type: none">• Labor• physical documents and graphics, and their translation,• transportation fund for producers who need financial support to attend meetings• manufacturing and designing the food baskets• Packing materials needed to prepare the food baskets.• First two months of food basket production and distribution	<ul style="list-style-type: none">• Geneva Contests Winnings• Marco Credit Agricole• Grants• Individual Contributions• State loans for young entrepreneurs

Legal Procedures

To operate commercially and regularly, our team and *Dar Si Hmad* will adhere to legal procedures to launch the CSA. These include health and safety regulations on being a food seller, RIAM's agroecological "Agréologie Maroc - Système de Garantie SPG" label, and registering as a **service-oriented aggregation** based in Agadir. These regulations may vary depending on the physical location where we distribute food baskets.



Participatory Guarantee Systems (PGS)

Private labels governed by 'the community' of small-scale farmers is not as uncommon. Despite the launching of the first State-led label for Organic Agriculture in 2018, certifying produces for organic farming labels by a third-party necessitates early expenses that most small farms cannot provide. PGS were imagined as "locally oriented quality assurance systems", that are built on "active stakeholder participation", and "a foundation of trust, networks and knowledge exchange." RIAM coordinates until 2023 a recruitment campaign of farmers.

Lemeilleur and Sermage, "Building a Knowledge Commons."

"Participatory Guarantee Systems | IFOAM," accessed July 10, 2022.

Communication Plan

Subscriber Survey in Agadir

To determine the consumption habits and food preferences of potential subscribers, our team will design a **Survey on Consumption habits and Food preferences** in diverse households in the Agadir-Ida-Outanane Prefecture. Questions will concern demographic information, along with the variety, quantity, and how much is spent on produce each week, to name a few. We will then disseminate the survey through social media platforms of local environmental and health organizations, local media, via word of mouth and messenger apps like WhatsApp.

Building a Digital Presence (Website and Social Media)

Our team of four - in coordination with Dar Si Hmad's website manager and their social media manager - will build a website and social media platforms for the CSA. The website will include profiles

of the farmer, their methods, and contact information, along with our mission, mapping of producers, and a digital marketplace for produce. Social media platforms (Instagram, Facebook, and TikTok) will be more accessible versions of this. These will be built to facilitate communication between subscribers, humanize our products and producers, and increase reach.

Advertising Campaign

To recruit an initial group of subscribers to the CSA, our team will spread awareness and generate interest in healthier and environmentally sustainable produce in Agadir through an advertising campaign. To begin, we will create posters/brochures about the subscriptions, along with physical and digital registration forms. Similar to our subscriber survey, we will then disseminate these by coordinating with local environmental and health organizations, their social media platforms, local media, presenting at local events, and word of mouth, both in-person and through messenger apps. While there is no specific minimum number of consumers needed to start a CSA, we are aspiring to reach a minimum of 25 subscribers, incentivized through a free trial basket.¹²⁵ We can expect more people will subscribe over time, adjusting supply based on demand. This campaign will also enable us to create and maintain a database of subscribers.

Pre-Launch

Manufacturing the Food Baskets

To construct an appealing, reusable, and easily-transported container for the produces, our team will find a manufacturer, craftsman, or cooperative in the Agadir Ida -Ouatane Prefecture to commission.

¹²⁵ "Annuaire National Des AMAP "Créer AMAP," Réseau-AMAP, accessed July 13, 2022, <http://www.reseau-ama.org/creer-AMAP.php>.

