



**MSc European Spatial Planning and Environmental Policy**  
**PLANET Europe Programme**

***Threats and opportunities for indigenous agri-food systems***  
***The case of Wadi Fukin, Palestine***  
***by Reem Barakat***



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## **Abbreviations**

**OPT-** Occupied Palestinian Territories  
**PLO-** Palestine Liberation Organisation  
**PA-** Palestinian Authority  
**GDP-** Gross Domestic Product  
**NIS-** New Israeli Shekels  
**CSO-** Civil Society Organisations  
**FAO-** Food and Agriculture Organisation

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## **Abstract**

Indigenous agri-food systems carry valuable knowledge embodied in the practices used by indigenous people to manage their environmental resources. This system witnessed a transition in the past few decades, due to the rise of globalisation, modernisation and industrialisation. Many indigenous societies face colonization in which lands are confiscated, and that further affected indigenous agri-food systems. The indigenous agri-food system in the Occupied Palestinian Territories (OPT) was similarly exposed to the previously mentioned influences, and that created many obstacles for indigenous farmers. A case study approach was employed in this research to discover the challenges that Palestinian indigenous farmers in Wadi Fukin village face nowadays, as a result to the transition in the agri-food system. It was found that globalisation, industrialisation, modernisation and colonization have created many challenges for those indigenous farmers resulting in economic inequalities, loss of some indigenous agri-food practices, increased dependence on agrochemicals, change in consumers preferences, among many other challenges. Moreover, some common indigenous agri-food practices that reflect the indigenous knowledge were document in this research. Finally, the scope for using this knowledge as a future developmental resource was briefly explored, in its role to resist the currently dominant agri-food system and colonial impacts.

# **Threats and opportunities for indigenous agri-food systems**

## **The case of Wadi Fukin, Palestine**

### **Chapter 1: Introduction**

#### **1.1 Context**

During the past few decades, a range of developments have weakened the Palestinian traditional agricultural sector, making it economically dependent on Israel, especially in the production of fruits and vegetables. Thus, the Palestinian GDP (Gross Domestic Product) coming from the agricultural sector became very low. Nowadays, the production system is oriented towards exporting cash crops that have been subjected to synthetic fertilizers and pesticides, which highly affected small producers (Oberender, 2015).

Traditional agricultural knowledge is being negatively affected by the new shift in the food production system, which is particularly alarming. In Oberender's interview (2015) with the Palestinian agronomist Saad Dagher, he was asked about the recent status of the traditional Palestinian agricultural sector. Saad Dagher explained that the sector is facing many obstacles due to the knowledge loss in this field. He explained that this knowledge includes the local seed production and preservation, building stone terraces which characterize the Palestinian landscape, tree pruning and land preparation for rainfed crops. Additionally, farmers nowadays and the young generation in general, can barely understand the terminology that once accompanied traditional farming.

The shift in agriculture which generally affected the Palestinian farming community, can be attributed to several reasons. First, the Palestinian diaspora and dispossession of land and livelihoods in 1948, which forced thousands of Palestinians to flee to refugee camps, leaving a destructive impact on farming communities of historical Palestine. This affected Palestinians by ripping away their core identity resembled by their existence in their own towns and villages. Second, the Israeli occupation of the West Bank and Gaza strip in 1967 further intensified those impacts. Palestinians were forced by military orders and regulations to renounce working on their lands, while some Palestinian farmers were compelled to work in illegal Israeli settlements and in building in order to generate income for their families. Third, the Palestinian economic

activity and trade were institutionalized by Oslo agreements, specifically the Oslo Accords' Paris Protocol. Through this protocol, Palestinian businesses and markets which were once flourishing, were unexpectedly cut off from their neighboring and international markets. Consequently, this caused the Palestinian economy to be regulated under the Israeli economy, and the Palestinian market became a recipient of Israeli products. Fourth, globalization represents an added challenge to the Palestinian economy. The domination of large corporations in global markets threatens local economies, and immensely damages ecosystems worldwide (Isma'il & Dajani, 2014).

Hence, the Palestinian economy which is fully tied to the Israeli economy is struggling, and many local and traditional producers are affected. Outcomes such as environmental degradation, social injustice, malnutrition and a key topic of this thesis, the loss of valuable indigenous knowledge are serious results that should be given attention. Through this research and within the results, it is hoped that at least some of this valuable knowledge will be revived and documented, while addressing some of the challenging outcomes.

## **1.2 Research objectives**

This research aims to conduct an in depth study on one indigenous society of which traditional knowledge about agriculture and food production is threatened by different factors. This research has four main objectives. First, to highlight the basic components that characterize the traditional Palestinian agri-food system. Second, to document part of the indigenous knowledge regarding the agri-food sector in order to preserve it for future generations. Third, to understand how the agri-food system and the relevant indigenous knowledge was influenced in the past few decades, therefore understanding the resulting challenges faced by the current agri-food system. Finally, to discover the future scope for using indigenous knowledge as a future developmental resource which Palestinian traditional farmers can use to address those challenges.

## **1.3 Research problem**

According to the previously discussed concerns, the main research question is:

What are the challenges facing the indigenous agri-food system in the Occupied Palestinian Territories and what is the scope for using the indigenous knowledge embodied in the agri-food practices as a future developmental resource for Palestinian traditional farmers?

The following sub-research questions will be used to answer the main question:

- a) What are the main characteristics of the indigenous agri-food system in the Occupied Palestinian Territories?
- b) What are the most common indigenous practices that characterize the Palestinian indigenous knowledge in the agri-food sector?
- c) How was the indigenous agri-food sector impacted in the past few decades and what are the challenges posed by the current agri-food system?
- d) What is the scope for using this indigenous agri-food knowledge as a developmental resource in the future of Palestinian traditional farmers?

#### **1.4 Societal and scientific relevance**

The outcomes of this study should be of relevance to both societal and scientific fields. First, Bornman (2012) explains that societal relevance encompasses many concepts, and those concepts are concerned with measuring different aspects including: cultural, environmental, economic and social outcomes of a research. "Societal benefits" involve the contribution to a nation's social capital, through inspiring new approaches to arising social issues. While 'Cultural benefits' involve the contribution to a nation's cultural capital, such as providing an improved understanding of history, in addition to the cultural preservation and enhancement. Whereas 'Environmental benefits' involve contributions to a nation's natural capital, in matters such as pollution and waste reduction, in addition to stimulating natural biodiversity. Finally, the 'Economic benefits' are those that include the expansion of the nation's economic capital, through enhancing its productivity and skills base.

Therefore, the relevance of this research to the societal field can be represented in the aimed results, encompassing some of the aspects mentioned above and for the following social actors:

- a) The Palestinian farmers, regarding the perseverance of their ancestors' knowledge and providing a possibility for its transmission through generations. This can be achievable through the documentation of this indigenous knowledge which this research partially aims to accomplish.
  
- b) The Palestinian community in general, through these two aspects:
  - 'Cultural benefits': As an indigenous society whose cultural identity is threatened by many factors, contributing to the perseverance of indigenous agri-food knowledge can help the Palestinian community to better understand its history, in which agriculture played an important role.
  
  - 'Environmental benefits': The outcomes of this research can also provide rich data which might be seen useful by proponents of alternative sustainable agri-food paths that are reliant on indigenous knowledge, especially in dry-land systems. Additionally, it can be useful to encourage dependence over local resources and traditional practices.

Second, scientific relevance can be found in some gaps in literature which this study aims to cover. It is believed by Farag and Ezeomah (2016) that culture and traditional food systems as primary drivers in food and nutrition studies are not very well documented in literature compared to other factors such as income, prices, and food availability. They also believe that indigenous knowledge is valuable in the way it shapes food systems in these indigenous societies sustainably, especially in terms of natural resources management. Although this research takes a case study approach, meaning that it cannot be generalized, it can still be a valuable addition to the literature of indigenous cultures in general, and to the scarce Palestinian cultural and agricultural literature in specific. Moreover, it provides some answers about the challenges and future scope for using indigenous agri-food knowledge as a developmental resource and this can be useful to strengthen the validity of traditional knowledge in the scientific sphere.

## **1.5 Structure**

This first chapter introduced the research objectives and questions, in addition to the societal and scientific relevance. The second chapter includes the literature review where many academic discussions relevant to the key topic are presented. The third chapter contains the

methodology and research design. The fourth chapter introduces the case study, and a brief historical context. The fifth chapter presents the key findings and analysis of this research. Finally, the sixth and seventh chapters include conclusions, recommendations, challenges and references followed by appendices.

## **Chapter 2: Literature review**

This literature review aims to explore the current research and academic discussions around key subjects that are relevant to this research. Those subjects are: the value of indigenous knowledge and the importance of its transmission, neoliberal globalisation effects on indigenous agri-food systems, power dynamics in the agri-food field, the transition in agri-food systems, alternatives to the current agri-food system and finally the colonization and decolonization of indigenous societies and their agri-food systems. These subjects will be thoroughly discussed in the following sections.

### **2.1 The value of indigenous knowledge and the importance of its transmission**

Our planet is home to 370 million indigenous people (almost 20% of world population), also described as “original” people who have historical and cultural bonds with the lands they live in. Most of these populations have been subject to invasion and oppression, while Western institutions imposed their knowledge upon them. In this system where Western worldviews have been dominant, maintaining the traditions and knowledge of these people has been a persistent struggle (Magni, 2017). Traditional environmental knowledge which is also called indigenous knowledge, local knowledge or native science refers to the knowledge acquired by long-term inhabitants or natives of specific places which was developed over a long period of time. Traditional environmental knowledge has become a popular concept in theory and practice. It has been mainly developed in the natural sciences context, regarding the use of local knowledge in the search for solutions to environmental problems (Bocco & Winklerprins, 2016). In this research, traditional knowledge and indigenous knowledge are two frequently used terms that carry the above explained meaning.

The diverse patterns of indigenous knowledge have enabled various populations to maintain a sustainable management system that protects the environment and strengthens their resilience. Their knowledge is resembled by the strong relationship with their surrounding environment, and cultural coherence. International awareness of the sustainable livelihoods of indigenous people, in addition to the planet’s deteriorating conditions, have developed an international community’s interest in the practices and knowledge of indigenous people (Magni, 2017).

Indigenous people's empowerment is partially echoed in the significance of their knowledge, in addition to self-identification and group recognition. The local or traditional knowledge means the uniqueness of knowledge and know-how of a given society. Such knowledge encompasses values, beliefs, taboos, rules and cultural traditions of local people, and it forms a basis for their scientific, economic and social identity. However, separating this knowledge from its socio-cultural context might lead to misleading interpretations and mis-use of this knowledge (Magni, 2017).

In the fight to gain access to their lands, to achieve social justice and to be heard at national and international levels, sovereignty and self determination are essential for indigenous populations. The indigenous people face various problems and have to deal with different sets of conditions, and their knowledge plays an important role in their survival and resistance. Magni talks about the concept of "Buen Virir", meaning "living well" which was adopted by the indigenous groups of Latin and Central America as a reaction to the policies and development strategies that negatively impacted them. This concept encompasses many elements that are crucial for their resistance against these policies. These elements include rights to land and resources, communitarianism, the harmony and equality for all parts of the society, food sufficiency, solidarity and caring values, maintaining the safety of the environment (Magni, 2017).

It is important to refer to indigenous knowledge, not just to explore how valuable it is to its own people but also to discuss the possibility of transmitting this knowledge through generations, and between different cultures. Bechtel (2016) states that there have been some calls for a convergence between indigenous knowledge and scientific learning, in order to encourage the incorporation of indigenous knowledge into the classrooms of science educators. Bechtel believes that in order to enable the transmission of knowledge, the differences between these two disciplines and their histories should be understood, as each of them carry different social and intellectual goals. Indigenous science is usually concerned with people's survival and the harmony with nature, whereas the eurocentric science is usually concerned with explaining nature and using knowledge for power. Moreover, indigenous science is subjective and holistic in comparison with the eurocentric science which claims to be objective, decontextualized with a reductionist framework.

Different scholars have discussed the ways in which indigenous knowledge can be transferred. Magni (2017) argues that knowledge transmission can be achieved through the family and community system, and through formal schooling. Indigenous knowledge can be passed through generations, while factors such as gender, age, occupation, political power and experience can all influence this transmission. Learning by doing is considered an essential approach for knowledge transfer. This involves observations, interactions with the community and the environment, practical demonstrations, storytelling, metaphors and songs.

According to Magni (2017), elderly people are often considered the most valuable sources of knowledge transmission since they are the custodians of indigenous knowledge. However, they can often be underestimated. The generational gap, for example, can get in the way of traditional practices' acquisition. However, Bechtel (2015) believes that the transmission and sharing of knowledge between the eurocentric science and indigenous science is achievable, through autobiographical narratives.

McGinty and Bang (2016) explain their own reflections on Bechtel's writings. They express their unease about the common connotation in education which obligates indigenous people to be educated on the terms of Western settlers, implying that these terms are valid and inevitable. For instance, climate change education assumes that the scientific climate change knowledge emerging from nation-states is essential, despite the fact that climate change was originally caused by those nation-states' ways of life. There is a complexity in the issues of climate change education, especially concerning the effects of climate change on locals and on indigenous people which include forcing shifts in indigenous people's ways of living, at a time where nation-states believe that indigenous practices should be controlled. McGinty and Bang question the ability of Western science to make a real change, taking into consideration the impacts of climate change on the indigenous learners.

Bocco and Winklerprins (2016) state that although settler scientists have worked with indigenous people, the work that has been mostly published is by scientists who come from developed countries who tend to describe the indigenous people as peasants or small holders. It is further believed that traditional environmental knowledge has been absorbed into cumulative scientific narratives in places where societal rupture has been absent, such as places that don't have a colonial past.

Finally, criticism arose regarding the rigorous need to conceptualize traditional environmental knowledge, and for a better focus on the methodology and quality when providing such knowledge. Major components of traditional environmental knowledge are considered to be poorly researched, and its dependability as weak. Furthermore, it is believed that this knowledge is trapped between different perspectives, and that it is under-represented in social sciences. It is advised that in order to facilitate cross-cultural collaboration, traditional environmental knowledge should be used as a collaborative concept (Bocco & Winklerprins, 2016).

