

Challenges and opportunities of adopting sustainable agricultural practices in Bali. Analysis of the impacts of organic farm volunteer tourism on farming techniques and livelihoods strategies.

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Abstract

In Bali, organic farming is seen as a possible solution to cope with the challenges faced by the agriculture sector, especially land degradation due to fifty years of chemical inputs overuse and labor and natural resource competition with the tourism sector. This master thesis focuses on understanding whether voluntourism on organic farms (WWOOFing) serves to promote sustainable agriculture practices. Furthermore, it tries to determine the impacts of this kind of voluntourism on the livelihoods of the farmers and the hosting communities.

The research uses a combination of qualitative and quantitative data obtained through semi-structured interviews and a questionnaire, as well as in-depth interviews with agriculture specialists in Bali. The study identifies how lack of education and governmental support strongly limit the willingness of farmers to adopt organic techniques and it reveals how determined key individuals and their volunteers play a central role in providing the missing knowledge and motivations to change.

Key words

Volunteer tourism, WWOOF, adoption of sustainable agriculture techniques, organic farming, human capital, social capital, livelihood strategies, Bali, Indonesia

Abstrait

À Bali, l'agriculture biologique est vue comme une potentielle solution face aux défis rencontrés par le secteur agricole, notamment la dégradation des sols causée par cinquante ans d'usage excessif de produits chimiques et la concurrence entre agriculture et secteur touristique au niveau de la main d'œuvre et des ressources naturelles.

Ce mémoire essaie de comprendre le rôle du tourisme volontaire dans des fermes biologiques (WWOOFing) dans la promotion de pratiques agricoles durables. En outre, il tente de déterminer les impacts de ce type de tourisme volontaire sur les moyens de subsistance des agriculteurs et de leurs communautés.

La recherche est fondée sur une combinaison de données qualitatives et quantitatives obtenues à travers des entretiens semi-structurés et un questionnaire, ainsi que des entretiens approfondis avec des spécialistes de l'agriculture à Bali. L'étude montre comment le manque d'éducation et de soutien gouvernemental limite fortement la volonté des agriculteurs à adopter des techniques biologiques. De plus, l'étude présente comment la détermination de certains individus clés et des volontaires joue un rôle central dans la transmission des connaissances nécessaires pour changer pratiques.

Mots clés

Tourisme volontaire, WWOOF, adoption de techniques d'agriculture durable, agriculture biologique, capital humain, capital social, stratégies de subsistance, Bali, Indonésie

Preface

My interest in organic agriculture techniques and the impacts of voluntourism on the establishment of these practices, as well as the choice of Bali as case study, were not casual. On the contrary, the journey that brought me to this decision begun around 3 years ago, during my experience working for a Swiss NGO (AMCA) in Nicaragua, and has not ceased to evolve ever since. My interest for questions of development, agriculture sustainability, food security and voluntourism came from my 5 months stay in in Central America, where I assessed the impact of the sustainable agriculture program put in place by AMCA in rural western Nicaragua. During this experience Nicaragua and while travelling in Costa Rica, I had the opportunity of visiting and staying in multiple organic farms that accepted as payment a few dollars and two to four hours of work a day, either on the fields or teaching English to the kids of the neighborhood. Talking to multiple travelers, volunteers and locals, I understood that such practices are increasingly frequent in Central America. I remember thinking that it seemed like a good socioeconomic opportunity for both the volunteers and the locals. On one side, tourists had the chance to work, spend less traveling and do a different enriching experience, on the other side, the farmers and the community had low-cost labor and different new jobs related to the tourists (shops, restaurants, bars and hiking guides). At first sight, this form of voluntourism seems a win-win situation for both sides but there is a lack of academic research confirming or not the positive impacts of WWOOF on the population and the local livelihoods in developing countries.

During the first year of my master degree in Development and Environment at the University of Lausanne, I was able to learn fundamental aspects of environmental issues in developing countries as well as the evolution of development theories and programs over the years. Furthermore, I was provided the tools to understand and critically analyze the challenges related to the environment and development practices. In Australia, during my semester exchange at the University of Queensland, I was able to follow classes in the agriculture faculty that allowed me to learn more on agrarian challenges related to globalization, food security, climate change, resilience and water resources, as well as ways to cope with them in both north and southern countries. Furthermore, I got in touch with multiple professors and students from or with experience in Indonesia. Their inputs combined with the few email exchanges I had with professors and NGOs from Yogyakarta and Denpasar, in Indonesia, helped me decide to focus my research on the island of Bali. The touristic nature of the

island, the important presence of volunteer projects and a very strong agriculture sector and farming culture present the perfect characteristics necessary to achieve my goal: understanding the impacts of organic farm volunteer tourism on the adoption of sustainable practices.

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I. Introduction

1.1 The challenges of sustainable farming in Bali

Since the 1960s, global agricultural production has more than tripled, mostly following the introduction of Green Revolution technologies and an high increase of land and resources allocated to food production in low and middle income countries (FAO, 2017; World Bank, 2018). The higher production has helped decrease the level of hunger, but 815 million people today remain undernourished (FAO et al., 2017). Achieving Goal number 2 of the UN Sustainable Development Goals (SDGs), which aims to end hunger and malnutrition by 2030, will be extremely challenging.

Over the last century, population growth and an increasingly globalized diet have been pushing the agriculture sector to deliver more (and more diverse) calories, which has resulted in farmers facing diverse pressures on what and how to produce on each hectare of land (Godfray et al., 2010). The pressure is set to continue to rise in the course of the twenty-first century. In fact, by 2050, the number of mouths to feed might reach the 9-10 billion (FAO, 2017, Godfray et al., 2010; Kremen et al., 2012). To satisfy the rising demand and switch from a cereal centered diet to one with high consumption of meat, dairy, vegetables and fruit, the competition for land, water and energy is set to increase (Godfray et al., 2010; Nepstad et al., 2006).

The technologies and practices used to increase yields and production and reach food security come to the expense of the environment and the health of both farmers and consumers (Kremen et al., 2012; FAO, 2017, Thorburn, 2015). In fact, the industrialization of agriculture, through monoculture, genetic uniformity and intensive use of pesticides and other chemical inputs, has been responsible for a growing number of large pest outbreaks, has made crops less resistant to extreme weather due to climate change and has increased water, land and air pollution (Kremen et al., 2012; FAO, 2017, Thorburn, 2015).

Throughout the last century, the population of Bali, and of the rest of Indonesia, has steadily increased (BPS, 2018a). The pressure on natural resources and the environment has been amplified by the continual growth of the tourism sector (Cole, 2012; Roth, 2014; Budiasa & Ambarawati, 2014; MacRae, 2005; Pringle, 2004). In 2010, the island welcomed around 3 million international tourists that added to the almost 4 million inhabitants (Law et al., 2016). In Bali, tourism has long been seen as a blessing for the local population providing a variety

of different jobs and solid incomes to a large part of the population. Nevertheless, today, the pressure of a growing population (both local and tourist) and the intensive and extensive practices promoted by the Green Revolution create strong concerns over the health of the environment and the local agriculture sector (Pringle, 2004).

The situation of farmers in Bali is strongly influenced by the tourism sector, which has contrasting impacts on their socio-economic situation (Sutawa, 2012). On the one hand, the farmers feel poorer when compared to the other economic sectors of the island and feel more marginalized compared to elsewhere in Indonesia. On the other hand, the presence of tourism increases the demand for food and creates a new demand for chemical free products, which may present attractive economic opportunities to local farmers (MacRae, 2011; MacRae & Arthawiguna, 2011; MacRae, 2005).

Over the last few decades, volunteer tourism (or voluntourism) has been a growing trend all over the developing world (Mostafanezhad, 2013). Multiple organizations offer volunteering opportunities abroad promoting the importance of cross-cultural exchanges and the benefits of this life changing experience for the volunteers and the local communities. The opinions on the impacts of voluntourism are very different and in contrast depending on the kind of activity and on the way these working-holidays are put in place. On the one hand, multiple researchers (Tiessen & Heron, 2012; TVO, 2011, Werner, 2017) are concerned about the negative or perverse impacts that volunteering without a prior preparation and knowledge of the local context can have on the communities. On the other hand, different authors (Miller & Mair, 2015; Mostafanezhad, 2013; Mostafanezhad, 2016a) observed that, if put in place in a conscious way, voluntourism can bring financial support and labor in vulnerable and poor areas, increase sustainability and create positive social and cultural impacts on both the volunteers and the local communities.

In western countries, volunteering on organic farms, or WWOOF¹ (World Wide Opportunities on Organic Farms), has been a form of alternative tourism for many years (Miller & Mair, 2015); it has started to grow in developing countries recently (Suh, 2014). This exchange, on one side, provides farmers a cheap labor force and potential to expand or

¹ In this thesis WWOOF will be used as a generic label to refer to every network organization connecting volunteers to organic farm hosts (WWOOF.net, HelpX, Work Away) and every other organic farm taking in volunteer tourists.

diversify, on the other, it allows volunteers to have free accommodation and food and farming experience (Miller & Mair, 2015; Mostafanezhad, 2016a).

With this master thesis, I analyze the challenges and opportunities related to the adoption of sustainable agriculture practices in Bali and I evaluate the role that voluntourism on organic farms plays on the establishment of these practices and the impacts it has on the livelihoods of the communities.

1.2 Problem statement

As I briefly stated in the introduction, farmers in Bali use multiple chemical pesticides and fertilizers that have deleterious impacts on the environment and on health (MacRae & Arthawiguna, 2011; Pringle, 2004). Furthermore, the strong need for chemo-synthetic substances sold by multinationals limits the farmers' independence, income and food security (MacRae & Arthawiguna, 2011). Moreover, farmers on the island have to cope with the pressure on natural resources caused by the increasing tourism sector (Cole, 2012; Roth, 2014; MacRae, 2005; Pringle, 2004). In Indonesia, the development of sustainable and organic agriculture is slow and limited by the lack of contribution and support by the government (David & Ardiansyah, 2016). As I present in the literature review further below, local and international NGOs play a fundamental role by promoting and supporting smallholders in the establishment and development of sustainable techniques (Jahroh, 2010; Nugraheni & Purnama, 2013). Nevertheless, there is a lack of literature analyzing the role that WWOOF and other volunteers on organic farms play on the establishment of sustainable agricultural practices in developing countries and the impacts they have on the local livelihoods.

1.2.1 Research question

The main objective of this thesis is to understand whether WWOOFing serves to promote sustainable agriculture in a developing country context. To answer this question, I have to understand the contextual forces affecting the types of agricultural strategies taken by Balinese farmers.

Thus, the initial research question for this thesis is: **What are the challenges and opportunities related to the adoption of organic agriculture techniques in Bali? How does volunteer tourism on organic farms impact local rural livelihoods and the implementation of sustainable practices?**

1.2.2 Specific questions

1. How did agricultural practices evolved in Indonesia? What are the contextual forces affecting the types of agricultural strategies taken by Balinese farmers? What are the opportunities and challenges related to the adoption of organic agriculture techniques?
2. What are the impacts of tourism on the evolution of organic agriculture in Bali? Does tourism increase the demand for this kind of agriculture? What kind of socioeconomic impacts does tourism have on the farmers?
3. What are the impacts of farm volunteer tourism on the livelihoods of the inhabitants of rural Bali? What role do WWOOF and other volunteer organic farms have on the promotion and the implementation of sustainable agricultural techniques in the communities they are located in?

1.3 Structure of the thesis

This thesis is separated into 5 main parts and 11 chapters. After this introductory section, in the background part, I present general information on the Balinese case study, on organic farming and on the main reasons to adopt new practices (chapter 2), and the literature review necessary to answer my research questions (chapter 3). Next, in the approach and methodology section I describe the conceptual framework and approaches used for the research, the methodology I used to collect the data, the sampling techniques and the difficulties encountered on the field. In the analysis part, I examine the quantitative and quantitative data collected on the field. To answer the first specific research question, I analyze the opportunities related to the adoption of organic practices (chapter 7) and its limits (chapter 8). Next, to answer specific question number two I analyze the impacts of tourism on the establishment of sustainable agriculture (chapter 9). In chapter 10, I focus on the impacts of voluntourism on the adoption of organic agriculture and the impacts on the livelihoods. Finally, in the last part of this thesis, I conclude by summarizing the results and what can be learned from them.

II. Background

In this chapter, I start by doing a general literature review on the Balinese context. Then, I present a general background on organic agriculture and the main reasons behind the adoption of new practices. Next, I review the literature necessary to answer my three specific research questions. To answer the first one, I focus on the agricultural Balinese context, to determine the evolution of the sector, as well as the challenges faced by farmers. Next, I lay the theoretical bases necessary to answer my second specific research question on the impacts of tourism on the agriculture sector. To answer my third specific research question, I continue by analyzing the literature on WWOOFing to determine the impacts this activity may have on the livelihoods of the population and the establishment of sustainable agriculture techniques.

2. General background on Bali

2.1 The case study

Bali is both an island and an Indonesian province. It is located east of Java and is the most western of the Lesser Sunda Islands, in the southern part of the archipelago (Figure 1). The province includes smaller islands (notably Nusa Penida, Nusa Lembongan and Nusa Ceningan) and has a surface of about 5'780 square kilometers (Encyclopædia Britannica, 2018) and is home to more than 4.2 million inhabitants (BPS, 2017). Most of the population lives in the southern part of the island, because the humid climate presents the most favorable climate for agriculture (Pringle, 2004). The local economy is highly reliant on tourism, which contributes to most of the GDP (UNESCO, 2016) and employs 30% of the active population (BPS, 2017). Agriculture is the second sector and employs 21% of the population (BPS, 2017). The island has a tropical climate, with a monsoon wet season going from November to April, and a dry, slightly cooler season going from May to October (Pringle, 2004). The island is geologically young and volcanically active. The volcanoes, especially Mt. Agung, have a strong mythological and religious importance for the local population. Their sacred role extends to different aspects of the Balinese beliefs. In fact, the sacred crater lakes are the main source of irrigation water for the fertile volcanic soils (Pringle, 2004). The extremely important water management of the island, the subak system, begins from the water temples located on the sides of these crater lakes (Pringle, 2004).



Figure 1: Position of Bali province in Indonesia

2.2 Balinese political evolution

2.2.1 The New Order

In 1966, Suharto and the military took control of the country. During the New Order Era, the military dictatorship phase, the regime was centered in Jakarta and had complete control over political, social and economic affairs and defense (Pringle, 2004). “*A system of ‘territorial’ military administration, parallel to the civil structure, extended down to the village level*” (Pringle, 2004, 182). Military officials held all major political positions on every administrative level. Nevertheless, “*the new system was implemented with a relatively light hand on Bali*” (Pringle, 2004, 182). Thus, local traditional structures remained intact and continued to be an important part of the political functioning (Pringle, 2004).

Nevertheless, in the 1990s, Suharto put in place a massive development strategy for Bali. The president increased economic deregulation and promoted both national and international capital-intensive investments in the tourism sector (Warren, 2012). The strong influence of the Suharto’s family and other military elites, was seen as a sort of Jackartan “colonization” of the island (Pringle, 2004). With the complicity of corrupted local actors, the program was responsible for enormous land speculations and expropriations that completely overlooked the province development plan, which was established to supervise and restrict development on the island (Warren, 2012). The increasing flow of capital and labor to Bali, created increasing unrest into the local population, which had to find ways to cope with the increasing globalization (Warren, 2012). Debates over Jakarta’s intense promotion of tourism

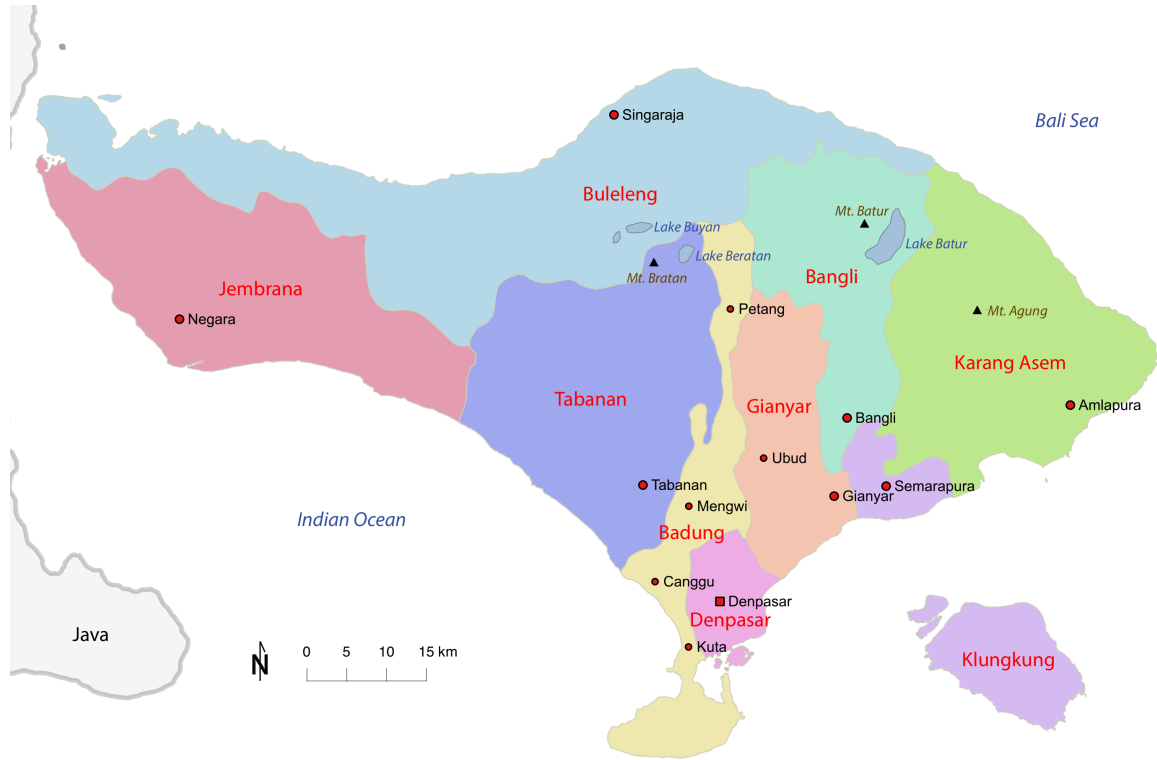
on the island intensified when Hindu sacred places and the Balinese culture, which was supposed to be the center of tourism development, started to be put on a second level and became increasingly threatened by socio-economic, political and environmental problems (Warren, 2012).

2.2.2 Reformasi Era: Democratization and Decentralization

To understand the current administrative functioning of the province of Bali, it is necessary to first comprehend the basic structure of the Indonesian political system. Indonesia is today in a period of transition that is called the *Reformasi* (Reform) era. Since 1998, following the fall of Suharto, the country has been shifting from a centralized authoritarian state towards a more democratic and decentralized one. While the national government remains in charge of foreign affairs, juridical system, defense, police, monetary policies and religion, most of the administrative responsibilities, that were centered in Jakarta during the New Order, are now delegated to the different local governments (OECD, 2016; Pringle, 2004). The sub-national governments are separated into multiple different levels. First of all, the country is divided into 34 provinces (*Provinsi*), each one of them headed by a democratically elected governor and enjoying a certain degree of autonomy (OECD, 2016). The provinces are split into regencies (or districts) and municipalities (or cities), which represent the second sub-national administrative level (514 in total) and have the authority to adopt their own local policies and laws (PCGN, 2015). Their competences include “*public works, healthcare, education, cultural and social affairs, labor, environment protection, land, citizenship and investment [as well as] public works, spatial planning, youth and sport, telecommunication, housing, transport*” (OECD, 2016, p. 1). Finally, the third and fourth sub-national administration levels are the sub-districts and the villages, which have obtained, since 2014, an increasing level of authority over the local communities (OECD, 2016).

2.2.3 The Balinese administrative system

Bali province is divided in eight regencies and one municipality, Denpasar the capital of the province (Figure 2 and Figure 3). As in the rest of the country, the regencies are responsible for the provision of most of the public services and infrastructures.



MapData © <http://diva-gis.org/datadown>. Author: Jacopo Schürch

Figure 2: Bali regencies and municipality map

Regency/municipality	Inhabitants
Badung	630'000
Bangli	223'800
Buleleng	650'100
Denpasar (city)	897'300
Gianyar	499'600
Jembrana	273'300
Karangasem	410'800
Klungkung	176'700
Tabanan	438'500
Bali total	4'200'100

Figure 3: Population of Bali regencies and municipality (data source: BPS, 2017)

The first difference compared to other parts of Indonesia, is at the village level, the *desa*. Indeed, in Bali there are two kinds of villages: the customary village (*desa adat*) and the administrative village (*desa dinas*) (Pringle, 2004). Customary villages all have at least the trilogy of important temples: “a village-origin temple concerned primarily with ancestor worship, a death temple concerned with the correct handling of malevolent forces and death, and a third temple concerned primarily with the spiritual oversight of irrigated rice land” (Pringle, 2014, 15). Sometimes, the boundaries of the official villages, defined by the government, do not respect these and other traditional structures (Pringle, 2014).

In Bali, each village is divided in multiple *banjar*, the smallest administrative level, commonly translated to neighborhood. The province counts around 4'400 of these *banjar* and each one of them is composed by around 50 to 200 households (BPS, 2017). A member of each household of the community (including elites and expatriates) must participate to the monthly or fortnightly meetings to discuss important issues regarding the *banjar* and to preserve its cultural values (Pringle, 2004). The key responsibilities of the *banjar*, led by a democratically elected leader (*kelian banjar*), include religious ceremonies, conservation of local infrastructures (roads, sacred places), money collection from local businesses or activities, overview of land allocations and, rarely, sanctions for minor offences to the wellbeing of community (e.g noise complaint, unauthorized party, etc.). Furthermore, “The ‘banjar system’ is credited for much of the Balinese success in implementing government programmes such as family planning and transmigration because it provides an effective mechanism for community discussion and decision making” (Pringle, 2004, p. 19).

2.3 Hinduism in Bali

Religion plays a central role in the civic organization of the island. The majority of Balinese practice a mix of Hinduism, Buddhism, ancestor worship and animism (Sawah Bali, 2018) centered on the deep traditional values of the *Tri Hita Karana* (the three causes of wellbeing): “the harmonious relationship between human beings and God, as the creator of the world; the harmonious relationship among human beings



Figure 4: Daily offerings

themselves; and the harmonious relationship between human beings and the environment” (Budiasa & Ambarawati, 2014, p. 30). The population practices a multitude of rituals that go from daily offerings (Figure 4) to large ceremonies (Figure 5) it influences all sectors, from agriculture to handicraft (Sawah Bali, 2018; Pringle, 2004). Furthermore, the traditional Balinese philosophy is the foundation of tourism development on the island. The growth of the sector is regulated by multiple laws in order to maintain intact the local characteristics and principles (Budiasa & Ambarawati, 2014).

One part of the Balinese Hinduist culture that has been losing importance over the years is the caste system. The latter arrived in Bali with the Indian civilization and was strengthened during Dutch rule (Pringle, 2004). There are four different castes in Bali. The highest one is the *brahmana*, the priests caste, followed by the *satria*, the warrior and rulers caste (today mostly businessman and government officials). The third one, the *wesia*, was the merchants caste in India but is mostly composed by minor officials in Bali. The lowest one, is the *sudra* or commoners caste, which accounts for more than 90% of the population (Pringle, 2004). Despite the structure is similar to the Indian model, the Balinese caste system is much less strict. In fact, the limitations to social interactions between members of different castes are very feeble and there are no concepts such as untouchability (Pringle, 2004). According to Pringle (2004) the use of the “*term ‘caste’ is misleading and arguably not appropriate for what are really no more than status distinctions*” (Pringle, 2004, p. 25).



Figure 5: Ceremony

2.4 Agriculture

The development of irrigated agriculture in Bali is unanimously believed to be the reason of the long economic and cultural success of the island (Pringle, 2004).

2.4.1 Agriculture in Bali

The richness of the soil, due to the volcanic ash and lava, and the substantial amounts of precipitation make Bali a highly agriculturally productive island. The most produced crop is

rice, which has been the central element of the Balinese diet for over a millennium (Pringle, 2004). The cultivation of the cereal is mostly centered in the south of the island, where the precipitations are more frequent and the moderate slopes allow the construction of well-irrigated rice terraces (Figure 6 and Figure 7) (Pringle, 2004). Drier areas of the island produce mostly fruits, vegetables, coffee and cloves (Sawah Bali, 2018). Until the 1990s agriculture employed more than 50% of the population of the island and was the center of the local economy (MacRae, 2005). The importance of agriculture has created over the years a highly developed agricultural system, which finds its strengths in cooperation, equal resource distribution and democratic communitarian organization: the *subak*.

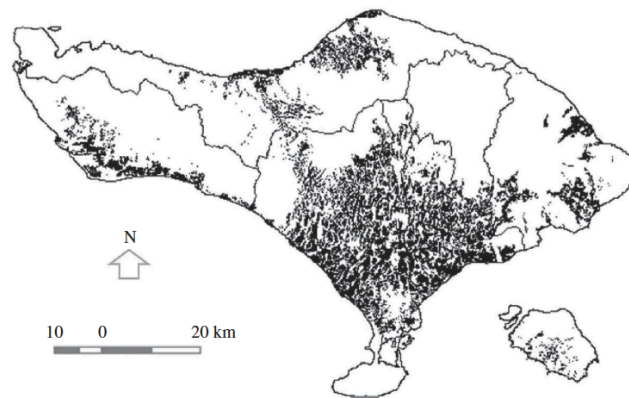


Figure 6: Rice-field distribution in Bali (source: Nuarsa et al., 2012, p. 5404)

Regency/municipality	Total area (ha)	Rice field area (ha)	Rice field percentage (%)
Badung	39'450.00	12'887.50	32.67
Bangli	52'718.75	3'537.50	6.71
Buleleng	131'925.00	13'606.25	10.31
Denpasar (city)	12'506.25	4'181.25	33.43
Gianyar	36'431.25	16'800.00	46.11
Jembrana	85'418.75	9'462.50	11.08
Karangasem	83'662.50	11'418.75	13.65
Klungkung	31'231.25	6'462.50	20.69
Tabanan	84'818.75	29'081.25	34.29
Bali total	558'162.50	107'437.50	23.22

Figure 7: Rice surface in Bali (Data: National Land Agency, 2008 in Nuarsa et al., 2012, p. 5404, adapted by Jacopo Schürch).

2.4.2 The *subak* system

The *subak* system is an extremely important local management organizations, parallel to the *banjar*, which has existed for over a millennium (Roth, 2014). It is responsible for the coordination and supervision of the *sawah* (the rice fields) and the irrigation system (Pringle, 2004). The latter is a complex system of canals and tunnels that distributes water from the heights of the crater lakes all the way to the fields on the coasts (Sawah Bali, 2018). The responsibility of the *subak* group and the *subak* leader extends to the scheduling of seeding, planting and harvesting cycles and the choice of seeds and inputs. The importance of the *subak* in the Balinese civic society is related to the central role played by rice production for both local culture and economy. Indeed, multiple rituals and ceremonies characterize different aspects of the agricultural cycle and each level of the irrigation system, from the crater lakes to the rice fields, presents a variety of temples (Figure 8 and Figure 9). Water is divided between the different members, in general 50 to 200 farmers, following a precise schedule and order (MacRae & Arthawiguna, 2011; Pringle, 2004).

Over the years, the *subak* system has been prized for being a successful example of autonomous community-based agricultural and irrigational management (Roth, 2014). The farmers of a *subak* participate democratically in the decision-making and in the communitarian management of the resources. Often, during the regular *subak* meetings, the farmers have the chance to express concerns or issues and the group tries to find solutions.



Figure 8: Ulun Danu Beratan Temple, on the shores of Lake Beratan



Figure 9: Small offering temple in a *sawah* in Canggu

3. General background on agriculture

3.1 Organic agriculture

In this chapter, I present the main studies on organic agriculture necessary to better understand the role of this practice in Bali.

The IFOAM (2017) defined Organic Agriculture as:

“a production system that sustains the health of soils, ecosystems and people. It relies on ecological processes, biodiversity and cycles adapted to local conditions, rather than the use of inputs with adverse effects. Organic Agriculture combines tradition, innovation and science to benefit the shared environment and promote fair relationships and a good quality of life for all involved”.