Pricing the Produce and Organizing the Food Baskets

In coordination with our team, producers, and Dar Si Hmad, we will determine the price of produce and baskets through an equation used by the *Associations pour le maintien d'une agriculture paysanne* (AMAP):¹²⁶

$$\begin{array}{r} \text{Post-inception operating} \\ \text{costs of the CSA} \\ + \\ \text{Cost of the production and} \\ \text{labor of the producers} \\ \hline \div \\ \text{Number of subscribers.} \end{array}$$

The baskets themselves should reflect a balanced diet, with 6 to 15 different products commonly purchased in Morocco, determined specifically by the capacity of producers and subscriber interest. Varieties are no longer chosen according to performance during exportation or shelf-life, but according to taste and nutritional qualities. As underestimation of food basket prices is the most frequent cause of CSA failure in the United States, the equation will be used to ensure the financial survival of the project while remaining accessible.¹²⁷

Upon inception, the income generated by the food baskets will be low, but as our interview with the Green Souk confirmed, the income is higher than in other branches of conventional agriculture for small-scale farmers. A careful analysis of Green Souk's pricing, throughout the study of their websites, and our interview with Christina, helped us determine the costs of produces that are agroecological farmed in Morocco's semi-closed farm systems, and sold throughout short circuits of transportation and consumption with the help of an intermediary. This could serve as an example to provide to project participants.

¹²⁶ "Annuaire National Des AMAP "Créer AMAP."

¹²⁷ Daniel A. Lass, "Community Supported Agriculture: Research and Education for Enhanced Viability and Potential in the Northeast - SARE Grant Management System," accessed July 12, 2022, https://projects.sare.org/sare_project/LNE95-063/.

Table 3. Current prices of produce from cooperatives available at the Green Souk, in Casablanca. (Table by authors)

Vegetables (price/kg)	Price dh/1kg	Fruits	Price dh/kg	Herbs and Spices	Price dh/1 bunch
Zucchini	16,5	Oranges	25	Chives	10
Radish (1 bunch)	7	Avocado	70	Basil	10
Spinach	16	Bananas	25	Coriander	6
Potato	11,5	Lemons	25	Parsley	6
Broccoli	36	Grapefruits	35	Dill	8
Turnip	15,5	Strawberries	60	Mint	6
Leeks	16	Cherries	60	Ginger (100 gr)	30
Cabbage	15	Abricots	55	Purslane	10
Eggplant	15				
Artichoke	23				
Cauliflower	15				
Lettuce	9				
Zucchini slaoui	18				
Tomato	18				
Onions	17				
Green bean	18				
Beet	10				

Identifying and Designing a Physical Location

To ensure the CSA is both central and accessible to subscribers, our team and *Dar Si Hmad* will identify potential locations to distribute food baskets. Depending on where the most interest for our project was gauged during our subscriber survey and advertising campaign, the CSA may be situated within a frequented commercial space like Agadir's *souk*, at the office of a partner organization like *Dar Si Hmad*, at one of the producer's farms, or in an accessible public space. The same team is committed to designing the physical location. While the non-daily sales made by the CSA make monthly rent payments on a singular property financially illogical and logistically irrelevant, the equipment needed for distribution remains the same. This includes multiple tables and chairs to build

space for packing produce into food baskets, a front desk to welcome subscribers and take their information, and a small gathering space for customers to meet with farmers. Financial records, most digital operations, and secure documents will be kept in *Dar Si Hmad's* office.

Launching F2F

The project will officially begin upon our first packing and distribution of food baskets in Agadir. Our team, *Dar Si Hmad*, the producers, and subscribers, will be invited to a picnic to celebrate the launch of F2F and get a first-hand taste of the food.

Project Monitoring and Evaluation

Quality Assurance, Monitoring, and Controlling

After one week of receiving their first baskets, our team will reach out to subscribers with a few questions to ask about their experience with the food basket. To ensure the quality of our service, correct within our capacity, and foster long-term relationships with our customer base, these questionnaires will be regularly conducted following the launch of the project. This will take place at the three-week mark as well, for subscribers past their free-trial period.

Monitor Project Impact and Sustainability

After two months of operations, our team and *Dar Si Hmad* will conduct a social impact assessment with producers, to understand what effect the CSA model has had on their financial livelihoods and beyond. This will be accomplished through a series of questions - asked in person or online - concerning production costs vs. income streams, ability to continue agroecological practices, perception of the project's operations, and understanding how farmers understand the trajectory of the CSA.