As discussed above, traditional environmental knowledge is indeed important, especially for indigenous societies and their continuous resistance against colonization and dominating western worldviews which underestimate their knowledge and practices. Other influential factors on these societies and their traditional systems include (neoliberal) globalization, modernization and industrialization. The traditional agri-food system was particularly influenced by these factors as will be explained in the following sections.

## **2.2 (Neoliberal) globalisation effects on traditional agri-food systems**

After having looked at the literature regarding indigenous societies and the value of their knowledge and its transmission, it is important to understand in which ways was the traditional agricultural knowledge affected. On a macro level, the ideological influences of (neoliberal) globalisation as a main driver of change in global food systems, must be understood in their relation to the modernisation and industrialisation process of agri-food systems.

Helland, Thomas and Aguilera (2018, p. 174) argue that small-farmers and their environmental management practices were subjected to displacement by an industrial food production system. They state that there is a global food crisis where hunger and malnutrition affected almost one billion people and that it is part of a global set of crises defined as “crisis of civilization”. Those crises include food, water, climate, economic inequality, resource depletion, livelihoods, uprooted populations and finally political instability evident in the neoliberal and global governance crisis and its legitimacy. Hence, they believe that the crisis in the food system is a result of the destructive impacts of the modern-industrial food system on small-scale producers, and their sustainable indigenous models.

According to Lawrence (2017), neoliberal globalisation is influenced by neoliberal ideologies concerning economic practices. Neoliberal globalisation affects food production systems in several ways, of which some will be discussed here. First, through the influence of large agribusiness firms that work at a global level. The power possessed by these firms harms small farmers and farm workers. For instance, these firms aim to gain financial advantages in the farm input sector, through introducing genetically modified seeds from advanced livestock genetics of which they possess sole ownership rights.

The second effect of neoliberal globalisation is related to the spread of productivist or 'high-tech' agriculture. The use of artificial pesticides, herbicides and fertilizers in agriculture are results of this system, in addition to hybrid and genetically modified seeds. In such an ideology, larger farming output and labour competence are aimed for, and therefore new management regimes and large scale machineries are introduced to traditional agricultural systems. The third effect is resembled by what is called "supermarketisation" which means the large dominance of supermarkets in comparison with the small retail sector of traditional food systems. These effects has caused threats to local markets and local farmers livelihoods, in addition to labour exploitation and changes in consumer diets worldwide (Lawrence, 2017).

It is further believed by Pechlaner and Otero (2008) that the neoliberal globalisation ideology has stimulated an international agricultural position in trade, which is the inclusive integration in national-neo regulation initiatives and supranational trade agreements. The implementation of new agricultural biotechnologies has been among the results of this position, and this implementation is being widely adopted. This biotechnology which is facilitated by developing regulatory structures has implied a possible basis for a new food regime. Furthermore, one of conceptualisations of food regime refers to the temporality of such dynamic in the food's global political economy. Meaning that certain institutional structures and unwritten rules act as characteristics of the food regime dynamic in a geographical and historical specificity of international food production and consumption. This specificity's key fundamental is the relative constancy of those trade relations developed between unequable nations.

However, some international institutions are defending the current path of neoliberal globalisation and argue that the world needs an advanced agricultural system in order to support an increasingly prospering human population. This human population is expected to

grow from 7 billion (present-day population) to over 9 billion by 2050. The question being posed by Lawrence here is that whether industrial farming is the convenient way to achieve an increased global food production that would meet the needs of the growing population (Lawrence, 2017).

This section provided an overlook at some important outcomes which resulted from neoliberal globalisation and neoliberal ideologies, to understand the context in which the modernisation and industrialisation of traditional agri-food systems were partially influenced by. In the following section, the power dynamics in the current agri-food system will be briefly discussed in relation to neoliberalism and technological advancements, followed by a thorough discussion regarding the transition resulting from the introduction of modern and industrial agriculture.

### **2.3 Power dynamics in the agri-food field**

There are civil society organisations that are concerned with the risks accompanying the new nanotechnology which silently entered the agri-food sector. States usually respond to those concerns with the approach that there is a lack of scientific evidence proving the dangers associated with new technologies. However, states seem to be unwilling to tackle such dangers and risks. Neoliberalism is believed to be the reason behind this economic policy approach which many governments all over the world embrace. Under neoliberalism, giving up public regulation is the choice given as a policy intervention, in order to promote for private regulation instead. This enables corporations and gives them power to set institutional stages that fits their own interests. Nevertheless, following this choice does not come without consequences. Those consequences include a weakened liability of firms regarding adverse effects of nanofood in addition to fortified patent laws with an outcome characterized as progress made without people (Sodano, 2018).

The unregulated nanofood development is not only driven by neoliberal policies and firms' strategies. Technological determinism and the concrete advancements of new technologies are also among the factors assisting the unregulated nanofood development, in addition to the generally accepted idea which considers technological change as a progress engine. Technological determinism stands on autonomous grounds and neutrality separated from the

human-value rationality. Hence, science and technology are believed to be shaping society and the modernization processes, away from social influences (Sodano, 2018).

The criticism of technological change was fed by the negative consequences which resulted from the industrial revolution in the beginnings of the twentieth century. This was mainly because technical change is viewed as product that is usually led by the dominant class in society, in pursuit of its own interest and personal goals (Sodano, 2018). Nevertheless, it is not clear yet what policy and governance measures are best suitable to deliver a sustainable agriculture, due to the fact that there is no consensus on which path should be taken forward. Governance has been criticized for being weak and vulnerable to powerful actors who are reforming agricultural strategies and technologies in new ways without genuinely embracing transformative policy frameworks (Clapp, Newell, & Brent, 2018).

Clapp et al. (2018) question the power dynamics and the way that different policy approaches serve the interests of the powerful parties in the agri-food sector. It is argued that practicing power happens through narratives that prioritize specific issues over others, and thus shaping scopes and policy options of a certain problem. There is a clear challenge in the power dynamics of the agri-food sector, since it is a complex dynamic consisting of the elite capture, market liberal and critical perspectives who all claim that delivering food security in a world facing global warming, can only be delivered through following their models.

## **2.4 The transition in agri-food systems**

*“State technologies of order were designed to smash the Indigenous systems of food production, consumption, celebration, and identity, and to replace them with the civilizing forces of modernity” (Grey & Patel, 2015, p. 437)*

The discussion on the transition in the agri-food system and its consequences includes clarifications on the components of both traditional and industrial food production systems. Turner, Berkes, Stephenson and Dick (2013) believe that over the past 500 years, there has been an accelerated transition in the relationship with the natural world from a healthy relationship into one that is characterized with disposition and disempowerment. It is believed by Dahlberg (1994) that indigenous societies have used systems that are complex and simulate

later stages of succession sustainably. According to Middleton (2013), alternative to this healthy relationship was introducing a modernising and industrialized agriculture which caused a shift in traditional agriculture, that was driven by socio-economic factors.

As one form of global food systems, the traditional food system has its own characteristics. First, it is considered to be small scale, farmers based and subsistence. Hence, production is small scaled, and oriented towards the family, and the village level where excess production is traded. Second, the GDP coming from the agricultural sector is usually high, since most traditional nations do not have manufacturing sectors. Third, wet markets where fresh vegetables and meat are sold are common in this system, and retail activities are limited to trading in those markets. Fourth, Farming is usually oriented towards staples production rather than processed foods and production is sourced domestically. Fifth, small-scale farmers use low-level technology in their production and no traceability is virtually available. Finally, the buying and selling of food in these nations is dominated by informal relationships, and short food chains (Lawrence, 2017).

As for industrial agriculture which is a form of modern farming, it is usually present in nations with developed services and manufacturing sectors where the GDP coming from the agricultural sector is low. In this system, there is a higher importance for the processing sector than in traditional agriculture, and supermarkets are considered to be main outlets for food (Lawrence, 2017). Modernising and industrialised agriculture is aimed towards maximized yields requiring high input and high efforts from farmers. Many practices came along with this transition in agriculture including: intensive cultivation, agrochemicals usage and fertilization practices (Middleton, 2013). Additionally and according to Dahlberg (1994, p.172): “In industrial agriculture, the main crops are essentially species and habitats which are kept at a pioneer stage of ecological succession- at very high energy and environmental costs”.

The twentieth century has witnessed many land use changes resulting from the abandonment of traditional agriculture. First, this has resulted in the destruction of native vegetation seed banks, in addition to affecting the species capacity for restoration (Middleton, 2013). Second, the shift into industrial agriculture has also negatively affected biodiversity. Areas that were historically considered by indigenous people as sacred and full of biodiversity, are now at real risk. Third, there has been an intensification in the use of fossil fuels which came along with industrial

agriculture, and the relation between this intensification and food systems is not widely discussed in academic studies. Dahlberg states that the few studies that are done on agriculture, don't usually discuss or include data on the complete cycle of food systems, such as the processing, the distribution, the storage, in addition to the usage and disposal of food. The outcomes of this complete cycle are linked to the weakening and destruction of renewable energy resources (Dahlberg, 1994).

Fourth, another consequence of industrial agriculture relates to the vast growing of economic inequalities. It is believed that these inequalities have been facilitated by two myths: the belief in market benefits and technological benefits. Together with the fossil fuels development, it is believed that those two myths have contributed in the exploitation of natural and social environments. Historically, inequalities are seen as outcomes of the native lands dispossession and of the conquest and subjugation of farmers. Fifth, a great emphasis on cash crops has resulted in the marginalization of small farmers and subsistence agriculture. Consequently, past and present inequalities have led to the uprising of indigenous people and farmers (Dahlberg, 1994).

In terms of indigenous people, the effects of this transition were massive, especially since they lost stewardship over their own territories, while they do not receive a share from the profits that come from the manipulation of the natural resources. Additionally, indigenous people were forced away from their natural environments, as a result of the contamination of wildlife, vegetation and water (Turner et al., 2013). Furthermore, human health was also impacted as consumers became dependant in their diets on processed and cheap foods that are full of sugar, salt and fats. These products are promoted for through what is called 'aggressive advertising' for a range of unhealthy foods in supermarkets (Lawrence, 2017). Overall, the criticism against industrial agriculture comes with several reasons, including the fact that industrial agriculture is intensive in terms of energy usage, in addition to its negative outcomes on rural communities and on the environment as external costs to production (Dahlberg, 1994).

An important note is that agriculture and food sectors are considered to be major contributors to climate change. Helland et al. (2018) say that according to the FAO, agriculture, land-use change and forestry produce at least one fifth of total greenhouse gas (GHG) emissions which the globalised food system relies on. Clapp et al. (2018) add that agriculture consumes almost

70% of fresh water, hence considered as a major contributor to deforestation. Therefore, substantial shifts in the current food regime are needed in order to restrain the negative impacts of global warming. Ironically, the food and agriculture sector itself is also affected hard by climate change due to extreme weather conditions and drought, especially for populations whose living is dependant on this sector. Calls for more sustainable forms of agriculture have been increasing in order to address this dilemma.

Clearly, traditional agriculture has been directly affected by modernisation and industrialization. Those effects have mostly harmed subsistence farmers and indigenous communities, in addition to altering environmental sustainability. Hence, many oppositions arose against the currently dominant food production system, while searching for a sustainable alternative that encompasses the traditional knowledge of indigenous societies.

## **2.5 Alternatives to the current agri-food system**

There have been many oppositions to the current path which food systems are following. Those include oppositions against policies that undermine peasants and small farmers in traditional agriculture, and thus leads to their removal from the agricultural field. Opposition to industrial agriculture arose through many movements and initiatives, such as community-supported agriculture (CSA) which revolts against supermarketization and global food sourcing. For instance, one of the largest food movement in the world is led by La Via Campesina organisation and it mainly aims at the confrontation of the capitalist industrial agriculture, and believes that free markets are among the root causes of world hunger in addition to the lack of state action against neoliberalism (Cote, 2016). An 'agro-ecological' approach to farming is suggested by such organisations which confirms the need for local presence, sovereignty over energy and technological resources, and farmer-to-farmer networks. This approach also argues that embracing ecological principles is the best way to achieving agricultural sustainability (Lawrence, 2017).

Small family farmers, consumers and politically motivated groups are three main sources of oppositions to industrialized food systems as expressed by Lawrence (2017). Furthermore, Morgan and Santo (2018) talk about the municipal food movements, which are interested in discovering how to provide food for cities in a just and sustainable manner, but also in a way

that is culturally appropriate. In their article, Morgan and Santo give a reminder that there has been a failure in recognizing the role and domination of food in social and political activity globally, and that one of the most important reasons behind this failure is the powerful force of the industrial food system. They do not deny the many achievements of this system such as the productivity gains that are claimed to have overcome hunger issues in the Global North. However, they point out the effects that this system has brought upon traditional bonds that exist between place and product, and between production and consumption. The costs of this system are manifested in ecological damage, diet-related diseases and social justice.

The municipal food movements are playing a role in re-moralising the food system by focusing on the special attributes of the agri-food sector, and by focusing on the good food's critical role in the wellbeing of people and the planet. A campaign with the aim of building bridges between different food-based social movements is encouraged, where multiple identities can be fashioned all as part of a cosmopolitan localism (Morgan & Santo, 2018).

As for small-scale farmers who are dependant on subsistence agriculture, they were affected with the rise of globalization, modernization and colonization, especially over the last five centuries. Their practices were usually non-anthropocentric, relying on agroecological farming methods that are harmonious with the non-human nature. Recent decades witnessed the globalisation of the food system, in addition to a structuring of power such as anthropocentrism, coloniality and developmentalism. Disposition including land and water grabbing and neoliberal restructuring have been accumulating and further adding to the pressure on food systems (Helland et al., 2018). According to a study made by the UN and the World Bank, there is a demanding necessity to radically transform the global agricultural system in order to avoid additional environmental and social problems (Moeller & Pimbert, 2018).