Jahroh (2010) affirms that organic farming can be defined as sustainable on three different levels: economic, social and environmental. First of all, economically, organic farming can help increase the income of farmers. In fact, on one side, the chemicals (pesticides and fertilizers) used in conventional agriculture are expensive and create a strong dependence towards the distributors. On the other side, the selling prices for organic products are higher than the conventional ones (Jahroh, 2010). On the social level, organic farming has multiple positive effects on community life. Smallholders that share the same enthusiasm in the practice are organized in groups and tend to help each other with technical advice, information and by transmitting their knowledge (Jahroh, 2010). Finally, environmentally, the beneficial effects of organic farming have been extensively proven by researchers and include *“the provision of ecosystem services, preservation of biodiversity, lower resource use, environmental protection, landscape values and reduced energy use”* (Jahroh, 2010, p. 5). In their article, Maharjan & Joshi (2013) argue that organic agriculture is more suited to adapt to and cope with climate change. In fact, it can resist better to floods and droughts and has less impacts on soil erosion (Maharjan & Joshi, 2013). The main differences between organic agriculture and conventional one are summed up in the following Figure 10.

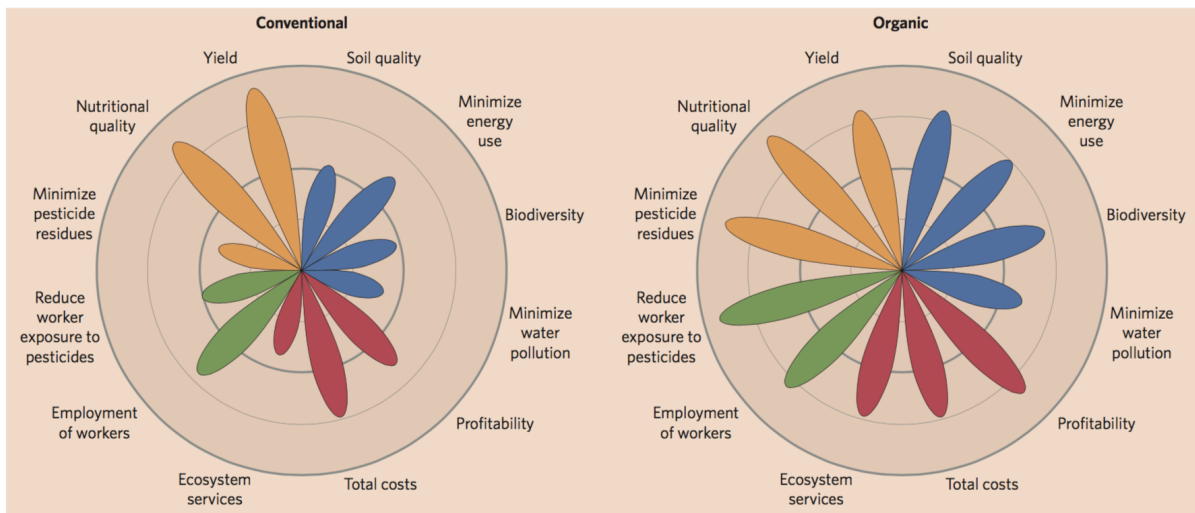


Figure 4 | Assessment of organic farming relative to conventional farming in the four major areas of sustainability. Lengths of the 12 flower petals are qualitatively based on the studies discussed in this Review^{15-23,25-29,32-56,58,62-74} and indicate the level of performance of specific sustainability metrics relative to the four circles representing 25, 50, 75 and 100%. Orange petals represent areas of production; blue petals represent areas of environmental sustainability; red petals represent areas of economic sustainability; green petals represent areas of wellbeing. The lengths of the petals illustrate that organic farming systems better balance the four areas of sustainability.

Figure 10: Assessment of organic farming relative to conventional farming in the four major areas of sustainability. Source: Reganold & Wachter, 2016, p. 4.

The debate on organic farming is not exclusively focused on the positive and sustainable impacts. In fact, multiple authors argue that the lower productivity of organic agriculture compared to conventional one presents an important limit (De Ponti, Rijk & Van Ittersum, 2012; Robinson, 2017). By 2050, the world population is set to reach between 8 and 11 billion, which means a substantial increase in the demand for food (Robinson, 2017). In general, organic yields are 20% less productive than conventional ones, therefore, feeding the world population on exclusively organic products would, according to some, mean increasing deforestation and other unsustainable practices in order to extend the farming land surface (Seufert, Ramankutty & Foley (2012)).

Other critiques focus on the large scale organic agribusinesses. Indeed, according to Guthman (2004) most of the California organic mass producers have capitalistic motivations, own large amounts of land and drive the prices of organic products down. Smaller committed farmers are often not able to match the lower prices and are left with very small margins of profit (Guthman, 2004).

In some other cases, the commodification of organic products has resulted in a reduction of the standards of certified products (Allen & Kovach, 2000). Additionally, the certification is

often done by private agencies that being vulnerable to the market sometimes violate the standards (Allen & Kovach, 2000). In some cases, the competitiveness of the markets can push farmers, which are in the organic business for the financial aspects and not the ethical ones, to use inputs or skip periods of fallow (Allen & Kovach, 2000).

Organic farming is not a magical solution to the global demand for food, but it has the potential to participate in the establishment of global food security and ecosystem conservation. The combination of different innovative agricultural systems is needed to face the food security present and future challenges (Reganold & Wachter, 2016).

3.2 Adoption of new practices

In this section I define the principal reasons behind the adoption of new practices, this is necessary to understand how voluntourism can play a role in the establishment of sustainable techniques. Sometimes, farmers decide to change their techniques or are forced to adapt them, the reasons behind these shifts can be multiple and can vary depending on the system's scale: global, national, local (Hazell & Wood, 2008). The main driving factors, based on the literature on the adoption of new farming techniques, can be summed up in the following reasons.

The first reason can be the need to **adapt to climate change**. The increasing frequency and intensity of extreme weather events related to climate change (rising temperatures, droughts, intense precipitation, floods, strong winds, etc.) is growing the risk of agricultural losses and the vulnerability of rural populations. Often, in developing countries, smallholder farmers represent the poorest part of the population and their livelihoods strongly depend on agriculture (Lipper et al., 2014; Hazell & Wood, 2008; UNEP 2017). Climate-smart agriculture (CSA) encourages the participation of a variety of actors (farmers, private sector and government officials) to increase climate resilience by improving the effectiveness of policies and local institutions and by connecting climate and agricultural investments and research (Lipper et al., 2014). This approach accentuates the importance of establishing adaptable, context-specific actions and not a one fit-all method (Lipper et al., 2014; Chandra et al., 2017).

The second reason is related to the **economic opportunities** presented by the new practice. In our highly capitalistic and globalized societies, markets dictate the direction that farmers

must take to stay competitive on different scales (Hazell & Wood, 2008). Indeed, the producer decides to adopt a new technique to increase profit (Anastasova-Chopeva, 2015; Scialabba, 2000). This can be attained by either selling more expensive products (e.g. organic or fair trade food) or by lowering the production costs (e.g. adoption of IPM: no need for expensive pesticides and seeds or by lowering the production costs by monocropping, using inputs, etc.) (Jahroh, 2010; Thorburn, 2015). On a worldwide scale, food markets push towards a globalized diet strongly influenced by the occidental model, rich in meat and dairy consumption (FAO, 2017). The demand for fodder and high value products creates a strong pressure on agricultural practices and techniques. For example, to answer the need of export products (such as palm oil, cacao, coffee, etc.), smallholder farmers tend to abandon subsistence-agriculture and focus on monocropping the highly demanded products (Vidal, 2014; FAO, 2017). On a regional and local scale, the markets can dictate the production of different context-related goods, for example, the production of rice for national consumption in South Asian countries. Moreover, mostly in western countries, the strong competitiveness complicates and limits the access of small farmers to local and global markets. In fact, the lower prices dictated by free trade and large producers often force the smaller farmers to either sell their land or adapt and join bigger companies, which are able to produce on a large scale and decrease the manufacture costs (FAO, 2017; GRAIN, 2014; Vidal, 2014). This, of course, can often push smallholders to change farming technique.

Another reason to change practice is the need or willingness to increase **yield quantity**. In this case increasing the quantity produced is a strategy to increase food security or profit (e.g. Green Revolution, GMO) (Thorburn, 2015). This agricultural development paradigm has been the principal path followed by a majority of governments and promoted by different international organizations (Nyantakyi-Frimpong & Kerr, 2015). This approach, compared to the climate change adaptation one, has often been put in place without taking into account the different contexts. In fact, Green Revolution techniques to increase production have been applied in a variety of countries in the whole world and brought a capitalistic, industrialized and standardized agriculture system (Chandra et al., 2017; Thorburn, 2015).

The next driver for change can be the necessity or the will to produce high **quality yields**. This reason is connected to both market opportunities and to personal ecological and ethical ideals. The farmers may decide to produce healthier and sustainable food to improve food and soil quality and improve the health of both workers and consumers (Reganold &

Wachter, 2016; Mattia et al., 2016). This approach is somehow in contradiction with the quantity one, by trying to focus on the importance of a sustainable present and future and not exclusively answer the current demand without considering the medium and long term impacts on the environment and health. Furthermore, to increase the quality the farmer might adapt the practice to the local context, by working with the land, the climate and the local knowledge, and not against it.

The fifth reason to change practice is the **invention of new technologies** that may for example improve productivity (e.g. pesticides, fertilizers) or reduce the need for labor (e.g. better tractors, irrigation systems, etc.) or increase sustainability (permaculture, hydroponic, IPM) (Thorburn, 2015; Lee, 2005). Of course the adoption of new technologies is related to most of the other reason and is often a mean to reach an objective, which may vary depending on the farmer, the context, the market or the policies in place. Intensive technologies can be put in place throughout the world without acknowledging the specificity of the local agrarian context and the traditional knowledge (Kremen et al., 2012).

The sixth and final reason is related to **social factors** which include education, gender, age, land surface and salary. In fact, certain groups with similar social aspects seem to be more or less likely to adopt a new practice. For example, different authors (Lee, 2005; Tu et al., 2018; Sidibé, 2005) have found that often older and less educated farmers are more unwilling to changing their practice, and young people, no matter their education level, are more keen to adapt. These characteristics seem to play a role that goes beyond the local context, indeed, similar trends can be seen in different countries and regions of the world (Mattia et al., 2016; Lee, 2005; Tu et al., 2018; Sidibé, 2005). Therefore, there are certain social factors that influence the perception of the risks and opportunities of a new agricultural technique.

These factors do not necessarily singularly influence the decision to implement or not a new farming technique. On the one side, sometimes the driving decision can include one or more of these reasons. On the other side, the choice to change, or not, may be related to **limiting factors** faced by the farmer. Indeed, the farmer may want to adopt a new technique but be incapable because of a lack of capital or local markets. Or again, the farmer may not be interested in changing because of a lack of education or ability, or because of the fear of starting a new practice after using the same one for years (Anastasova-Chopeva et al., 2015).

Furthermore, motivating or demotivating factors can be related to **power relations** and strong social, economic, political and environmental **inequalities**. As advocated by many political ecology academics (Chandra et al., 2017; Biel, 2016; González de Molina, 2013; Kremen et al., 2012) agriculture and food systems have a strong social and political dimension. In fact, access to markets, economic opportunities and adoption of new technologies are often influenced by local vertical relations and by global north-south ones (Biel, 2016; Chandra et al., 2017; Robbins, 2012). For example, the introduction of Green Revolution innovations and technologies in the 1960s has created a deep dependence of south countries from north ones (Chandra et al., 2017). Farmers in developing countries were virtually forced to adopt new extensive techniques and currently remain highly reliant on external seeds and inputs (Shiva, 2016; Thorburn, 2015). These power relations are today strengthened by imbalanced trade exchanges and “*the concentration of market power and influence in the hands of a few industries operating from developed countries*” (Chandra et al., 2017, p. 830). Moreover, Chandra et al. (2017) and Biel (2016) affirm that smallholders are politically poorly represented and have limited access to local, national and global markets. The impossibility of having their interests heard deepens the social issues, and the lack of governmental support makes the adoption of new practices harder (Chandra et al., 2017). To overcome the inequalities, increase their independence and improve the access to quality food, farmers unite to create social movements (such as La Via Campesina), which promote the revolution of agricultural systems (with agroecology principles), food sovereignty and food security (Rosset & Martínez-Torres, 2012). Biel, with a strong Marxist political ecologist position, explains that:

“in reducing physical input, we do require something more intangible to replace it: human capacity, knowledge, wisdom. This reconnects to a central point introduced by the Utopian socialists of the early nineteenth century: the response to pessimistic Malthusian propaganda about an inevitably deficient food supply is to overthrow corrupt exploiters and unleash the associative and co-operative traditions of the working class.”
(Biel, 2016, p. 3).

This thesis tries to determine not only which of the general reasons listed above push farmers to adopt organic techniques but also how farmers increase their access to the human capital (knowledge, skills, etc.) and social capital (networks, social relations, etc.) necessary to change. Indeed, the decision to adopt a new practice can be driven by the information and knowledge provided by different actors, such as NGOs, extension officers, model farmers or the community (Neupane et al., 2002; Thorburn, 2015; David & Ardiansyah, 2016; Jahroh, 2010). For example, the Farm Field Schools allowed groups of cultivators to discuss, learn and personally observe the differences between conventional agriculture and IPM, in order to increase their knowledge and give them the possibility of choosing the best practice to adopt (Thorburn, 2015). The perception of the technique also plays a central role on the willingness or not of adopting new practices (Marra et al., 2003; Neupane et al., 2002). Indeed, depending on the perception of risk and the attitude towards risk the farmer can be open or not to change (Marra et al., 2003). In their study on the adoption of agroforestry in the hills of Nepal, Neupane et al. (2002) explain that the fear of not being able to produce enough cereal crops kept the farmers from wanting to adopt the practice. The authors added that:

“The adoption decision by farmers is a function of myriad of factors, such as farm size, local needs, farmer’s education, beliefs, and perception, access to market, technology, and so on. The knowledge of the role of each of these factors in adoption of agroforestry at the farm level is indispensable to promoting agroforestry” (Neupane et al., 2002, p. 191).

According to Lee (2005) and Scialabba (2000) improving education and access to information is fundamental to be able to promote and increase the adoption of sustainable agriculture practices. For Lee (2005), this learning process should be put in place with the participation of farmers, farmers’ groups, governments and NGOs. This research tries to assess whether voluntourism can play a role in increasing human and social capital in rural communities and consequentially motivate farmers to adopt organic agriculture.

4. Specific research questions

This chapter of the background presents the literature necessary to explore my specific research questions and determine my research hypotheses.

4.1 Agricultural context (First specific research question)

4.1.1 The Indonesian agricultural context

The history of the archipelago was marked by four centuries of Dutch colonization, which have strongly influenced the economic structure of the country. In fact, during the colonization, the Dutch created large and profitable plantations (e.g. sugar) and helped to lay the basis of industrialization and modernization in the archipelago by introducing new goods, that are today highly exported (such as coffee, rubber, indigo, tea, cacao, and tobacco) (Geertz, 1963 & Vickers, 2005), and by building infrastructures (ports, roads, railway, etc.) (Vickers, 2005). The Dutch colonization came to an end during World War II when the Japanese invaded the country in 1942 (Geertz, 1963). During the war, most of the resources were sent to the Japanese empire in the conflict zones. The economy of the country deteriorated, food and other basic necessities were limited and the population was starving.

When Japan lost the war, the population united decided to fight for independence and, on August 17th 1945, Sukarno and Hatta proclaimed the independence of the country (Vickers, 2005). The following decades were characterized by political instability and a strong economic crisis. At the end of the 1960s, the head of the military, General Suharto, became the president of the country through a coup d'état. The new leader, supported by the United States, used severe policies to regulate the economy and promoted exports and foreign investors, which resulted in a significant economic growth (Vickers, 2005).

The following years, the increasing population and the improving economy strongly expanded the demand for food. In 1969, to achieve food security and sovereignty the authorities adopted Green Revolution practices, technologies and supports (financial and political) that aimed at increasing the production of agricultural goods. As shown in Figure 11, in the following decades, the new policies helped reaching this goal. In fact, between others, the country was able to attain rice self-sufficiency in 1984 (Syaukat, 2008; Jahroh, 2010; Nugraheni & Purnama, 2013). However, to improve productivity, the Green Revolution promoted heavy use of a vast variety of pesticides and fertilizers (Figure 12) that have multiple harmful effects on the environment and on human health (Jahroh, 2010;

Panuju, Mizuno & Trisasongko, 2013) and that facilitate pest and disease outbreaks (Thorburn, 2015). Furthermore, the farmers became highly dependent from the industrial sector, which produced the chemicals that they needed to grow their crops (Nugraheni & Purnama, 2013).

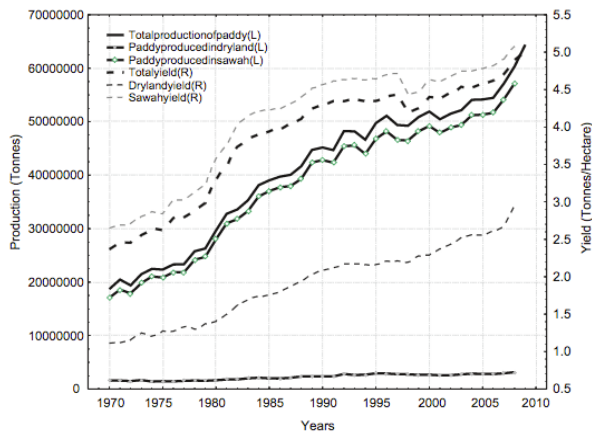


Figure 11: Production and yield per hectare of rice in Indonesia (1961-2008). Source: Panuju, Mizuno & Trisasongko, 2013, p. 33. Data: FAO.

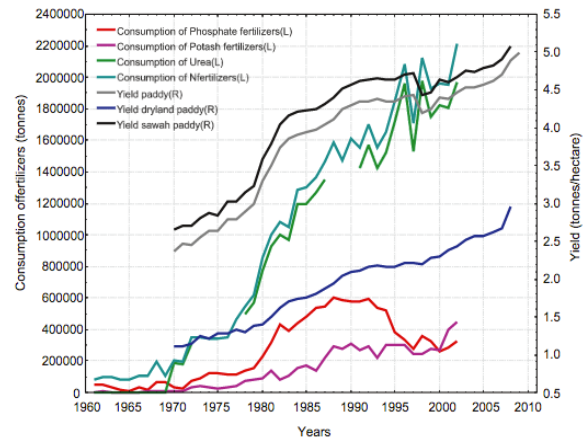


Figure 12: Consumption of fertilizers in Indonesia (1960-2009). Source: Panuju, Mizuno & Trisasongko, 2013, p. 33. Data: FAO.

4.1.2 Evolution of sustainable agricultural practices in Indonesia

In this part I am going to empirically analyze the evolution of sustainable agricultural practices in Indonesia, to understand the main reasons and the main actors behind the adoption of new techniques.

Integrated Pest Management (IPM)

The 1984 country's rice self-sufficiency did not last long. In fact, just two years later, Java was hit by multiple pest outbreaks (brown planthopper – BPH) that put at great risk Indonesia's food security (Thorburn, 2015). The devastating loss of crops raised concerns over these negative agricultural practices. Thus, new concepts such as sustainable development, integrated pest management and organic agriculture started to emerge in the 1980s (Jahroh, 2010; Leimona et al., 2015; Nugraheni & Purnama, 2013; Thorburn, 2015). These techniques were proposed to decrease the quantity of harmful chemicals and give more independence and better products to the farmers and the communities. Furthermore, these new approaches were believed to have the potential to improve the livelihoods of the rural

population, by giving a possible solution to the country's rural poverty issues (Jahroh, 2010; Thorburn, 2015).

In 1989, to cope with the issues, president Suharto launched the Integrated Pest Management Program. The program introduced the Farmer Field Schools, which consisted in facilitators and participants learning the benefits of IPM directly on the rice fields by observing, analyzing and discussing in groups (Thorburn, 2015). In 11 years, this new sustainable agricultural approach had spectacular success. In fact, the interdiction of different chemicals and the increased number of Farmer Field Schools, led over one million growers to adopt greener techniques, which resulted in a reduction of pesticide use and BPH outbreaks (Thorburn, 2015). In 1999, after months of political and economic unrest, Suharto was deposed and the IPM program basically came to an end. The new government put in place a democratic reform, decentralized the power and deregulated the economy. Opening the markets gave the opportunity to foreign companies to easily import an increasing number of different chemicals. *“Today, a decade and a half into Indonesia's democratic reformasi era, rice farmers are using more pesticides than ever, with the consequence that the country is again experiencing devastating BPH infestations in many of its key rice-producing areas.”* (Thorburn, 2015, p. 382).

National development plans

As explained by Thorburn (2015), between the end of the IPM program and today, In Indonesia the agricultural situation has worsened. Nevertheless, a number of governmental programs have sought to promote sustainable agriculture. First of all, in 1997, by applying the National Agenda 21, the government agreed to improve the sustainability of the country. For the agriculture sector, the agenda suggested various practices to ensure better food security, improve the quality of the products, increase community participation and rehabilitate the cultivated lands (Leimona et al., 2015). Nevertheless, these goals and guidelines were not supported by the creation of new rules or the assistance of the government, for this reason they were never really effective.

A few years later, with the National Development Program and the Medium-Term Development Plan (2004-2009), the country had as objective the reduction of poverty and amelioration of the quality of the environment. The ecology improvements put in place were important only on the level of the water quality (Leimona et al., 2015). Moreover, the intention of the National Long-Term Development Plan, for 2005-2025, is the achievement

of equitable development (poverty reduction), better food security and the improvement of rural areas (Leimona et al., 2015). As part of this strategy, and in concordance with the Indonesian Grand Strategy of Agricultural Development of 2015-2045, the Indonesian Ministry of Agriculture launched a plan for 2015-2019, which has “agriculture for development” as the main goal (FFTC, 2015). The proposal aims at increasing rice self-sufficiency (being rice the most consumed food of the country – Ricepedia, 2012) and other subsistence products (such as corn, soybean, sugar, etc.). Furthermore, the country wishes to ameliorate the export and the import (mostly of substitution products and raw materials), the bioindustry, the technologies, infrastructures and facilities, the resilience of communities, etc. (FFTC, 2015; Leimona et al., 2015). The agricultural sector is seen as an engine to governance and economy development:

“Apart from being a major basis for food security, the agricultural sector has other strategic functions to resolve like environmental and social issues (poverty, justice, etc.) as well as provision and development of agro-tourism. Above all, organizing the agricultural sector in the national development is the key success to realize the dignity, resilient, progress, justice, and prosperity of the country.” (FFTC, 2015).

The next section focus on the emergence of organic agriculture principles in the country.

Development of organic agriculture

The worldwide demand for organic food has been progressively growing (mostly in European countries where organic products have become mainstream) but it represents only 1% of the global agricultural production (Niggli, 2015). The great multitudes of crops that can be grown in Indonesia and the extent of the territory give to the country the opportunity to be one of the main global actors in the organic sector. With a steadily growing economy and a decreasing number of children per adult, the Indonesian per capita and household incomes have increased, which has led to a rising consumption of organic products. In fact, as in the rest of the world, the middle class population, with a higher income and a good education, represents the current consumer of organic products (David & Ardiansyah, 2016).

Among those areas of Indonesia affected by the Green Revolution, organic agriculture was first reintroduced in Java by a local NGO, Bina Sarana Bakti (BSB), in 1984. In three years the NGO converted to organic all of their fields and opened a farming training center that educated in the following years more than 10,000 smallholders and organizations in

Indonesia (David & Ardiansyah, 2016; Jahroh, 2010). Following the example of BSB, multiple new organic farms were created with the support of multiple organizations, including NGOs (both national and international), religious groups and educational organizations. These organizations had another fundamental role, which was helping farmers to unify into groups. The partnership between organic farmers allowed them to support each other technically and was essential to help other smallholders to convert to organic agriculture. These groups, and the connection between them, became stronger with the creation of the first Indonesian Organic Network (JAKEPRO), in 1998. This association was created with the support of the International Federation for Organic Movements (IFOAM), and was responsible for keeping all the organic organizations together. The main role was to provide better support to farmers, organizations and other related actors (Jahroh, 2010; David & Ardiansyah, 2016; Nugraheni & Purnama, 2013). In 2000, a group composed by members of the Ministry of Agriculture, researchers, academics and entrepreneurs established the Indonesian Organic Community (MAPORINA). This new organization, external to the government, had the objective of expanding the organic food market to be more competitive globally. With its 14 branches it gave consultations all over the country and did research to improve organic practices (Jahroh, 2010; David & Ardiansyah, 2016). In 2001, after strong pressure from MAPORINA, the government decided to launch the “Go Organic 2010” program. The main goal of the Ministry of Agriculture was to promote the benefits that organic farming has on health, the environment and the economy (mostly the great possibilities that come from exporting the products out of the country). After a few years, “Go Organic 2010” was considered a partial failure. With the help of NGOs and educational foundations, some farmers are still following the ideas and the objectives of the program but the governmental support has been almost entirely absent (Jahroh, 2010; Nugraheni & Purnama, 2013).

There is a lack of scientific literature on the impacts of organic agriculture on rural livelihoods in Indonesia. Nevertheless, different authors (Nugraheni & Purnama, 2013; Jahroh, 2010, Syaukat, 2008) that did field research in Indonesia to determine the best ways to promote organic farming and improve marketing for the products, found that the higher incomes and the better quality of the food, make organic farming a possible solution to the country’s rural poverty issues. Organic farming is *“an effective risk management tool for small poor farmers as it reduces input costs, diversifies production, and improves local food security”* (Jahroh, 2010, p. 9).

4.1.3 The Balinese agricultural challenges

In Bali, as in the rest of Indonesia, the adoption of Green Revolution practices and technologies was introduced by the New Order in 1969. Initially, the implementation of the new technologies increased the agricultural production, but the positive impacts were largely offset by the upsurge of numerous problems (MacRae & Arthawiguna, 2011; Pringle, 2004). Indeed, the abundant use of chemical fertilizers and pesticides strongly decreased the soil quality and rose the number of pest outbreaks and the consequential loss of crops. To overcome these problems, the use of an increasing amount of chemicals was promoted by the government (Pringle, 2004). Up to the moment of introduction of Green Revolution techniques, the Balinese traditional practices consisted in using crop rotation (alternating *sawah* to other crops such as corn, vegetables, flowers, etc.) and other ancestral knowledge to preserve the fertility of the soil (Pringle, 2004). These customary practices were almost entirely abandoned to follow the guidelines promoted by the Green Revolution. Today, most Balinese farmers use large amounts of chemicals to compensate the poor soil quality and to prevent pest outbreaks. Another problem is related to the growing number and increasing intensity of extreme weather events (strong rain, droughts and winds) (UNESCO, 2016). Indeed, according to a local agriculture consultant and farmers (Sawah Bali, 2017) hybrid rice varieties promoted by the Green Revolution are significantly more vulnerable to climate change compared to traditional ones. Finally, the overuse of chemicals is today a major contributor to water pollution and the consequent degradation of offshore coral reefs (Sawah Bali, 2018, Pringle, 2004).

4.1.4 Hypotheses for the first specific research question

Based on what I've presented, my hypothesis for the first research question is that the main reasons pushing farmers to adopt organic farming techniques are health, environmental and economic benefits. Furthermore, changing to sustainable agriculture gives the opportunity to increase the independency from multinationals selling chemical inputs.

Nevertheless, the absence of governmental economic and political support towards the implementation of organic agriculture presents a strong limit to the expansion of sustainable practices.