Develop Roadmaps for Future Expansion

To ensure the sustainability of the CSA in difficult financial or agricultural circumstances, our team will develop roadmaps for activities that expand the CSA's target audience. Current ideas include establishing a delivery system of the food baskets, building partnerships with local hotels and restaurants to supply them with our produce, transforming produce that will go bad into alternative products (sauces, juices, etc), and offering discounts for subscribers who assist farmers in cultivation and offering discounts to households who give us organic waste to create a composting initiative. We will provide project objectives, a timeline, and a detailed outline of necessary activities.

Handover to Dar Si Hmad

In this final activity, our team will facilitate our departure from the CSA, to be partially run by *Dar Si Hmad* and the producers themselves. While the project will be chiefly operated by the producers, there are several activities, like financial management, activity planning, digital outreach,

and expansion, which are often carried out by subscriber-volunteers, known as CSA committees.¹²⁸ This is well situated with *Dar Si Hmad's* organizational structure of volunteers, operational capacity, producer familiarity with them, and enthusiasm for our project. Our team will provide recommendations as to how the CSA can be best integrated and empowered through the operations of *Dar Si Hmad*, like organizing farm visits, workshops about agroecology, and educational events for kids about the importance of biodiversity. We would also conduct a final evaluation of the aggregation and our work within it, to understand what vulnerabilities would be created by our departure. Lastly, we will draft two categories of crisis scenarios for the CSA: the first concerning threats to the project itself, like worsened drought or legal challenges, while the second concerns larger threats to Morocco's food systems, like rising prices or widespread shortages resulting from international market fluctuations or increased operational costs from an extractive industrial agricultural model. In the event of the latter, such contingencies would enable hundreds of low-income residents in Agadir to access relatively affordable basic food needs.

Table 4. List of Expected Deliverables. (Table by authors)

Internal Deliverables	External Deliverables
<ul style="list-style-type: none"> • Database of interested producers; • Survey on consumption habits/food preferences; • Database of consumer; habits/eating preferences; • Database of Producers; • Crop planning document; • Subscription form; • Database of Subscribers. 	<ul style="list-style-type: none"> • Printed brochures about Community-Supported Agriculture models • Assessment form for potential CSA farmers; • Website for our CSA farms; • Profiles of farmers/producers; • Poster and Brochure about the subscription; • Handover to local partners (Dar Si Hmad).

4.5 Risks Assessment And Mitigation Measures

The following table summarizes the risks encountered during the preparation of our project, organized into four categories: production, human resources, market, and enabling environment. There are three degrees of impact: high (red), medium (orange), and low (yellow) with corresponding mitigation measures for each risk.

¹²⁸ Henderson, "The World of Community Supported Agriculture."

Table 5. Project's Risks Assessment and Mitigation Measures. (Table by authors)

Risk	Degree of Impact	Mitigation Measures
Production		
Drought (on crop)	High	Utilizing the fog-nets to collect water. common around Agadir.
Pest and disease outbreaks (crop)	Medium	Utilizing peasants seeds and diversifying crops.
Excessive rainfall and floods	Low	Periodic monitoring potential risks during potential high seasons.
Fires	High	Monitoring of risks during high seasons (Spring, Summer) and preparation of emergency protocols.
Failures to meet standards	Low	Seasonal monitoring of crops with the help of RIAM, and accreditation to RIAM's local private PGS.
Human resources		
Personal risks and injury to personnel	Medium	Although agroecological agriculture do not use machines, fertilizers or pesticides, a solidarity fund and a set of tools are established to support farmers in case of injury, disease, or , climate impacts can generate health-related issues (such as heatstrokes)
Supporting organizations	Low	A strong network of local nonprofit organizations and partners, would support the initiative for a variety of purposes
Market		
Members price volatility	Medium	Outreaching to new members and developing tools (activities, different payment plans, advice and recipes) to maintain members within the farm-support would lower the members price volatility
Food price volatility	Low	Prices would be reassessed once during the harvest season according to the food pricing equation in place and in comparison with local food markets
Logistical risks	Low	Collaboration with local organizations, such as Dar Si Hmad would support any logistical issues arising
Members risk and default	Medium	A solidarity fund and different pricing plans would be put in place to support in case of default from the counterparty
Input price volatility	Low	An assessment of potential other inputs would be done, if needed, at the end of the harvesting season
Enabling environment		
Regulatory risk (domestic and international)	Medium	Throughout the implementation regulatory frameworks would be analyzed and integrated into further development
Erratic government intervention and policy	Medium	Throughout the implementation policy interventions would be analyzed and integrated into further development
Data management	Low	Informed consent will be sought regularly and no unnecessary data will be processed (using the GDPR as a model)