This aggressive globalisation as Helland et al. (2018) call it, is attempting to colonize the planet by enforcing a world system that does not accept alternatives, to both humans and nature. This destruction is happening under the name of civilization, modernization and development. Helland et al. encourage the role of movements and organisations to advance food sovereignty alternatives where indigeneity and agroecology are central in planting seeds for resilient land based and communal alternatives. Going beyond resistance and the deconstruction of dominant structures through constructive programs is encouraged. This can happen through prefiguring,

creating, securing and proposing alternatives that are materially viable, ecologically balanced and socially just.

Indigenous agri-food systems were not only impacted by the rise of modernisation and industrialisation. Colonialism has additionally contributed to the alteration and transformation of indigenous agri-food systems as will be further discussed in the following section. Additionally, just as oppositions against the current industrial path have been discussed, the opposition against the colonization of indigenous communities will be briefly explored under the decolonization concept.

## **2.6 The colonization and decolonization of indigenous societies and their agri-food systems**

*“It is important to note that while there are differences in circumstance regarding Indigenous Peoples throughout the world, there are also many similarities, including a common history of colonization resulting in loss of culture, land, and voice; health disparities, including socioeconomic positions and patterns of disease such as obesity, cancer, diabetes, and mental health issues; and, most importantly, worldviews, including a tradition of respect, identity and connection with their environment.” (Stein, Miroso, & Carter, 2017, p. 115)*

McGinty and Bang (2016) talk about politics of colonial societies. They define the fundamental belief of these societies to be related to the conquest of land as property, in addition to the elimination of indigenous societies. The settler-colonial societies establish settler life ways as normatives of which development can be measured upon. The accomplishment of this depends on the following: erasing indigenous presence, organized inheritance of indigeneity and the creation of slavery. It is believed by Grey and Patel (2015, p.435) that on many indigenous accounts and due to the stories told and promises made by colonialism, colonialism is often described as a “myth” or “lie”. They further add that imperialism was similarly assisted by some myths such as the “land belonging to no-one” myth.

On the one hand, Calvo and Esquibel (2015) explain that the colonization process works by the extraction of natural resources and labor, where the land and resources are taken away from their indigenous communities, in order to economically fund colonial missions. Colonial systems

work in different forms such as shaping the economy, food system and educational and religion institutions. In terms of the colonization of educational institutions, it happens through devaluing and dismissing indigenous knowledge and histories, while valuing European cultures and their histories.

On the other hand, Calvo and Esquibel (2015) say that decolonization includes the dismantling of colonial systems concerning power and knowledge, and they believe that our indigenous ancestors knowledge needs to be recovered and listened to. While discussing decolonization, Shahjahan (2005) refers to the idea of agency which was discussed by Fanon, Ghandi, Memmi and Thiongo. Agency revolves around the idea of possibilities which exists in our carried practices, of which we can make changes through. Shahjahan says that it is through our scholarly quest, be it through writing or teaching that we can create possibilities for ourselves, and those who come after us. He adds that colonization happens when we stop believing in ourselves and lose hope and become dependant on the colonizers, and that we have to be subjects of change rather than objects of change. This can happen through presenting the voices of indigenous people, and through using their concepts as our own analytical systems.

Grey and Patel (2015, p. 436) further discuss the decolonization process and say that an essential part to such project is to spot the lie. They refer back to the work of Steve Biko and Frantz Fanon explaining that “the most powerful weapon in the hands of the colonizer is the mind of the colonized”. Therefore, understanding falsehood in its length and breadth requires that indigenous people find their original teachings and instructions which contains elements of their traditions that were overwritten by colonial inscriptions.

In terms of agri-food systems, indigenous people worldwide shape their sustainable communities through decolonization strategies and self-determination efforts. This includes the revitalization of their indigenous food systems and their traditional practices, while becoming less dependant on the globalized food system (Cote, 2016). Furthermore, Grey and Patel (2015) propose thinking of food sovereignty as one form of decolonization and resistance. They give an example of the Chippewa in Northern Minnesota who are trying to re-localize the Indigenous economy through achieving food and energy sovereignty. This tribe is still traditionally growing and harvesting wild rice which is a key food for them. Grey and Patel (2015, p. 439) mention a quote taken from one of this tribe’s community members saying:

“instead of trying to make up some economy that makes no sense to us at all, we decided to develop something that we’re good at. And we’re good at ricing, maple sugaring, hunting, farming”. They further add that food sovereignty is a form of resistance which is a result to a long history of anti-colonial struggle.

For some indigenous societies like the Maori of Aotearoa (New Zealand), their afri-food practices are seen as a way for challenging the corporate food system. This indigenous society and their local food-based practices reflect not only food growing, but also their cultural and historical values which include: community and tribe significance, ancestors and traditions, familial relationships and future generations, wellness, agroecological farming, self reliance and self determination. Furthermore, land is cherished by the Maori, and is seen as a fundamental part of their existence and identity, and that it is their duty to look after it (Stein et al., 2017).

As explained above, indigenous societies who experienced colonialism have been highly altered by colonial acts, and their knowledge have been underestimated by the scientific education. Therefore, the decolonization of indigenous societies against both industrial agri-food systems that dismiss indigenous practices, and against colonial acts is crucial.

## **2.7 Conclusion of literature review**

The aim of this chapter was to provide several academic discussions regarding the value of indigenous traditional knowledge and the demanding need for incorporating this knowledge into the scientific sphere, to facilitate its transmission through generations and between different cultures. The need for the incorporation of indigenous knowledge and their environmental management practices have become ever increasing with the worsening global environmental conditions and the increasing impacts of climate change. Additionally, this knowledge has been essential for the resistance and survival of indigenous societies against attempts of removal and uprooting by Western worldviews and colonial forces. Nevertheless, a transition in traditional agri-food systems of indigenous societies has occurred, causing a shift into modernized and industrialized agri-food systems. This shift placed tremendous effects on both: indigenous communities and their livelihoods, in addition to environmental sustainability. The path followed by the current agri-food system fails to address insisting environmental problems, and assists in the neglect of indigenous knowledge and its valuable attributes. Therefore, many scholars are

encouraging the revitalization and incorporation of indigenous knowledge in the scientific field. Additionally, alternatives aiming at deconstructing existing structures in the agri-food sector, in addition to decolonization are encouraged through proposing viable, balanced and socially just alternatives.

As seen above, many sets of literature have been looked at and relevant issues to the main subject of this research have been discussed. However, it is worth mentioning that some of the discussed concepts are specifically relevant to the analysis and those are: (neoliberal) globalisation, modernization, industrialization and colonization as factors of impact upon traditional and indigenous agri-food systems. These concepts will guide the empirical research in the remainder of the thesis. First, the analysis will illustrate the transition in the agri-food system of the chosen case study, in accordance with the literature review. Second, the influences and challenges resulting from this transition will be analysed in relation to concepts mentioned above. Third, indigenous knowledge also represents an important concept in this research, as the indigenous knowledge of the chosen case study embodied in some agri-food practices will be mapped down throughout the research. Finally, the opposition against the current path of agri-food systems, and the suggested alternatives including the decolonization concept will give an insight into the scope available for utilizing indigenous knowledge as a future developmental resource for traditional farmers.

## **Chapter 3: Methodology and research design**

This chapter describes the research design used to guide the conducting of this study. It first discusses the epistemology, ontology and methodology adopted in this research. Second, the case study, sampling, the selection of informants and methods will be discussed. Finally, this chapter will discuss how the collected data was coded, in addition to the ethical considerations and limitations of this research.

### **3.1 Epistemology**

Interpretive paradigm which allows deploying a constructionist perspective was adopted as an epistemological basis for this research. Interpretivism is explained by relativism and the subjectivity of this world which is full of meaning that is constructed through the relationship between human beings and their surrounding world. Hence, there are different realities in this world, because perspectives are shaped differently by individuals. Similarly, to understand a specific phenomenon, we need to understand relationships between individuals as well as their cultural and historical contexts. Arguments around interpretive research are many, as it is not considered to be valid for generalization and hence not favored or as much considered by policy makers as scientific research. This is partly due to the highly contextualized qualitative data and the subjective interpretations of it (Scotland, 2012).

However, since this research is concerned with understanding many facets of indigenous knowledge in the agri-food sector, such as: indigenous practices, transitions, challenges and scopes for a certain indigenous society, basing this research on interpretivism is important. Dahlberg (1994) says that there has been an interest in conducting research about seeds for example, and hence collecting information about the plant, soil, climate conditions. However, he believes that other aspects are often dismissed in these studies, and those include the cultivation, preparation, economic, cultural and human dimensions of the grown crops, of which they have little information. Therefore, in order to get a deeper understanding of a specific indigenous society, its cultural and historical context and most importantly the transition and challenges it has gone through, an interpretive approach is essential.

### **3.2 Ontology**

The ontological consideration of this research is based on constructivism. Constructivism considers social actors to be continuously constructing social phenomena and adding meanings to them. Even researchers are considered to be constructivists in the way they interpret such phenomena, and that is strengthened by the fact that they decide which version of social reality they want to focus on and present to the world. Therefore, subjectivity is more dominant here than objectivity, because it is impossible for a researcher not to present values throughout the research. The process of choosing the area of research, the research questions, design and methods and finally analysis and conclusions is simply not value free. Additionally, the social world is constructed through interaction, it is not external to us and it is shaped by the language and choice of words we use when we talk, write or discuss (Bryman, 2012).

Thus, the motivation for this research was originally driven by personal curiosity and belief in the importance of indigenous knowledge, especially the knowledge embodied in agri-food practices and what kind of challenges does this sector face nowadays, in addition to how this knowledge can be alternatively used.

### **3.3 Methodology**

In coherence with the interpretive and constructivist nature of this research, a qualitative approach is chosen. An interpretation and justification for this methodology choice will be further explained. Denzin (2017) talks about using qualitative research as a critical inquiry in order to solve problems of social injustice while providing accessibility for the purpose of public education, constructing social policy and the achievement of community transformation. Given the nature of this research, which entails relevant issues to social injustice, public education and community transformation, a qualitative approach is seen appropriate for addressing such issues. Denzin (2017, p. 8-9) quotes a vision in justifying his approach that goes as follows:

*“Health researchers collaborating with communities to improve healthcare delivery systems, qualitative researchers engaging their students in public interest visions of society, indigenous scholars being trained to work for their own nations using their own values, teachers fostering*

*the ethical practices of qualitative research through publications, presentations, and teaching in both traditional classroom and professional development settings, internationally and nationally.”*

Qualitative research is often underestimated. Denzin's (2017) response to those who underestimate it, is that we live in a world dominated by numbers nowadays and that qualitative research is crucial in the ethical domain where it actually makes a difference in the lives of those who are oppressed. In his argument against positivism, he states that while positivism instruments can indeed generate studies, they cannot provide information that tackles problems resulting from social injustice and racial politics.

### **3.4 Case study**

A case study approach was chosen in this research, to gain a better understanding of the specific indigenous society in concern. According to Yin (1984), there is a unique contribution that case studies bring to our knowledge of different phenomena, such as individual, social and political phenomena. As a research strategy, case study is common in different fields like sociology, psychology, social work, planning and even in economics. Overall, it is our ambition and need to understand complex social phenomena that assisted the emergence of case studies.

Case studies tend to have focused questions about a phenomenon that need to be answered in a relatively short period of time. They can be about specific issues related to individuals, groups or sites. A case study provides in-depth descriptions and interpretations and has investigative characteristics (Hays, 2004). Furthermore, the use of case studies is usually preferred when questions such as “how” and “why” are being posed, and also when the case study is about a contemporary phenomenon rather than a historical one. However, when posing “what” questions that are exploratory in nature, then an exploratory case study is justifiable and can also be conducted (Yin, 1984). The nature of this particular case study is exploratory indeed, since it aims to discover the challenges facing the traditional agri-food sector and the scope for utilising the indigenous knowledge as a future developmental resource for indigenous farmers.

Yin (1984) believes that case studies are usually undermined in comparison with experiments and surveys because of concerns over accuracy. However, in case study research, the

alteration of collected materials is strictly forbidden and the researcher needs to report fair evidence.

### **3.4.1 Case study selection**

For the purpose of this research, a small Palestinian village in the SouthWest of Bethlehem in the Occupied Palestinian Territories was chosen. Wadi Fukin village was chosen due to the successful history of its inhabitants in returning back to their village in 1972 after they were forced to migrate between 1947 and 1948. According to Manasra (2007), Wadi Fukin villagers fled to nearby villages and camps to seek refuge but they never gave up their right to return. During the Palestinian diaspora, the indigenous people of the village were constantly going back to their lands to resume their agricultural activities during the day and would return to sleep in the refugee camps during the night. Additionally, the original inhabitants were mostly farmers, although now they are facing great attempts of displacement and shift in careers. The previously mentioned reasons incited the decision regarding the choice of this particular village as a suitable case study for answering the proposed research question.

### **3.4.2 Sampling**

The case study will follow a purposive sampling approach in which the main research question gives an indication that assists in the selection of units, and provides guidelines to which category of people should be chosen (Bryman, 2012). Due to the fact that this research seeks to discover the challenges facing the traditional agri-food sector, while mapping down indigenous agri-food practices in the process, former elder indigenous farmers (ideally over 70 years old) as valuable carriers of this knowledge are mainly chosen. Furthermore, active farmers who are inheritors of indigenous knowledge, and who are currently witnessing the changes in this sector were also interviewed. It is important to note that reaching the informants was facilitated by a friend who is originally from the village.

### **3.4.3 Informants selection:**

For the purpose of this research, eight in-depth interviews were conducted with indigenous farmers. As mentioned in the literature review and according to Magni (2017), elderly people are

the most valuable sources of knowledge transmission, since they are guardians of this knowledge. Direct inheritors of this knowledge were also interviewed because they are currently witnessing the change in the agri-food sector and are able to give insights into how this change is currently influencing their traditional practices. Hence, the choice of informants was based on age and activity in the field. The following table provides some basic information about the informants of this research, and dates of interviews.