4.2 Tourism (Second specific research question)

4.2.1 Background on tourism

Tourism is an extremely fast growing sector. Initially, it was an activity exclusively for the wealthier classes, but the higher incomes, the cheaper and faster transportation, the increasing travel markets and the institutionalization of this practice, made it accessible to the majority of people (Olsen & Timothy, 2017). *“In 2015, 1.185 billion international tourist arrivals were reported, generating approximately US\$1.241 trillion in international tourism receipts”* (Olsen & Timothy, 2017, p. 1). Furthermore, in the same year, tourism represented 8.7% of the total global employment, including indirectly related jobs (Olsen & Timothy, 2017). For many countries, including Indonesia, this service represents an important source of revenue (Annexes 1-3, World Bank). However, tourism does not only bring economic benefits, it can have multiple social, cultural, economic and environmental effects (UNESCO, 2016). Socially, tourism can increase the power relations on a local or global scale, and can be interpreted as a neo-colonial relationship between northern and southern countries. In fact, tourists can see the destination only as a pleasure area, which can increase the social and racial separation (Olsen & Timothy, 2017). Culturally, locals can lose their local knowledge, livelihoods and capacities in order to adapt to the needs of the tourists. Furthermore, in some cases the local culture is commodified or staged in order to give a “real” local experience to the tourists (Olsen & Timothy, 2017). The impacts on the environment are different and depend on the context. In fact, nature is a highly demanded destination, which can lead, on one side, to a better protection of the environment (e.g. national parks), and on the other to an overexploitation and ecological degradation (Archer, Cooper, & Ruhanen, 2005; Olsen & Timothy, 2017). Tourism can increase waste production and dispersion, decrease biodiversity, decline water and air quality (Archer et al., 2005; Olsen & Timothy, 2017). The competition over natural resources can directly impact the agriculture sector and threaten the livelihoods of rural populations (Ashley et al., 2000).

4.2.2 Tourism in Bali

In Bali, tourism directly or indirectly influences the life of everyone on the island and represents today the main economic sector. The continual growth of the sector causes strong environmental concern both locally and globally (UNESCO, 2016). There are three main ways tourism threatens the sustainability and the viability of the agrarian sector. The first one is related to land competition. Bali is a rather small island, highly populated and with an enormous amount of visitors per year, this creates a high demand for land, which leads to farmland being sold or grabbed in order to build new villas and hotels (Cole, 2012; Roth, 2014; Budiasa & Ambarawati, 2014; MacRae, 2005; Pringle, 2004). Indeed, over the last two decades the harvest area of paddy (Figure 13) and other products (such as cassava) has strongly decreased (BPS, 2018b).

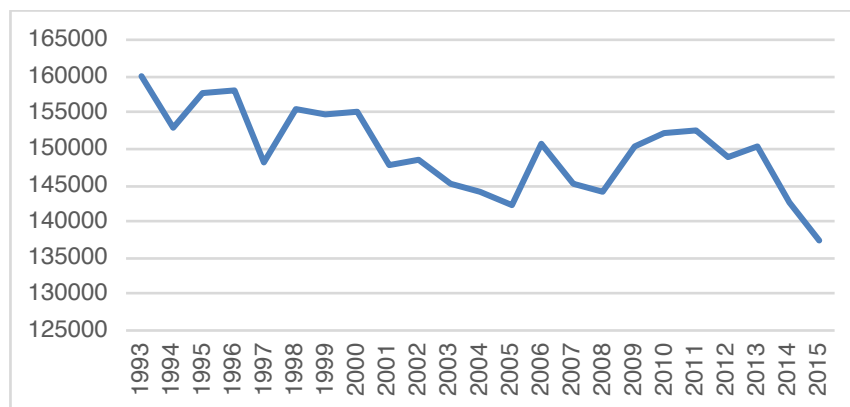


Figure 13: Harvested Area of Paddy in Bali (ha), 1993–2015 (source data: BPS, 2018b)

The second tourism related problem is water competition. In fact, despite the abundance of water on the island, the exponential increase in the number of visitors and the widespread urbanization have created a strong pressure on the resource (Pringle, 2004). The average tourist uses around 150-200 liters of water per day, substantially more than the average 30-50 liters consumed by the locals (IDEP, 2015). Conflicts between *subak* groups and businesses (hotels with pools, restaurants, spas, etc.) have been increasing over the last few decades as farmers have been left without the necessary irrigation water (Cole, 2012; Pringle, 2004). Another problem related to water is the intrusion of salt water into freshwater aquifers (Cole, 2012; IDEP, 2015). Indeed, different hotels and villas (mostly in southern Bali) have been pumping water from their often unauthorized wells, which has resulted in dropping water levels or dried aquifers and ocean water invasions (Figure 14) (Cole, 2012; IDEP, 2015).

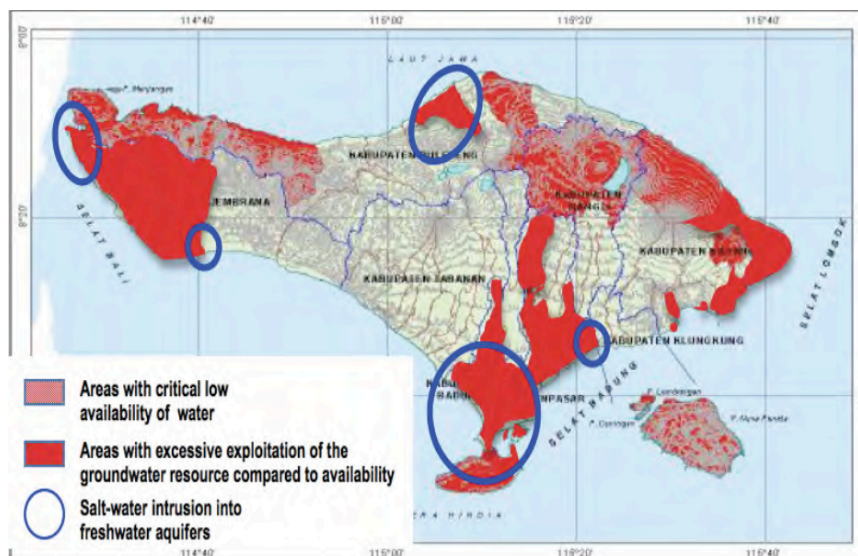


Figure 14: Areas of water stress and salt water intrusion (Source: IDEP, 2016, p. 6)

The last tourism related issue is pollution. In this case, tourism is not the main cause, but it contributes by bringing highly consumerist visitors to an increasingly capitalistic and industrialized local population (IDEP, 2015). Pollution problems, such as plastic waste, trash, transportation emission and bio-chemical and toxic, have increased the pressure on the environment and on agricultural activities (Cole, 2012; IDEP, 2015). Indeed, the quality of irrigation water and fields is affected by the widespread pollution (Figure 15).

These issues do not only present a threat to the environment and the agriculture sector, but also to tourism itself (Pringle, 2004). In fact, the unique beauty of the island, a mix of local traditions, Hinduism, rice terraces, lush vegetation and coral rich shores, is what attracted tourists in the first place. Multiple local (IDEP, Sawah Bali, etc.) and international organizations (e.g. UNESCO) are trying to limit the negative environmental practices, but with a continually growing tourism sector the challenges are set to increase (Pringle, 2004).



Figure 15: Polluted *subak* water

4.2.3 The marginalization of farmers

The tourism sector not only impact the environment and the livelihoods of the farmers, but also affect the farmers' social position (MacRae, 2005). In fact, the decline of the sector and the increasing marginalization of farmers, is easily noticeable by observing the steady decrease “*of the agricultural component of national economic indicators and progressive transfers of land, labor, and capital from agriculture to other sectors*” (MacRae, 2011, p. 69). Indeed, farmers on the island earn significantly less than other tourism related sectors and the future of the profession is in jeopardy because young people prefer to work as drivers, waiters or as hotel staff rather than as farmers (MacRae, 2005). The highly touristic character of the island makes Balinese farmers feel more socially excluded then elsewhere in Indonesia, where tourism is not as developed (MacRae, 2005).

Nevertheless, the development of tourism and the flourishing Balinese middle class are responsible for an increasing demand for chemical free food, which may present attractive economic opportunities to local farmers (MacRae, 2011; MacRae & Arthawiguna, 2011). Other economic opportunities for farmers include the development of alternative forms of tourism, such as agro-tourism, ecotourism and voluntourism (Budiasa & Ambarawati, 2014).

4.2.4 Hypotheses second research question

Tourism is responsible for the increasing marginalization of farmers because it provides a more profitable alternative to farming. Furthermore, the sector competes with agriculture for the access to natural resources. Despite the competition, mindful tourists are responsible for the otherwise inexistent demand for organic products.

4.3 Voluntourism (Third specific research question)

Sustainable tourism or ecotourism can be a possible solution to lower the negative impacts on the hosting countries. A well-known form of sustainable tourism, which shares the same concepts and objectives, is volunteer tourism (or voluntourism). This activity is a mixed form of traveling and working. Different organizations (e.g. NGOS, private sector, government, universities) offer a variety of different experiences all over the world, which vary from animal and nature conservation to development projects (Mostafanezhad, 2013). Often, the volunteer has to pay a certain amount of money for administrative fees, food and accommodation and once on the field spends a part of the time helping and free time exploring, travelling or socializing. For different authors (Miller & Mair, 2015) voluntourism might represent the opportunity for a de commodification of tourism, by promoting new principles and interactions between local populations and tourists. According to Mostafanezhad (2013, p. 485) international volunteer tourism “*is now one of the fastest growing niche tourism markets in the world*”, in part because has been made visible and “*sexy*” by international celebrities and social media. The “*doing the right thing*” idea has grown mostly in young females, which account today for 80% of the total global volunteers (Mostafanezhad, 2013). Making humanitarian issues mainstream has increased the conversation and put in place development actions and agendas that would have not been possible otherwise. Nevertheless, this kind of promotion has made issues related to poverty and development in the ‘Global South’ personal and sentimental instead of political (Mostafanezhad, 2013). Olwig & Christiansen (2016) explain their concerns about supporting programs that oversimplify the complex and structural relations of these issues, such as “*the political, economic and social aspects of environmental degradation as highlighted when applying a political ecology approach*” (p. 112).

Different authors (Raymond and Hall, 2008; Wearing and McGehee, 2013) emphasized the positive socio-cultural impacts of voluntourism on both volunteers and local communities. The cross-cultural exchanges are often considered highly constructive and helpful in building an idea of “*peace through tourism*” (Raymond and Hall, 2008). Furthermore, it gives the possibility of creating a form of sustainable tourism that focuses more on the community and its actors and less on the tourists themselves (Wearing and McGehee, 2013).

Less known are the negative impacts that volunteering without a prior preparation and knowledge of the local context can have (Tiessen & Heron, 2012; TVO, 2011, Werner,

2017). A much discussed example of the perverse effects that volunteers can have on local communities is volunteering in orphanages (Tiessen & Heron, 2012; TVO, 2011, Werner, 2017). In the last 10 years, this kind of practice has become common in developing countries. Tourists can work in an orphanage for a few weeks or visit them for a few hours. In Cambodia, the accusations leveled against such practices are that because of the increasing demand for volunteering experiences in the last 6 years the number of these facilities has increased by 65% and children are often forced to abandon their families, with the excuse that in the orphanage they will get a better education. Moreover, volunteers, often, do not have any prior expertise or experience in working with kids and their work can end up having negative impacts on child psychology critics (Werner, 2017; TVO, 2011). The orphanage example is one of the most extreme ones but other volunteer projects can have perverse effects as well. For some critics (Werner, 2017; TVO, 2011), volunteerism could bring to a sort of commodification of development and an objectification of the locals (e.g. children, women, etc.). The risk is that the voluntourists interests are put in advance compared to those of the local populations and that this could increase the relations of power and the inequalities between the two groups (Miller & Mair, 2015). Furthermore, Mostafanezhad et al. (2015) indicate that economic, social and ecological change can be very limited when projects are put in place mostly trying to address problems that are appealing for the volunteers.

The neoliberal imprint of voluntourism is revealed by how lucrative this activity has become for companies and organizations selling this new form of tourism. The sector has been estimated to be a 2 billion dollar industry (Baart, 2016). In western societies, adolescents are almost pushed to go aboard and work in poor communities to “make a difference” and the experience is perceived as extremely positive for CVs, especially in the USA where college applications are based not just on standardized test results but on holistic application dossiers demonstrating the interest, talents, and implication of the individual (McGloin & Georgeou, 2016). Nevertheless, the vast amount of money involved and the increasing number of young participants make volunteer tourism a potential enormous developing tool. If put in place in a conscious way, it can bring financial support and labor in vulnerable and poor areas, can increase sustainability and create positive social and cultural impacts on both the volunteers and the local communities (Mostafanezhad, 2016a). Furthermore, once the volunteers return home after their experience, they become more sensitive to development issues and are more likely to engage in activism with other conscious individuals that went through similar experiences (Miller & Mair, 2015).

4.3.1 Volunteering on organic farms

In this master thesis, I focus on voluntourism on organic farms or WWOOF. This form of tourism started in England in the 1970s (Miller & Mair, 2015). Initially, it was only a weekend activity, which gave people with interest in organic agriculture living in London the opportunity to access organic farms and connect with farmers. It was a way to escape the city and join the organic movement taking place in rural areas (Miller & Mair, 2015). This activity has increased in the last few decades, first in western countries and recently in many developing ones. In general, on one side, the volunteers seek an authentic experience that differs from everyday life and, on the other side, organic farmers welcome them mainly to answer their need for labor force and to diversify their livelihoods strategies towards tourism (McIntosh & Bonnemann, 2006; McIntosh & Campbell, 2001). In exchange for food and accommodation, the volunteers work between 15-30 hours per week on the field (Mostafanezhad et al., 2015). According to Mostafanezhad et al. (2015) their work is fundamental, in fact, a lot of small organic farms in Hawai'i would have not been able to survive their first years of activity without the help of WWOOFers.

Wwoofing can be considered a form of agro-tourism. In fact, in their study on the characteristics of agro-tourism, Phillip et al. (2010) identify WWOOF as the main example of the fifth typology of agro-tourism: 5) *working farm, direct contact, authentic agro-tourism* (Figure 16). In this kind of agro-tourism, the visitors contribute first-handedly to the farm functioning and are not part of a passive or staged experience (Phillip et al., 2010).

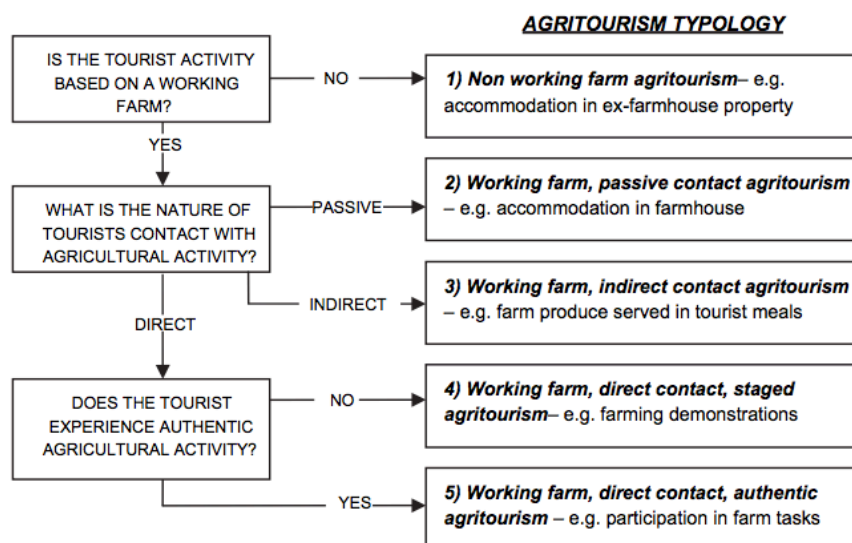


Figure 16: A typology for defining agritourism. Source: Phillip et al., 2010, p. 756.

WWOOFing can, therefore, present an opportunity of diversifying the livelihood strategies of the farmers (Phillip et al., 2010). Indeed, the volunteers are going to require certain touristic activities and experiences.

Nevertheless, from their extensive study on WWOOFing in New Zealand (descriptive statistical analysis and in-depth interviews with both hosts and visitors), McIntosh & Bonnemann, (2006) were able to determine that the main difference between a stay in a WWOOF farm and other conventional agro-tourism stays is the lack of a commercial dimension. For the two authors, “*the WWOOF farm stay experience can be described by four common dimensions; that is, the rurality of the experience, the opportunity to learn about organics, the personal meaningfulness of the experience and the element of sincerity in the experience*” (McIntosh & Bonnemann, 2006, p. 97). Furthermore, with a similar research in Argentina, Miller & Mair (2015) determined that voluntourism on organic farms creates a strong interconnectedness between humans and between humans and nature. The relations created, the knowledge and awareness-rising exchanges and the social and ecological engagement once back home, answer in part to the critiques addressed to volunteer tourism regarding the commodification of the sector and the strong power relations involved (Miller & Mair, 2015). Nevertheless, Miller & Mair (2015) focused their research more on volunteers than the hosts.

To have an holistic view of WWOOF and understand the impacts of the activity on the livelihoods of the farmer, the point of view of the latter must be taken more into account. On this regard, with his study in Hawai‘i, Mostafanezhad (2016b) tries to understand the reasons behind the choice to become an organic volunteers’ host. The author points out that farmers take part in WWOOF to promote movements that endorse “*organic food production and consumption, as well as spirituality and alternative education*” (p. 128) in order to challenge “*the legitimacy and sustainability of neoliberal agro-industrialism*” (p. 126). The promotion of these movements is important to show that WWOOFing goes beyond the mere provision of labor force by the volunteers (Mostafanezhad, 2016b) or the willingness to diversify the livelihoods strategies by developing tourism related activities (McIntosh & Campbell, 2001). Indeed, Mostafanezhad (2016b) findings support the points made by Miller and Mair (2015), which assess that WWOOFing is shaping new ways for people to fight “*neoliberal capitalism at the intersection of alternative tourism and organic agriculture*” (Mostafanezhad, 2016b, p. 128).

Research on the potential of this relatively new activity in developing countries is still limited. Nevertheless, Choo and Jamal's (2009) study *“suggests that ecotourism principles may be usefully applied as a guiding sustainability paradigm for small scale, organic farms engaging in tourism. This new tourism type can be employed as a strategy for facilitating sustainable agriculture, local development, social–cultural and environmental conservation, wellbeing, and learning.”* (p. 431).

With this research, I try to determine how, in Bali, voluntourism on organic farms can help diversifying the local livelihoods and promote the establishment of organic agriculture practices in the areas surrounding these farms.

4.3.2 Hypotheses third research question

Volunteer tourism increases the livelihoods strategies of the population. The presence of volunteers pushes towards the creation of new touristic activities (such as restaurants, bars, hiking guides, etc.). The livelihoods of the community are more diverse thanks to the development of touristic activities. The organic agriculture example presented by WWOOFs pushes other farmers nearby to switch to the sustainable technique, because of the better economic opportunities and the healthier, more sustainable products.

III. Approach and Methodology

5. Conceptual framework and approach

In order to answer my research question: **what are the challenges and opportunities related to the adoption of organic agriculture techniques in Bali? How does volunteer tourism on organic farms impact local rural livelihoods and the implementation of sustainable practices?** I use the following approaches.

5.1 Sustainable Livelihoods Approach and Framework

During the 1990s, the concept of livelihood started to take an important place in development thinking, mostly to understand the totality of the activities and strategies undertaken by the poor to survive and not only the main employment (Chambers & Conway, 1992; Scoones, 1998; Adato & Meinzen-Dick, 2002). The Institute of Development Studies (in Brighton, UK) defined sustainable livelihoods as:

“the capabilities, assets (including both material and social resources) and activities for a means of living. A livelihood is sustainable when it can cope with and recover from stresses and shocks, maintain or enhance its capabilities and assets, while not undermining the natural resource base.” (IDS and Chambers & Conway, 1992 in Scoones 1998, p. 5)

For the British development agency DfID (2001), the sustainable livelihood approach (SLA) puts people at the heart of development and has as objective the elimination of poverty. The sustainable livelihoods framework (SLF) was created by the DfID to analyze the livelihoods of the poorest and the causes behind their poverty as well as to assess and prioritize development project and programs (Adato & Meinzen-Dick, 2002). The SLF has been used by researchers, national development agencies, NGOs and the UNDP (Adato & Meinzen-Dick, 2002).

The SLA focuses on analyzing the access to the main five assets categories or capitals (human, social, natural, physical and financial) in order to identify the capabilities and the different livelihoods strategies of the population (DfID, 2001). Furthermore, the holistic dimension of the approach allows to understand how different factors, structures and

processes can influence the capitals and consequentially the livelihoods strategies (Figure 17) (DfID, 2001; Scoones, 1998).

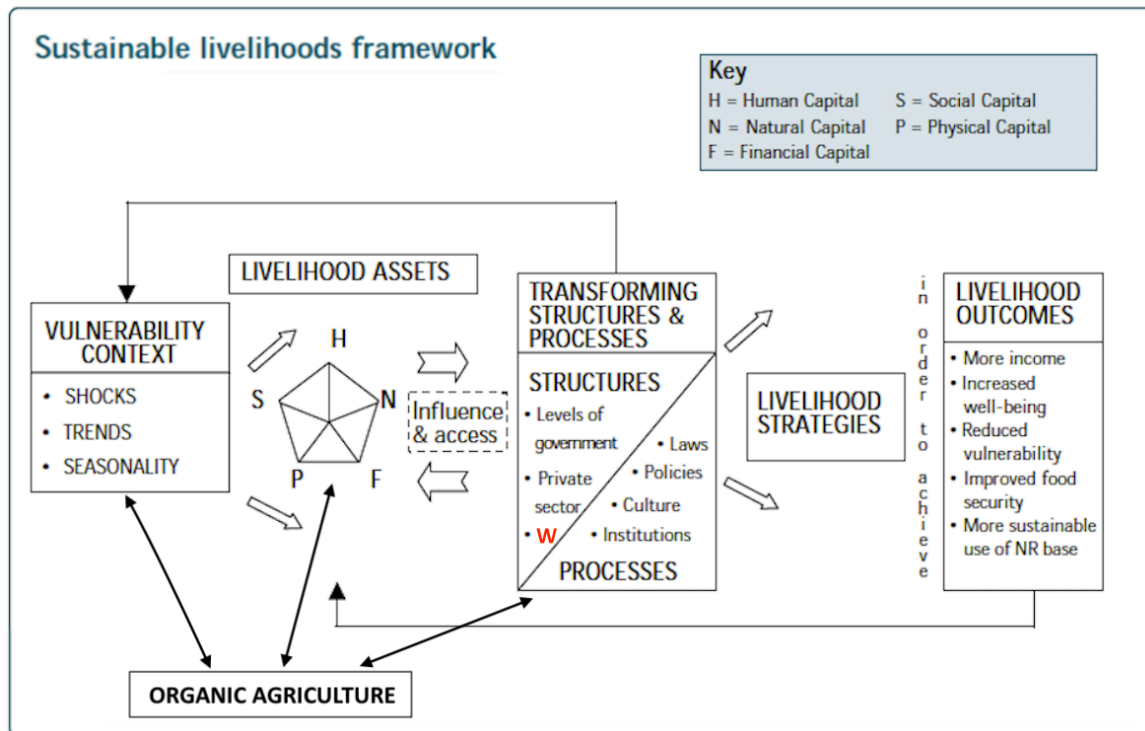


Figure 17: Sustainable livelihoods framework including organic agriculture and WWOOF (W), adapted from DfID (2001).

The five different capitals are described by the DfID (2001) as follows:

- Human capital consists in “the skills, knowledge, ability to labour and good health” (p. 19) necessary to enable people to adopt different livelihoods strategies.
- Social capital refers to the social resources (networks, social relations, organizations, etc.) essential to pursuit certain livelihoods strategies necessitating group actions.
- Natural capital consists in the stock of natural resources (water, soil, air, etc.) and environmental services (pollution sinks, nutrient cycling, etc.) necessary for certain livelihoods.
- Physical capital refers to infrastructures, tools and equipment essential to attain the livelihoods strategies.
- Financial capital consists in all economic resources (credit, cash, savings, etc.) needed to adopt different livelihood strategies.

In order to answer the first specific research question on the “the contextual forces affecting the types of agricultural strategies taken by Balinese farmers and the opportunities and challenges related to the adoption of organic agriculture techniques”, I rely on the SLF. Indeed, the framework allows me to determine which factors (processes and structures) influence the different capitals of the farmers and, therefore, the context within which the adoption of new practices takes place. Furthermore, the SLF enables me to assess how changing to organic techniques can impact the livelihood strategies (Figure 17). Finally, the livelihoods approach helps me understand how the adoption of sustainable practices modifies the vulnerability to shocks, trends and seasonality and what kind of outcomes are generated by the new strategies (more income, increased well-being, better health, more sustainable use of natural resources, etc.) (DfID, 2001).

I use the SLF to tackle my second research question as well: “what are the impacts of tourism on the evolution of organic agriculture in Bali? Does tourism increase the demand for this kind of agriculture? What kind of socioeconomic impacts does tourism have on the farmers?”. The microscale focus of the framework helps me identifying how the farmers and their communities adapt to the growth of the tourism sector. Indeed, it allows me to analyze how tourism influences farmers’ access to different assets (mostly financial and physical capitals), new livelihood strategies (diversifying the source of income) and different livelihood outcomes (more income and well-being).

Finally, in order to answer my third research question: “what are the impacts of farm volunteer tourism on the livelihoods of the inhabitants of rural Bali? What role do WWOOF and other volunteer organic farms have on the promotion and the implementation of sustainable agricultural techniques in the communities they are located in?”, I use the SLF to analyze the influence of WWOOF on the different assets. In the framework I situated WWOOFing as a local structure as shown in Figure 17 (red W). According to the DfID (2001), the importance of “*institutions, organisations, policies and legislation that shape livelihoods [...] cannot be overemphasised*”. In fact, they have a central role in determining the access “*to various types of capital, to livelihood strategies and to decision-making bodies and sources of influence*”. Therefore, my objective is to use the SLF to determine if voluntourism on organic farm can increase access to the different capitals and, subsequently, the adoption of sustainable agriculture and new tourism/voluntourism related livelihood strategies.

5.2 Political ecology approach

This master thesis builds upon another fundamental theoretical approach: political ecology (PE). This concept started to appear in the 1970s-80s with academic bases in rural development, ecology and political economy (Robbins, 2012; Perreault et al., 2015). The majority of authors agree with the fact that political ecology does not have one simple definition (Perreault et al., 2015). Nonetheless, according to Robbins (2012) political ecology can be described as a:

“community of practice united around a certain kind of text [...] as well as theory and empirical research [that addresses] the condition and change of social/environmental systems, with explicit consideration of relations of power. Political ecology, moreover, explores these social and environmental changes with an understanding that there are better, less coercive, less exploitative, and more sustainable ways of doing things” (p. 20).

One of the main methodological objectives of PE is to deeply and directly observe local contexts in order to truly understand the socio-ecological relations in place (Moragues-Faus & Marsden, 2017).

5.2.1 The general political ecology of agriculture

In the last 40 years, the relative abundance of food, at least in developed countries, resulted in a limited number of studies connecting food to its political and environmental implications (Moragues-Faus & Marsden, 2017). Nevertheless, since the 2007-2008 food crisis, the academic interest for agri-food systems has strongly increased (Moragues-Faus & Marsden, 2017). Globally, the use of the political ecology approach to analyze the evolution of the dynamic and rapidly changing agriculture system has strongly increased. Indeed, as advocated by many political ecology researchers (Biel, 2016; Kerr, 2012; Jarosz, 2012; González de Molina, 2013) there is a strong social and political dimension of agriculture and food systems and it would be impossible to *“address food issues without addressing the whole structure of society”* (Biel, 2016, p. 7). PE focuses on different scales of governance and politics which contribute to the increasing marginalization and vulnerability of small-scale farmers (Chandra et al., 2017) and uses a strong critical stance to analyze the relations between politics and the environment (Gautier and Kull, 2015). Gautier and Kull (2015)

suggest that this critical dimension of political ecology has pushed new generations of academics worldwide to adopt this Anglo-American approach. In fact, the two authors, specify that even French scholars are embracing this approach after mainly using the “*systèmes agraires*” one from the 1980s to the 2000s. The latter focused on historical socio-economic changes linked to agrarian systems but with a strong technical and practical emphasis which failed, for example, to recognize the impacts of modernization on the marginalization of smallholder farmers (Gautier and Kull, 2015).