4.6. Intended Benefits and Outcomes

Through the creation of a self-sustaining alternative and circular markets for agroecological produce, **Small Fields to Local Forks (F2F)** intends to empower small-scale agroecological farmers to better sustain themselves financially. Aside from monetary contribution and financial risk-sharing between farmers and subscribers, this project ensures the continued use of sustainable farming practices while saving limited natural and financial resources for marginalized farmers. In

parallel, the project has tangible effects on subscribers when providing healthier, better-tasting, and longer-lasting produce, while promoting food sovereignty, land preservation, and biodiversity within the frameworks of doughnut economics and circular economy.

In the long term, this project also seeks to mitigate the impending damage and impoverished conditions that will result from worsening climate events and decades of harmful agricultural extraction. Finding soil no longer arable in tandem with unfavourable international markets, larger-scale farmers that rely on international markets will be confronted with the necessity to transform their industrial food production, while small-scale farmers using agroecology will retain their livelihoods. But more importantly, situating food production locally, through water-saving methods and local seeds, allows food to remain relatively available and affordable, preventing new forms of multidimensional poverty.

5. Future Vision and Conclusions

Although they share the same acronym, Community-Supported Agriculture and Climate Smart Agriculture evoked above have not much in common. CSA farms are places of experimentation, where communities are achieving what Kneafsey and al. call ‘quiet sustainability.’¹²⁹ Although farmers and producers part of the CSA models has a small production they are “finding ways to become economically sustainable and resilient”, while progressively building skills, and raising awareness. Numerous voices advocates for expanding the CSA model of production and distribution, while others are worried to lose sight of the initial objectives of the model.¹³⁰ Three moments are particularly important to think about scaling up our project: How to find and manage different kinds of labour? How to navigate crop production within seasons? And how to manage the shared expectations of subscribers about the quality and quantity of produce?¹³¹ Within our community-led project, we imagined proposals for scaling up our project:

- **Mixing seasonal, wage, and community-members labour to help on the farms;**
- **Establishing a complete local circular economy (re-using perishable)¹³²;**
- **Expanding the types of produces available where possible and if needed;**
- **Expanding the delivery centre to a place of community gatherings;**
- **Enabling door-to-door delivery such as The Green Souk while imagining a trade-off system for carbon emissions;**

All in all, there are plenty of reasons to believe that this current project might only be at its first step before being scaled up, in Morocco but also elsewhere. This project then also aspires to influence other local contexts around Morocco, and agricultural trends at large, to shift towards agroecological methods that are more environmentally and economically sustainable. Acting in advance while centring the use of indigenous knowledge and community-supported agriculture is the best way to reduce multidimensional poverty across marginalized groups in rural Morocco. Katharina Bäumlér underlines that large retailers, and private corporations, can drive the food system transition, and play a role in scaling them up using agroecology.¹³³ There is no doubt that large private actors in industrial agriculture can implement agroecological and sustainable paradigms, that are not greenwashed. However their initiatives remain scarce, and as Bäumlér underlines, to enhance their efforts, strong governmental leadership is needed to enhance labels or employ tax exemptions for sustainable food.

¹²⁹ Moya Kneafsey et al., “Capacity Building for Food Justice in England: The Contribution of Charity-Led Community Food Initiatives,” *Local Environment* 22, no. 5 (May 4, 2017): 621–34, <https://doi.org/10.1080/13549839.2016.1245717>.

¹³⁰ Eric Nost, “Scaling-up Local Foods: Commodity Practice in Community Supported Agriculture (CSA),” *Journal of Rural Studies* 34 (April 1, 2014): 152–60, <https://doi.org/10.1016/j.jrurstud.2014.01.001>.