Table 1: Informants details and interview dates

<b>Informants</b>	<b>Gender</b>	<b>Age</b>	<b>Activity status</b>	<b>Date of interview</b>
Informant A	Female	87	Former indigenous farmer	18-03-2018
Informant B	Female	75	Former indigenous farmer	18-03-2018
Informant C	Male	65	Active indigenous farmer	18-03-2018
Informant D	Female	78	Former indigenous farmer	18-03-2018
Informant E	Male	45	Active indigenous farmer	27-03-2018
Informant F	Male	75	Active indigenous farmer	27-03-2018
Informant G	Male	79	Former indigenous farmer	27-03-2018
Informant H	Female	49	Active indigenous farmer	05-05-2018

### **3.5 Methods**

Two methods were used in the data collection and those are semi-structured interviews as the main method, and secondary sources. Both methods will be further explained.

In regards to the nature of semi structured interviews, the researcher usually prepares a list of questions and topics to be discussed, but gives the interviewee some space in how to answer these questions. Additionally, the outlined schedule which the researcher usually sets is flexible in terms of sequence, but also in regards to asking new questions that are not included in the main questions list in order to follow up on the interviewees' replies. In qualitative interviews in general, there is a generality in formulating initial research ideas, and interviewees' own perspectives are emphasized. Consequently, there is a flexibility in qualitative interviewing, and the direction which the research might take depending on interviewees' perspectives (Bryman, 2012).

In this research, the flexibility of the chosen interviewing method resulted at times in changes in some of the interview questions and in the sequence. In some instances, the researcher had to change the formulation of some questions because some informants did not understand the question in concern, or needed more clarification. It is important to mention that the researcher used two main interview guides, where the second included a modification in the questions posed, according to the initial interviews and the issues that were raised during them. Furthermore, audio recordings were used to document the raw data material from interviews. According to Guion, Diehl and McDonald (2001), recordings are very useful in interviews, as they can be returned to for more accurate documentation by the researcher.

As regards to secondary sources, they include: Internet database, articles, publications and even photographs, to add strength and verification to the research findings. Photographs are usually used to give one or more of these functions: Illustrating and adding life to the findings. They can also be used as data themselves, and finally they can inspire and prompt participants to talk about the content of the photo (Bryman, 2012). For the purpose of this research, photographs taken by the researcher are used to illustrate and add life to the findings as suggested above.

### **3.6 Data coding and analysis**

The first step leading to the analysis was transcribing and translating the raw data material. According to Marshall and Rossman (2014), in researches that use the interviewing method, transcription and translation are highly important tasks and they are not merely technical as they entail judgement and interpretation. The transcription can be facilitated by a computer software, where the files from the audio recording can be entered into a software application which has a word-processing program. The tape's playback can be slowed down, speeded up or paused using various key strokes. In this research, interview transcriptions were assisted by a computer software called "NVivo", which was mainly used to slow down and pause the playback of the audio, whenever needed.

As for translation, the person who translates the original data into the main language of the research is usually referred to as the interpreter, according to Marshall and Rossman (2014). They see this as lifting the burden of complete accuracy from transcriptions and their translations, and that our role is to find a reasonable approximation of the words and intents of the informant. The mother tongue of the informants in this research, and that of the researcher is Arabic language. For this reason, and for the inability of most informants to speak proper English, the interviews were conducted in Arabic. Then, the researcher translated the data (results and quotes) to English, based on reasonable approximation as suggested by Marshall and Rossman.

For the analysis of the collected data, the research followed the thematic content analysis method which aimed to produce a systematic documentation of themes addressed in the interviews. Burnard (1991) discusses various stages that are relevant to this method, and those followed in this research will be briefly mentioned. First, reading through the transcripts and making notes on general themes. Second, the researcher reads again through the transcripts and makes headings until all the contents are covered. Third, higher order headings are created and the list of categories are grouped under these headings. Fourth, repetitious or similar headings in the categories are removed. Fifth, each interview transcript is then coded according to the categories list. Sixth, the similar coded sections of all interviews are cut out and collected together. And finally all the sections are filed together and prepared to be used or written up in

findings where the research questions can then be either separately and purely answered according to findings, or references to the literature can be directly made.

Usually, researchers worry of not giving justice to what is heard and seen from interviewees during the interpretation stage. Researchers are also warn against the mere description of what interviewees said and did. Therefore, theorizing in relation to the researcher's work is important for acquiring significance, since the researcher should not act as a mere mouthpiece (Bryman, 2012).

### **3.7 Research trustworthiness and ethical considerations**

It is important to make sure that the research process will have criteria of trustworthiness as Bryman (2012) describes it. Those include credibility, transferability, and confirmability, which reflects reliability and validity in research, notwithstanding that qualitative social research can hardly be objective. Nevertheless, reflexivity will be taken in mind through consciousness, and self-criticism. Furthermore, the researcher should make sure that no harm will be caused to informants, no invasion of privacy and no deception. An informed consent was taken as well, to make sure the informants were aware of the research process, and the use of findings afterward (Bryman, 2012). Prior to signing the consent form, the informants were given an information sheet providing details about the nature of the research project, what it involved for them and contact details for further enquiries. The contents were explained including the clarification of the voluntary nature of participation and the ability to withdraw at any circumstances without the need to provide reasons. Finally, each informant was provided with the information sheet and a copy of the consent form, for any future reference.

### **3.8 Limitations**

One of the limitations of this research lies in the case study approach that is followed. Case studies usually result in big amounts of data that need to be analysed. For this reason, much of this data has to be omitted, and that sometimes results in giving more focus to details or quotes coming from certain informants more than others (Hodkinson & Hodkinson, 2001). In this research and in instances where informants' responses were somewhat similar, the results were generalized, which means all informants responses were taken into account. However, there

are special instances where the presenting of some results or quotes was focused on certain informants, who shared extra information that is believed to have further enriched the results. Another questioned limitation to case studies as discussed by Bryman (2012, p.69), is the generalizability or external validity of case study research, and their capability of being generalized to other cases. Bryman explains that case study researchers are usually aware of this limitation and do not seek to make generalizations. Likewise, generalizability is not aimed for in this research. In contrast, the researcher believes that each indigenous society has its own unique characteristics, and that it is important to give each indigenous society its right in expressing those characteristics.

## **Chapter 4: Introducing the case study (Palestine- Wadi Fukin village)**

Before introducing the chosen case study, it is important to understand the political situation in Palestine and its colonization. Without understanding the historical background of Palestine, it would be complex to understand many issues related to the case study and findings. Hence, a brief explanation on the colonization of Palestine will be presented, followed by an introduction on the case study in concern.

### **4.1 A brief historical context on the Israeli colonization of Palestine**

*“The “surrogate colonization” of Palestine had a foreign power giving to a non-native group rights over land occupied by an indigenous people. (Atran, 1989, p.719)*

The problem of land in Palestine highlights the contrasting and conflicting agendas of three parties: British, Jews and Arabs. Arthur Balfour, the foreign secretary of Britain declared, during the British mandatory control over Palestine in 1917, the British support for building a national home for Jewish people in Palestine. This declaration came with clarification that non-Jewish communities will not be prejudiced neither in their civil rights, nor in their religious rights. The rationale for achieving this aim was based on three steps: geopolitical strategy, imperial civilizing mission and religion. The Jewish civilization was seen as qualified to bring what Atran (1989, p.721) referred to as “enlightened imperial principles” to the “cultural desert of Palestine”. In 1919, an agreement was signed stating that the settlement of Jewish immigrants on the land should be assured through intensive cultivation of the land, and a closer settlement. Consequently and according Gasteyer and Flora (2000), the foundation of Israel in 1948 has resulted in the Palestinian diaspora and the expulsion of the majority of Palestinian Arabs who lived there before 1948, while the Israeli government and the Zionist movements continued in pursuing their goals in “revitalizing” and “developing” the land through many land-based projects.

In terms of agriculture, most of the Palestinian agriculture was based on what is called rainfed agriculture or dry-farming (Ba'li in Arabic). According to Tesdell (2015, p.571), Ba'li is taken from Ba'al and "It is likely a reference to the Canaanite title for the master god Ba'al, who was associated with Hadad, the Canaanite god of rain and agriculture". Nevertheless, there was a

transition in the British mandate period, when Zionists were searching for new settlement models based on dairy farming, and that required a transition from rainfed crops to irrigated crops. Nassar was concerned about this and thought that drylands and agricultural knowledge were crucial for a Palestinian political action and place-making. His advice to the Palestinian Nazareth farmers back then was that the only way to escape the dangers of what is happening is through building the soil, planting trees, an experienced cultivation, and customizing a number of olive tree seedlings to each son of the village. His advice was interpreted as trying to make the accomplishment of Palestinians' displacement difficult.

The Palestinian diaspora in 1948 left a destructive impact on farming communities of historical Palestine (Isma'il & Dajani, 2014). In addition to impacting the farming communities, the colonization has further impacted the Palestinian economy negatively. One of the most binding restrictions imposed on the Palestinian economy are reflected in the Paris Protocol which is attached to the Oslo II agreement. The Paris Protocol was signed in 1994 between Israel and the Palestine Liberation Organization (PLO) with the purpose of formalizing economic relations that were determined in the West Bank and Gaza strip previously for a five year period by Israel. Although this protocol expired 19 years ago, it is still considered the basis for economic relations and constitutes a framework for the economic and fiscal conduct of the Palestinian Authority (PA). This trade agreement, which is similar to a customs union, theoretically allows goods to flow freely between both sides, with an agreement concerned with acquiring external tariff for imports. However, realistically, a customs union was created by Israel imposing trade policy on the West Bank and Gaza Strip. Customs unions usually don't require the elimination of borders, and that has enabled Israel to proceed with the colonization of the Occupied Palestinian Territory (OPT) while postponing the borders issue (Arafah, 2018).

The protocol was violated and Israel dictated that moving goods can only be done freely from Israel to the OPT, not the other way around. A restriction on moving goods within the OPT was also imposed by Israel. Foreign trade is also restricted through closure policies and non-tariff barriers. Hence, the OPT's market is bound to the Israeli exports. Building a weak Palestinian economy requires a different tariff structure than what is suitable for an industrialized economy, since the OPT has a fraction of the Israeli's Gross Domestic Product (GDP). The Palestinian GDP was 13.397 \$ billion in 2016 which constitutes around 4.2% of Israel's GDP in the same year. Hence, disregarding the gap between both economies is a serious problem. However, the

protocol itself is deformed even without being violated because it does not meet the needs of the Palestinian economy. The current trade system is not expected to be replaced as long as it serves Israel's strategic interests which were primarily guided by political interests aiming at the maintenance of a "no-state solution". In short, the Palestinian economy is suffering under a deformed system, while Israel as a superior power intends to keep this system as long as it serves its interests (Arafah, 2018).

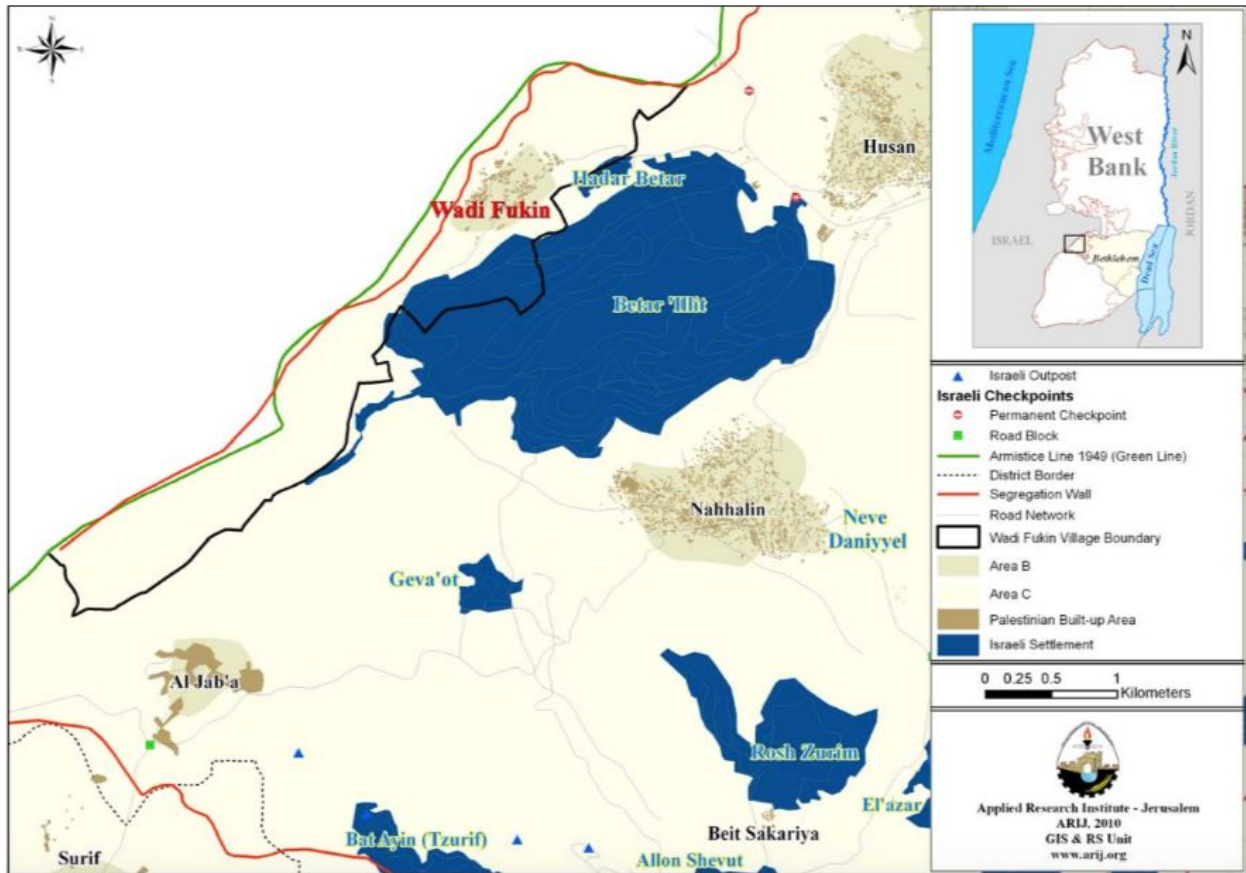
Additionally, due to the Israeli imposition of restrictions on fertilizers import, farmers movement, services, trade and seizure of natural resource, a 20-33% decline in the agricultural productivity in the Occupied Palestinian territories was documented since import restrictions on fertilizers were enforced. This caused extra financial and time-related costs for Palestinian farmers. Furthermore, the Palestinian economy in the occupied C areas is deprived of 63% of the West Bank's agricultural resources, which include the most fertile lands. The construction of the separation wall and Israeli settlements have additionally diminished areas that are suitable for agricultural activities (United Nations, 2015).