The political ecology approach helps me understand how power relations and inequalities, on both local and international scales, limit the adoption of new sustainable practices. As I presented in the literature review, the Green Revolution seems to present a major limiting factor in Indonesia (and other developing countries). In fact, different political ecology scholars (Chandra et al., 2017; Jarosz, 2012; Kerr, 2012; Biel, 2016) agree that the Green Revolution was a class-based approach that slightly increased yields and global production but that on the long-term did not help solving hunger and poverty problems. On the contrary there are

“three key issues in the GR literature [that] resonate with inequality and power relations in smallholder communities: (1) technology and scientific approaches deepened uneven power relations between the global north and south; (2) income inequalities amongst smallholders widened and polarized traditional social farming structures; and (3) environmental degradation endangered the livelihood assets of the grassroots setting a deterministic approach to future agricultural strategies.” (Chandra et al., 2017, p. 828).

5.2.2 Application

In order to answer the first research question and partially the second, I build an argument that fits in Robbins’ (2012) first political ecology dominant narrative: the *degradation and marginalization thesis*, which studies the evolution of production systems from ecologically harmless to deleterious. This brings me to partially answer the second research question on the impacts of tourism on agricultural practices. Robbins’ thesis explains how the excessive exploitation of natural resources, resulting from either governmental intervention or new access to local and international markets, can increase poverty, marginalization and vulnerability of the less powerful (Robbins, 2012). Therefore, to explain the environmental

evolution of a certain place, it is fundamental to understand “*who profits from changes in control over resources, and [...] who takes what from whom*” (Robbins, 2012, p. 59). To do so, PE authors use Marxists lenses and critically explore historical relations and conditions of social, cultural, economic and environmental systems and their evolution (Biel, 2016). Furthermore, this approach emphasizes the importance of scale-specific analyses (Robbins, 2012) because, although household, local, village, regional, national and global scales are connected between each other, they present significant distinctive social, economic and ecological characteristics (González de Molina, 2013), which all influence the understanding of environmental degradation and marginalization phenomena.

The political ecology approach, more specifically Robbins’ (2012) fourth and fifth thesis, respectively on *environmental subjects and identity* and *political objects and actors*, also help me answer the third specific research question. The fourth thesis focuses on how new environmental situations can change the perspectives of people, their understanding of the world and their actions. Moreover, individuals from different social groups can unite under similar beliefs and work towards similar goals. The fifth thesis focuses on understanding how “*resistance emerges from traditional, alternative, or progressive human/non-human alliances marginalized by such efforts*” (Robbins, 2012, p. 23). Therefore, as noted by Robbins (2012), these two thesis, instead of focusing on the separation, the marginalization and the destruction related to exploitation (first thesis), emphasize the ecological groups and movements that arise. I use these two thesis to determine if WWOOfing can present a tool to connect conscious farmers and motivate other members of the community in similar situations to adopt sustainable practices. Furthermore, it helps me evaluate the role of Balinese traditional structures in increasing the effectiveness of “*identity-based movements*”.

5.3 A combined approach

Over the last three decades, livelihoods approaches and frameworks have been globally used in development studies and program implementation (Carr, 2015). Nevertheless, their application is subject to a fair share of criticism. Scoones (2009) identifies four main failing perspectives: “*A lack of engagement with the processes of economic globalization, a lack of attention to power and politics, a failure to appropriately engage with climate change and its impacts, and the limited engagement of livelihoods approaches with ongoing agrarian transformation in many parts of the Global South*” (Carr, 2015, p. 335). Furthermore, critics affirm that SLA have often overlooked important local and global market changes and political shifts (Scoones, 2009), as well as social processes, particularly power relations (Carr, 2015; Turner, 2017). For these reasons a combination between political ecology approach and sustainable livelihoods framework seems ideal.

By trying to apply political ecology lens to the sustainable livelihoods framework it becomes possible to better understand the role of the *transforming structures and processes* section of the framework. Political ecology pushes researchers to dig into the influence of global and local institutions, policies and actors on the farmers, their livelihoods strategies and their capitals. Furthermore, the critical analysis of the evolution of socio-political and environmental relations on different scales helps understanding the *vulnerability context* of smallholder farmers. Finally, in my specific case, the combination of PE and SLA helps define how national and international factors, such as the Green Revolution, tourism and voluntourism can affect the adoption of sustainable practices and the livelihoods of the local populations.

6. Methodology

6.1 First stages

To collect the data necessary to answer my research questions, I stayed in Indonesia for almost 4 months from the beginning of December 2017 to the end of March 2018. After a first moment of adaptation, I started visiting farms to learn more on the local culture and the agriculture system. During this first period on the field, I adapted and improved the log-frame that I created during my first year at the University of Lausanne. This adapted log-frame (Figure 18) was fundamental to structure my research and organize the main objectives and sub-objectives. Furthermore, I used it to clarify the information needed to achieve these goals, answer my research question and to define the different ways of collecting the data. Finally, it was essential to imagine the difficulties I might have faced while collecting the information on the field and possible ways to overcome them.

Furthermore, to determine the pertinence of my research question and my questionnaire (the main tool for my data collection), I contacted a local organization, Sawah Bali, and I had the chance to discuss my questions and my approach with one of the main actors of the Balinese organic scene: Pak Chakra. This very knowledgeable farmer and consultant helped me understand the importance of the local agricultural heritage and the central role of religion, as well as the connection farmers have with their land. He gave me important background information on the changing policies and the role that the government has today. After reading some articles advised by Chakra and Prof. Phyllis Kaplan, American founder and interim executive director of Sawah Bali, I improved my questionnaire and started creating my network and increasing my number of connections across the island. Furthermore, with their help and the help of other farmers, I was able to identify the different organic volunteering hotspots, as well as areas with a higher concentration of organic and non-organic farms.

Overall project goal: This project seeks to answer the following research question: What are the challenges and opportunities related to the adoption of organic agriculture techniques in Bali? How does volunteer tourism on organic farms impact local rural livelihoods and the implementation of sustainable practices?		
First main objective: To examine the evolution of agricultural practices in Bali and the contextual forces influencing agricultural strategies.		
Sub-objectives	Information needed to reach objective / data categories	Sources of information and methods to access
Sub-objective 1.1: To understand the evolution of agricultural practices in Bali.	Use the Political Ecology (PE) approach to determine how agriculture has evolved over the last 50 years. Understand the techniques used by the farmers.	Literature review on agriculture in both Indonesia and Bali. Government data. Triangulation between qualitative, quantitative (socio-demographic data, correlations, Chi-Square tests, etc.) interviews and physical observation.
Sub-objective 1.2: To identify the contextual forces influencing the agricultural strategies.	Use the Sustainable Livelihoods Framework (SLF) and PE, to understand how processes and transformation influence the adoption of new agricultural strategies. For example the role of politics, subak, collective society, religion, etc.	
Sub-objective 1.3: To understand the challenges and opportunities related to the adoption of organic agriculture.	Determine the factors that influence the choice to adopt or not new sustainable techniques (economic benefits, quality, quantity, etc.). Assess the importance of fear and opportunity.	
Second main objective: To investigate the impacts of tourism on agricultural practices and on the livelihood strategies.		
Sub-objectives	Information needed to reach objective / data categories	Sources of information and methods to access
Sub-objective 2.1: To investigate the role of tourism in changing towards more sustainable agricultural practices.	Determine if and how farmers have changed their farming practices because of tourism. Evaluate if tourism increases the demand for organic products.	Literature review on the impacts of tourism in Bali. Data from the government on the levels of tourism. Triangulation between qualitative, quantitative (socio-demographic data, correlations, Chi-Square tests, etc.) interviews and physical observation.
Sub-objective 2.2: To identify the impacts on the livelihoods of the communities and the environment.	Use the SLF to determine the impacts of tourism on the competition for natural resources (access to natural capital). Identify if farmers change livelihoods strategies because of tourism. Determine the relation of the new generations with agriculture.	
Third main objective: To investigate the role of organic farm volunteering on the local farmers ways of living and working.		
Sub-objectives	Information needed to reach objective / data categories	Sources of information and methods to access
Sub-objective 3.1: To understand the impacts of WWOOFs on the adoption of new agricultural practices.	Use the SLF to determine if WWOOFs help increasing the farmers' access to human and social capital necessary to adopt organic agriculture. By promoting the practices in the subak and in the community.	Data from hosts, NGOs and government on the role of voluntourism. Triangulation between qualitative, quantitative (socio-demographic data, correlations, Chi-Square tests, etc.) interviews and physical observation.
Sub-objective 3.2: To identify the impacts of voluntourism on the livelihoods of the community.	Use the SLF, to determine if volunteers have impacts on the livelihoods of the local population. Creation of new jobs? Homestays? Direct payment?	
Sub-objective 3.2: To evaluate the potential of voluntourism in increasing the sustainability the tourism sector.	Use the SLF and PE to understand if volunteer tourism can help farmers create new agro-tourism and eco-tourism activities. Mostly by creating group movements in the subak.	

Figure 18: Log-frame

6.2 Data collection

6.2.1 Methods of data collection and analysis

For my research, I retrieved and analyzed secondary data from academic studies and Balinese organizations and authorities, and I collected primary data in the field. The primary data is composed by both quantitative and qualitative information. On one side, I used a structured questionnaire (Annex 4) composed by 75 multiple choice and short questions, necessary to determine demographic and social information and concise statistics on the farmer's activities and their opinion on the role of organic agriculture and voluntourism. On the other side, I used semi-structured questions, open conversations and physical



Figure 19: Interview with two farmers

observation, during and after the survey, to complement the statistical data (Figure 19, Figure 20).



Figure 20: Interview with three farmers

The data collected through the questionnaire was digitalized and organized in a single excel sheet in order to be easily accessed and used for different statistical analysis on SPSS. I used SPSS to determine if there are any associations and correlations between the groups (e.g. organic with volunteer, organic without volunteers and non-organic) and the answers given by the interviewees. At the same time, I sorted and

organized the different qualitative questions, in order to be able to compare the answers between each other and get a clear idea of the points of view of the farmers.

A crossed-analysis of the qualitative, quantitative and secondary data helps me determine how different factors, such as social factors, changing policies, tourism and voluntourism, can affect the decision to adopt a certain agricultural practice. Moreover, the triangulation of the data acquired gives me the tools necessary to understand how tourism and voluntourism on organic farms impact the livelihoods of the farmers and the rest of the community.

6.2.2 Sampling strategy

The selection of the sample is a crucial stage of the research. Indeed, the quality and relevance of the data collected depends on it. To answer my research question, I selected the interviewees following three main criteria (shown schematically in Figure 21) and two secondary ones.

First, I decided to interview only people directly connected to the agriculture sector. Indeed, either the primary or secondary profession of all but three interviewees is farming. The three non-farmers are a volunteer on organic farm, the owner of an ecotourism resort and the owner of a restaurant (the last two, both have organic gardens and produce almost the totality of the food served). To have a better and complete understanding of the agriculture system I selected farmers from different backgrounds and with distinct charges and professions (NGO workers, government officials, subak leaders, etc.).

The second sampling criteria, the “agricultural groups”, consisted in selecting interviewees with different relations to volunteering and organic agriculture. The three groups are: organic farmers with volunteers, organic farmers without volunteers and non-organic farmers.

The third main criteria was gender. Initially, I wanted to interview the same number of women and men, but the patriarchal household structure and the predominant role of men in agriculture related decision-making pushed me to interview 75% of men and 25% of women. Furthermore as a male researcher I had easier access to men compared to women.

	Agricultural groups	Organic farmers with volunteers		Organic farmers without volunteers		Non-organic farmers		Total by other profession
		Male	Female	Male	Female	Male	Female	
Second job	Gender							
	NGO professional	3	1	-	-	-	-	4
	Government official	-	-	2	-	-	-	2
	Subak leader	1	-	-	-	1	-	2
	University professor	-	-	-	1	-	-	1
	Owner of eco/agro tourism	1	-	1	-	-	-	2
	Worker of eco/agro tourism	-	-	2	-	-	-	2
	Owner of organic restaurant/hostel	1	-	-	-	-	-	1
	Worker of organic restaurant/hostel	1	1	-	-	1	-	3
	Volunteers on organic farm	1	1	-	-	-	-	2
	Only farmers	5	2	6	3	7	1	24
	Total by gender		13	5	11	4	9	1
Total by agricultural group		18		15		10		43

Figure 21: Sampling criteria

Furthermore, not represented in the table (Figure 21), the farmers were selected from different regencies of the island that present diverse economic, environmental/climatic and touristic characteristics, which was necessary in order to understand how the spatial dimension might influence the adoption of new practices.

Finally, I tried to interview farmers that cultivate all kinds of products (rice, vegetables, fruit, coffee, etc.), because depending on the sort of good produced a farmer could be more or less likely to adopt new practices.

Choosing the interviewees following these sampling criteria, allowed me to have a good representation of the heterogenous Balinese farming landscape. Furthermore, it gave me the variety necessary to determine why farmers with different characteristics and different relations to volunteering, tourism and organic agriculture, decide or not to adopt new sustainable practices.

6.3 The interviewees

In the following table (Figure 22), I briefly summarize the profiles of the 43 farmers interviewed during my field research in Bali. The majority of the interviewees did not ask for anonymity but I decided to code their names for their privacy and to avoid confusion in the analysis. I refer to them as “Interviewee n” (where “n” is the code number). The names of organizations, government offices, hosts and restaurants are not coded unless upon request of the interviewee. On the map (Figure 23) are represented the locations of the farms/organizations of the interviewees.

Code name (Interviewee n)	Agricultural group ²	Gender ³	Age	Regency ⁴	Profession and additional information	Products Cultivated	Volunteers per year
1	OV	M	40-49	4	Farmer, permaculture and organic agriculture consultant, director of local organization Sawah Bali	Rice	16-30
2	OV	M	30-39	4	Farmer, with his volunteers tries to promote organic agriculture in his subak	Vegetables	5-15
3	OV	M	18-29	4	Farmer and works for local NGO IDEP which welcomes both national and international volunteers	Rice, vegetables, fruits	5-15
4	OV	M	30-39	3	Farmer and sells his products at Samadi Organic Market in Canggu	Fruits	3-4
5	OV	M	30-39	1	Volunteer from Australia, farmer, permaculturist volunteering for a retreat center	Rice, vegetables, fruits, herbs	31+
6	OV	M	60+	8	From Australia, he is the owner of Bali Eco-Stay, which employs around 6 local permaculturist farmers (stopped welcoming volunteers)	Vegetables, fruits, herbs	5-15
7	OV	M	18-29	4	Farmer and agriculture student at Udayana University, works as permaculturist for Moxa restaurant	Vegetables, fruits, herbs	5-15
8	OV	M	18-29	1	Farmer and permaculture consultant, owner of Farm Hostel in Canggu	Vegetables, fruits	31+
9	OV	M	18-29	5	Consultant in organic farming	Coffee	31+
10	OV	M	30-39	3	Farmer and florist, grows marigolds (largely used for daily offerings)	Coffee, cloves, flowers	1-2
11	OV	M	30-39	8	He is from Java. Farmer and manager of	Vegetables, fruits	5-15

² Agricultural group refers to the three main sampling criteria: OV = Organic with Volunteers; OWV = Organic Without Volunteers; NO = Non-Organic.

³ Gender is the second sampling criteria: M = Male; F = Female.

⁴ Regency is the last sampling criteria: 1 = Badung; 2 = Bangli; 3 = Buleleng; 4 = Gianyar; 5 = Jembrana; 6 = Karangasem; 7 = Klungkung; 8 = Tabanan; 9 = Denpasar.

					Island Organics Bali, which produces and sells organic products all over South Bali		
12	OV	M	40-49	1	Farmer, Leader of Subak Girin, in organic traditional village, and owner of tourist village	Vegetables, fruits	3-4
13	OV	M	50-59	9	From Java, he is a farmer and communication officer for Rikolto Bali, NGO that focuses improving the livelihoods of smallholder farmers	Rice, vegetables, fruits, herbs	5-15
14	OV	F	60+	1	From Switzerland owner and founder of a local foundation promoting permaculture and welcoming volunteers from all over the world	Vegetables, fruits	31+
15	OV	F	18-29	1	Volunteer from the USA working as a farmer and helping local communities	Vegetables, fruits	31+
16	OV	F	30-39	4	Farmer for NGO IDEP, she works on her family's farm sporadically	Fruits, herbs, tea, cloves, lemongrass	1-2
17	OV	F	30-39	5	Farmer and sells her products at Moksa Market in Ubud	Vegetables, fruits	1-2
18	OV	F	50-59	8	She is from the Netherlands and not a farmer but owns a little restaurant and employs local farmers to work on her land. She helps the farmers of the village with the managerial and advertising aspects (stopped welcoming volunteers)	Vegetables, fruits	5-15
19	OWV	M	50-59	4	Farmer and former policeman.	Vegetables, fruits	0
20	OWV	M	50-59	3	He works for the Department of Agriculture of Badung Regency and as farmer in Pateng, where the government has created an organic village example to promote sustainable agriculture	Rice, vegetables, fruits, coffee, cacao, cloves	0
21	OWV	M	60+	4	Farmer, often receives help from volunteers	Rice	1-2
22	OWV	M	60+	4	Farmer, often receives help from volunteers	Rice	1-2
23	OWV	M	50-59	4	Farmer and sells his products at Moksa Market in Ubud and Samadi Market in Canggu	Vegetables, fruits	1-2
24	OWV	M	30-39	8	Farmer on his family's farm and for Bali Eco-Stay	Rice, vegetables, fruits	0
25	OWV	M	40-49	1	Farmer that cultivates organic coffee and tea and is the owner of Bali Rural Life, an agro-tourism village	Coffee, tea	0
26	OWV	M	40-49	1	Farmer and sporadically works for Bali Rural Life	Rice	0
27	OWV	M	30-39	4	Farmer, he bought multiple land plots thanks to his former job on a cruise ship	Vegetables, fruits	0
28	OWV	M	40-49	1	Farmer in traditional banjar	Rice, vegetables, fruits	0
29	OWV	M	50-59	1	Head of Division Crop and Horticulture for the Department Of Agriculture of Bali Province and he is a farmer as well	Rice, vegetables	0
30	OWV	F	50-59	3	Helps on the family farm but mostly by selling the products at the market, she works at a hotel in Canggu as well	Fruits and coffee	0
31	OWV	F	60+	1	Farmer in traditional banjar	Rice, vegetables, fruits	0
32	OWV	F	50-59	8	Chemical engineer from the Philippines, works as a farmer and production manager	Rice	0

					in traditional and UNESCO Heritage Site Jatiluwih Village		
33	OWV	F	50-59	3	Professor at Udayana University, director of the Bali Organic Association, a pioneer and strong promoter of organic agriculture in Bali, she works on her own farm as well	Rice, vegetables	0
34	NO	M	50-59	4	Farmer and artisan	Rice	0
35	NO	M	18-29	4	Farmer and studies agriculture at Udayana University	Vegetables, fruits, herbs	0
36	NO	M	30-39	4	Farmer	Rice	0
37	NO	M	50-59	4	Farmer and construction worker	Rice	0
38	NO	M	60+	4	Farmer and artisan	Rice	0
39	NO	M	60+	1	Farmer	Rice	0
40	NO	M	40-49	1	Farmer in transition to organic agriculture	Rice	0
41	NO	M	50-59	1	Farmer and Leader of Subak Liplip in Canggu	Rice	0
42	NO	M	60+	1	Farmer and owner of little convenience store in Canggu	Rice	0
43	NO	F	40-49	3	Farmer	Rice, cloves	0

Figure 22: Profiles of the interviewees

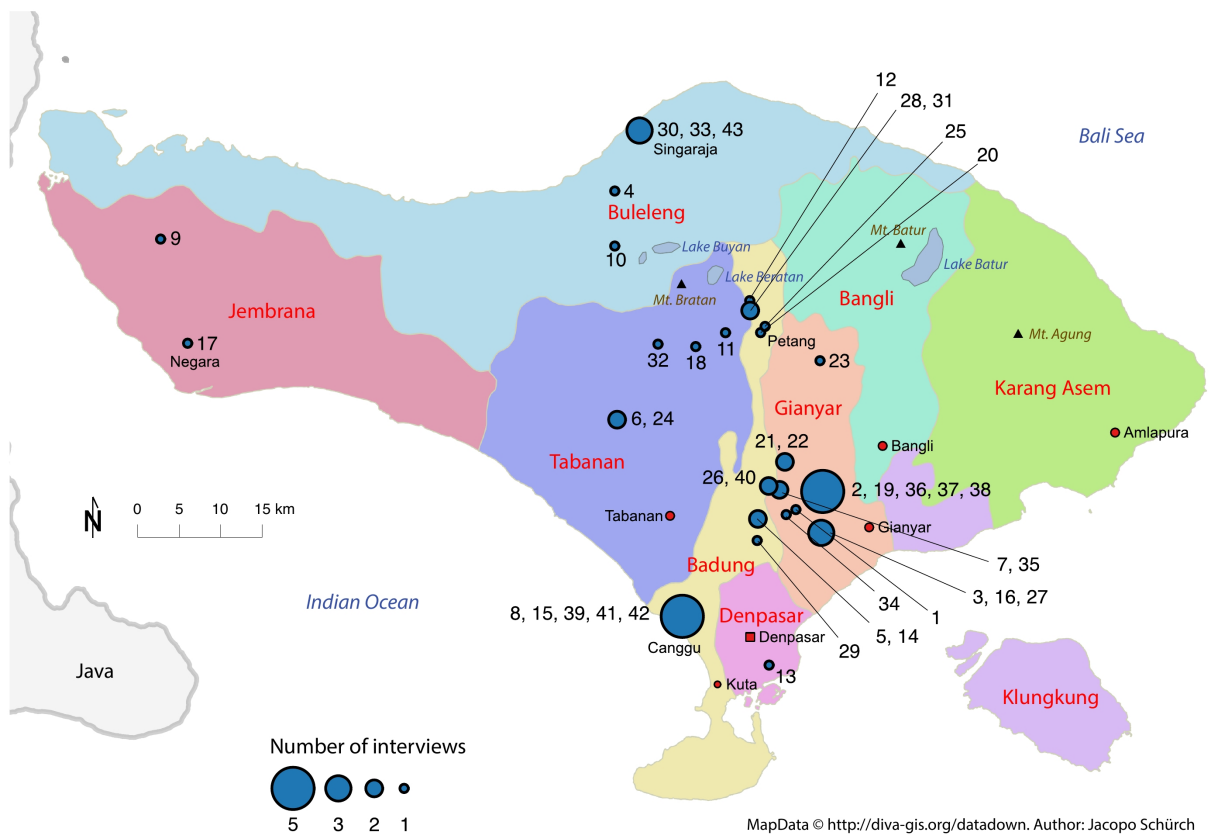


Figure 23: Location of the farms or organizations of the interviewees

6.4 Limits

The methodology employed for this thesis presents some limits that might have influenced the results. I have recognized four main ones.

First of all, the language barrier. In fact, only farmers with volunteers spoke English; the rest did not. For the majority of the interviews with organic and non-organic farmers I was helped by different interpreters. Finding the perfect translator in Bali takes time, not because there is a lack of English speaking Balinese, but because, often, the English speakers are very busy, work in the touristic sector and have little knowledge of farming and specific agrarian words. For this reason, I looked for translators at Udayana University in Denpasar, in the agriculture faculty, and at local organic markets (where both Balinese farmers and tourists/expatriates meet on weekends). For the 43 different interview I worked with 3 different translators (Kadek, a university student that helped me mainly with non-organic farmers interviews; Putu Lelek, seller at the Samadi organic market in Canggu; and Annaga, a non-agriculture student that grew up in a family of farmers). I assume that, despite the excellent qualities of the translators, some of the information must have gone lost. In fact, sometimes, the interpreters seemed to give personal opinions or answers that they found logical. The risk is to obtain responses that are a mix of their point of view and the one of the interviewee. Occasionally, when I noticed this, I tried to remind the translator to stick as much as possible to the replies of the respondents.

The second main difficulty has been engaging in a field research independently on the other side of the planet in a complex and unknown environment. Despite the long preparation at both the University of Lausanne and the University of Queensland, it is difficult to be ready for the reality of the field. In fact, before arriving in Indonesia I tried to contact multiple WWOOFs, NGOs and professors only a few got back to me. Once in Bali, I realized that emails and phone calls are not the main mean of communications. In fact, farmers and even WWOOFs and NGOs, mostly use WhatsApp and Facebook to connect. After understanding this, I had to find alternative ways to create my own network and find farmers and institutions to interview. I went to farmers markets and asked for contact details and addresses and was able to slowly increase my connections. To get in touch with certain NGOs, I was forced to persistently go and knock on their door until someone answered and agreed to answer my questions.

Third, despite the research was focused in an adequate area, where agriculture is more developed (Figure 6; Figure 31), the sample size was probably not sufficient to have a clear idea of the differences between the different zones. For this reason it would have been better to focus on a smaller area. Nevertheless, not knowing the exact extent of voluntourism in Bali, I began my research by selecting organic farm with volunteers across the island. Considering the limited amount of time available for the field research and how populous and large Bali is, it would have been better to focus on a single regency.

The last limit, was related to the strongly touristic nature of the island. Some of the interviewees saw me as a tourist or a client and, in some occasions, as a potential business partner. Sometimes the farmers, mostly the ones more connected to the tourism sector, tried to deviate the conversation from my questions to a sort of promotion of their ecological activities or the quality of their products or, again, asked me to send volunteers to their farm. From what I was able to observe, it seemed that most farmers had never been in contact with researchers and had difficulties understanding the reasons for my questions. In order to obtain truthful answers, it was fundamental to specify my neutral position and that it was not an evaluation of their activities. After the first moment of confusion related to my intentions, most people were happy to answer my question and did not mind the long interviews.

IV. Analysis

In this section, I analyze the results of my field research. I do so by following the order of my specific research questions. Indeed, I start by presenting the opportunities and limits related to the adoption of organic farming in Bali. I continue by presenting the different impacts of tourism on organic agriculture. Finally, I conclude by analyzing the impacts of voluntourism on the livelihoods of the farmers and on the adoption of sustainable techniques.

7. Opportunities related to the adoption of organic agriculture

In this chapter, in order to answer the second part of the first specific research question, I try to determine the main opportunities related to the adoption of organic farming in Bali.

In Bali, the concept of organic⁵ agriculture emerged around thirty years ago and its importance has been rising since. Nevertheless, Balinese are not new to sustainable practices. Indeed, traditional agrarian techniques respected the environment and the totality of rural ecosystems. According to interviewee 1, farmers used natural enemies or organic matter to avoid the spread of pests and used crop rotation to preserve the fertility of the soil. It is only following the introduction of Green Revolution practices in 1969, that most Balinese farmers abandoned traditional organic techniques in favor of modern agriculture.

“While I grew up, I thought my dad was a hero, like every kid, but I lost respect for him because of chemicals. Of course it wasn’t a voluntary thing, he was forced by the Suharto government in ’73. It took 10 years to convince all the farmers” (interviewee 2).

The increasing use of chemical pesticides and fertilizers resulted in two major pest outbreaks in 1980 and 1986 that destroyed respectively 12’000 and 200’000 hectares of rice on the island (Resosudarmo & Yamazaki, 2011). Furthermore, in the same period, health problems related to the chemicals started rising on both Bali and Java (Resosudarmo & Yamazaki, 2011). Nevertheless, instead of reducing the use of inputs farmers were forced by the authorities to apply even more (Resosudarmo & Yamazaki, 2011). During the 1990s, the

⁵ In this research the term “organic” is used to refer to an agricultural production based on natural fertilizers and pesticides derived from animals or vegetables instead of chemicals. Some of the farmers (e.g. Interviewee 1 and 13) refer to organic production in Bali as “Low External Input Sustainable Agriculture” (LEISA), not because they personally use little quantities of chemicals, but because they cannot affirm with certitude that their land and the water they use are not contaminated by the chemicals used by their neighbors or other upstream farms. Furthermore, as I present further below, in Indonesia obtaining a certification for organic products is very difficult.

increasing negative impacts and the growing global ecological and health movements pushed the first local and expatriate pioneers to start small-scale sustainable initiatives (MacRae & Arthawiguna, 2011). The latter consisted in small subsistence gardens and local group projects selling to niche-markets. The introduction of Farm Field Schools in certain districts helped raising awareness on the impacts of chemical inputs on the crops and on the environment. Nevertheless, as indicated by Thorburn (2015), the development of these schools ended with the fall of the Suharto regime and the beginning of the decentralization process and their role remained therefore marginal. Indeed, none of the farmers interviewed was able to give any insight about the effectiveness of the farmers field schools and literature on the topic is very limited for Bali.