¹³¹ Nost.

¹³² Appendix (5): Potential expansion plan for our project

¹³³ Katharina Bäumlér, “The Role of Large Retailers in Scaling Up Sustainable Food Systems Solutions” (Sciences Po, 2022), <https://www.sciencespo.fr/psia/chair-sustainable-development/wp-content/uploads/2022/05/sciencespo-2205-k-baumler-role-large-retailer-food-systems-solutions.pdf>.

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Appendices

Appendix (1): 'Behind the Scenes' (1)

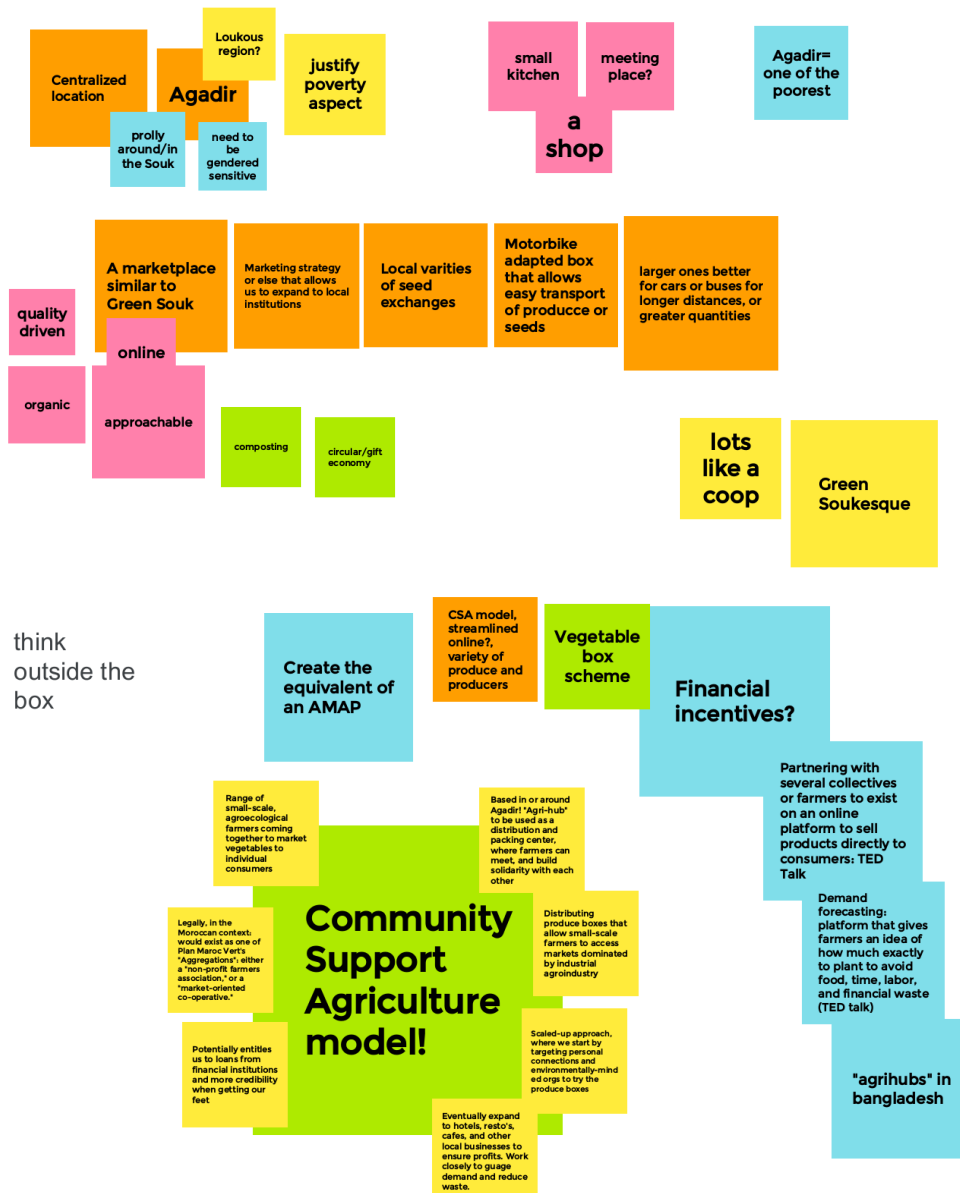
A few pictures from our fieldwork in Morocco (April-June 2022)



Appendix (2): 'Behind the Scenes' (2)

Three Jamboards illustrating our collective thought process (June 26, 2022)





Appendix (3): Survey Design

The following appendix shows the survey we designed for this project.