Arafah (2018) encourages further research in order to discover how the agricultural and industrial sectors can assist in building a productive economy which is less dependant on Israel, as part of the struggle against land expropriation. She further believes that local food production should be subsidized and high quality of local products should be guaranteed while boycotting the Israeli products which can help in protecting Palestinian goods, and in increasing the cost of the occupation.

#### **4.2 A closer insight into the case study of Wadi Fukin village**

Wadi Fukin is a Palestinian village located in the South-West of Bethlehem city, and it is part of Bethlehem Governante. It is bordered by Nahhalin village from the east, and the 1949 Armistice line or the green line from the West. To the north lies Husan village, and to the south lies Al-Jab'a village. Statistics show that the documented population was 1,168 in 2007. There is historical evidence for the existence of Wadi Fukin village that goes as far as 1800 years back, and the current inhabitants of the village are indigenous. The main economic activity in the village is the agricultural sector (absorbing 60% of the total workforce), while other economic activities include the Israeli labor market (20%), government or private employees sector (10%)

and trade sector (10%). Wadi Fukin village has no industrial activities, as there is only one tailor, one mechanic, one stone quarry and six groceries (Applied research institute, 2010).



Map 1 : Wadi Fukin location and borders (The applied research institute, 2010, p.4)

The village was affected by the Israeli colonialism in different ways. First, after the 1967 war and the Israeli occupation of the West bank and Gaza strip, large areas of Palestinian land were confiscated for the purpose of constructing settlements and military bases. Thus, Wadi Fukin village was exposed to the Israeli violations and was bordered by two Israeli settlements: Betar Illit from its eastern side, and Hadar Betar from its northern side and those were built on the land of Wadi Fukin village. Second, Wadi Fukin village was among the villages affected by the Oslo II agreement between the Palestinian National Authority and the Israeli government in 1995 (Applied research institute, 2010).

According to the Oslo II agreement, the West Bank was divided into three area types (A, B and C). Areas A and B were designated to the Palestinian population in built-up areas, and are under the Palestinian Authority control. While area C which consists of the land mass surrounding A and B areas is under the Israeli full control. Hence, the potential for agricultural and economic development in the West Bank is confined to area C (B'Tselem, 2017). Consequently, Wadi Fukin village was divided into B and C areas. The B area represents 7.3% of the total area, while the C area represents 92.7% of the total area which is around 3817 dunams (Turkish measurement unit). Third, according to an amendment issued in 2007 regarding the segregation wall, the wall will isolate Wadi Fukin village and many neighboring villages from Bethlehem governorate. The segregation wall will be extended for 4,6 km on Wadi Fukin's lands and thus will isolate 3781 dunams of the village's agricultural lands and open spaces. Last but not least, 250 olive trees in addition to 100 stone fruit trees have been uprooted by the Israeli forces since 2000 (Applied research institute, 2010).

## **Chapter 5: Key findings and data analysis**

This chapter aims to explore the main data collected through interviews, in addition to few secondary data resources that were useful in the third and fourth sections' analysis. Many themes resulting from the interviews were discussed and analyzed in their relation and significance to the wider literature on the subject. The four sub-research questions were answered and analyzed separately while attempting to answer the main research question. Hence, this chapter is divided into the following sections.

The first section includes an insight into some of the basic characteristics of the traditional agri-food sector in Wadi Fukin village. The second section includes documentation of indigenous agri-food practices in Wadi Fukin village. The third section discusses both the transition through which the agri-food system in Wadi Fukin village passed in the past few decades, and the resulting challenges by two main influencing factors. Finally, the last section tackles the scope for using indigenous knowledge as a developmental resource in the future of Palestinian traditional farmers. In this chapter and at some instances, photos taken by the researcher are included to illustrate on some of the findings.

### **5.1 Characteristics of the traditional agri- food system in Wadi Fukin village**

In this section, the first sub-research question is answered: “What are the main characteristics of the indigenous agri-food system in the Occupied Palestinian Territories (Wadi Fukin village as a case study)?”

Throughout the interviews, some characteristics of the indigenous food production system in Wadi Fukin village were highlighted and recognized. The indigenous food production system characteristics of Wadi Fukin village seem to be somewhat similar to the general traditional food production system characteristics discussed by Lawrence (2017) in the literature review. The similarities are represented in the following aspects; a small scaled production system of which production is basically family oriented, and the excess of production is used in trading. Also, one of the important goals of this system is to enable farmers and their families to be self-sufficient. It is important to mention that the food production in the traditional system rarely depends on high-level technology, relying more on human and animal force. The last aspect is the type of

relationship they had, which according to Lawrence (2018, p. 775) described as “informal relationships”. The base of these relationships contains positive values, love and giving between society members in Wadi Fukin village.

The agri-food system in Wadi Fukin village has special characteristics. Wadi Fukin village was considered as the “food basket” and main exporter of food to Jerusalem, Bethlehem and Hebron districts. Some of the famous vegetable crop types in Wadi Fukin village include: white cucumbers, eggplants, beans, pumpkins, parsley, zucchini, mint, radish, rocket, tomatoes, kale, beet, garlic, spinach and cabbage. As for fruit trees, those include: peaches, apples, pomegranates, pears, figs and grapes, in addition to almond and olive trees. Another characteristic was the existence of two practiced agriculture types in Wadi Fukin village; rainfed agriculture (Ba’li in Arabic) and irrigated agriculture. Wadi Fukin village has eleven water springs on which irrigated agriculture depends, while rainfed agriculture of grain crops was mostly common on the mountains.

However, in terms of self sufficiency most informants estimated that the majority of their needs were met, which indicates high self-sufficiency levels in the village, mentioning that only few stuff were purchased from outside the village, such as soap, rice, salt and gas. Also, food preservation was very common in the village, as the food stored during summer was part of people’s winter food supply.

*“We used to eat everything here from the orchard, one barely needed anything, all from the orchard. There were no fridges back then”*

(Informant B, Wadi Fukin, 2018)

Moreover, the availability of eleven water springs resulted in a very fertile landscape in which livestock owners from nearby villages such as Husan, Nahaleen, Ta’amreh, Obeidiyyeh used to visit regularly to feed their herds. Hence, big amounts of natural manure were available in the village and therefore all farmed lands were naturally fertilized.

When discussing the characteristics of the indigenous agri-food system, it is important to mention the trading system. Previously, the trading system in the village took many shapes

including selling in return for money and trading products according to individual needs. Additionally, some farmers used to give some of their products to those in need and those who did not own farming land. As for workforce, it mainly consisted of family members, but because of the strong brotherly relations within the villagers, and on some special occasions, some people used to help the big-landowners such in the harvesting season or soil turning, and that is called the “Awneh tradition” translating to “Help tradition”. Finally and in terms of transportation, in order to reach marketing areas in nearby villages or cities, farmers used to either walk or use animals such as camels as means of transportation.

On a micro level, some of the basic and most common indigenous agri- food practices in Wadi Fukin village will be mapped down in the following section, in order to gain a better insight into how these practices helped in shaping the indigenous agri-food system.

## **5.2 Indigenous agri-food practices in Wadi Fukin village**

In this section, the second sub-research question is answered: “What are the most common traditional practices that characterize the indigenous Palestinian knowledge in the agri-food sector?”

As discussed by Magni (2017) in the literature review, diverse patterns of indigenous knowledge helped many populations in maintaining sustainable management systems that were good for the environment and for their resistance against colonizing forces. This has developed the interest of the international community in knowledge and practices of indigenous societies. The knowledge of Wadi Fukin's indigenous community has likewise enabled them to sustainably manage their surrounding environment, and this section attempts to map down some of their most unique and rich practices, or as Magni calls it, the know-how of the given society.

During the interviews, a great amount of data about indigenous practices was collected. Due to words limitation, all practices are mentioned, but some are briefly explained. Those practices include the following: food preservation practices, traditional plowing (land tilling), traditional irrigation techniques, rainfed agriculture, integrated pest management and finally traditional grinding and filtering techniques.

### **5.2.1 Food preservation**

The majority of the informants talked about food preservation as part of their traditional practices. According to these informants, many types of food were preserved and then stored for later use by Wadi Fukin villagers, since fridges were not common back then. The stored food was part of their winter food supply. Many types of fruits, vegetables and grains were preserved and stored, including: tomatoes, zucchini, eggplants, figs, grapes, wheat, lentils and barley. Meat and milk were also preserved and stored for later use. When asked to explain more about the preservation process, some informants provided a detailed explanation of how the following types were preserved:

- Tomatoes: Tomatoes are usually grown in summer but were preserved for winter food supply. Tomatoes were first carefully selected, then the good ones would be sliced, spread, and sprayed with salt (salt is a mosquito and microb repellent according to informant E). The tomato slices would be left to dry out before being stored. For winter use, tomatoes were soaked in water for some time until the tomato slice returns to its original shape before drying.
- Meat preservation: After slaughtering the lamb, and consuming as much as needed, the leftover meat was preserved. The process began with heating the meat in water without any salt addition or anything else, and then stored in a clay jar (see photo 7) leaving 10-15 cm of space empty. The meat's fat was then distilled and melted down, then added in the empty space that was left in the jar, in order to close the pores of the meat. When they later decide to eat it, they would take certain quantity of the meat and then again melting down the fat, adding it to the meat and closing the jar and so on.
- Zucchini and eggplants: Eggplants used to be sliced, soaked in hot water, dried and then stored. Zucchini used to be sliced and spread on the Palestinian stone chains, sprayed with salt, dried and then stored in pottery jars.
- Figs and grapes: According to informant C, figs and grapes were not dried on nets like it might be imagined. He talked about a plant that gives a good smell like the "Thymus

Capitatus” plant which used to be cut, spread among the fruits or vegetables and left to dry out under the sun.

The storage place in which farmers used to store their food over seasons was called “Khabyeh”. Khabyeh was made of clay or pottery mixed with straw and shaped with a narrow bottom. As for the size, it was decided according to people’s needs. At the bottom existed a special place for storing grains such as wheat, flour, lentils, barely which were all part of the winter food supply. Additionally, a hole existed at the bottom to access the grains, and it was closed with a blockage band.

### **5.2.2 Plowing**

Plowing was mainly dependant on animals that were raised by farmers, such as cows, mules and donkeys. According to informant D, the process starts with smoothing the land, removing any weeds and then plowing it in preparation for planting afterwards. Special metal trails were created for this purpose, where two cows would be placed on each side. The cows are supposed to pull the tilling tool through what is called the Neer (a thick wooden piece attached to both cows and to the tilling tool). This technique was practiced until around the 1960s until tractors were introduced to the village.

The cows would be directed to move from one place to another until the whole piece of land is plowed. Informant E believes that this traditional method is better for the land than nowadays tractors. He explained that when you turn the soil and reach 90 cm deep (which normally takes around 3-5 days), the land gets exposed to more sun. Additionally, this method results in mixing all particles of the soil together. He added that this is not to neglect the blessings which god gave us along with technology, civilization and development. However, he believes that for the land and soil, the old methods were more appropriate and much better.

Afterwards, farmers would plant wheat, lentils, barley, corn, hummus (chickpeas) and other crops. Informant C says that all the surrounding mountains used to be tilled and planted also with wheat, barley, karsanna (*Vicia Palaestina Boiss*), two corn types: one for animal consumption and one for human consumption. It is believed by farmers that the land’s production was much better and more blessed with a better quality following the traditional way,

in comparison with the modern way. After planting, the land would then be naturally fertilized and irrigated through the “Machakeb system” which is explained below.

### **5.2.3 Between the traditional “Machakeb” irrigation system and the agricultural irrigation pools and plastic pipes**

#### **Machakeb irrigation system**

Machakeb means the division of land into basins that were used for planting vegetables, and were irrigated through land/soil channels due to the strong and continuous flow of the water spring. Water would be directed through opening channels in the soil while closing others, until the whole piece of land is watered (see photo 1 and 2 ). These basins were fertilized using animal manure. According to informant C, there was a huge animal wealth in this village, as people raised many animals including sheep and a lot of natural fertilizer was therefore available.

#### **Agricultural irrigation pools and pipe channels**

Later on, when agricultural pools were introduced to the village, people followed a water division system. Channels that connect water springs to the agricultural pools were created, and since then farmers direct water to their pools through these channels. Afterwards, farmers would let the water flow into their land through pipe channels, whenever there is a need to irrigate. Following the water division system, each landowner can use the water in a specific timing either by day or night, and people would irrigate according to how much water they have. However, water is not available for everyday use. According to informant E, if one farmer’s turn is on Sunday, his next turn would be on the 8th day after Sunday, so his next turn would be on Monday and so on.

Informant E believes that water pipes are good but there are some specific winter crops that he personally prefers to water through the Machakeb system. These crops include: spinach, turnips, radish, chard. He says that when planting a lot of seeds, a lot of pipes are needed, but unfortunately they can’t water the land completely. However, using the Machakeb system he ensures that his whole piece of land is properly irrigated. He adds that the land is usually

divided into basins and then irrigated through channels. After the first basin is watered, he moves on to the next one, and the one after it and so on. And next time he irrigates following this method, he would start from the last piece he watered in the previous time reaching the first one.