Today, despite the use of Green Revolution technologies is not forced by the government, the majority of Balinese farmers keeps using chemicals rather than returning to traditional practices or adopting new sustainable ones (Figure 24). According to Professor Kartini from Udayana University (interviewee 33), the adoption of Green Revolution techniques completely changed the structure of the agrarian Balinese society. In fact, farmers were forced to switch from a system centered on traditional social interactions and a spiritual connection



Figure 24: Farmer applying chemical inputs

with nature, to a strongly economical one. She adds that farmers and communities used to be independent and mainly based on subsistence agriculture and barter, with little monetary exchange involved. Today, on the contrary, non-organic farmers are highly reliant on money, mostly to buy chemical inputs and hybrid seeds. Moreover, she thinks that Bali has become very contradictory. On one side, Balinese are always prizing the values of the *Tri Hita Karana*, the harmonious connection between humans and god, humans and humans and humans and nature, on the other side they use huge amounts of pesticides that destroy nature and ruin these connections.

Despite the difficulties faced by the agriculture sector, according to the farmers, NGOs and government officials interviewed on the field, organic agriculture is increasing all over the island. In order to understand how the opportunities related to organic agriculture can push farmers to adopt this practices and how the practice can help tackle the social and ecological issues presented in the literature review, I asked the interviewees what are the main reasons to adopt this kind of agriculture (Figure 25). The data in the table (Figure 25) has been separated in the three main groups (Agricultural Groups, second sampling criteria), to see how the perception of the role of organic farming changes according to the type of practice employed by the interviewees. By analyzing the results of the survey three recurring reasons are easily recognizable.

Main reasons to go organic⁶				
Agricultural Group		Responses⁷		Percent of Cases⁸
		N	Percent	
Organic with volunteers	Higher revenue or profit	9	18.80%	50.00%
	Health	15	31.30%	83.30%
	Better for the environment	15	31.30%	83.30%
	Subsidies	2	4.20%	11.10%
	Diversification	5	10.40%	27.80%
	More demand	2	4.20%	11.10%
	Total		48	100.00%
Organic without volunteers	Higher revenue or profit	6	14.30%	40.00%
	Health	14	33.30%	93.30%
	Better for the environment	13	31.00%	86.70%
	Subsidies	2	4.80%	13.30%
	Policies	3	7.10%	20.00%
	Diversification	3	7.10%	20.00%
	Subak Decision	1	2.40%	6.70%
Total		42	100.00%	280.00%
Non-organic	Higher revenue or profit	6	35.30%	60.00%
	Health	5	29.40%	50.00%
	Better for the environment	5	29.40%	50.00%
	Diversification	1	5.90%	10.00%
Total		17	100.00%	170.00%

Figure 25: Question 36: What are the main reasons for changing to organic agricultural practices

⁶ For this question, the interviewees could choose one or more of the following reasons: higher revenue or profit, health, better for the environment, subsidies, policies, easier, faster, less effort, diversification, more demand, subak decision, other (specifying).

⁷ **Responses:** **N** represents the number of interviewees that selected the answer (for example: in the “organic with volunteers” agricultural group, 9 interviewees selected the answer “Higher revenue or profit”); **Percent** represents the proportion of that answer over the total of the answers given: 9 out of 48 answers = 18.50%.

⁸ **Percent of Cases** represents the percent of interviewees that selected the question (50% = 9 of the 18 interviewees of the group “organic with volunteers” selected answer “higher revenue or profit”).

7.1 Health

First of all, farmers decide – or, in the case of non-organic farmers, would decide – to go organic for health reasons. In fact 79% of all respondents has indicated health as one of the drivers. Indeed, according to most interviewees the impacts of chemicals became evident on the health of the farmers and their families. When asked about the main reasons to go organic, Interviewee 27 responded without hesitation: *“Health the first one. You see the impacts on the others, how they get ill from chemicals. When see how bad it is, people want new system”*. Other interviewees noted how the negative effects of conventional agriculture are stronger on tourists, considering that they are not as “resistant” as locals and develop allergic reactions or sickness rather easily. Most interviewees mentioned concern for the health of the future generations and willingness to change practice in order to be able to provide quality food to their offspring. Indeed, Interviewee 1 affirmed that the importance of eating healthy extends to all aspects of a kid’s life: *“You can only learn when you are in good health, you can’t absorb information if you are not healthy, children can’t learn. We must ensure the future. Healthy kids, absorb better information. It’s the only way to go. Vandana Shiva said: you produce fake plants you produce fake food. Fake health, fake body, fake everything”*.

From the table is noticeable that health is a significantly less important factor for non-organic farmers. In fact, only 50% of non-organic farmers indicated health as a reason, compared to 83.3% of the organic with volunteers and 93.3% of organic without volunteers. According to multiple interviewees (5, 11, 18, 33) this is due to a lack of information and education from the part of both producers and consumers. Indeed, one of the non-organic farmers, interviewee 39, when I asked him if he was concerned about the impacts of chemicals on his health, responded that spraying the pesticides without a mask can cause poisoning, but that there are no risks when eating the product. He added that as a precaution farmers rinse their mouth with milk or coconut water after applying the inputs.

Despite not being the first concern, half of the non-organic farmers are aware of the benefits of sustainable agriculture for the health. Indeed, Interviewee 40, that was in transition from non-organic to organic, pointed out how in his *subak* the leaders *“decided to go organic because farmer not have a lot of potential for life. Using pesticides is killing people. They want to go back to healthy life. And we are happy to do that. But now is hard, because we need time. The beginning is hard but then is an investment for the next generations”*.

7.2 Ecology

The second reason for choosing to adopt organic practices, indicated by 77% of the interviewees, are the environmental benefits. Similarly to health, only half of the non-organic farmers has included ecological reasons in their survey, compared to more than 83% for the two organic groups. Another resemblance with the first reason is that the interviewees are mostly concerned for the quality of the environment for the future generations. Indeed, the farmers that lived the pre-Suharto era want their kids to experience the same kind of rich and diverse ecosystems they grew up in. Interviewee 21, thinking back to his youth, remembered all the diverse “*healthy and delicious*” beings that lived in the rice fields and “*the sound of nature, with crickets, frogs and dragonflies*”. He and interviewees 1 and 22 expressed how, before becoming organic, they had multiple discussions with other elder farmers to find ways to return to the old traditional practices, to reintroduce plant species and animals lost over the last thirty years. According to some of the interviewees (1, 22, 25, 26), the results of turning back to sustainable traditional practices and new organic and permaculture ones are already visible on the fields. Indeed, multiple farmers have already observed the return of different animals, mostly eels, fish, toads, frogs, snails and insects (such as dragonflies, crickets and beetles). Interviewees 25 and 26 explained that the return of dragonflies and fireflies is a clear indicator that ecosystems are getting less polluted. Interviewee 25 cheerfully added that since he started his organic farm these insects have increasingly come back. Interviewee 26 expressed the importance of having a healthy ecosystem for the diet. In fact, a quality paddy field provides better opportunities of having a diversified, protein rich diet (mostly from beetles, eels, fish, snail, dragonfly, crickets). These animals are consumed in the family compound or sold in the community.

The reappearance of different species is not only positive for the balance of the ecosystem, for biodiversity, for the diets of the farmers and for the return of pests’ natural enemies, but also for the farmer’s revenue. Indeed, the farmers are able to sell the animals found in their fields at the local markets and earn an extra income. The importance of having a diversified source of income and nutrition is accentuated by 21% of the interviewees and is the fourth main reason for change. Multiple organic rice farmers (interviewee 3, 20, 26) defined diversification as central for paddy rice growers, as it allows them to be more economically and ecologically resilient.

Finally, according to the organization Sawah Bali (2017), growing organic rice also helps increase the resilience to climate change. In fact, the organization explains that traditional varieties of rice are significantly more resistant than hybrid ones (Figure 26). Therefore, adopting organic agriculture practices could prevent major yield losses. in the case of droughts, heavy rains and strong winds.



Figure 26: organic heritage rice (left) and hybrid rice (right) after same storm (source: Sawah Bali, 2007)

7.3 Profit

As shown by different academics (Jahroh, 2010; Anastasova-Chopeva, 2015), the higher earning related to organic agriculture have been globally recognized as one of the main reasons for adopting organic practices. Indeed, the results of the questionnaire confirm these theories. Profit is the third main reason for change and has been indicated by 49% of the interviewees. In this case, the trend of having significantly different answers between organic and non-organic groups is less meaningful, but still observable. Indeed, 60% of non-organic farmers indicated profit as a main reason to change to sustainable agriculture, compared to an average of only 45% for the two organic groups. Furthermore, profit is the number one reason gave by non-organic farmers but is only the third reason gave by organic ones. This difference might be explainable by the fact that most organic farmers have been educated on the impacts of chemicals on health and the environment unlike non-organic smallholders. Furthermore, on the one hand, non-organic farmers cannot first handedly observe the ecological and health benefits. On the other hand, they can easily observe the higher prices related to organic products, for example at the local markets and stores. Therefore, the profit opportunity is more visible and tangible.

The difference in prices are often substantial and can convince farmers to change practices. Indeed, according to interviewees 1 and 32, traditional organic rice costs 25'000 Rupiahs per kilogram (1.73 USD/kg), traditional organic red rice from Jatiluwih costs 35'000 Rupiahs per kilogram (2.42 USD/kg) and hybrid conventional rice is sold for around 9'000 to 13'000 Rupiahs per kilogram (0.62-0.90 USD/kg). Interviewee 28 added that rice is not the only organic good sold at higher prices. Indeed, organic vegetables and fruit are considerably more expensive as well.

Multiple interviewees (8, 18, 23, 25) stated that the majority of farmers on the island became organic exclusively for the higher revenue and not for ethical reasons: *“local farmers do it only for business. Like do it for the money and then eat chemical products at home”* (interviewee 23). Interviewee 8 thinks that *“profit is not a good enough incentive”*. This last thought is echoed by interviewees 18, 23 and 25, which added that farmers should *“not do it for money or for increasing income but do it for you, for yourself”*. For these farmers, the lack of moral or deeper motivation is a concern, because in case of a drop of the demand (for example due to a scarcity of tourists), they could easily decide to go back to using chemicals. I focus more on the precarious role of the demand in section 9.3.

7.4 Other

The last three reasons to adopt organic agriculture have been expressed by only a non-significant number of farmers. In fact, just 9.3% of the interviewees has indicated governmental subsidies motives, 7% policies and 2.3% *subak* decision. These three factors can be summed up as administrative reason. In this cases the authorities have promoted or supported the adoption of sustainable practices. In section 8.2, I analyze more in detail the role that the different administrative entities play in the adoption of organic agriculture in Bali.

7.5 Conclusion

This chapter presented the main reasons identified by the farmers to adopt organic agriculture. Nevertheless, the cultivators may decide to change to the new practices only if they think that the opportunities surpass the limits. In the next chapter, I present the main factors responsible for limiting the development of organic agriculture in Bali.

8. Limiting factors to the evolution of organic agriculture in Bali

To answer the last part of the first specific question, in this chapter, I analyze the main limits related to the adoption organic farming.

During the interviews, the farmers presented a variety of factors limiting a successful transition to organic agriculture. In this chapter, I present the main limits and the different ways in which the three agricultural groups perceive them. Understanding these limits is fundamental to determine what role play voluntourism on organic farms and tourism in surpassing these difficulties.

8.1 Social factors

As I presented in the literature review (section 3.2), some social characteristics have been recognized by different scholars (Lee, 2005; Tu et al., 2018; Sidibé, 2005) as possible factors responsible for the willingness of farmers to adopt or not new agricultural practices. In this part of my thesis, I ran multiple frequency and descriptive analysis (Annex 5⁹) and chi-squared and correlation analysis (Annex 6¹⁰) on SPSS in order to find the characteristics that most influence Balinese farmers. By crossing the statistical results with the qualitative answers given by the interviewees, I tried to understand how the different agricultural groups compare between each other on a social level.

8.1.2 Education

The first chi-squared analysis (Annex 6, chi-square test 1) shows that there is a significant association between “agricultural groups” and “level of education”. This means that the level of education of a farmer influences his or her likelihood of being organic. By analyzing the specific data presented in Figure 27, it is possible to affirm that farmers with a higher level of education are more likely to own – or work on – an organic farm with volunteers. On the contrary, farmers with low levels of education are more likely to be non-organic. Indeed, the figures show that 66% of the farmers from the organic with volunteers group has a university degree. By adding the proportion of farmers with a practical university degree, the totals elevates to 83.4%. The same proportion is 33.4% (26%+6.7%) for organic farmers without

⁹ Only the frequency and descriptive analysis used in the research are presented in Annex 5.

¹⁰ Only the chi-squared and correlation analysis used in the research are presented in Annex 6.

volunteers and 10% for non-organic ones. Furthermore, only 5.6% of the organic with volunteers group has an education level under high school, compared to 46.7% for organic without volunteers and 50% for non-organic.

Level of education		Responses		
Agricultural Group		N	Percent	Cumulative Percent
Organic with volunteers	Junior high	1	5.6	5.6
	High school	2	11.1	16.7
	Practical university	3	16.7	33.3
	University	12	66.7	100
	Total	18	100	
Organic without volunteers	Primary	4	26.7	26.7
	Junior high	3	20	46.7
	High school	3	20	66.7
	Practical university	1	6.7	73.3
	University	4	26.7	100
Total	15	100		
Non organic	Primary	3	30	30
	Junior high	2	20	50
	High school	4	40	90
	University	1	10	100
	Total	10	100	

Figure 27: Question 13: what is your level of education?

Farmers with a higher level of education (e.g. university degrees in agriculture or practical university diplomas in permaculture) have a better knowledge on the issues related to conventional agriculture. Furthermore, in university they are given the means to practically adopt organic and permaculture techniques in a variety of difficult conditions (e.g lack of water or degraded soils). Moreover, agricultural faculties teach the fundamental marketing and business skills necessary to start a successful activity or improve an already existing one.

Sometimes, the higher human capital motivates the interviewees with the higher degrees to diversify their income sources, by starting parallel activities such as agro-tourism (interviewee 1), ecotourism (interviewee 6), restaurants (interviewee 18) or by selling on larger scale (interviewee 11). Other highly qualified farmers decide to work for local NGOs or for the government in order to promote and teach sustainable practices across the island.

According to interviewees, it is not only the low scholastic education level that limits the likelihood of non-organic farmers to adopt sustainable agriculture, but also the loss of traditional knowledge. Indeed, interviewee 1, 21, 23, and 33 noted that after more than forty years of Green Revolution techniques, non-organic farmers in some areas of the island have forgot how to produce traditional heritage varieties of rice. Indeed, most of the new

generations of farmers have only experienced how to cultivate conventional hybrid rice and even if they wanted they would not know how to go back. Therefore, there is a loss of human capital related to decreasing traditional agricultural knowledge and skills.

For these reasons, education has been recognized by multiple interviewees (1, 3, 5, 6, 8, 11, 14, 33) as the major limit to the development of organic agriculture in Bali. According to them, both farmers and consumers are not entirely aware of the impacts of chemical inputs on both health and the environment. Interviewee 1 explained that *“Local people, uneducated and poor, go for the cheap one, but it is actually more expensive because they get unwell and they need hospital and medicine that are expensive”*. According to interviewee 18: *“Educating both farmers and consumers is fundamental. [...] Farmers often still don’t know the impacts that the chemicals have on their health”*. Interviewee 6 added that it is fundamental to: *“Educate the locals somehow. Start to do it in hotels and the locals are going to start. The local practices are the problems, supporting Monsanto, using roundup, plastic, not having a serious waste management. They are afraid to change. Need to change policies to change the local mentality.”*

According to Lee (2005), improving education and access to information (building human capital) is central to increase the adoption of sustainable agriculture practices. Moreover, the author believes that the learning process should be put in place with the participation of farmers’ groups, governments and NGOs. The DfID (2001) shares the same point of view, indeed, according to the guidelines of the department, education, training programs and high social capital (built through social relations, networks and relationships) are necessary to increase the human capital of the poor. In Bali, as I present in the section 8.2, the role of the government is often limited, but NGOs and foundations play a fundamental role in the education process. Indeed, local organizations IDEP, Bali Organic Association and Sawah Bali and international organization Rikolto are focusing their efforts on teaching how to produce organic goods, in order to help smallholders diversify their production, increase their incomes, improve their health and reduce rural poverty.

Nevertheless, according to interviewee 11, *“NGOs normally only educate the producers”*. In his opinion, to change the Balinese agricultural system, the objective must be the creation of conscious consumers. In fact, the average Balinese prefers to eat hybrid white rice, which is cheaper but extremely less nutritional and bad for the consumers health (interviewee 1, 11, 21). According to interviewee 1, *“organic brown and red rice have huge benefit for the*

family. Before, always cook way more rice, like 2 kilos. Because white rice need more and feel less healthy. Now, with 1.5 kilos the family all good and still have some in the morning”.

Interviewee 11 believes that the continuous demand for hybrid rice keeps most farmers from changing. Furthermore, he thinks that producing organic products for self-consumption and for tourists only improves the short-term health and monetary benefits of the farmer but does not solve the long-term environmental and health issues of the whole island. *“What if because of the volcano¹¹ or other crisis tourist stop coming? Who consumes the organic products then?”*. As I present more in depth in chapter 9, the connection between organic agriculture and tourism is perceived by local farmers as both a blessing and a concern. Indeed, on one side, tourism creates the demand for chemical free products, on the other side, the dependency on the overseas consumers makes the sector highly vulnerable (Figure 28). For interviewee 11 and 18, to have a stable system it is necessary to educate consumers on the importance of eating quality products, because *“if the Balinese consumers are going to ask for sustainable [products], more farmers have to change too”* (interviewee 18).



Figure 28: Organic farmer

Better access to internet is one of the most important factors contributing to the exchange and the diffusion of information to and between consumers and producers. The continuing economic development of the island and the higher salaries have made internet accessible to the majority of the Balinese population. Indeed, most people have a smartphone and a Facebook profile. Different farmers (interviewee 25, 27) mentioned that they were able to learn the basics of organic techniques online. Other farmers (interviewee 5, 6, 8, 14, 18, 25) use internet, mostly Facebook, to improve the visibility of their businesses (restaurant, agro-tourism, ecotourism), the network of their organization (1, 3, 13, 33) or their access to niche organic markets (interviewee 11).

As I present in chapter 10, the majority of the interviewees explained that volunteers play a central role in the promotion of the importance of a quality diet and agricultural system.

¹¹ At the time of the field research (between December 2017 and March 2018), multiple eruptions of Mt. Agung between September 2017 and January 2018 had caused a decline in tourism.

8.1.2 Age

The second social factor influencing the adoption of organic practices is age. The analysis of the answers given to Question 3 (Annex 5) shows that there are three main ways age impacts the decision to adopt different techniques.

The first reason is that often younger people are better educated on current issues. Indeed, as I presented in the previous section (8.1.1), young farmers have access to agricultural education, through NGOs, or the agriculture faculty at Udayana University or online. Furthermore, younger farmers grown up in a strongly tourist influenced society and learn English either in school or by practicing with foreigners. The importance of being able to speak English has been recognized from the interviewees (19, 34) as fundamental to be able to host volunteers and sell organic products at the local markets. For this reason older farmers are less likely to welcome volunteers. On the contrary, younger ones, know how to communicate with volunteers and can easily connect with them using social media.

The second reason is related to the decreasing number of young Balinese willing to work in the agriculture sector. As I presented in chapter 4.1 and 4.2, the Balinese agriculture sector is facing a big crisis. Most of the young decide to abandon the family farm to work in the tourism sector, which gives better economic opportunities. Indeed, 95% of the interviewees stated that young people do not want to work on the fields anymore. According to interviewee 1, the young think that agriculture is *“too hard, a lot of effort and not a lot of earning”* and prefer working in *“hotel, tourism and construction”*.

“On average in Ubud with 3’000 square meters of rice field you make 23’800 Rupiahs¹² per day. Under extreme poverty level 50’000¹³. Working in construction you make 85’000¹⁴. That’s why young people like to leave to work in hotel and tourist industry, you can’t blame them, hard work in farms and no earning, while working in a hotel in Kuta they make 1.5 million¹⁵ a month” (interviewee 1).

His words were echoed by basically every interviewee: *“tourism gives better salaries, more opportunities, less effort, not need to get dirty in the fields”* (interviewee 4), *“Nobody become farmer, too hard, they see the father think is difficult so they want to move from the farm to*

¹² 23’800 Rupiahs = 1.60 USD

¹³ 50’000 Rupiahs = 3.40 USD

¹⁴ 85’000 Rupiahs = 7.75 USD

¹⁵ 1.5 million Rupiahs = 101.40 USD

become tourism. They think tourism is easy money... even if...” (interviewee 13), “*Young want to leave agriculture and farms. They want to make easy money and not work hard in the field. Don't want to get hands dirty. They work in hotels, restaurants, shops, stores.*” (interviewee 22). Non-organic interviewee 41, leader of a *subak* in Canggu, added that “*Only people 50 plus are farmers. No new generations. Only retired people do agriculture*”. Interviewee 2 added that the profits are highly reliant on the weather and that a family in today’s Bali cannot afford to live only by farming: “*Farmer earn very less than others. Cannot live only as farmer. Can only live ok, but not with son or daughter in school*”.

The trend of young people leaving farms to work in the city, or in highly touristic areas, has been recognized by most of the interviewees. Nevertheless, in certain rural villages a part of the young remains and works on the farms. Indeed, interviewee 24 (resident of a rural village in Tabanan Regency) explained that “*not all the young go to tourist areas, a lot stay here and work with families as farmers. We are far from Kuta and Denpasar here*”. Nevertheless, even in this case, many of the villagers, including interviewee 24, work as farmers, cleaners or guides for the ecotourism resort located nearby.

From what I was able to observe, most of the young who decide to keep working as farmers are interested in the sector and are motivated to improve their techniques. Indeed, the majority of the young Balinese farmers interviewed studied agriculture in university. This is confirmed by the -0.396 correlation (significant at the 1% level) between the “age” and “education level” indicators (Annex 6, correlation matrix 1). This correlation indicates that younger farmers have higher levels of education and, vice versa, older farmers are less academically educated.

Finally, the last way age influences the choice of adopting or not organic agriculture is the fear of changing practice. Indeed, according to interviewees 1, 6, 34, farmers that have lived all their lives, or at least the last 40 years, using Green Revolution techniques are afraid to switch to something new and different. Their observations are confirmed by the second chi-squared analysis (Annex 6, chi-square test 2) between “for how long have you worked on this farm” and “agricultural group”. Indeed, the test shows a strong association between the two factors. This means that non-organic farmers are more likely to have worked on their farm for a longer period of time. Interviewee 34, a non-organic farmer, admitted that one of the main reasons that kept him from changing to sustainable agriculture is that, after all these years, he is “*afraid to do a different practice, a lot of effort and don't know where and how to sell*”. On

the contrary, young farmers can be more motivated to change, mostly because of education and because the prospect of failing at a young age is perceived as less scary: *“I want to try. If doesn't work because of the soil I don't know, but need to do it for my parents”*.

8.1.3 Land size

The last social factor is the size of the land (Figure 29). The table shows that the average land size for non-organic farmers is significantly smaller than for organic ones. It can be supposed that farmers with larger plots of land have higher incomes. Indeed, more land surface produces more crops and increases the profits of the owner and, at the same time, owning large plots of land can be an indicator of wealth. Furthermore, Figure 29 shows that (in this case study) the maximum land size for organic agriculture farms are 10-15 times bigger than non-organic ones. This might mean that richer farmers might decide to produce organic agriculture in order to increase their income even more. Finally, the minimum size of the organic farm with volunteers (0.03 hectares), shows that it is possible to adopt organic agriculture techniques even in a small plot.

Agricultural Group	Minimum	Maximum	Mean
Organic with volunteers	0.03	15	2.3489
Organic without volunteers	0.24	10	1.902
Non organic	0.1	1	0.362

Figure 29: Land size in hectares (ha)

8.1.4 Conclusion

This first part of this chapter helped me understand how social factors can impact the decision of adopting new sustainable practices and hosting volunteers. Furthermore, it has briefly showed how voluntourism on organic farms influences education and how it can increase the likelihood of farmers switching to organic agriculture.

8.2 Political limits

The political system is the second limiting factors to the development of sustainable agriculture in Bali. In this section, I analyze how the interviewees perceive the role played by the different authorities in implementing organic practices and how the members of the agricultural groups define their relations with the government.

8.2.1 Decentralization and fragmentation

As I presented in chapter 2, after the end of the New Order, Bali, and the rest of Indonesia, entered a democratization and decentralization period. Decentralization generally allows a better participation of the local population and greater political freedom, characteristics that are expected to improve the effectiveness of the measures put in place by the authorities. Indeed, local governments are supposed to better understand the particular needs of the citizens and should be able to determine what kind of public services and goods are necessary, as well as the best ways to put them in place (Rosser & Wilson, 2012; Sujarwoto & Tampubolon, 2015). However, in Indonesia, since the beginning of the decentralization process, the sub-national administrative boundaries have not ceased shifting and changing and the number of provinces, regencies and cities have been progressively increasing (PCGN). The continuous adjustments and the fragmentation of the country have been responsible for a significant confusion over the responsibilities of the different authorities and have increased the conflicts related to overlapping rules (Pringle, 2004; OECD, 2016). Moreover, corruption and the pursuit of elites' interests by local authorities have been a limit to the promotion of new pro-poor strategies and programs (Rosser & Wilson, 2012; Sujarwoto & Tampubolon, 2015).

The fragmentation of the political system complicated my understanding of which administrative level is responsible for the implementation of the different programs. Furthermore, the interviewees have very contrasting opinions. Certain farmers have an harsh and negative attitude towards the role of the government, others are pleased with the programs that have been put in place. In general it seems that impacts of the national government are rather difficult to assess, that the role of the Balinese regional government (the province) is strong and that on the local level the different regencies and villages have completely different plans and programs to prevent unsustainable agriculture.

8.2.2 National government

As I presented in chapter 2, since the beginning of the 2000s, the Indonesian government has put in place different plans to increase the sustainability of the agriculture sector (such as Organic 2010 and the Indonesian Grand Strategy of Agricultural Development of 2015-2045). Nevertheless, according to scholars (Jahroh, 2010; Nugraheni & Purnama, 2013) and most of the interviewees, the impacts of these projects have been quasi inexistent and the support of the central government has been almost entirely absent. In fact, interviewee 1 noted that *“Last president out of the blue [launched] organic 2010, but without the things that go with, no teachers, no plans, no seeds. Just a big dream, it’s a trend so why not do a speech on that”*. Next, he added that today the situation is very complex: *“It’s hard, the new president has good ethics but he is so far away. From there [Jakarta] to here [Bali] everything faded. Money and everything else. The local authorities take photos of projects that we do and take credit for it! They show them to their bosses but they don’t help. They don’t do nothing”*.

Interviewee 33 confirmed that the central government has good intentions and tries to promote the production and consumption of organic products. For example, to show its support in 2014 it awarded Bali and two other provinces in Java as “organic provinces”. Nevertheless, according to different interviewees (1, 34, 35, 39), the government on one side, partially promotes sustainable agriculture, on the other side, is always researching, producing, buying and selling hybrid seeds and chemical inputs and it *“keeps wanting the farmers to be dependent [on] chemicals”* (interviewee 1). Indeed, non-organic farmers (interviewees 34, 35, 39) affirmed that they still receive subsidies to buy chemicals. Other farmers mentioned that the government still distributes chemicals but not for free anymore (interviewee 2).