Souhaitez-vous des paniers bios locaux en bas de chez vous ? Une enquête au Maroc

Vous vivez au Maroc est avez 4 mins maxi pour répondre à ce questionnaire ?

Etudiant(e)s en master dans divers pays, nous participons au concours organisé par le Graduate Institute de Genève afin de créer un projet auprès de petits fermiers et agriculteurs bios dans le sud ouest du Maroc. Nous travaillons en collaboration avec des organisations locales dans la région de Souss-Massa.

Nous souhaitons inciter à établir un système de souscription à des paniers bios et locaux de légumes et autres produits (viande, céréales, œufs...). Les paniers seront disponibles de manière régulière dans un magasin facilement accessible et où les participant(e)s pourront échanger avec les producteurs. Le fonctionnement sera familier aux AMAPs (en France).

Nous souhaitons mieux comprendre vos besoins et intérêts à souscrire ou non aux paniers.

Les réponse seront seulement utilisées dans le cadre de notre proposition au Concours.

Merci encore pour votre participation !

Questions:

1. Vivez-vous au Maroc ?*

Oui

Non (fin du questionnaire)

2. Quelle est votre identité de genre ?*

Féminin

Masculin

Je ne souhaite pas le préciser

Autre :

3. Quel est votre âge?

(Indiquer l'âge)

4. Dans quelle région êtes-vous situé ?*

(Déroulé des 12 régions)

5. Est-ce que vous vivez en ville ?*

Oui
Non
Autre :

6. Est-ce que votre marché local se trouve où vous résidez ?*

Oui
Non

7. Est-ce que vous avez déjà participé à une souscription à un panier de légumes/produits locaux ?*

Oui
Non

8. Est-ce vous achetez des légumes/produits au marché local ?*

Oui, chaque semaine
Oui, de temps en temps
Non

9. Quel est votre jour préféré pour aller au marché local ?*

Je ne vais pas au marché
Lundi
Mardi
Mercredi
Jeudi
Vendredi
Samedi
Dimanche

10. Préférez vous aller faire de courses :*

Je ne vais pas faire de courses
Le matin tôt
A midi
L'après-midi
Le soir

11. Si vous n'avez jamais participé à un panier, pourquoi pas ?*

Je n'ai jamais entendu parler de ces paniers.
Je ne connais pas de fermiers/producteurs qui le font.
Je ne cuisine pas.
J'ai mon propre jardin.
Je ne comprends pas ce que c'est.
Je ne suis pas intéressée par ces questions (environnementales, sur l'économie locale).
Je ne veux pas payer en avance sans garantie de qualité.
Je ne pense pas avoir les moyens de payer pour ces paniers.

12. A quel type de paniers préféreriez vous recevoir ?*

Légumes seulement.
Même part de légumes et fruits.
Légumes avec quelques fruits en plus.

Légumes avec quelques œufs en plus.
Légumes, avec quelques fruits et oeufs.
Légumes avec du poulet ou autres viandes en plus.
Seulement du poulet ou de la viande.
Des céréales.
Autre :

13. Souhaiteriez vous en apprendre plus sur les fruits et légumes de saison ?*

Oui
Non

14. Souhaiteriez vous savoir en avance ce qu'il y a dans les paniers (si possible) ?*

Oui
Non
Ce n'est pas important pour moi

15. Qu'est ce qu'il vous motive à soutenir des fermiers et producteurs locaux ? (cochez tous les choix applicables)*

Acheter local, polluer moins
Soutenir l'économie locale
La qualité des produits
Avoir des produits de saison
Mieux connaître les fermiers/producteurs
Autre :