Photo 1: Basins in the Machakeb irrigation system



Photo 2: Opening channels in the Machakeb system



Photo 3: Agricultural irrigation pool



Photo 4: Water channel

#### **5.2.4 Rainfed agriculture (Ba'li) vs. irrigated agriculture**

Due to the availability of freshwater resources, irrigated agriculture in Wadi Fukin village was very famous amongst villagers who used the techniques mentioned above. Rainfed agriculture was also common in the village, but mostly practiced on mountains growing crop types that

include tomatoes, zucchinis and Armenian cucumbers. However, nowadays farmers rarely practice rainfed agriculture outdoors because almost everyone plants in greenhouses instead. “The crops on the mountain, we call them Ba’li tomatoes, Ba’li zucchini. The Ba’l zucchini was better than the irrigated Zucchini, better and stronger. Farmers would water it only when the seed is planted, and after that they don’t water it. They would just turn the soil on it and leave it. Then, the seeds would grow into such a beautiful green tasty vegetables, praise the Lord! Their green color would be stronger than those irrigated, this is all called tasty Ba’li.”

(Informant A, Wadi Fukin, 2018)

*“Ba’li crops that grow outdoors are more delicious than those grown inside greenhouses. They taste better because they are exposed to the sunlight. Nowadays in greenhouses, the sun does not enter..”*

(Informant B, Wadi Fukin, 2018)

Informant E uses a technique that he learned from his ancestors which he calls “Thirsting” and according to him, elders called it “pass”. This method works by plowing the land twice, watering the seedlings only two times, and then leaving them without water for 21 days, and sometimes 28 days. One day before watering the seedlings, the natural fertilizer would be accumulated on the entrance of the basin where the water starts flowing. Then on the following day when irrigating, the farmer would throw the fertilizer and let it flow over the water until the water fills the basin. Later on, in order to mix the fertilizer with the soil the farmer digs, plows and then “pass” or not irrigate again for one more week. Technically, this means the seedlings were not watered for relatively a whole month. Afterwards, it takes around 30-40 days until it starts fruiting.

He explains further: *“Let us say it like this, which is tougher, the son of the desert or the son of the city? The son of the desert is tougher, stronger, and can hardly catch sickness. When you thirst vegetables, you give them strength and toughness, in order to resist sickness, and to fight soil and fungi diseases. When you give them water, they gets used to abundance and thus they become fragile to any insect or fungi disease.”*

### 5.2.5 Integrated pest management

Informant C expressed how farmers originally used to manually make seedlings using only local seeds. Some farmers are now using foreign seedlings coming from northern areas or from the Jordan valley area (Jericho for instance). Some pests and diseases started to spread among those seedlings, and many resistance strategies have failed to control them, he said. Therefore, farmers are returning to natural resistance strategies through using natural insects which feed on other harmful insects, and that is called integrated pest management. Another strategy for managing pests inside of greenhouses is through using yellow and blue traps. He explained that some insects and pests are familiar with these colors, so when they come to land on them, they get trapped by a sticky material.

Finally, the following are some of the traditional tools which informant D still owns although they are not widely used anymore. The first and second photos shows the grains straining and grinding tools. The third photo shows a clay jar that was used for food preservation.



Photo 5: Traditional straining tool



Photo 6: Traditional grinding tool



Photo 7: Clay jar for food preservation

As seen above, the indigenous agri-food knowledge in Wadi Fukin village is rich, and many of these practices assisted the indigenous population in achieving self-sufficiency. It also guided them to sustainably manage their natural resources where animals, humans and natural resources were all integrated to shape the traditional agri-food system of this indigenous society. However, during the past few decades, the indigenous agri-food system went through a transition phase which created many obstacles and challenges which are discussed thoroughly in the upcoming section.

### **5.3.1 The transition in Wadi Fukin's agri-food system**

In this section, the third sub-research question is answered: "How has the indigenous agri-food sector been impacted in the past few decades and what are the challenges posed by the current agri-food system?"

The answer to this sub-research question is divided into two subsections: the transition in the indigenous agri-food system and the challenges facing the current agri-food system due to this transition. As many indigenous societies and as many traditional agri-food systems worldwide, the agri-food system in Wadi Fukin village went through a clear transition over the past few decades as a result to many factors as will be further explored. This transition altered the production, the land and natural resources, farming techniques and people's preferences among other effects, which are also discussed as follows:

1. The shift from complete dependence on human force and animals, into a dependence on agricultural machineries and new technologies such as tractors, and harvesting machines (See photo 9).
2. The shift from reliance on natural fertilizers and natural predators for fighting pests and diseases into high reliance on agrochemicals for higher yields of production, in addition to pesticides and herbicides for fighting an increased number and variety of pests and plant diseases.

*" There was an abundance in natural fertilizers and on this basis they used to fertilize all farmed or planted lands with natural fertilizers. They didn't know those chemical*

*fertilizers at all, those were known only after 1973 or 1974 approximately. The same for pesticides, they didn't use pesticides. In 1978 pesticides were not used, they used one type which is sulfur. Sulfur material is non-toxic I believe, and it used to protect vegetables from fungi disease and repel insect diseases."*

(Informant C, Wadi Fukin, 2018)

3. The shift from having high self-sufficiency levels into an increasing need for external and additional income resources to afford high living expenses.

When Informant G was asked if people needed to buy anything from outside the village in the past, he said: *"We didn't need any help from outside, everyone used to rely on what they plant and farm. Farmers used to plant wheat, barley. They had sheep, cows. They had everything."*

4. The disappearance of rainfed agriculture (Ba'li) on mountains over the past few decades, while irrigated agriculture and greenhouses are dominant nowadays (See photo 8).

*"They used to plant Ba'li tomatoes and stuff like this, the Ba'li was always available but today there isn't, the weather is too hot and the Ba'li corps do not live, they only plant orchards now."*

(Informant F, Wadi Fukin, 2018)

5. The shift from using the traditional irrigation system (Machakeb system), into drip-irrigation system, as explained in the previous section.
6. The shift in consumption habits from consuming handmade fresh food from the land and traditional recipes into consuming processed foods available at the supermarkets. Additionally and due to the change in people's preferences, some crop varieties are becoming less common and preferred, such as the white cucumbers and lentils.

*“Today if something is missing from the house, todays’ generation would go to the supermarket immediately. Today’s generation is very familiar with supermarkets, they don’t accept the food we used to eat.”*

*(Informant D, Wadi Fukin, 2018)*

7. The shift in the younger generation’s career preferences in comparison with the older generation from farming into governmental or private jobs, or working in Israeli settlements for higher wages.

*“The Palestinian market is open to Israeli vegetables coming from Israel, and they compete with the Palestinian vegetables, so vegetable prices have dropped. Hence, the farmer’s income does not exceed 50 NIS (New Israeli Shekels) per day, which made any farmer’s son to start comparing working at the land with his father or working in Israel and gaining 300 NIS per day. There is a difference in terms of income, and we live in tough economic situations as Palestinians in the West Bank and Gaza. These tough economic situations have forced the youth to as I said, either work in Israel or in settlements or in governmental jobs, or even in private jobs.”*

*(Informant C, Wadi Fukin, 2018)*

8. The shift in the roles of Wadi Fukin village farmers as main providers of food to nearby districts and cities, into marginalized farmers who are facing strong local and external competition.



Photo 8: Green houses and plastic pipes



Photo 9: Tractor

The traditional agri-food system characteristics were discussed in the first section of this chapter in relation to the interview results and literature review. In this section, the characteristics of the industrial agri-food system as opposed to the traditional one will be also viewed here in relation to interview results and literature review. In Lawrence's (2017) comparison of traditional agriculture and industrial agriculture, it is made clear that industrial agriculture is practiced in nations who own manufacturing sectors and developed services, and where the GDP of the agricultural sector is usually low with supermarkets being the main outlets of food. The production in this system is usually large-scale and requires high efforts and input from farmers. Middleton (2013) adds that agrochemicals and intensive cultivation are common in this system. Those characteristics are applicable to Wadi Fukin village's current agri-food system, although some other impacts that were not discussed in this literature review were particular to Wadi Fukin's case. Those include the impacts upon the traditionally practiced rainfed agriculture, and the impacts on the traditional irrigation system.

Pechlaner and Otero's (2008) talk about the widely adopted new agricultural biotechnologies resulting from the international agricultural position in trade. Their argument is that there is a constancy of trade relations between un-equable nations under institutional structures and unwritten rules in the food regime's dynamic in the global political economy. As part of an impaired Palestinian economy and in comparison with the Israeli economy, Wadi Fukin village is starting to follow an industrial agricultural path, one that it might not be completely prepared for especially with the lack of manufacturing sectors in the village and that is alarming for the future of Wadi Fukin's indigenous farmers. Many challenges consequently resulted from this transition, and they will be explained in the following sub-section.

### **5.3.2 The challenges posed by the transition in the agri-food system**

To answer this question, informants were asked about the hardships and challenges that indigenous farmers in Wadi Fukin village face nowadays, in terms of following their traditional agricultural practices. Informants had various answers pointing out to some challenges that can be summarized in the following points. Those challenges were categorized and divided into: challenges influenced by globalisation, modernization and industrialization, and challenges influenced by the Israeli colonization.

## ❑ Challenges linked to globalisation, modernization and industrialization

1. The ability of new machineries to take off some of the human effort, and facilitate some practices.

*“In regards to traditional agriculture, the only hardship in going back to traditional agriculture is the physical disability of farmers, not more not less, because it is tiring when you plow and make basins for irrigation, they find drip-irrigation through pipes easier, comfortable and less physically exhausting” .*

*(Informant C, Wadi Fukin, 2018)*

2. The change in the consumption preferences of today's generation, due to the existence of supermarkets and shops from where today's generation prefers to purchase their food. Additionally, people now only care about the size of the vegetables they are buying, and don't feel satisfied anymore with the small local ones.

*“People now look for the big tomato piece, the good and clean one. As for the small one, they don't look at it”.*

*(Informant F, Wadi Fukin, 2018)*

3. Increased local competition and the marginalization of small traditional farmers, and this is partially due to:

*“Municipality water or underground water, how? For example, no one used to farm in Bethlehem and in the Ta'amreh area, no one practiced agriculture at all, there was no water. Back then, Wadi Fukin was famous for agriculture, why? because of the availability of water springs. Today we the people of Wadi Fukin village which was the food basket of Bethlehem and Jerusalem, we became small farmers for the Ta'amreh area”. Moreover, informant E and informant F believe that the increasing availability and support for building green houses is an added factor in increasing the local competition in food production.*

(Informant E, Wadi Fukin, 2018)

4. The spread of soil diseases, and the increasing use of agrochemicals.

*“One of the disadvantages of greenhouses is that of course the area here or the soil is diseased, it has diseases and of course in greenhouses they spread very fast, due to high temperatures and high moisture levels, so they spread and we don’t know how to treat them”.*

He further adds that in order to fight and treat these diseases, farmers are obligated to use expensive chemicals.

(Informant E, Wadi Fukin, 2018)

5. The decrease in land productivity, and food quality in comparison with the past, as believed by many informants.

*“This land does not give as much as it used to”*

(Informant B, Wadi Fukin, 2018)

*“In the past there were no chemicals, today they use a lot of chemicals. God’s blessings enriched the food with no chemicals needed! Only to work hard, to irrigate, to plow, to remove weeds and almighty god blesses the food”.*

(Informant D, Wadi Fukin, 2018)

6. Trade commissions. According to Informant F, traders buy vegetables from traditional farmers in big quantities, and then they sell the products for double or triple their original price. Hence, indigenous farmers cannot compete with them. Some informants refer to this system with “kimsyon” meaning commission. In this system, farmers bring their vegetable to the market where they give their products to traders to sell them and those traders receive a certain percentage.

However, *“ Some farmers nowadays would like to sell grape leaves for example, and they don’t want to follow this commission system. But they are not allowed to sit in the markets to sell their products there now”.* She further adds that it is the municipality who came up with this

decision, and the only choice those farmers have is either to give their products to be sold by the “commission” or not to sell at all.

(Informant H, Wadi Fukin, 2018)

7. Tough economic situations: In the past, production costs were cheaper than today’s. Living expenses became so high and the income coming from the food production cannot cover and keep up anymore with the production expenses.
8. Water scarcity problems due to the drop in rainfall rates. Hence, a decrease in production levels was noted.

*“ Production levels are dropping because of the scarcity of rain. Farmers find that the rain isn’t enough, and the available trees and agriculture don’t provide them with the needed production”.*

(Informant G, Wadi Fukin, 2018)

As mentioned above, the impacts of neoliberal globalisation ideology which were discussed in the literature review by Lawrence (2017) included the spread of productivist agriculture and supermarketization which are among the challenging impacts affecting indigenous farmers in Wadi Fukin village. As for the impacts of modernization and industrialization, they first include the spread of agrochemicals use and fertilization process. Second, the changes in land use which resulted in the destruction of native vegetation, and affecting species capacity for restoration (Middleton, 2013). As seen in the results, the change in land productivity and the increasing dependence on agrochemicals were both expressed by informants. There is a close link between the use of agrochemicals and land productivity.

Baishya (2015) says that with the agricultural modernisation, ecological principles were ignored and that modern agriculture introduced practices such as monoculture, chemical pest control and the use of inorganic fertilizers. She adds that those practices resulted in soil degradation which is also due to the misuse of high external inputs. Informant E talked about the misuse of agrochemicals saying that indeed agrochemicals are harmful but only when they are not used properly. He further explained that usually when experts and agricultural engineers recommend using a specific type and quantity of agrochemicals, they always have a purpose behind their

recommendation. He says that unfortunately the farmer ends up using much higher quantities than what he is supposed to and the time it takes one kilo of chemical fertilizers to decompose is different than the time needed for five kilos of fertilizer to decompose for example. Hence, the farmer puts a pressure on the land to decompose a big quantity in a relatively short period of time.

Third, the water scarcity and drop in rainfall rates in Wadi Fukin village are probably attributed to climate change and the intensification of fossil fuels which is discussed by Dahlberg (1994). Helland et al. (2018) also discuss the contribution of agricultural activities to greenhouse gas emissions. The increasing dependence on greenhouses for higher amounts of production is alarming for the future of Wadi Fukin village, especially in light of the water scarcity problem in the village. Finally, economic inequalities driven by the market and technological benefits, as argued by Dahlberg (1994), also impacted the indigenous community in Wadi Fukin village. Economic inequalities were a result of trade commissions and the increase in local competition in markets due to the increased availability of underground water and greenhouses.