According to Food Crop Agricultural Agency of Bali Province statistical documents provided by the province official (interviewee 29), in Bali the number of organically certified farmers groups (national certification LeSOS) has gone from 2 in 2009 to 44 in 2017. In total, these certified farmers groups count nearly 2’300 farmers, which corresponds to 0.2% of Balinese farmers. LeSOS is not the only organic certification agency operating in Bali, other agencies focus on high standard certification for products that will be internationally exported, mostly coffee and cacao. Nevertheless, according to the province official the proportion of organically certified farmers in Bali remains under 1% of the total.

8.2.3 Bali province

To safeguard agricultural land, the province has established a protected area, called the green belt, where the conversion from farming land to other uses is forbidden. Furthermore, interviewee 29, head of division crop and horticulture of the Department of Agriculture of Bali Province, explained that around a decade ago, Bali Province launched the SIMANTRI program, which provides subsidized organic fertilizer to farmers around the island. According to interviewees 20 and 42, organic fertilizer costs 1'500 Rupiahs per kilogram (0.10 USD/kg) and for every kilogram bought by the farmers, the province pays 900 Rupiahs (0.06 USD) and the farmer only 600 (0.04 USD). Nevertheless, less than 40% percent of the interviewees indicated that they receive this subsidized organic fertilizer. Furthermore, many of the farmers that receive the fertilizers noted that the quantities provided are very small and often insufficient to make a difference.

According to most of the interviewees, another problem is that the government distributes organic fertilizer but does not teach how to change practice: *“they just say to be healthy and go back to organic and traditional agriculture, but they don't say how to do plantation”*. Only 3 interviewees (13, 30, 31) and the two government officials (interviewees 20 and 29) stated that they had received visits from government experts to help improving their agricultural practices.

8.2.4 Regencies and villages

In Bali, the negative impacts of decentralization have been stronger on the local level. Indeed, instead of eradicating corruption and abuses, the lack of vertical control has given more freedom to local leaders (Rosser & Wilson, 2012; Warren, 2012). According to multiple interviewees, today, the majority of politicians pretend to have the interest of the communities at hearth but, in reality, only try to make as much money as possible during the 5 years in office, *“they all make promises, but then nothing happens”* (interviewee 1). Interviewee 8, added that *“They don't help, they aggravate it, make it worst. Every farmer that want to switch they don't help, when they try it makes it worst”*. Interviewee 3 has a similar opinion, indeed, he is happy that the authorities do not care and leave them alone. Interviewee 32 explained that the government is not interested in helping organic communities not even the ones supported by international organizations: *“We have an*

association for red rice since 2010, with 48 members. We never got anything from government, they don't have budget and they don't care. UNESCO pushes the government but still nothing".

Interviewee 18 added she has:

"no idea what the government does. Often I see guys that have packages of pesticides down the hill. [...] The government gives sometimes machines but they [the farmers] can't even use them cause the ground is too steep, so probably they [the officials] have nepotism and just try to make money, and the farmers get these and sell them again because they don't need them. [...] Monsanto management here would sell so much and be greeted in Indonesia like kings".

Interviewee 12 told me two similar anecdotes on the lack of government support and interest:

"One NGO is trying to collect and produce compost, but government charges twice to import machinery. So to import a truck for compost, instead of 10'000 USD they have to pay 20'000 USD. They make it harder to bring tools that would help composting, producing better, etc. Everything runs because of money and corruption". Furthermore he added: "Two weeks ago, symposium sponsored by the Dutch. Travel agencies started freaking out for the impacts of social media in showing the level of trash. Dutch tourists stopped coming to Bali, and the Dutch government spent a couple millions to try to solve problem. They held a three days seminar to promote and start a cleaning project. Maybe the action plan will have some positive impacts. As always, the problem is that no one from the local government showed up. No one. Not a single Balinese authority. All the big recyclers, private sectors, tourist agencies, etc. But no local government".

To explain the inefficiency and the marginal role of the local government, interviewee 1 explained the lack of qualification and motivation of certain local officials in his village:

"One time Sawah Bali was managing a workshop to solve a problem with rats in the fields. And by accident the agriculture department sent people to the workshop and they said 'No, there is no problem with rats'. They said that their research showed that the problem was only for 5% of the land, but lie, the problem is everywhere. So we showed pictures to the officials showing the presence of rats everywhere. At that point the government tried to come up with a solution, a superstitious, religious solution to scare

rats with prayers". He laughs and adds *"Instead we created a program to train owls to kill the rats, and it fixed the problem, without the government. Now we can grow the rice there"*.

After considering the different opinions and analyzing the results of a crossing between the answers to question 23: "Do you receive any help from the government" and the provenance of the farmers (Figure 30), it appears that every regency adopts different policies and programs. The differences do not stop at the regency level but continue to the village one too. Indeed, interviewees from same regencies do not receive the same assistance from the government (Figure 30).

Do you receive any help from the government?			
Regency		Frequency	Percent
Badung	Yes	5	35.7
	No	9	64.3
	Total	14	100
Buleleng	Yes	5	83.3
	No	1	16.7
	Total	6	100
Denpasar	Yes	1	100
	No	0	0
	Total	1	100
Gianyar	Yes	7	46.7
	No	8	53.3
	Total	15	100
Jembrana	Yes	2	100
	No	0	0
	Total	2	100
Tabanan	Yes	0	0
	No	5	100
	Total	5	100

Figure 30: Question 23: Do you receive any help from the government?

According to the interviewees and different authors (Rosser & Wilson, 2012; Warren, 2012) the fragmentation of the political system has created confusion on the roles of the different officials and has increased the conflicts between administrations and between government and population. Interviewee 32 gave me an example of how the fragmentation has direct impacts on the farmers earnings as well. Indeed, in her village, the earnings collected with the tourists' entry fees are divided between a very large number of officials from different administrative levels before reaching the farmers.

Tourists pay *"40'000 [Ruphias] per person to visit, 35% goes for the salaries of the people collecting at entrance of the village and for maintenance. [The remainder]*

divided by 2: 45% Pendang Tanana government, 55% percent to the village. And this 55% [...] is divided to traditional community, head of the village, and then to the subaks. [...] each subak only gets 1% of the total money, like 4 million each per year [274 USD]. Here in 2016 they had an income of 4 billion Rupiahs, special year, very high [around 2'700 USD for each subak]”.

Rosser & Wilson (2012) after conducting a research on the field in Bali, observed that, in the last two decades, multiple regency and village officials have been connected to local gangs and mafias. According to the interviewees corruption is mostly noticeable in the allocation of plots of land for tourist proposes by completely disregarding local planning regulations. Indeed, multiple interviewees (1, 2, 3, 8, 21, 22) have indicated that widespread corruption has been responsible for the conversion of farming land into villas and resorts for the tourists. According to these and more interviewees (4, 13, 18, 19, 27, 33, 34, 38), the land is sold mostly to rich Jakartan, both private citizens and politicians, but also, indirectly, foreigners. Non-Indonesian citizens are not legally allowed to buy land in Indonesia, for this reason, Balinese residents have to acquire the certificates instead of them. 70% of the interviewees has indicated that in their neighborhood there has been significant land conversion. This phenomenon participates in increasing the marginalization of farmers, indeed, the sector keeps losing importance compared to tourism. The fact that local officials participate in the illegal land allocation process grows the pressure on the farming sector even more. Indeed, the loss of land and other natural resources strongly decreases the access to natural capital for the farmers, who are forced to adapt their livelihoods strategies.

According to interviewee 12, leader of a *subak* in Banjar Auman, and interviewees 28 and 31, a few villages in certain remote areas of the island have not been impacted at all by the Green Revolution. The three farmers explained that they have always cultivated following the traditional methods and that their village has always supported and protected the local agricultural heritage.

Furthermore, the two government officials (interviewees 20 and 29) indicated that Petang village is an entirely organic as well. The village is supported by the government and is used as an example of organic success for the promotion of the practice. Indeed, according to interviewee 27, the promotion of organic agriculture from the government:

“It’s beginning. Around Ubud more people produce organic than before, because of not only tourists but local people too. Because the government they help the farmer, to do water canals and compost and gives cows. They have people that check that you don’t sell the cow for money”.

Interviewee 30, explained that government programs, like the organic village in Petang are necessary to give an example: *“Projects like the ones put in place by the government help increasing the organic production. The government explains why it is important to do organic, to use organic compost and fertilizers. Tourism makes the demand. Government helps creating a good offer”.*

8.2.5 Subak

According to 95% of the interviewees the *subak* still plays an important role in the organization and management of the Balinese agricultural system. To understand if this institution plays different roles in organic or non-organic communities, I asked the interviewees to describe the importance it has today compared to the past (Annex 5: Question 28a and 28b). By analyzing the answers, I found that, despite non-organic farmers consider the *subak* more influential compared to organic farmers with volunteers, the majority of all the interviewees (63%) has observed that the influence has continued to decrease over time.

The decreasing level of influence of the *subak*, more emphasized by organic farmers, can be linked to the structural changes that took place during the Green Revolution. Indeed, during this period, the characteristics that made the *subak* an example of community-based and democratic organization started to crumble (Roth, 2014; MacRae & Arthawiguna, 2011). Indeed, most *subaks* became a tool for the top-down governance approach promoted by the New Order government (Roth, 2014; MacRae & Arthawiguna, 2011). *Subak* leaders were used as channels to impose the implementation of modern practices and technologies that, on the long term, caused a loss of the traditional costumes and knowledge (Roth, 2014; MacRae & Arthawiguna, 2011). Interviewee 2 affirmed that *“The government used the subak system, the subak head, to put chemicals in the whole community. The more pesticides the farmers use the more the leader earn. And the farmers were free to take all the chemicals for free, and then would have to pay what they owed at the end, after the harvesting”.*

Interviewee 1, 3, 21 and 22 noted that the *subaks* still plays an important role in the decision making processes of the agricultural communities, but that the characteristics have changed. According to them, the main difference is that today some *subak* leaders are not always farmers. “*This is negative for the whole subak*” explained interviewee 3 “*because the choices made by the leaders are more political instead of agricultural and it pushes farmers to be more independent and individualistic*”. Furthermore, according to interviewee 4 and 21 the *subak* groups and leaders still heavily promote the use of chemicals, “*because the more the farmers use the more they earn*” (interviewee 21), “*they help becoming non organic*” (interviewee 4).

Therefore, the political features of the *subak* have presented a major limit to the development of organic farming. Often, the interviewees have indicated that they need unity within the *subak* to decide to change practices and that for personal or political reasons it is almost impossible to reach a consensus.

One of the non-organic interviewees (42) explained that going organic is indeed difficult. On one side, according to him, the soil is too broken to cultivate organic, on the other side it is:

“Difficult to switch to organic here, because everyone has to change at the same time, because if the village don’t change all the village together it will not work. The water goes everywhere, and if one is not organic no one is. And subak cannot change that because not everyone wants to be organic. Some are happy with the current situation”.

Interviewee 41, *subak* leader in Canggu explained what the leader role consists in: “*We establish how to use the water for all of them [...] what rice to plant, when, the amount of fertilizers depending on the size of the farms*”. Interviewee 39 confirmed that the role of the *subak* is to decide what is better for the farmers, to assure the maximum productivity. He added that they once had a discussion with the whole *subak* to decide if they wanted to do organic or keep using hybrid seeds and chemicals and they decided to continue with what he defined as the “*normal way*”, meaning conventional agriculture. Furthermore, interviewee 43 added that the decisions “*must be followed by the whole subak, we must buy all the chemicals together, can’t buy only a little. The camion comes and then we pay together*”. According to interviewee 41 and 42, the fertilizers chosen and distributed are Urea (synthetized Nitrogen

fertilizer), Phonska (synthesized Nitrogen, Phosphorous, Potassium - NPK fertilizer) and organic (from compost and SIMANTRI program).

Interviewee 8 explained that the problem is not always the unwillingness of the *subak* leaders to change, but the reluctance of farmers as well. Indeed, according to him farmers have become lazy and want do as little effort as possible:

“the subak leader, he asked me to talk about organic farming to the community. He explained me that he is hopeless, he wants to bring this change, inform [the farmers] of the decision, but all the farmers they just want fast solutions, and they don’t think they can afford it. Going back to organic means lower yield for a while but then better”.

Thus, after 40 years of Green Revolution practices, the farmers have not only lost a part of their traditional agricultural knowledge, but also the motivation to work the land. I analyze more in dept the role of the lack of motivation in section 8.3.3.

Despite the fact that the role of the *subak* system seems to have faltered over the last few decades, when asked if they think that the *subak* could play a role in the promotion and establishment of organic agriculture, 77% of the respondents answered positively (Question 29a, Annex 5). Furthermore, 65% of the interviewees affirmed that they had discussions on adopting organic techniques in the *subak* (Question 29b, Annex 5). For example, interviewee 1 explained that him and other older farmers from the *subak* always discuss about turning the whole *subak* towards organic agriculture and that, over the last 10 years, they have been able to already help 18 farmers. The proportion of respondents indicating that they had discussions on organic farming in their *subak* is lower for the non-organic agricultural group, indeed it is only 40%.

Interviewee 32, gave an example of how the *subaks* manage the farmers in an entirely organic village. In Jatiluwih, the village is divided in three *subaks*, which are responsible for the control of the quality of the heritage red rice produced. To assess the excellence of the product they do tests every 6 months, in order to be ready for the certification exams every 3 years. Furthermore, every farmer in the *subak* must use spring water (not polluted) and is forced to cultivate red rice between January and July and free to produce any other crop between July and December (corn, vegetables, flowers, garlic, etc.). The use of chemical

fertilizers and pesticides is strictly forbidden. A farmer that does not respect the rules is fined by the *subak* group. Moreover, if a farmer does not plant at the right moment, according to the religious calendar and priests decision, the *subak* cuts his water supply. She added that the *subak* is very united but that “*you have to follow*”.

8.2.6 Conclusion

As shown in this chapter, the fragmentation and the overlapping of different administrative levels create confusion over the responsibilities of the different authorities and increase the chance of corrupted officials and illegal practices. Furthermore, it is difficult to evaluate the role of the political entities, because they provide subsidies and assistance in certain areas, but completely neglect other ones. The general feeling is that the average farmer does not rely on the support of regional and national government. According to the interviewees, on one side, the lack of trust is related to the lack of support, on the other side, is connected to decades of strong and oppressive Green Revolution policies, that have increased the dependency of farmers from chemical inputs and hybrid seeds and have caused the loss of traditional agricultural knowledge.

The close relationship between *subak* and farmers increases the belief that this local and communal managerial entity could play a role in the establishment of sustainable practices. In chapter 10, I present the community-based characteristics of the *subak*, which have been partially lost during the Green Revolution, could still present an opportunity for the promotion of organic agriculture. Indeed, the structure of the *subak* could be used as a platform to share the environmental, health and economic benefits of sustainable farming.

8.3 Environmental degradation and chemicals

In this section, I continue answering the second part of the first research question, by analyzing how environmental degradation and the excessive use of chemicals limit the willingness of farmers to adopt organic techniques.

8.3.1 Declining quality of the soil

According to interviewees 1, 2, 9 and 33, at the beginning of the Green Revolution, using hybrids and synthesized fertilizers and pesticides was economically convenient. Indeed, the application of small amounts of synthesized inputs combined with the already fertile Balinese soils increased the yields. Nevertheless, over time, the intensive use of chemical fertilizers and pesticides decreased the number of nutrients in the soil and its quality. According to interviewee 2, initially farmers used to apply only 1 kilogram of chemical fertilizers for 100 square meters, now, to compensate the loss of fertility of the land, they need to use around 20 kilograms for the same surface. Interviewee 41, leader of a non-organic *subak*, explained that today, in his community, farmers use “for 30 are¹⁶: 50 kilograms Phonska¹⁷, 100 kilograms Urea¹⁸ and 120 kilogram Organic fertilizer. Before plantation, when the soil is just covered in water, put organic fertilizer and compost, after 2 weeks put new plantations. After that put Urea and Phonska”. Interviewee 21 said that in theory they should use:

“1 kilo of Urea and 1-2 kilo of NPK per 100 square meters, but in reality 9 kilo, because it doesn't work anymore. You need fibers in the soil. Only clay in the water, so just inject more and more chemicals to grow. Rain washes chemicals away, you need more. [...] Burn the remaining of the rice to be fast but less microbes, less nutrients”.

Interviewee 11, biologist and agronomist, indicated that the problem with chemical fertilizers (Urea and Phonska) is that only a fraction of the nitrogen is absorbed by the plants and that the rest leaks into the groundwater. Furthermore, the runoff pollutes sources of drinking water and kills the ocean reefs. According to the interviewee the overuse of the chemical is not only a huge contributor to water pollution, but it also kills the microorganisms (fungi and bacteria) necessary to break the nutrients of the soil on the roots of the plants, decreasing the

¹⁶ 1 Are = 100 m² = 0.01 ha

¹⁷ NPK fertilizer (Nitrogen, Phosphorous, Potassium)

¹⁸ Nitrogen fertilizer

capacity of the plant of absorbing the nutrients. Liu et al. (2014) confirm the observation made by interviewee 11; indeed, according to the researchers, the overuse of nitrogen fertilizers has serious environmental impacts and is harmful for humans as well as animals.

Despite the clear evidence on the negative impacts of synthesized fertilizers, the use of these and other chemicals keeps increasing. According to Professor Kartini, most of the non-organic farmers think that:

“the soil quality is too poor, that is impossible to work without [chemical fertilizers]. Soil is dead, they try to use again the traditional way but impossible to go back [...]. The soil is too broken to be organic. That’s why they keep doing chemical. Chemicals were basically free before and if some of the farmers tried not to use chemicals they were [reported] to the government and some fields were set on fire”.

Indeed, 70% of non-organic farmers interviewed have indicated soil quality or pollution as two of the main limits to the adoption of organic practices. Furthermore, according to 30% of the non-organic interviewees, climate change has made certain areas less prone to producing organic rice: *“here organic can grow but not good. Our area not good for red organic rice, is easier by the mountains. Because here is hotter. Subak make the selection for the good rice for the area”* (interviewee 39). Interviewee 41 added that *“the climate limit is already too bad here. Used too much chemicals for too many years. Since the 1970s when Suharto started promoting pesticides. Before Suharto it was all organic. New president Jokowi suggest to use less urea and use organic”*. Following his statement, I asked him if they would like to go back to before the Suharto era, to traditional agriculture. He answered: *“it’s better now than when was before and during Suharto. Now is better than before, is more modern and practical. Now they give more attention to the farmers and they give subsidies. Now post-Suharto better, more help by the government”*. He adds that the *subak* now gives them better information on what to do and that they do not overuse pesticides: *“if there are insects, we use pesticides if there are not we don’t. Sometimes when we see them we spray. Government recommend not to use pesticides but it depends from the climate, if there are no insects and climate is good, we don’t use the pesticides”*.

According to Takama et al. (2015), the combination of climate change and overuse of chemicals is responsible for the decreasing the paddy suitability of certain areas. Indeed, as shown in Figure 31, multiple areas of the island are today less suitable for paddy cultivations. The south-west of the island, where interviewees 8, 15, 39, 41, 42 live and work, is

characterized by almost exclusively conventional rice farmers, which compensate the decreasing land fertility with chemical fertilizers.

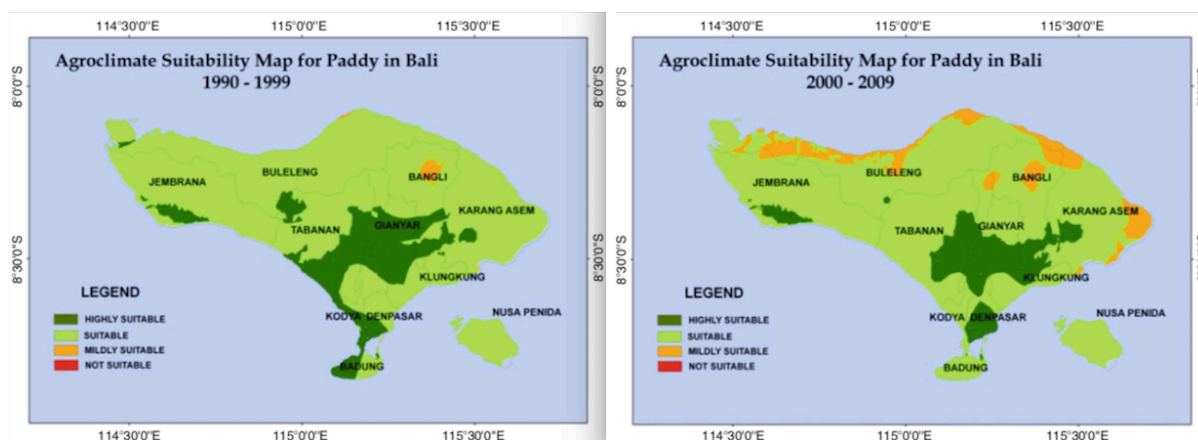


Figure 31: Maps of the agriculture suitability for paddy in Bali between 1990s and 2000s.

Source: Takama et al., 2015, p. 9

The problems related to climate change are not only felt by non-organic farmers. Indeed, 15% of organic farmers have indicated that they have been having issues related to extreme seasonal weather:

“Climate is more and more wet in the rainy season and super dry in dry season. To produce veggies, too much rain the last 2 years, the rain makes it impossible to grow them. Fruit is watery, cucumber watery. We use sustainable techniques, like little hills to keep the water off the roots. Rice is easier, less influenced by the rain. But vegetables and fruits is the contrary” (interviewee 2).

Interviewee 12 and 27 confirmed that the rain has been extremely strong over the last couple of wet seasons and, on the contrary, the dry seasons have been very hot and sunny: *“we depend from climate. If climate bad, more or less rain, hot, etc. very difficult. This year a lot of rain and a lot of vegetables and salads die”* (interviewee 12).

8.3.2 A limit to certification

Chemical use also impacts the chances of getting certified organic. Indeed, according to interviewees 1, 6, 18, 27 the soil and the water are too contaminated to get certified. Furthermore, the farmers (1, 2, 3, 4, 8, 9, 16, 17, 19) think that it is too expensive and that

their profits are already too limited to try. Interviewee 4 added that he decided to go organic mostly for himself and to sell locally and that, therefore, he does not need certification.

For these reasons, most of the organic farmers interviewed do not care about certification and just sell the products locally. Only 14% of the interviewees (5, 13, 14, 20, 32, 33) are certified organic and all of them are located in areas far from farmers using chemical inputs or have access to either spring water or water wells.

According to the interviewees, the soil can take between 6 months and 5 years to recover and be ready to produce quality organic goods. Interviewee 5 noted that *“organic agriculture is a long term process. No fast result, it is a continuous improvement, it is better in time”*. Nevertheless, interviewee observed that it is *“difficult for farmers because at the beginning land not organic but still need to produce”*. For this reason, interviewee 5 thinks that diversification or rotating crops is the best option.

In the next section, I argue that what keeps farmers from adopting organic agriculture is the rapidity and the lack of effort necessary to produce using conventional techniques.

8.3.3 Conventional agriculture is faster, easier and takes less effort

By analyzing the answers to the question “Reasons for chemicals use” (Annex 5, Question 26) it results that 84% of the respondents thinks that non-organic farmers use chemicals because it is “faster”, 70% because it is “easier” and 42% because it takes “less effort”. According to interviewee 1:

“Organic farming is the opposite of what Balinese farmers want. They want something fast yield and an easy way of growing it. With chemicals. And they can always sell it, always demand. Organic you have to tell people that it’s different. Normal business people don’t want to buy it, you have to find people that want to do meaningful business, something that is good as well”.

Interviewee 13 explained that it is a behavior and motivation issue: *“farmers use chemicals to be fast and because the problem for them is time. Organic needs more dedication, more time”*. Interviewee 21 added that it is difficult at the beginning *“more time and harder. To weed 100 square meters organically you need 30 minutes. With chemical 5000 square meters in one hour”*. Interviewee 1 similarly observed that it is harder and it costs more too:

“for example on a 5000 square meters rice field to kill weed organically it takes 4 people for 3 days. To do it in a conventional way takes 1 person 1 hour, spraying chemicals. They mostly use roundup, which is banned from most countries. And that is only as herbicide, then there is a cocktail of toxins, fungicides, pesticides. Basically kill anything”.

Indeed, non-organic farmer interviewee 39, confirmed that they use *“herbicides because if you cut the weeds they grow back fast. We use roundup first and then take weeds off, because is faster and stay long”*.

According to interviewee 6, the problem is *“convincing the locals. Even telling that the selling is going to be twice as much they don’t care. Too much effort”*. Interviewee 4 thinks that farmers use pesticides just because they are lazy. Interviewee 9 has a similar opinion and added that *“some farmers are just lazy and want to do less and less. [...] they don’t like to wake up early anymore”*.

The “laziness” identified by certain interviewees is not the only reason that pushes non-organic farmers willingness to be faster and do less effort by using chemicals. In fact, 91% of the interviewees affirmed that farmers often use chemicals in order to be done quickly and work another job. Mostly farmers work as construction workers, as tourist drivers or in other tourism related sectors. This last observation introduces the topic of the next chapter, the contrasting impacts of the tourism sector on the adoption of organic agriculture in Bali.

9. The contrasting impacts of tourism

In this chapter, I use the SLF to understand how tourism influences the livelihoods strategies of the farmers and the communities. Next, I present the conflicting impacts of the tourism sector on the adoption of organic practices, particularly the competition for natural resources and labor and the vulnerability of tourists' driven demand.

9.1 Impacts of tourism on rural livelihoods

According to UNESCO (2016), in 2015, Bali welcomed around 8.5 million national tourists and 4 million international ones. According to Balinese authorities (interviewee 29), this number is significantly smaller and is around 7 millions. Despite the discrepancies on the exact number of visitors, 91% of the interviewees has indicated that their community has been strongly changed by the tourism sector and 78% has affirmed that their life is strongly influenced by tourism. For 56% of the farmers the changes have been exclusively positive, for 40% of them there have been some positive and some negative ones. To determine the main impacts of tourism on the livelihoods of the population I asked the interviewees to determine the main positive and negative aspects (Annex 5, Questions 47 and 48).

9.1.1 Positive impacts

After analyzing the different answers it results that there are six main positive impacts related to tourism: higher incomes, more jobs, higher demand for organic products, promotion of organic practices and healthy food, examples of sustainability and better waste management, social and cultural exchanges.

The quasi-totality of the interviewees (98%) agreed that there are new jobs in their communities related to the tourism sector (Annex 5, Question 51). According to the respondents the new jobs are predominantly: driver, barman, waiter, cook, hotel stuff, housekeeper, hiking guide, construction worker (for villas and hotels), gardener. For interviewee 15 there are *“like a million new jobs, like everything! Before, farmers they were producing their food, sharing and exchanging. Now, they need money to keep up with the incomes of the other locals”*. Indeed, 63% of the respondents has affirmed that either their primary or secondary job is connected to tourism (Annex 5, Question 45b).

Non-organic farmers normally do not have any farming related connections with the tourists. Some of them work part-time in hospitality, as drivers, builders or sell craftsmanship in the art markets, as in the case of interviewee 34: *“As a farmer no earning [from tourism], but I produce rice for locals and make woodcraft, yes. To sell to tourists”*.

One of the main ways organic farmers earn from the presence of tourists is by answering the demand for organic food. Indeed, interviewees 1, 9, 11, 19, 22 sell to restaurant and hotels and interviewees 5, 6, 7, 8, 14, 15, 18, 25 either work on or own restaurants or hotels which produce their own organic food. The increasing market for organic, vegan and vegetarian restaurant, cafes and stores, and healthy food in general, has resulted in an exponential growth of this kind of activities in the most touristic areas of the island (Ubud, Kuta-Seminyak, Canggu, etc.). The creation of new organic restaurants not only gives more market opportunities to the farmers but increases the demand for young and conscious Balinese cooks and servers. Indeed, the owners of the businesses are often westerners, but the majority of the employees are Balinese. According to interviewee 7, young locals want to work in touristic hip restaurants and when they do they adopt the same *“healthy life style and become more conscious about problems related to food”*. In fact, interviewee 35, non-organic farmer that works in the permaculture garden of an organic restaurant said: *“I work at the restaurant. I learn a lot. I would like to help my parents change the land to organic rice. I want to try. If doesn't work because of the soil I don't know, but need to do it for my parents”*. Similar outcomes happen in areas surrounding eco-stays. Interviewee 6 explained that, when he started building his eco-stay, he provided a lot of employment in the community *“We got here after a big coconut disease so we kind of employed a lot of people that lost their livelihoods and we showed that they can grow more products than they were. Most of the farmers still work here, and we employed more”*. This was confirmed by one of the farmers working on in the permaculture gardens of the eco-stay: *“We saw the tourism at eco-stay, and we work here on the fields of the eco-stay. [...]we learn more about permaculture and organic veggie gardens”* (Interviewee 24).