16. Préférez-vous que les paniers soient disponibles (à déterminer avec le contenu du panier)*

Chaque semaine (4 par mois)
Toutes les deux semaines (2 par mois)
Tous les mois (1 par mois)

17. Quelle souscription pour les paniers préférez vous ? (cochez tous les choix applicables)*

Je m'inscris pour un nombre précis de paniers
Je m'inscris chaque semaine
Je ne sais pas
Autre :

18. Vous préférez que votre souscription soit :*

Par mois : je m'inscris pour le mois de Septembre (entre 2 et 4 paniers)
Par saison : je m'inscris de Septembre à Décembre (entre 8 et 16 paniers)
Par an : je m'inscris pour l'année (entre 26 et 52 paniers)
Autre :

19. Préférez-vous un mode de paiement :*

Par carte bancaire
En liquides
L'un ou l'autre c'est bon

20. Pensez-vous que les prix des paniers sont plus ou moins chers que dans des supermarchés (au Maroc) ?*

Au même prix que dans les supermarchés
Plus cher que dans les supermarchés
Moins cher que dans les supermarchés

21. Pensez-vous que les prix des paniers sont plus ou moins chers que dans des marchés locaux (au Maroc) ?*

Au même prix que dans les marchés
Plus cher que dans les marchés
Moins cher que dans les marchés

22. Pensez-vous vous inscrire à une souscription de paniers dans le futur ?*

Oui, je pense m'inscrire.
Non, je ne pense pas m'inscrire.
Je ne sais pas encore.

**23. Si non, pour quelle(s) raison(s) vous ne pensez pas participer à ce panier ?
(cochez tous les choix applicables)***

Je pense participer / Non applicable.
J'ai mon propre jardin.
Je ne cuisine pas.
Je ne sais pas quoi faire avec les produits du panier.
Je n'aime pas les produits du panier.
J'achète mes légumes et autres produits au marché local.
Je n'ai pas le temps d'aller chercher les paniers.
Je n'ai pas les moyens de payer.
Je ne peux pas payer à l'avance.

Appendix (4): Mapping of Relevant Actors

Nonprofit organizations	Research centres	Enterprises and Cooperatives	Syndicates	National (State) Institutions	Regional Institutions
Dar Si Hmad	Research Center on Agriculture in Dryland area (ICARDA)	Coopérative Agricole Marocaine (COPAG)	La Via Campesina Morocco	Fund of Agricultural Development (FAD)	Préfecture Agadir-Ida-Outanane
ATTAC Morocco	National Institute for Agricultural Research) (INRA)	The Green Souk	The Moroccan Syndicate (FNSA)	Agricultural Development Agency (ADA)	The Regional Council of Souss Massa
AFSA Alliance for Food Sovereignty in Africa	The Policy Center for the New South		Syndicat National des Paysans (SNP)	Minister of Agriculture, Maritime Fisheries, Rural Development, Water and Forests (MAPMDREF)	Local councils
Investing in rural people (IFAD)				Office National de sécurité sanitaire des produits alimentaires (ONSSA)	
High Atlas Foundation (HAF)				Professional Chamber of Agriculture	
The Moroccan Network of Agroecological Initiatives (RIAM)				Initiative Nationale de Développement Humain (INDH)	
Terre & Humanisme Maroc (independent from Pierre Rabhi's Foundation)					

Appendix (5): Potential expansion plan for our project

Table (6): Produces recycled from the Green Souk (Table by authors)

Green Souk-made produces	Price dh
Olive oil (75 cl)	86
Kombucha (1L)	77,5
Kéfir de lait (1L)	41,5
Fresh juice of vegetables – all kinds (500 ml)	65
Apple juice (500 ml)	36
Apple juice (1L)	65
Pickles – cabbage (740 ml)	45
1 Msemmen Beldi with nettles	7
1 Msemmen Beldi normal	5
1 Briouate	10
Old varieties of tomatoes	22