Through the literature review, it has been discussed that the colonization of the planet is happening through enforcing a world system that does not accept alternatives and that destruction is happening under the name of civilization and modernization (Helland et al., 2018). However, Indigenous societies in specific such as the indigenous society in Wadi Fukin village are facing an additional type of colonization, of which effects will be demonstrated below.

#### ❑ **Challenges linked to the Israeli colonization**

1. The Israeli competition poses a big challenge on traditional farmers in Wadi Fukin village, for Palestinian markets are full with Israeli products. One of the informants was asked about his opinion on the effects of the economic Paris agreement between the PLO and Israel on small farmers. He answered:

*“Look, before the existence of the PLO, markets were open, Israeli markets were open to the Palestinian products and Palestinian markets were open to the Israeli products. Today, being a Palestinian, I am not allowed to bring my products to Israeli markets, but Israelis are allowed to sell us their products”.*

(Informant E, Wadi Fukin, 2018)

2. Public participation in governmental decisions is impaired.

In reference to the Paris economic agreement with Israel, one of the informants said: *“Big officials in the government are signing agreements with them [referring to the Israeli side, RB], and they are not including us and our opinions in these agreements. I am telling them that you are not the sole owners of this country, why isn’t there any referendum on issues like this?”*

(Informant E, Wadi Fukin, 2018)

3. Restrictions on land use that were imposed by Israel, such as collecting wild plants in certain areas. One of the informants shared a story of two women she knows, who once went out for a picnic and were charged three thousand NIS for gathering wild thymes. She says that before the occupation, people used to collect wild thyme and use it at their homes or even sell it in markets. Now due to these restrictions, they can’t do this anymore.
4. The landscape or space which shepherds and farmers previously used for grazing has shrunk because of the Israeli land confiscation and restrictions imposed on land usage. Herds which previously grazed at the mountains surrounding the valley now are banned from roaming there, and can only roam freely in certain areas in the valley. Farmers stopped raising animals anymore, and those few farmers who still have two or three animals keep them tied most of the time.
5. Restrictions on natural fertilizers use, especially those containing “sulfur” which is a natural composting material, because it can be used in making explosives.
6. Because of higher wages in Israeli settlements and factories in comparison with the income coming from farming, the younger generation is now tempted to leave working in the land in order to start new careers with higher wages.

7. There is some kind of uncertainty of what will happen next on the political level, and how the surrounding settlements are going to further affect the Palestinian population in Wadi Fuki village. Photo 10 and 11 show the expansion of Israeli settlements, and how close they are to the village.



Photo 10: Bitar Illit settlement



Photo 11: Recent expansion of the settlement

As expressed earlier, Indigenous societies such as the indigenous society of Wadi Fukin village are facing an additional type of colonization, along with globalisation, industrialization and modernisation. According to McGinty and Bang (2016), this colonization entails land conquest and the elimination of indigenous societies. Calvo and Esquibel (2015) discuss that colonial systems work to shape the economy, the food system and educational institutions, and the process entails the extraction of natural resources and labour, while taking away the land from its indigenous communities, in addition to dismissing the indigenous knowledge.

On the one hand, in Wadi Fukin village, the economy is being shaped through the economic inequalities resulting from the Paris protocol as discussed earlier which has been one of the contributing factors to the marginalization of indigenous farmers. This confirms the idea of power dynamics in the agri-food sector, which in the Palestinian case is represented through the current trade system as explained by Arafah (2018). According to her, this system serves Israel's strategic interests and it is not expected to be replaced anytime soon. However, the consequences of this power dynamic in the Palestinian context which is also apparent in the trade commissions system explained earlier, is a deformed Palestinian economy and disregarded public choice. As argued by Sodano (2018), public choice is usually disregarded

under neoliberalism. As presented in the above results and according to one of the informants, Wadi Fukin farmers were not consulted when the Paris economic agreement was signed with Israel. Hence, farmers had no power over its application and implications on their livelihoods.

On the other hand, the following acts are thought to have helped in shaping the current food system in the following ways:

1. Restrictions on natural fertilizers, could be a factor in the increased usage of agro chemicals.
2. The tough economic situation forced a lot of villagers to leave the agricultural field in order to gain more money in the Israeli settlements.
3. The Israeli land-use restriction and land confiscation influenced the agricultural field in many ways such as the decrease in raising animals, and the decrease in the use of wild plants.

To conclude, the traditional indigenous agri-food sector in Wadi Fukin village witnessed a transition in the past few decades. This transition posed some challenges to indigenous farmers due to two main factors as seen above. In order to discover the scope for an alternative food production system based on traditional knowledge in Wadi Fukin village, indigenous farmers were asked several questions of which answers provided some insights into actions that need to take place.

#### **5.4 The scope for using indigenous knowledge as a future developmental resource for Palestinian traditional farmers**

In this section, the fourth sub-research question is answered: “What is the scope for using indigenous agri-food knowledge as a developmental resource in the future of Palestinian traditional farmers?”

This sub-research question will be mainly answered through providing some interview quotes distilled from responses to several questions that are believed to entail indirect answers for the question in concern. Three interview questions and some of the most appealing responses are reviewed here. Afterwards, these findings are analyzed in relation to the wider literature.

- The first question was: “As an indigenous society in this land, what do you think is the importance of the traditional agricultural knowledge in the current time, and how can it be used to bring dignity back?”

*“We can bring it back through boycotting, boycotting every Israeli product, as long as you monopolize and despise my product and don’t want it in your markets, I also don’t want your product in my markets and I don’t want to use it or want it at all. And let’s stay without apples, we can live without apples, we can live without pears, we can live. Boycott the Israeli products and have patience in observing the effect. They will come and beg you the next morning to do whatever you want. But of course people and traders who benefit from these products will never do anything”.*

*(Informant E, Wadi Fukin, 2018)*

Informant E further added: *“It is very important. Let me tell you, the Jews [referring to Israeli Jews, RB] bring groups of tourists and I can hear the tour guides explaining to them that there isn’t any valley in all over the country (Israel as they call it) where farmers practice agriculture the way our ancestors four thousand years ago used to except here in Wadi Fukin. While we, Palestinians, prefer to go to Tiberias and Eilat in order to have fun. We should bring universities and school students to visits the farms here and show them how our parents and grandparents used to practice agriculture. It is very important because it is part of our history, part of our culture and civilization, and we have to preserve it.”*

When asked about how the transfer of traditional knowledge to the current generation can be facilitated, informant H said:

*“Through school and through us as well, not only schools, we can teach them.”*

- The second question was: “What do you believe is the role of the current generation in preserving the agricultural heritage?”

*“The current generation is supposed to preserve the agricultural heritage, through preserving the agricultural land, especially that we in Palestine, the West Bank, not only in Wadi Fukin but*

*in all of Palestine, we are facing a colonial attack. But as I said, the economic situation is what drives the youth away from agricultural work, and makes them work governmental or private jobs, or in factories.”*

(Informant C, Wadi Fukin, 2018)

Informant C further explained: *“If there is any support for these youth, things would be very different. They would have the will, the ability, the vitality and even the love to work again in their lands. There are many types of support, for example there are some lands that need reclamation. So, for example we can increase the agricultural fortune of trees, let’s say either olive trees, grape trees, almond trees or others. Now there are organizations that work in the West Bank, they are Palestinian supported by EU countries or by the USA or Arab countries or others, but those use technical agricultural reclamation. Jews [referring to the Israeli Jews, RB] have their eyes on our Palestinian lands, and they aim to put their hands on it so that they can provide immigrant jews and their new generations with suitable homes. Now, however, this manual reclamation decreases the danger of bringing the Jew’s attention to confiscation..”*

- The third question was: “As we know, the world is getting bigger and the population is increasing as well, what do you think is the best way to provide good amounts of food for this growing population, in a way that is sustainable and good for the land and people?”

The informant showed enthusiasm which indicates how important this issue is, saying: *“I was asked this question by an engineer from the FAO (Food and Agriculture Organisation). Intensive agriculture is the answer. As Fairouz [A lebanese famous singer, RB] said population is increasing and the space is shrinking, and it is true. Today, let me tell you something, her brother in law [pointing to a woman who was with us, RB] has built on an agricultural land. Tomorrow, his children will come and will want to build in the orchard, because there is no land. There is land, but building in Wadi Fukin is forbidden [Area C, RB]. I read about Egyptian Delta and which had many agricultural lands. Today, only one third of these lands is left while the rest are used for buildings.”*

(Informant E, Wadi Fukin, 2018)

Informant E later talked about a new method being applied in one of the village's farms, as part of an ecological agriculture course being given at the village. He believes that this is an ancient method which was practiced in Egyptian Delta aiming to preserve natural or local species through intensive agriculture. It includes trapping vegetables in deep ground channels, and trapping water there in a way that neither water nor the natural fertilizer is wasted. Straw is used in this method for two benefits; the first is to prevent water evaporation, and the second is to use straw as mulch to prevent weed seeds from spreading.

The same question was asked to another informant, but the question ended with: "is it through the traditional way, or modern way or is there something else?"

He replied: *"I say the modern is better than the traditional way". It was then clarified to him that the question is seeking to discover a way that does not harm the land or humans. He further explained: "This question is more suitable to pose on people who have large agricultural land (40-50 dunams). They can control what to plant in them: wheat, barley, vegetables, whatever they want but here in Wadi Fukin village, the largest a person could own is three dunams or two dunams which are separated, so here we face some obstacles. But areas like Qana, Tulkarem, Jericho, those large plain lands can help in increasing the production thus increasing the exports, while we only sell to eat."*

(Informant G, Wadi Fukin, 2018)

As noticed through these quotes, the beliefs of some of the informants regarding the possibilities to overcome some of the challenges that get in the way of traditional agri-food practices can be summed up in the following points:

1. Boycotting Israeli products, as a resistance method targeting economic inequalities.
2. Manual reclamation of agricultural lands, as a resistance strategy against land confiscation. This means the rehabilitation agricultural lands that are not used, in order to prove ownership rights.
3. Because of the decrease in agricultural land, intensified agriculture was suggested, for larger production in relatively small areas.

4. Raising awareness through encouraging field trips and educational visits to Wadi Fukin village.
5. Incorporating the traditional/indigenous agri-food knowledge in schools.
6. Learning from surrounding ancient cultures, such as the example of the Egyptian Delta method which is being employed in the village recently.

In general, the indigenous agri-food system in Wadi Fukin village obviously changed and is facing many challenges. As an indigenous society that is facing colonization of which effects have impacted the agri-food sector, it is only normal for indigenous farmers to think of ways to decolonize their land and their agri-food system. Decolonization as discussed earlier by Calvo and Esquibel (2015) happens through dismantling the colonial systems in terms of power and knowledge, while recovering the indigenous knowledge. The revitalisation of indigenous food systems, and their traditional practices is further encouraged by Cote (2016). In the Palestinian context, and according to one of the informants, in order to bring dignity back and to preserve the traditional knowledge in the mid of colonization, boycotting the products coming from the colonial system or in other words becoming economically independent is one way towards achieving the goal. This links to Arafah's (2018) suggestion of boycotting the Israeli products in order to protect the Palestinian goods, and in order to help in building a productive local economy.

In terms of land reclamation which was also suggested by one of the informants as seen above, it was mentioned in the literature while referring to the work of the Palestinian intellectual "Najib Nassar" (Teddell, 2015). Nassar predicted early in history that following modern agricultural techniques in dryland systems will badly impact the nationalism of the Palestinian case, and that in order to improve production and well-being of Palestinian farmers, holding on to the land is essential. His advice, similar to what one of the informants suggested, is to build the soil and to plant trees, in order to strengthen their existence and resistance. Nassar believed that the agricultural knowledge of dryland systems is crucial for a Palestinian political action and place making (Teddell, 2015).

Furthermore and in the wider literature, there has been a growing realization for the role that indigenous agriculture plays in providing food security in the middle of economic and energy crises. However, Helland et al. (2018) believe that in order to resist and to deconstruct the

dominant structures in the agri-food system, alternatives that are materially viable, ecologically balanced and socially just should be proposed and secured. Moreover, they encourage the advancing of food sovereignty alternatives that centrally encompass indigeneity and agroecology as methods of resistance. Grey and Patel (2015) confirm to this encouragement by suggesting the achievement of food sovereignty as a form of decolonization. Finally, Morgan and Santo's (2018) recommendation in regards to building bridges between food-based movements where multiple identities can be fashioned, relates to incorporating useful techniques from other indigenous agri-food cultures such as in the example provided by one of the informants about the use of an ancient egyptian method in the village.

These realizations assisted the rise of several suggested solutions, such as agro-ecologically based production systems and food sovereignty. Altieri and Nicholls (2013) discuss the results of two major international reports, that suggest adapting the most efficient farming systems as an urgent action that is needed in order to feed nine billion people in 2050. These two reports which are based on consultations with civil society, industries and scientists have emphasized that within ten years, food production in specific regions can be doubled in reliance on small farmers and agroecological methods. The results of these reports somewhat represent an answer to Lawrence's (2017) question which was posed in the literature review, on whether industrial farming is the convenient way to feed this growing population or if there is another path that would support larger global food production. But more importantly, the ideas discussed above confirm that indigenous agri-food knowledge can indeed be a developmental resource for indigenous communities who are harmed by new world systems and colonial forces. However, this is a field that should be further researched, as the current research only provides an insight into the issue in concern, based on interview results and few external resources.

## **Chapter 6: Conclusion, recommendations and limitations**

### **Conclusion**

This main objective of this research was to discover the challenges that the indigenous agri-food system faces, and to highlight the scope for employing the indigenous knowledge as a developmental resource in the chosen case study, Wadi Fukin village. In order to do this, this research had four secondary objectives represented in the four sub-research questions. The following paragraphs contain a summary to the objectives and posed questions.

The first objective was to understand the basic characteristics of the indigenous agri-food system of the chosen case study, and those were successfully identified and described. The indigenous agri-food system in Wadi Fukin village was subsistence based and enabled the indigenous community to attain self sufficiency, while closing many loops in nature through wisely using the natural resources of the village. The work was reliant on human force and animal force. Moreover, informal relationships were dominant in the village and the workforce mainly consisted of family members. Finally, the trading system was reliant on selling, trading and giving away for those in need, and the transportation to marketing areas was either through walking or using animals.