From what I was able to directly observe and from the comments of the interviewees, the most important meeting place between organic farmers and tourists are the organic markets (Figure 32). Indeed, on the weekend, many of the interviewees (1, 4, 11, 17, 19, 23, 27, 30, 32) sell their products at the markets. The buyers are mostly tourists, expatriates and middle class Balinese that want to buy fresh and quality products directly from the producers: “*We sell in Samadi and Moksa markets¹⁹. We sell to mostly tourists, and the prices are higher than what locals would pay*” (interviewee 23), “*We supply Indonesians too, more than before. For example, doctors and nurses because they’ve seen the impacts. And the middle class Indonesian with more money. And the Indonesians that want to feed good products to their children*” (interviewee 11).



Figure 32: Organic farmer at Samadi market in Canggu

These markets not only give better access to economic opportunities for the farmers but also constitute an important social and cultural exchange place. In fact, the farmers and a part of the consumers share a similar interest and passion for questions of sustainability and healthy food. Some of the locals have started producing and selling simple organic products (snacks, energy bars, jams, etc.). Finally, some of the farmers are able to promote agro-touristic activities or try to find motivated potential volunteers (Interviewee 17). For example, interviewee 25 explained that:

“The benefits from the tourism are not just from selling to them but from visits too. If somebody wants to join they can come for 50 dollars they have meal and drink from garden and show how to do food and we show farms and do tour in the subak. We have around 20 visitor per month now. Last year more”.

Interviewee 13 on the exchanges with the tourists added that:

“a lot of tourist give technical opinion and ask different aspect on how we produce coconut organic and some vegetables in Bali. We had organic project before, like 5 years ago, in some areas in Bali for vegetables and rice, to increasing capacity of the

¹⁹ Moksa market takes place in Ubud on Saturdays, Samadi market in Canggu on Sundays.

farmers, and tourists come to the site and talk with the farmers and interest in how they become from non-organic to organic”.

Moreover, according to interviewees 2, 5, 27, the interactions with conscious tourists can increase the awareness of local consumers on the benefits of eating organic products. “*Tourist they are more wise about organic than local and show good example*” (interviewee 2), “*they help. They try to convince to switching to organic*” (interviewee 27). “*The fact that tourists are cool push neighbors to follow: eat good food too*” (Interviewee 5).

By analyzing the answers given by the members of the different agricultural groups, three main differences can be identified. First, significantly more non-organic farmers (90%) and organic farmers without volunteers (67%) have indicated the increase of the income as a main benefit of tourism, compared to only 33% for organic with volunteers. As I presented in section 7.2, the importance of profit over health or ecology factors can be related to the level of education. Indeed, as I present below, organic farmers with volunteers focused more on the importance of tourism in promoting healthier and ecological practices. Nevertheless, this difference could be partially due to the fact that some interviewees from the organic with volunteers group might try to give answers that are more likely to make them look eco-friendly and less focused on profit.

The second main intergroup difference is that organic farmers with volunteers have focused more on the importance of tourism in increasing the demand for organic products (50% of them), compared to only 13% of organic without volunteers and 10% of non-organic. This can be explained by the fact that 78% of the organic farmers with volunteers frequently interacts with tourists, for both work and social reasons (Annex 5, Questions 49 and 50). Furthermore, 60% of the farmers from this group runs or works for a tourism related business, which allows them to directly sell their products to tourists (Annex 5, Question 8). In section 9.3, I present the role played by tourism on the demand for organic products.

The third main difference is that none of the non-organic farmers has indicated the promotion of organic practices, healthy foods, and better sustainability and waste management as positive impacts of tourism. One of the factors that influences this result is the lack of cultural, social and professional exchanges with the tourists. Indeed, all the organic farmers (both with and without volunteers) indicated that they have either professional (at the organic

markets or on the farms during agro-tourism activities) or social (in bars, restaurants, etc.) interactions with tourists. Interviewee 3 explained that *“talking to tourists makes more openminded, more perspective, not only traditional but global too. [...] and they give awareness for global issues, like waste and pollution”*. Interviewee 18 added that *“if they see tourist cleaning the roads the locals think is good to clean it. But it depends what kind of tourists. Need to attract the right tourists, slogans to attract green tourists”*. Interviewee 11 noted that tourists *“explain and show the importance of consuming healthy organic products. This helps increasing the health of the local consumers too”*.

On the contrary, 40% of the non-organic farmers affirmed that they never interact with tourists (Annex 5, Question 49). Thus, the chances of promoting sustainability to this group are significantly lower. For example, from what I was able to directly observe, in organic farmers markets no one uses plastic bags. On the contrary, in conventional farmers markets and convenience stores plastic bags are massively distributed to the costumers.

9.1.2 Negative impacts

Only 28% of the interviewees has said that there have been no negative changes related to tourism. The rest has indicated mostly problems related to lack of respect, cultural differences, land conversion, pollution and overcrowding.

According to the some interviewees there is a lack of respect for local culture *“tourists go around the villages in bikinis and swimming suits without caring for the local customs”* (interviewee 1), and *“they drink alcohol in the streets”* (interviewee 21). Interviewee 18 explained that some tourists are arrogant and do not respect the local culture *“they just don’t care about local rules”*. Another problem, according to other interviewees, is that the huge number of tourists is responsible for an increase in the amount of waste produced and the consumption of natural resources. Indeed, interviewee 27 noted that *“yes on one side they teach better sustainability, not to pollute, etc. but then much more rubbish production with more people”*, interviewee 29 added that tourists bring *“a lot more consumption: more food, more plastic, more everything”*.

In sections 9.2 and 9.3, I tackle the concerns of the interviewees related to land conversion, natural resources allocation and other agriculture related conflicts.

9.2 Competition between agriculture and tourism

Tourism and agriculture compete on two different levels. First of all, as I presented in sections 4.2 and 8.2.4, the two sectors compete over natural resources, mostly water and land. In fact, despite the abundance of water on the island, the increasing number of tourists has put a strong pressure on the resource. To assure big amounts of water to villas, hotels and resorts numerous shortages have been occurring in the *subaks*, which puts at risk the production of crops and, therefore, the food security of the farmers. Moreover, the two sectors compete over land. Indeed, the increasing value of land presents an attractive opportunity for farmers, who often decide to sell their plots. According to interviewee 3 “*Tourism and agriculture is a competition for now. Competition for the land. There has been a huge land conversion from rice fields to tourist resorts etc. Like in Kuta, Canggu, etc.*”. Moreover, interviewee 1 added that “*1000 hectares of agricultural land are lost every year because of conversion to tourist facilities and housing for national immigrants looking to work in Bali*”. Interviewee 32 expressed that there has been a “*big impact of tourism in Bali, all people before they were farmers, now they sell land to local or international investors to get money. That’s the biggest problem*”. Interviewee 27 observed that “*now all the land is used for accommodation, more cement than [agricultural] land*”, and Interviewee 39 added “*they build a lot of villas and control a lot of restaurant, too many. We lost farms, a lot lost*”. The continual loss of agricultural land strongly decreases the access to natural capital for the farmers, and forces them adapt their livelihoods strategies.

Second, the two sectors compete over labor. Indeed, as I presented in sections 4.2 and 8.1.2, the economic opportunities related to touristic sectors are significantly more important than the agricultural ones. The decreasing labor force represent another factor decreasing the human capital of farming communities. Furthermore, the increasing costs of inputs (for non-organic farmers) and the stagnating produce prices, have decreased the income of the cultivators and have increased the unwillingness of young people to become farmers. For these two reasons, tourism is one of the factors responsible for the marginalization of farmers. Indeed, according to MacRae (2011) and MacRae & Arthawiguna, (2011), Balinese farmers feel more socially excluded then elsewhere in Indonesia, mostly areas where tourism is not as developed. Indeed, when asked “Has there been a change in the perception of farmers in the ‘new’ touristic Bali?” (Annex 5, Question 52a) and “Do farmers feel poorer or/and marginalized?” (Annex 5, Question 52b) respectively 56% and 58% of the

interviewees responded affirmatively. According to interviewee 1 and 21, the perception of farmers has completely changed. *“Young people are almost ashamed of their parents, because they think that only the poor work as farmers”* (interviewee 1) and *“Even in school they don’t put that parents are farmers in the forms. Ashamed because means poor and uneducated”* (interviewee 21). Interviewee 8 added that:

“The marginalization of farmers is particularly bad in Bali because here people are proud of all they have accomplished in history, the kingdoms, etc., but it gives a huge ego. They think ‘we don’t get dirt, we don’t work hard, dirty nails are not nice’. If you work in a farm you are really poor, but they forgot where the food comes from”.

Interviewee 9 thinks that today farmers are less respected and that their job is not desirable anymore, but according to Interviewee 2 *“the young do not disrespect the farming culture. But they think it is too hard and they do not want to become farmers”*. Interviewee 11 observed that in the city no one believes he is a farmer: *“when I say to taxi drivers that I’m a farmer they say shut up, a farmer that parties?”*. In fact, according to multiple interviewees (11, 13, 15), in the city the conception of farmers has strongly changed and often farmers are more marginalized than in the mountains. The spreading urban area not only pushes farmers to the edges of the city but also to the borders of society.

Nevertheless, according to some of the interviewees (23, 29, 30, 34) farming is indeed seen by the population as old fashioned but not as poor or marginalized. Interviewee 30 claimed that *“Farming is always very well seen, because everyone knows how important it is for our island. Gives the food. A lot of respect”*. Interviewee 34 added: *“They like the farmers. We do what we always did. And always an important role in the communities”*.

9.3 The vulnerability of the demand

According to 95% of the interviewees, tourism gives better opportunities to switch to organic practices (Annex 5, Question 43). Most of them (interviewees 1, 2, 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, 16, 17, 19, 20, 21, 22, 24, 25, 28, 29, 30, 32, 33, 37, 43) mentioned that this is predominantly due to the strong touristic demand for quality, healthy, organic products. Interviewee 6 affirmed that: *“Tourists are very conscious; they care more about product’s quality, what they eat, where it comes from, how it’s produced. They love being able to see where and how the food is produced in our garden”*. According to interviewee 14, tourism

“creates a market. Increases the demand that would be almost inexistent without tourists”. Interviewee 21 added that tourism plays a big role in the adoption of organic by not only increasing the demand, but also by promoting the products. Interviewee 2 added that farmers change to organic because *“if they only maintain conventional there is no income, we collaborate with tourism and we wish we can have better income, and change our [agriculture] culture with tourist”*. According to interviewee 33 tourists *“increase the demand and show positive example. Tourists want to know the provenance of the products, so more connection with farmers”*.

Despite most of the interviewees finds tourism fundamental to increase the demand, a part of them is convinced that the role played by the sector has conflicting impacts on the establishment of organic agriculture. Indeed, on the one side, it creates the demand for chemical free products, on the other side, the dependency from overseas consumers makes the sector highly vulnerable to an eventual drop in the number of visitors. Indeed, despite the fact that the high demand by tourists is responsible for the increasing adoption of organic agriculture techniques, 51% of the interviewees think that the demand is not enough to attain an effective and long-term change. Indeed, interviewee 1 said that *“farmers are organic strictly related to the demand. If no demand they go back to bad practices right away”*. According to the same interviewee, the vulnerability of the tourism sector was made clear by the decline in tourism following the multiple Mt. Agung volcanic eruptions that took place between September 2017 and January 2018: *“The volcano eruption decreased the demand, way less tourists. Normally, we sell 500 kilograms of rice per month, now with eruption and low demand 50 kilos a month. Indirectly related to tourists. Like Bali Buddha, etc. no order because of the volcano. Very hard.”* (interviewee 1).

Bali is located in the pacific ring of fire and is, therefore, at risk of volcanic eruptions, earthquakes²⁰ and tsunamis (Siagian et al., 2014). According to Adger et al. (2005, p. 1037), *“The resilience (or conversely, the vulnerability) of coastal societies is more tightly linked to larger-scale processes today than in the past”*. This is particularly true for Bali, which saw its economic production shift from agricultural based to highly tourism centered. Indeed, as I presented above, most of the livelihoods of the population are strongly connected to tourism, including those of organic farmers. The vulnerability of the tourism sector is not only related

²⁰ As I write this thesis, in August 2018, multiple earthquakes have struck Bali and the neighbor island of Lombok.

to natural disasters but to political and social unrest too. Bali has already lived the impacts of terrorism on tourism and, therefore, on the livelihoods of the population. Indeed, as explained by MacRae (2005), following the 2002 Bali bombings, the island was struck by a decline in tourism that “*revealed the vulnerability of an economy narrowly based on tourism and has led to rethinkings of future economic development in which agriculture plays a more important role*” (p. 209).

According to multiple interviewees (1, 2, 4, 5, 6, 7, 14, 21, 24, 32), the problem is that the average Balinese does not consume organic products. For this reason, in the case of a drop in the number of visitors, organic farmers would be forced to go back to conventional agriculture to meet the demand for cheap hybrid rice and non-organic vegetables: “*The local people like to eat hybrid white rice, not brown or red rice. More soft and simple taste. No demand for organic brown rice*” (interviewee 21). Interviewee 32, which has been in the organic business for 14 years, explained that: “*They need to change the mentality. If the production is there, but the mentality of the Indonesian consumers doesn't change, it won't make a difference*”. She added that the village exports rice to Jakarta but that the demand is very unstable. Furthermore, she noted that the community does not export internationally because of certification limitations.

According to interviewee 2, producing for tourists is a start but to solve this problem the goal is to increase the awareness of the locals in order to convince them to consume organic too. Interviewee 4 added that “*seeing the kind of consumption of tourists can help push locals to consume better. The demand for organic food for tourists will create more demand for locals too. And on the long term a change in the habits*”. Similarly, interviewee 14 noted “*Need to show the locals the benefits. The fact that westerners like it is a motivation to change. But takes time*”.

Multiple interviewees (20, 22, 23, 27, 30, 35, 36, 37, 43) mentioned that to solve the vulnerability issues it is necessary that government promotes the consumption of healthier products and supports the transition to organic farming. According to interviewee 20 “*Without government programs that promote and subsidize change, it would be impossible to change the practices of the population. This is visible in our village, where a big part of the farmers are organic and consume organic, thanks to the help of the government*”. Interviewee 22 thinks that without adequate policies a large-scale evolution of the food landscape is impossible. Furthermore, according to interviewee 23 “*We need material,*

organic fertilizer and compost, etc, to help produce organically. We have the demand but not the necessary government help”.

Indeed, the support of the government is necessary to promote the consumption of healthier, sustainable products. As I presented in section 8.1.2, national and international organizations must participate in educating present and future local consumers, in order to increase the local demand and guarantee a future to sustainable agricultural practices. According to the interviewees, volunteers seem to have a role to play in this direction. Indeed, farming organizations and WWOOFs often use volunteers to promote better consumption. Before, analyzing more in detail the role played by volunteers in chapter 10, I briefly present the ideal tourists according to the farmers interviewed.

9.4 The ideal tourist according to farmers

When asked what kind of tourists they would prefer to have more or less (Annex 5, Questions 40 and 41), 12% of all the interviewees answered that they have no preference and would only want to see a general increase of the number of visitors. Nevertheless, the majority would like to see an increase in sustainable tourism. Indeed, 78% of organic farmers with volunteers and 73% of organic without volunteers would want to welcome more ecotourists and agro-tourists on the island, compared to only 40% of non-organic ones. Interviewee 3 expressed that he would like more conscient ecologically aware tourists and tourists *“similar to 25-30 years ago, that came here out of curiosity for the culture, to engage with locals, see culture, live with locals”*. Interviewee 25 would loves to share his knowledge about organic farming and he wants *“tourists to know more about the Balinese farmer culture. Invite a lot of people from outside the island to see how Bali life is like”*. Furthermore, 53.3% of organic farmers without volunteers would love to host volunteers to have help with the work on the land and to increase the promotion of sustainable agriculture in the community. Around 12% of the interviewees (30% of non-organic ones, and 13% of organic without volunteers) would like to see more rich tourists, *“tourist that spend a lot of money to us”* (interviewee 36), *“very rich tourists that can help increase our lifestyle. Buy more art crafts, consume better, more expensive products”* (interviewee 34).

More than half of the interviewees (51%) does not want a decrease of any kind of tourist. The rest of the farmers would want to see less mass tourism (7%) and less disrespectful (12%),

loud and party (30%) or backpackers (7%). Interviewee 21 explained that he would want less “*Backpackers, low budget travelers. Because they stay between them, don't do agro-tourism and other activities like richer tourists do*”. According to interviewee 2 “*mass tourism not good for Bali, but our government wants as much as possible. More money*”.

This brief analysis on the kind of tourists that farmers would love to see more in Bali, showed that more than half of the organic farmers without volunteers would love to host more volunteers. In the next chapter, I try to understand what role volunteers play in the communities and the impacts they have on the adoption of sustainable agricultural practices. Furthermore, I try to determine how they could affect the future tourism in Bali.

10. Volunteers on organic farms

In the previous section, I showed the potential offered by the touristic demand for organic products and the limits of both the demand and tourism itself. Many of the interviewees expressed that they would prefer to welcome more volunteers. To answer the third specific question, in this last part of the analysis, I explain how volunteer tourism on organic farms impacts the livelihoods of the communities and the role it plays in the adoption of organic agriculture. I begin by explaining the characteristics of the volunteers hosted. I continue by analyzing the tasks given to the volunteers on the farm and the responsibilities they have in the community. This helps me define the impact they have on the livelihoods of the farmers and on the agricultural techniques. Next, I present the role of the hosting farmers/organizations. Finally, I conclude by identifying the limits and possible paths for the future.

10.1 Characteristics of voluntourism on organic farms in Bali

As I presented in the literature review, most volunteers decide to go abroad because they are looking to make a difference in a developing country or they want to live a life changing experience in an unknown social and cultural context. Volunteers on organic farms are often moved by a desire of living a working experience in a different environment and be able to socialize and exchange with other people passionate about sustainability and healthy food. Similar motivations were given by the two volunteers interviewed. Indeed, interviewee 5, explained that he had already worked as a volunteer in Bali years before and now he had come back with a diploma in permaculture, motivated to share his knowledge with local farmers and perfectionate his own skills through the daily contacts with local and international farmers. The other volunteer, interviewee 15, was not a professional farmer but was looking for a meaningful experience, an opportunity to help local communities while learning more about herself.

The volunteers stay for very different amounts of time, which can go from a couple of days to a whole year. In general the hosts (interviewees 1, 3, 11, 14, 18) prefer longer stays, because it gives them the opportunity to work on medium and long-term projects and it increases the development potential for the farm, the community and the volunteer. Depending on the size

of the land and the need for labor, the owner normally welcomes between 1 and 4 volunteers at the same time.

The volunteers have different backgrounds and are not always qualified or experienced in the agriculture sector. According to the interviewees, the visitors have a variety of skills and competences in different fields and they all bring some advantage to the farm. Some exclusively work on the fields, others help with the construction of buildings and some focus on marketing and social media promotion. Furthermore, interviewee 1 explained that: *“to help on the farm it doesn't really matter how qualified or experienced they are, because often, even if they studied agriculture or work as farmers in the home country, what they know is not applicable here”*. Interviewee 3 indicated that IDEP foundation selects the most suitable volunteers by analyzing the profiles of different international and national candidates. Interviewee 14 looks for volunteers with different expertise but all qualified in their field. She welcomes permaculturists, web designers and social media professionals, yoga teachers, nutritionists. According to interviewee 7, volunteers are often not experienced in agriculture, *“so we have to explain more what to do and why. But they know more design, social media”*. Interviewee 8 added that around 50% of the volunteers are qualified, mostly the ones that teach in the community (for example permaculturists, construction workers, plumbers, English teachers, art teachers, etc.), the other 50% normally helps managing the hostel, farming or constructing new bamboo buildings.

Different hosts (3, 7, 9, 10, 12, 16) welcome both international and local volunteers and interns. The latter often study agriculture at Udayana University in Denpasar, and work on organic farms to improve their experience on the field. As indicated by interviewee 7, on one side, having skilled local labor can compensate the lack of agricultural background of some international volunteers. On the other side, the international visitors can share their motivation for change and their computer proficiency with the local students.

Other farmers (1, 11) combine westerners with volunteers and interns from nearby countries (such as Malaysia, Taiwan, South Korea or Thailand). Normally, Southeast Asian volunteers are agriculture students looking to practice with experienced farmers and permaculturists. According to interviewee 11, it is easy to work with Malaysians students, because they are informed on agricultural challenges and have a similar climate, which helps them transition faster to Balinese farming, compared to occidental visitors.

For more than three quarters of the interviewees, volunteers, no matter their provenance, bring and receive competences during their stay (Annex 5, Question 60). WWOOFing and voluntourism in general are seen by the respondents as an opportunity to share personal knowledge and experiences and together improve the sustainability of the Balinese agricultural sector. Interviewee 3 thinks that exchanging has to be the objective of volunteering on organic farms. Indeed, according to him, local ancestral knowledge combined with new sustainable techniques, such as permaculture, can increase the expertise of the farmers and the efficiency of the system. According volunteer interviewee 15, *“it goes both ways we can offer a lot and they offer a lot. We can learn from each other. It’s an exchange. It would be crazy to think that we can teach better practices when everything here is so different.”*.

From what I was able to observe in the farm hostel (interviewee 8), volunteers do a variety of different activities. They work in the garden for their own consumption, they promote agriculture around the island, they manage the hostel and clean it and they try to give back to the community. Indeed a part of the earnings of the hostel is reinvested in local project, that vary from agriculture promotion to construction of bamboo buildings. One of the last projects consisted in building an orphanage in a nearby community. Another remarkable aspect of the hostel are the rich cultural exchanges. Indeed, volunteers from around the world and local young farmers, professionals and artists gather for work and for recreational activities. The owner seems to be the connecting point between the two groups. On one side, it seems that the volunteers arrive in Bali wanting to make a difference, with good intentions, strong motivation but sometimes without the necessary expertise. On the other side, young locals tend to have lost the interest in farming and building, but often have the skills to do it. The combination of the two, seems to have created a balance between expertise and motivation, which has evolved in a variety of successful projects organized by the hostel (interviewee 8). Sometimes, despite the skills and the directions given by the locals, the lack of experience of the volunteers can result in problems or even injuries for the volunteers. Indeed, while interviewing interviewee 8, a French volunteer showed me his bandaged arm, which he cut deeply while constructing a bamboo building for a project.

10.2 Impacts of voluntourism on the livelihoods of rural communities

The interviewees identified different benefits related to the presence of volunteers in their communities. As shown in Figure 33, the promotion of organic practices was given as the principal positive impact, followed by knowledge and teaching, sustainable awareness, profit, labor, new jobs and cultural exchanges. These impacts can be separated in two groups, non-agricultural and agricultural ones. In this section, I focus on the first one in order to determine in which non-agricultural ways the voluntourists affect the communities where they are located. Next, in section 10.3, I focus on the different agricultural impacts.

Benefits Volunteers								
Agricultural Group	Organic with volunteers		Organic Without Volunteers		Non-Organic		Total	
	N	Percent of cases	N	Percent of cases	N	Percent of cases	N	Percent of total
Promotion of organic practices	8	44.4%	10	66.7%	2	20.0%	20	46.5%
Labor or help	7	38.9%	3	20.0%	1	10.0%	11	25.6%
Profit, economic, capital	7	38.9%	5	33.3%	1	10.0%	13	30.2%
New jobs	6	33.3%	0	0.0%	0	0.0%	6	14.0%
Knowledge or teaching	8	44.4%	4	26.7%	5	50.0%	17	39.5%
Sustainable awareness	7	38.9%	2	13.3%	4	40.0%	13	30.2%
Cultural exchange	3	16.7%	1	6.7%	0	0.0%	4	9.3%
Other	2	11.1%	1	6.7%	0	0.0%	3	7.0%
Do not know	0	0.0%	3	20.0%	2	20.0%	5	11.6%

Figure 33: Question 65: Benefits of volunteer tourism on organic farms

According to the interviewees, volunteers on organic farms engage in different activities within the community. The most recurrent ones are teaching and sharing knowledge. Indeed, the visitors often organize English or art classes for the kids of the neighborhood. Interviewees (2, 6, 19, 36, 37, 38) noted that in rural communities, volunteers are fundamental to teach English to the new generations of farmers. As I presented in chapter 9, tourism is currently vital for the development of organic practices and, to be able to interact with restaurant and hotel owners and with international consumers at the markets, it is necessary to speak English.

According to interviewee 2, unlike tourists, volunteers become part of the society while visiting. For interviewee 8 their presence is fundamental to show to the residents of the communities “*that people are willing to do things out of goodness and to exchange. [...] Volunteers exchange their time for other value than money*”. Indeed, they use their time teach

and share information on concerning issues, mostly sustainability (2, 4, 13, 29, 40, 42). Given the magnitude of the waste crisis that has been afflicting Bali for years, multiple hosts and organizations have used volunteers to make farmers and their communities aware on the deleterious impacts of waste on the environment and on agriculture. Indeed, interviewee 13 noted that volunteers *“teach famers and their families, give knowledge on waste, sometimes they watch movies with them, to explain the dangers of waste, and plastic, etc. Help the farmers being healthy and environmentally aware”*. Interviewee 40 indicated that volunteers *“help with the garbage problem. Try to clean up the village and make a plastic garbage management. And just down the road now we have a garbage separation center”*. Finally, interviewee 4 added that *“they help promoting respect for the environment, by not using plastic and not wasting things”*.

Another central benefit related to having voluntourists in the community is the opportunity of diversifying the livelihoods strategies. In fact, the presence of the visitors in rural areas gives farmers and other members of the *subak* the chance to differentiate their source of income. The volunteers have the same needs as regular tourists, for example. going out for food or drinks, grocery shopping, buying souvenirs and art. Therefore, the presence of volunteers has created different new jobs in areas that would otherwise not have needed them. According to interviewee 5 and 6, little stores, bars and restaurants developed around the host facilities. Interviewee 5 noted that: *“the small bar just outside here would not have existed without the volunteers, everyone goes there during the week”*.

Other ways of diversifying income consist in working as housekeeper or cooks for host organization or as drivers and guides or again as teachers of traditional Balinese cuisine, dance, art, etc. Interviewee 2 explained that *“volunteers are not in Bali only to work on farm, teach English and sustainability, they want to learn too. They pay for classes, like for cooking, art, or yoga and other activities. So this create interest in other local people to work and attract more tourists to come here”* (interviewee 2). Interviewee 12, indicated that volunteers pay to do a variety of activities during their time-off, which include going to the beach, which is two hours away, or for hiking and biking around the area.

Furthermore, as noted by interviewee 1 and 23, when the hosting farmers do not have any space to accommodate volunteers, the organizations or the visitors themselves have to pay host families, normally other farmers from the *subak*, to welcome them for the length of the

visit: *“homestay gives another small source of income for the farmer and helps for the exchange with the volunteer”* (interviewee 1).

Finally, according to interviewee 1, 5, 6, 8, 14, 18 the profits of voluntourism, either direct payments for the stay, or indirect through their work, are partially redistributed in the community, through projects and activities aiming to improve the livelihoods of the local families. According to interviewee 1, the economic capital provided by the volunteers when they come through European agencies is very useful. He explained that the problem is that only half of the monthly payment paid by the volunteers is received by the hosts *“they pay agent in Europe 600 Euros per month, and only half here. But very useful for the development of the village and to pay the hosting families”*.

10.3 Impacts of voluntourism on the adoption of organic practices

As I presented above, the opportunities related to volunteers on organic farms have many secondary impacts on the communities, notably bringing linguistic teachings, spreading knowledge on sustainability and creating new jobs and diversified sources of income. In certain cases, WWOOFs and organizations are located in areas without direct contact to development opportunities related to tourism. Nevertheless, the limited number of volunteers creates a small demand for services and activities, which presents a unique opportunity of development for the farmers.