The second objective was to map some of the most common indigenous agri-food practices which helped in shaping the indigenous agri-food system. Those practices included food preservation techniques, traditional land tilling relying on animals and human force, the traditional Machakeb irrigation system, rainfed (Ba'li) agriculture and irrigated agriculture as two previously common traditional types of agriculture in the village and finally integrated pest management.

The third objective was to understand how the indigenous agri-food system was impacted during the past few decades, and what challenges have resulted. There has been a noticed transition in the past few decades, from a traditional agri-food system into an industrial and modernized agri-food system at Wadi Fukin village, and this transition has created many challenges linked to two main factors of influence. Globalisation, modernisation and industrialisation as part of the new global system are believed to represent the first factor. The

second factor is the Israeli colonization and those both factors have created many challenges. Those challenges include restrictions over land use, land confiscation, water scarcity problems, local and Israeli competition, shift in consumer preferences, spread of soil and plant diseases and reduction in land fertility among many other challenges.

The fourth and last objective was to discover the scope for using the indigenous agri-food knowledge as a developmental resource in the future of Wadi Fukin indigenous farmers. The indigenous agri-food knowledge is believed to be somewhat suitable as a future developmental resource for indigenous farmers, for it can enable them to take a Palestinian political action against land expropriation and can also help in building a productive economy. However, there are many aspects and complications that should be taken into account while making such proposition, and of course it needs further research. Nevertheless, some insights were given by the indigenous informants, who believe that boycotting and breaking the dependency over the colonial system is one way to go forward, in addition to reclaiming the land and cultivating many lands to proof the right of ownership and existence. Furthermore, transmitting the indigenous knowledge in this sector through schools, field visits and from generation to generation is encouraged. In the wider literature, it is believed that agro-ecology which encompasses indigenous knowledge can be a viable alternative for the current industrial agri-food system. Finally, addressing the above challenges is encouraged, by focusing on the deconstruction of the current dominant structures and through decolonization efforts in the current agri-food sector.

### **Recommendations and further research**

The recommendations of this research are directed towards governmental bodies, the educational system and civil society organisations (CSO) who according to the findings of this research, play an important role in shaping the current agri-food system.

Governmental bodies can have an active role, by understanding the vitality of public participation in matters with direct effects on the population. Ashe (2015) believes that in order to facilitate a wise public decision making process, dismissed wise tools are equally needed as those of technology. Therefore, guaranteeing proper public participation in public policy decisions through consultation and community engagement, especially for the indigenous

society in concern can make a big difference. As for educational organisations, it is recommended that the ministry of education and governmental schools should highly consider incorporating indigenous agri-food knowledge into their educational systems and scientific classrooms, while organising for regular field trips to raise the awareness amongst students on the know-how of their ancestors. Whereas community initiatives can be made to preserve the ancestral wealth of knowledge in the agri-food sector.

As for further areas of research, although this research gave an insight into the scope for using the indigenous knowledge as a developmental resource in Wadi Fukin village, this subject needs further research (perhaps an action research) on the issue in concern. It is recommended that such future research should be conducted with the participation of the indigenous community and indigenous farmers in specific, in addition to civil society organisations.

Finally, finding an alternative agri-food system, one which encompasses sustainable attributes from both the indigenous knowledge and the scientific sphere is highly recommended. However, in order to propose such an alternative, a wider in-depth research must be conducted and it is recommended that an agro-ecological approach should be adopted.

### **Limitations, challenges and reflections**

There were various limitations endured throughout this study. Two of the major limitations were time and resources. Initially this study was supposed to evaluate “to which extent can indigenous knowledge be a developmental resource for Palestinian traditional farmers?”. However, during the research and due to time constraints, it was discovered that such a topic requires more time, and more resources. And in order to answer such a question, a wider range of informants and entities would have been needed, besides the indigenous farmers. Furthermore, the data resulted from interviews mainly revolved around challenges, characteristics and mapping down some of the indigenous knowledge. Hence, the study had to take a different direction, in order to answer the currently proposed question. Also and due to time constraints, a participant observation method was initially intended to be used in this research, in order to be immersed in the field being researched while collecting data. However, this was not possible as more than one interview were conducted in the same day over several days in Wadi Fukin village, and that on its own took a lot of time and effort.

Other minor challenges were faced during the research. First it is important to mention that entering the village and making contact with indigenous farmers would have been much harder if the researcher was not accompanied by one of the indigenous villagers. However, few informants were still hesitant to take part as they had some justifiable fears from possible hidden aims. Nevertheless, the aims of the research were clearly explained and the informants were provided with an information sheet and contact details in case of any more enquiries. Second, although the researcher and informants speak the same native language, the different spoken dialects caused some misunderstandings at certain points, or difficulties in understanding few terms. This sometimes resulted in trying to give different explanations for the question being posed, and eventually in changing the format of the interview guide as mentioned earlier.

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## Appendices

### Appendix 1: Ethical approval form

## CARDIFF SCHOOL OF PLANNING AND GEOGRAPHY

### Ethical Approval Form

#### Student Projects (Undergraduate & Taught Masters)

*This form must be completed and submitted to Evelyn Osborne email: [OsborneE1@cardiff.ac.uk](mailto:OsborneE1@cardiff.ac.uk) / Tel Ext: 76131 / Room 2.54 Glamorgan Building).*

*In the case of dissertations it is the responsibility of the student to submit the form, duly signed by their supervisor, and secure ethical approval **prior to any fieldwork commencing**.*

*A copy of the signed form should be included by all students with their final dissertation.*

**Title of Project:** Master thesis: Threats and opportunities for indigenous agri-food systems- The case of Wadi Fukin, Palestine

**Name of Student(s):** Reem Barakat

**Name of Supervisor/Module Leader:** Kevin Morgan- Karel Martens

**Degree Programme and Level:** Joint Masters programme of European Spatial Planning and Environmental Policy

**Date:** 12th March 2018

<b>Recruitment Procedures:</b>		<b>Yes</b>	<b>No</b>	<b>N/A</b>
<b>1</b>	Does your project include children under 16 years of age?		•	
<b>2</b>	Have you read the Child Protection Procedures below?	•		
<b>3</b>	Does your project include people with learning or communication difficulties?		•	
<b>4</b>	Does your project include people in custody?		•	
<b>5</b>	Is your project likely to include people involved in illegal activities?		•	
<b>6</b>	Does your project involve people belonging to a vulnerable group, other than those listed above?	•		
<b>7</b>	Does your project include people who are, or are likely to become your clients or clients of the department in which you work?		•	
<b>8</b>	Does your project include people for whom English / Welsh is not their first language?	•		

**\* Cardiff University's Child Protection Procedures:**

<http://www.cardiff.ac.uk/govrn/cocom/resources/2010%20November%20Safeguarding%20Children%20&%20VA's.doc>

**If you have answered 'yes' to any of the above questions your supervisor will need to explain how you will deal with these ethical issues.**

<b>Data Protection:</b>		<b>Yes</b>	<b>No</b>	<b>N/A</b>
<b>9</b>	Will you tell participants that their participation is voluntary?	•		
<b>10</b>	Will you obtain written consent for participation? If "No" please explain how you will be getting informed consent.	•		

1 1	If the research is observational, will you ask participants for their consent to being observed?	•		
1 2	Will you tell participants that they may withdraw from the research at any time and for any reasons?	•		
1 3	Will you give potential participants a significant period of time to consider participation?	•		

**If you have answered 'no' to any of the above questions your supervisor will need to explain how you will deal with these ethical issues.**

<b>Possible Harm to Participants:</b>		Yes	No	N/A
1 4	Is there any realistic risk of any participants experiencing either physical or psychological distress or discomfort?		•	
1 5	Is there any realistic risk of any participants experiencing a detriment to their interests as a result of participation?		•	

**If you have answered 'yes' to any of the above questions your supervisor will need to explain how you will deal with these ethical issues.**

<b>Data Protection:</b>		Yes	No	N/A
1 6	Will any non-anonymised and/or personalised data be generated and/or stored?		•	
1 7	Will you have access to documents containing sensitive <sup>1</sup> data about living individuals?		•	
	If "Yes" will you gain the consent of the individuals concerned?			•

**If there are any other potential ethical issues that you think the Committee should consider please explain them to your supervisor. It is your obligation to**

<sup>1</sup> Sensitive data are *inter alia* data that relates to racial or ethnic origin, political opinions, religious beliefs, trade union membership, physical or mental health, sexual life, actual and alleged offences.

bring to the attention of the Committee any ethical issues not covered on this form.

<b>Health and Safety:</b>	<b>Yes</b>
Does the research meet the requirements of the University's Health & Safety policies?  <a href="http://www.cf.ac.uk/osheu/index.html">http://www.cf.ac.uk/osheu/index.html</a>	●

<b>Prevent Duty:</b>		<b>Yes</b>	<b>No</b>	<b>N/A</b>
<b>20</b>	<p><b>Has due regard been given to the “Prevent Duty” in particular to prevent anyone being drawn into terrorism</b></p> <p><a href="https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/445916/Prevent_Duty_Guidance_For_Higher_Education__England__Wales_.pdf">https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/445916/Prevent_Duty_Guidance_For_Higher_Education__England__Wales_.pdf</a></p> <p><a href="http://www.cardiff.ac.ukhttps://www.gov.uk/government/uploads/system/uploads/attachment_data/file/445916/Prevent_Duty_Guidance_For_Higher_Education__England__Wales_.pdf/public-information/policies-and-procedures/freedom-of-speech">http://www.cardiff.ac.ukhttps://www.gov.uk/government/uploads/system/uploads/attachment_data/file/445916/Prevent_Duty_Guidance_For_Higher_Education__England__Wales_.pdf/public-information/policies-and-procedures/freedom-of-speech</a></p>	●		

**Any changes to the nature of the project that result in the project being significantly different to that originally approved by the committee must be communicated to the Ethics Committee immediately.**

**Supervisor's declaration**

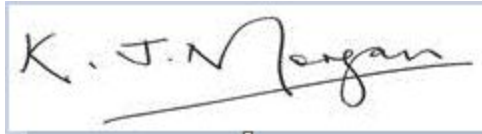
1/ As the supervisor, I confirm that any ethical issues arising from this student project were discussed in advance with participating students (please indicate how here)

2/ As the supervisor (*please delete as necessary*) for this student project, I confirm that I believe that all research ethical issues have been dealt with in accordance with University policy and the research ethics guidelines of the relevant professional organisation.

Date 12-03-2018

Name KJ Morgan

Signature

A handwritten signature in black ink, reading "K. J. N. Morgan", is written over a light blue horizontal line. The signature is cursive and includes a long horizontal stroke at the end.

**If any of the shaded boxes have been ticked the supervisor/module leader must explain below how the potential ethical issue will be handled:**

## Appendix 2: Interview guide

### Interview guide (Second version)

- ❖ How was the nature of the agricultural food production system in Wadi Fukin village prior to 1948?
- ❖ Who was the production directed at?
- ❖ Was the production reliant on selling or trading?
- ❖ Were people reliant on local or external resources?
- ❖ Who did the workforce in the agricultural field mainly consist of?
- ❖ What is your estimation of the villagers' self-sufficiency levels depending on the traditional agri-food system?
- ❖ What are some of the common indigenous agri-food practices used by farmers? What modern practices are practiced nowadays, and what did they replace?
- ❖ How was the land kept fertile?
- ❖ What are the negative effects of chemicals and pesticides? How did you manage pests and diseases in the past?
- ❖ The world is growing, and the population is increasing. In your opinion, what is the best way to provide food for everybody, but in a way that is sustainable for both humans and the land?
- ❖ What kind of challenges do small traditional farmers face nowadays? What are the challenges that get in the way of practicing traditional indigenous agriculture?
- ❖ What are the effects of Paris economic agreement on traditional farmers in the village?
- ❖ In your opinion, what is the importance of indigenous agricultural knowledge? How could it be used to bring back dignity?
- ❖ How can this knowledge be transferred to the current and following generations?
- ❖ How did the occupation affect agriculture?
- ❖ What does nature mean to you?

Is there anything else you wish to add?

Thank you very much for your participation..

### Appendix 3: Consent form sample

#### Interview consent and data processing statement

You are being asked to take part in a research study about traditional agricultural knowledge in Wadi Fukin village. This consent form is necessary to ensure that you understand the purpose of your involvement and that you agree to the conditions of your participation.

**Please tick the appropriate boxes**

**Yes No**

#### **Taking Part**

- I have read and understood the project information sheet.  Yes  No
- I have been given the opportunity to ask questions about the project.  Yes  No
- I agree to take part in the project. Taking part in the project will include being interviewed and audio recorded. The audio recordings will be transcribed by the researcher.  Yes  No
- I understand that my taking part is voluntary; I can withdraw from the study at any time and I do not have to give any reasons for why I no longer want to take part.  Yes  No

#### **Use of the information I provide for this project only**

- I understand my personal details such as phone number and address will not be revealed to people outside the project.  Yes  No
- I understand that my words may be quoted in publications, reports, web pages, and other research outputs.  Yes  No

*Please choose **one** of the following two options:*

- I would like my real name used in the above  Yes
- I would **not** like my real name to be used in the above.  No

#### **Use of the information I provide beyond this project**

- I agree for the data I provide to be archived at the UK Data Archive.  Yes  No
- I understand that other authenticated researchers will have access to this data only if they agree to preserve the confidentiality of the information as requested in this form.  Yes  No
- I understand that other authenticated researchers may use my words in publications, reports, web pages, and other research outputs, only if they agree to preserve the confidentiality of the information as requested in this form.  Yes  No

#### **So we can use the information you provide legally**

- I agree to assign the copyright I hold in any materials related to this project to Reem Barakat.  Yes  No

\_\_\_\_\_  
Name of participant

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Reem Barakat  
Researcher

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

**Project contact details for further information:**

Researcher name: Reem Barakat

Phone number: 0545381682

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