In this section, I focus on how voluntourism impacts the agricultural practices of the host and the local communities. According to the interviewees the visitors play at least three fundamental roles. They provide cheap labor force to the farmer, they promote organic techniques in the *subak* and around the island and they help the hosts with marketing and computer related aspects.

10.3.1 Labor force and technical help

As I presented in the literature review, in western countries, volunteers on organic farms represent a fundamental source of low cost labor, without them multiple organic farms would not have been able to develop (Mostafanezhad et al., 2015). In Bali, the volunteers provide a partial solution to the lack of interest in a declining agriculture sector. Indeed, volunteers can

fill the workforce void created by the competition with the tourism sector. As I presented in section 8.1.2 young people are not interested in farming and leave the rural areas to work in the cities. Furthermore, as shown in section 8.3.3, one of the reasons non-organic farmers keep using chemicals is the amount of effort and time necessary to go organic. Voluntourism on organic farms, therefore, can help the transition of farmers to new practices, by reducing the amount of effort necessary to change. According to interviewee 30, having volunteers is a major advantage for the organic farming sector, because they provide *“more hands, they can help physically. Very useful to talk to other villagers and show the importance of producing organic. We want more volunteers”*. Interviewee 1 added that volunteers *“help and support the farmers. For example by planting, weeding, composting, etc. Weeding takes hours and hours, so volunteers are very useful to decrease the work of the farmer”*. Interviewee 4 added that they are *“useful to help on the farms when [the farmer] is tired or busy”*.

Besides presenting an important source of labor, volunteers bring different skills and competencies that can improve the productivity of the farm and increase the diversification of the cultivation. According to interviewee 5 and 6 the guests bring knowledge on how to produce certain vegetables and herbs or how to cope with the impacts of extreme weather. According to interviewee 14, Australian volunteers are often very informed on permaculture and they all bring small adjustments to the farm. Interviewee 12, explained that volunteers from different countries and different contexts have unique skills and knowledge that can often be applied on the field. Indeed, he noted that *“we had Koreans that came here and teach us how to produce asparagus. Westerners how to sell here in restaurants. Australians helped to put small open greenhouse to produce paprika and special vegetables. Now we have built eco-stay. In April multiple guest will come here to sleep here”*. Interviewee 24 noted that they *“have good experience in the neighborhood with international guys coming and helping. They teach us interesting things. And how to produce different food”*.

According to interviewee 11, volunteers play a central role in broaden the farmers' horizons, by giving *“different perspectives. They give the point of view of societies that are more developed and have less green area but still interested in using organic and permaculture”*. Moreover, interviewee 11 explained that volunteers present an opportunity to help with some technical difficulties the farmers may have. They can do activities that the farmers do not want to do or they cannot do. For example, according to him: *“most of the farmers don't know how to write, so it's good to have someone that can write. They can help with*

documentation of products and yields”. Furthermore, he added that the volunteers “*stay for a long time, like 6 months. Normally 1 to 3 at the time. At first, I ask them to do the dirty works, like helping with weeding, harvesting. And at the same time I ask them to identify problems on the farms, because they come from university where everything is theory. Then, after some practice they can identify issues, for example with composting and mulching, etc. Now they can give feedbacks or proposal on things.*”

Despite the importance of voluntourists on organic farms as labor force and in providing technical help, their main role is the promotion of the benefits related to adopting sustainable practices.

10.3.2 Promotion of organic agriculture

As shown in Figure 33, the main way voluntourism on organic farms impacts the livelihoods of the rural populations is through the promotion of organic agriculture. Indeed, according to 95% of the interviewees, the volunteers play a central role in the promotion of the practice (Annex 5, Question 57).

Volunteers, with the help of the host, organize classes inviting the farmers of the *subak* and “*they inform and show how transition towards organic practice works*” (interviewee 27). Indeed, interviewees 8 and 9 explained that they do workshops and weekly meetings to promote agriculture sustainability and increase the dialogue. Interviewee 8 added that it is fundamental to “*create a platform to learn from and with each other*”. Furthermore, according to multiple interviewees, the volunteers and the hosts visit the farmers and distribute organic seeds (interviewee 3) and “*they help by talking and showing the positive of organic practices to the neighbors*” (interviewee 4), “*they talk to them, to explain what is the process to be organic*” (interviewee 2). Interviewee 31 thinks that it is “*positive that volunteers show organic agriculture and promote to other farmer because it increase the interest of the other farmers*”. Interviewee 22 added that it also “*increases the interest of young people*”.

In general, the volunteers try to educate the farmers on the negative impacts that using large amounts of chemicals have on soil, environment and health. At the same time, they promote the importance of using organic fertilizers to ameliorate the fertility of their land and strengthen the plants. According to interviewees 6, 11, 13, 16, 24, 32 and 37, volunteers teach

how to make compost by using organic waste and how to use it, alongside farmyard manure, normally from cattle and poultry, as organic fertilizer. To demonstrate the benefits of having a fertile soil, rich in micronutrients and microorganisms, the volunteers show how much stronger the stem of organic rice (heritage red or brown rice) is compared hybrid ones. Furthermore, the volunteers with their hosts, explain to the farmers how using organic fertilizer decreases the compactness of the soil and allows the plants to have deeper roots able to absorb water and nutrients more in depth. This decreases the amount of irrigation water necessary. Indeed, according to interviewee 1, heritage rice needs around 85% less water than conventional one.

Sometimes, international volunteers have taken permaculture classes in their home countries and are motivated to share the knowledge acquired. Mostly they promote the advantages related to cultivating the most suitable products for their area, in order to diversify their yields. Furthermore, they teach the importance of having strong interactions with the other farmers of the community, to find group solutions to problems and increase their resiliency (interviewees 1, 2, 3, 5, 8).

Interviewee 1 explained that he does a variety of activities with the volunteers and that, thanks to their work, other farmers from the *subak* are slowly adopting sustainable agriculture.

“The volunteers come with me to help the other farmers in the subak, and the farmers in the community. We help diversifying. We show that we have so many different animals and products. Much more income. That diversification is the key. We got land that the community wasn't using, got rid of the rats and changed everything. In 2013 we started with 4 farmers, and then started showing the other farmers that it is working. Now, in 2018, we have 22 farmers. Then, with volunteers we show farmers that volunteers, interns, tourist help and create demand for chemical free products”.

According to interviewee 1, some of the farmers do not want to be pressured to change by other farmers. For this reason, he thinks that, sometimes, the easiest and most effective way to promote organic agriculture, is by just showing the results to whoever is interested and not by forcing the idea. He calls this approach “*Seeing is believing*”.

“Now, with some of the people in the village, we don’t need to tell them. They just need to see. If I tell them to change, they don’t want, if they see, they want to sell to the restaurant too. I don’t want to tell them to do it, because if they don’t have a market, like if restaurant don’t want to buy anymore, then they blame me” (interviewee 1).

Interviewee 8, uses a similar approach on his farm:

“Balinese farmers are a proud people, they come from the past kingdoms and do not want anyone to tell them what to do. For this reason, in Canggu, I don’t try to convince people to do what I do. I just let my work speak for itself. This way, the neighbors are more prone to observe and apply. They understand that even in Canggu they can do this in the limited space available in their gardens. They see the amount of food grown, they forgot that you could grow here. The locals here even started growing pumpkins. We are having a bigger impact than what I expected”.

Another fundamental role played by volunteers is raising the awareness of the consumers on the benefits of eating organic products (Figure 34). Indeed, as I presented in chapter 9, one of the limits to the development of organic agriculture is the lack of Balinese consumers. The volunteers try to educate the local population on the negative impacts of chemicals on the health and the environment. Indeed, with the help of their hosts, volunteers set up little stands in the streets and talk to the people, mostly to explain the better nutritional values of brown and red rice compared to hybrid one. Promoting organic rice is central because rice remains the main source of calories for the local population.



Figure 34: Sawah Bali volunteers promoting and selling organic products

10.3.3 The imitation factor

According to multiple interviewees (1, 5, 7, 19, 21, 22, 23), the presence of volunteers in the fields of organic farmers presents by itself an opportunity to attract more farmers towards sustainable agriculture. Indeed, when other smallholders from the *subak* see westerners working on their neighbor's field, they are curious to know why they are there and what they are doing: *"The other farmers see westerners on the farm and ask me why. And they are always jealous"* (interviewee 22). *"They see that volunteers are around here and they want it too"* (interviewee 5).

Some of the organic farmers think that having volunteers on the fields changes the perception of agriculture for the surrounding farmers and mostly for their kids. According to interviewee 7, the *"interest from volunteers makes more interest for local young people. I think is good for the future"*. Indeed, observing westerners enjoying agriculture and showing that farming *"is cool and ok and fun, increase the interest of other farmers in organic agriculture. And they want to build place for volunteers too"* observed interviewee 21, before adding *"this is fundamental, because if we don't find way to keep young from leaving farms, it is going to be difficult to stop land change from rice to hotel. If no one works on farms, no more farms"*.

Moreover, interviewee 5 explained that often non-organic farmers from the *subak* are almost shocked when they see that both Balinese and international farmers that work in the permaculture and retreat center seem satisfied and happy about their job. Furthermore, the interviewee noted that *"the locals working here [in the center] appreciate the value of their work and their interactions with the volunteers and, when they go back to the community, they indirectly advertise sustainable farming with their positive attitude"*.

Moreover, interviewee 19 observed that because of *"the presence of volunteers more people talk about the benefits of organic"*, which increases the possibility of more farmers adopting sustainable practices. Interviewee 23 added that volunteers *"give prestigious image of farming. They [the other farmers of the community] think 'wow a tourist farming, that's cool'. They are curious and do a lot of research and then maybe ask how to improve too"*.

Non-organic farmers and their offspring tend to want to imitate organic farmers with volunteers. This may happen because, on the one side, the possibility of increasing the appeal of their farm to visitors may seem like a profitable idea. Indeed, according to interviewee 7: *"volunteers only go to organic farms, where there are no pesticides and no chemicals and*

this pushes farmers that want to host volunteers for the economic benefits, to reconsider their strategies and their techniques". On the other side, as indicated by multiple interviewees, the fact that westerners find a certain activity interesting, increases the curiosity of the neighbors, mostly of the youngsters. The tendency of young people to follow the example of young westerners is, therefore, used by the hosts to increase the possibilities of development of the organic sector. *"It gives a different prospective, mostly to young kids. If the foreigner, from the society we look up to, can do a thing that we think that is already old school [farming], why wouldn't we do it"* (interviewee 11).

10.3.4 Marketing and visibility

One of the main ways volunteers help their hosts is by improving the farmer's marketing strategies and his online connections. Indeed, according to multiple interviewees (1, 2, 3, 5, 6, 17, 18, 19), the visitors are often proficient in social media and designing. According to interviewee 3, some international volunteers are not very skilled in the fields and are, therefore, employed more in the office. They help improve the multimedia and connectivity aspects of the organization or they participate in fundraising and marketing activities. In general the volunteers work on marketing in three main ways.

First, volunteers are employed to contact different potential clients, such as restaurant, bars, cafes and private citizens. Mostly they try to increase the network and the connections to other actors of the organic agriculture sector to find the best economic opportunities.

Second, the volunteers help the farmers to set up or improve their Facebook, WWOOF, HelpX or Workaway profiles, in order to increase the visibility of the farm online and attract new volunteers. According to interviewee 2, the marketing and promotion put in place by his volunteers on social media, has significantly grown the number of contacts and volunteering requests received.

Finally, improving the image and the visibility of the farm is fundamental for those hosts aiming to expand to agro-tourism or ecotourism. Today, being noticeable and standing out among the different touristic options is fundamental in the highly competitive Balinese context. The hosts have to be able to show the quality of their offer, mostly by creating appealing websites. Interviewee 6, mentioned that volunteers are often essential to increase

the visibility of eco-stays and agro-tourism. Indeed, in his case, the volunteers took pictures and improved the design of the website and managed the social media pages.

10.4 The key individual

As I presented in the last part of section 8.1.2, different interviewees have identified “fear of adopting new practices” and “lack of motivation to learn” as limits to the development of sustainable agriculture. Despite these limits, it seems that the presence of organic farmers and WWOOFs in a *subak* helps the transition of other farmers to the sustainable practice. Indeed by analyzing the chi-squared analysis between “agricultural group” and “proportion of organic farmers in the *subak* (%)” (Annex 6, Chi-squared test 3), it results that there is an association between the two indicators. Indeed, the analysis shows that the proportion of organic farmers in the *subak* is higher if there is an organic farm with volunteers in the *subak*. On the contrary, in *subaks* without any organic farmer or WWOOF the proportion of sustainable farmers is lower. This means that despite the lack of participation of the *subak* group and leaders, certain key actors inside the community can help increasing the proportion of organic farmers.

These key actors are often the ones that welcome volunteers and put in place awareness activities, group meetings and motivate farmers to adopt organic techniques. From what I was able to observe on the field and from the comments of the interviewees, it is clear that voluntourists on organic farms play an important role in the promotion of sustainable practices in the community. However, the effectiveness of the activities undertaken by the volunteers is strongly related to the motivation, the knowledge and the skills of the host, and his/her ability to employ the visitors in the most adequate ways. The most efficient hosts understand the local context and the needs of the *subaks*' farmers and provide the guidelines necessary to have a successful promotion of the practice. Furthermore, this key figure represents the nexus between the different farmers and, with the help of the volunteers, he provides the support necessary to educate and support the farmers of the community.

In their research on the role of the *subak* on the establishment of sustainable agriculture, MacRae & Arthawiguna (2011) discovered that, although the decision and the process of switching to organic farming was carried out democratically by the whole group, the role of a key actor that initiates, organizes, motivates and develops the project is necessary. In their

case, the key actors were an entrepreneur farmer from the village and an outsider with great agricultural expertise. In my experience, the key actors of the multiple *subaks* analyzed had very different backgrounds and included permaculture experts, local farmers, NGOs, local governments, international agriculture specialists and entrepreneurs. Despite their dissimilarities, they all shared a very strong farming knowledge combined to a deep understanding of the local agricultural, social and cultural context.

Some of these key individuals (interviewees 1, 2, 8, 13), learned about sustainable agriculture by themselves, because of personal motivation and desire of seeing their family's land go back to being healthy like before the implementation of Green Revolution techniques. Interviewee 1 explained that he came back to his hometown after being away studying for a few years and found a completely different agriculture system, with no natural ecosystem, no trees, no fish, no insects, just chemical fertilizers and pesticides that were supposed to make the job much easier for the farmers. *"I didn't think that is right, but for a long time I was on my own and tried to find similar people with similar idea [...] to farm like we use to do, and create the old ecosystem and nature"*.

Farming in Bali has always been a community activity, where farmers help each other during the different steps of the agricultural cycle. Therefore, having to go against the decisions and the practice of the rest of the *subak*, without any support presents an important constraint. Often the key individual starts by himself and, by explaining and trying to increase the understanding of other members of the community, starts to build a network inside the *subak*. Interviewees 21 and 23, indicated that without the teachings of interviewee 1, and the physical and technical support of his volunteers, they would have not been able to adopt organic farming. They affirmed that interviewee 1 has helped them develop better understanding over the importance of diversity and that he keeps supporting them today, through multiple group meetings, workshops and field activities. Interviewee 21 explained that now himself and the other organic farmers participate in helping interviewee 1 promote sustainable agriculture in the *subak* but that *"it takes a long time to change the habits of the rest of the community"*. Interviewee 23, from a different *subak*, explained that interviewee 1 *"helped understanding the motivations to do organic agriculture and permaculture and now we do the same with other people in our community"*. He affirmed that farmers from different areas of the island that worked together, often gather for workshops and discussions on organic development in Bali.

Another key actor, interviewee 8, stated that they started from nothing and tried to make a little difference in Canggu, where land grabbing and conversion to touristic facilities has depleted the agricultural sector over the past thirty years.

“We rented a little piece of land from the neighbors. At the beginning they didn’t want but then they did rent, and we made a little space out of it. I used to go to the mountains quite a lot, see the farms and thought ‘this is totally what I want to do’. Norman, an Aussie that introduced me to permaculture, and that had been here 30 years, he explained me everything and locked me in on all of that. I was always interested in sustainability without even knowing what it was too much. I just want to see a change in Bali. [...] Normally when a farmer in the subak finds motivation to change, he helps the others”.

Interviewee 25, decided to go organic by himself, for the sake of his kids and to bring back what he used to love to see growing up.

“I loved animals and to go to rice fields, I loved firefly. I decided to do something. I found information on google to bring them back. I read books on organic farming. I went to Denpasar and learned about sustainability. When fireflies and dragonflies come back it means that ecosystem and environment are less polluted. And now they are slowly coming back more and more”.

He has spent the last decade promoting organic agriculture in his *subak*, and trying to convince the village chiefs to go organic. Furthermore, he has been using a part of the income of his successful agro-tourism to finance the change. After a long convincing period, his *subak* has decided to go entirely organic in the next couple of years. All non-organic farmers have already stopped cultivating (including interviewee 40) and are now in transition to sustainable farming. *“Finally subak decision to go all 100% organic. Probably in 9 months, to be pure organic”* said interviewee 25. Interviewee 40 added that the *subak* made the decision with the consent of all the farmers.

“now we are growing grass to revive the soil and to bring back nutrients, and using the grass for compost and to feed the cows. Subak decided to go organic because farmer not a lot of potential for life, using pesticides is killing people. They want to go back to healthy life. And we are happy to do that. But now is hard, because we need time, the beginning is hard but then is an investment for the next generations”.

Sometimes the key actor is an organization or foundation, such as IDEP, Sawah Bali, Bali Organic Association and Rikolto, that also plays a central role in the implementation of sustainable techniques. These NGOs welcome volunteers to help them with the promotion and the awareness campaigns and organize workshops and group activities to determine agricultural problems and the best ways to solve them. These organizations are mainly local (all except Rikolto) and are strongly connected to the communities and with farmers all around the island. I interviewed farmers hours away from the organizations that had been helped transition to sustainable practices by these actors.



Figure 35: IDEP farm

IDEP has developed a long-term program to train 35 partner farmers across the whole island. The foundation teaches permaculture to support the livelihoods of the communities and promote sustainability. The farmers periodically meet in Ubud and learn by doing on IDEP's demonstration field (Figure 35). To ascertain the improvement of the partners, the instructors do follow ups visits in the students' villages.

The Bali Organic Association, led by Prof. Dr. Kartini (interviewee 33), grows large amounts of organic worms and compost in a factory in Denpasar, which are then distributed to hundreds of farmers around the island. Since the 1990s, the professor has been teaching how to grow these worms around the island. In her opinion, the main challenge to organic farming is the very poor quality of soils and worms are the easiest and most efficient way to revive them. She spreads her knowledge on worms to decrease the dependence from chemical fertilizers and give better chances of transitioning to organic agriculture. Furthermore, in order to spread her knowledge to the new generations of farmers, Dr. Kartini has been a key player in the creation of the sustainable agriculture program inside the agriculture faculty of the Udayana University, which increases the access to young people wanting to study organic agriculture.

Sawah Bali works in different *subaks* in Gianyar Regency adopting their "seeing is believing" strategy, which consists in showing the benefits of sustainable farming and giving the farmers the choice to adopt or not the new practice. The organization helps willing

farmers to produce sustainable products and assists them with capacity building sessions for marketing, logistics and quality control and by leading collaborative problem solving encounters within the community. Furthermore, Chakra organizes multiple public workshops to share his knowledge on permaculture and organic techniques with as many farmers as possible. Finally, Rikolto in the last 30 years has developed multiple projects around the Indonesian archipelago to improve the livelihoods of smallholder farmers. In Bali, the NGO is educating producers on how to do compost by themselves *“they start collecting organic waste, they put plastic cover ferment and after seven days they put in around the tree, coffee and cacao”* (interviewee 13). Furthermore, the NGO helps farmers obtain certification for coffee and cacao, in order to be able to export these value-added products and increase their income.

In the case of Petang village, the key actor has been the government, which has promoted and subsidized the adoption of organic practices. *“They give us compost and they have programs and workshops to explain better techniques. Then we have group to help each other to improve in the community”* (interviewee 20). According to other interviewees, normally the government only gives organic fertilizers without giving the necessary information or teachings on how to effectively changing practices. In the case of Petang, the government has established an effective communal learning process, that according to interviewee 20 has made the village entirely organic.

To conclude, despite the association between proportion of organic farmers in a *subak* and organic farms with volunteers, the role of the *subak* leaders in supporting and promoting the adoption of sustainable practices is often insignificant. Nevertheless, the *subak* presents a unique platform for motivated and knowledgeable key individuals to encourage other farmers to change agricultural techniques. Indeed, the connections between the farmers in the traditional community-based *subak* institution present a unique tool to increase the social capital of the farmers and, subsequently, to build human capital through education and promotion. Indeed, according to the DfID (2001) *“there is a close relationship between the way that knowledge is generated and transmitted and social capital. High levels of social capital can therefore substantially add to human capital”* (p.20). Furthermore, the DfID observes that *“Knowledge generation should be based upon a broad understanding of the current livelihood strategies of the poor and the internal and external factors that may cause these to change”* (p. 20), therefore, the role of the key individual and his/her knowledge of

the local context are central to adequately increase the access of farmers to human and social capital.

In Bali, farmers have partially lost their enthusiasm for the profession and have passively followed the interest of their leaders, without questioning the structural, environmental and health problems related to Green Revolution techniques. However, when presented the chance and given the right motivations and reasons, a part of the farmers decides to adopt new practices seen as sustainable.

10.5 Limits

Despite most of the interviewees see voluntourism on organic farms as beneficial for both the livelihoods of the communities and for the establishment of sustainable agriculture, certain farmers have indicated different limiting factors to the success of the activity (Figure 36). According to the interviewees, the first constraint is the low number of volunteers on organic farms. Indeed, certain organic without volunteers and non-organic farmers have observed that they rarely have or never had contact with volunteers. The majority of these interviewees, have mentioned that they would love to welcome volunteers to help them on the fields *“we need more hands, young that can help. And to compost. Then maybe we have more possibility to change, now is too hard. Can you send your friends to help?”* (interviewee 37).

Limits of voluntourism on organic farms								
Agricultural Group	Organic with volunteers		Organic Without Volunteers		Non-Organic		Total	
	N	Percent of cases	N	Percent of cases	N	Percent of cases	N	Percent of total
Payments needed to make it worth	1	5.6%	1	6.70%	0	0%	2	4.7%
Not enough volunteers	3	16.7%	7	46.70%	7	70.00%	17	39.5%
Language difference	2	11.1%	1	6.70%	0	0%	3	7.0%
Cultural difference	5	27.8%	1	6.70%	0	0%	6	14.0%
Time limit	3	16.7%	1	6.70%	1	10.00%	5	11.6%
Difficulty to assess the impacts	1	5.6%	0	0%	0	0%	1	2.3%
Take jobs from locals	1	5.6%	0	0%	0	0%	1	2.3%
No experience or knowledge	1	5.6%	0	0%	0	0%	1	2.3%
No limits	5	27.8%	0	0%	0	0%	5	11.6%
Lack of motivation to do the work	1	5.6%	1	6.70%	0	0%	2	4.7%
Visa problems or limits	0	0%	1	6.70%	1	10.00%	2	4.7%
Do not know	0	0%	4	26.70%	1	10.00%	5	11.6%

Figure 36: Question 66: Limits of volunteer tourism on organic farms

Volunteers seem to be more effective in areas where tourism is more developed. In fact, where there is lack of tourism related activities volunteers can steal jobs from the local population (interviewee 6).

“I prefer giving work to the locals, cheaper and better for them. So no more WWOOFing. If you have volunteers the locals have no income. Here we are far and the only economic opportunity is farming. Farming and the eco-stay. [...] At the beginning I had a lot of WWOOFers, we set up the permaculture farm, etc. But then I stopped” (Interviewee 6).

On the contrary, around touristic areas, to work in the tourism sector local people tend to abandon farming (mostly the young) increasing the need for labor force. According to interviewee 18, another limit of having volunteers in remote areas is the fact that the guests like being located close to touristic activities. Indeed, interviewee 18 explained that she decided to stop receiving volunteers because most of them wanted to finish their job quickly and go surfing or swimming in Canggu or Kuta (2 hours away) or go to yoga classes, bars and restaurants in Ubud (1 hour away).

“I don't have volunteers anymore. Before we had a lot of them and we learned from them a lot. They helped with the garden and they were teaching farming to the neighbors. But I had to stop a couple of years ago, because I started to have more and more bad experience with people that just wanted to surf or go out. And I had a few people that tried to change the farmers of the community and not educate and be educated. Well, they just refused to do what they needed to” (interviewee 18).

The desire of volunteers of being closer to touristic places, with easier access to multiple activities, high speed internet, bars and restaurants has contributed to the high concentration of WWOOF hosts around these touristic areas, notably around Ubud. Nevertheless, the presence of touristic activities is not the only reason for the presence of farm volunteers in this area. Indeed, the surroundings of Ubud, and in general the south of the island, present the ideal climate for agriculture and have been the center of the sector for thousands of years. Furthermore, the majority of farmers cultivates rice with heavy use of chemicals and there is, therefore, a high potential for development. Moreover, farmers located in areas far from the tourists often cannot speak English, which decreases the possibility of volunteers having a positive impacts on the adoption of organic practices. Indeed, interviewee 18 indicated that *“There are not a lot of volunteers in this area because farmers would need translator 8 hours*

a day with them. So it is harder. Sometimes it took us more energy with the volunteers. Except the ones that had very good knowledge on how to farm”.

Another limit, according to interviewee 1, is that having volunteers is economically convenient for the hosts only if the visitors pay for their experience. Indeed, he explained that life in Bali is expensive and giving free meals and free accommodation to a volunteer comports costs for the farmer and that sometimes these costs can surpass the benefits.

“Normally we ask for a payment from the volunteers. Because without any payment it is not a win-win for the farmers. I can hire someone from Bali for a whole day for 50'000²¹, but backpackers want a free place to stay and that's more expensive. And they don't have expertise. So I ask for little payment for the host family”.

An additional limit to voluntourism on organic farms is the lack of expertise of certain volunteers. Sometimes the good intentions of the visitors do not translate to the field. Indeed, in certain cases, the farmers have to spend long amounts of time trying to explain how to work or what to do, which, as indicated by interviewee 1 in the above statement, would not be necessary by employing Balinese farmers. In other cases, the experience of the volunteers can present a limit as well. Indeed, in certain occasions the visitors try to apply their foreign knowledge directly on the field without considering the completely different Balinese agricultural context. Interviewee 18 explained that she has had bad experiences in this sense.

“One guy from Montana worked for months on trying to put tomatoes but he had no luck, too high here. Another guy tried to produce milk. He asked why don't they use cows for the milk but only for meat. So, we tried with this guy from Paris. But not a lot of milk at all. Apparently it depends on the food and the water. And here the cows don't drink water, they just feed them banana trunk, because it's full with water.”

Finally, the last limit is the government. Indeed, Indonesia has very strict visitor policies. Tourists can visit the country without a visa for a maximum of 30 days, a third of the time granted in most countries. The government policy can be characterized as anti-backpackers and tries to limit the affluence of low budget travelers and promote high-end tourism (mostly

²¹ 50'000 Rupiahs = 3.40 USD

Asian) and short-stay mass tourism (mainly Australian) (Cole, 2007). Therefore, long stay volunteers are not allowed in the country. Furthermore, interviewee 27 affirmed that he would love to have volunteers, but he does not “*want problem with the government because sometimes is illegal*”. Indeed, according to him volunteers would have to ask for an internship visa to be allowed to work on the fields.

10.6 Discussion and opportunities for the future

As I presented in the previous sections, key actors and their volunteers have the potential of increasing the likelihood of farmers adopting sustainable practices in the *subaks*. In fact, the interactions and the discussions between farmers and volunteers and the whole education and motivation process strongly increase the knowledge of the farmers on questions of sustainability and give the necessary knowledge to adopt new organic practices. Thus, it increases the overall human capital of the farmers and their community. As I presented in chapter 8.1.2, building human capital is central to increase the motivation and the skills necessary to improve the livelihood strategies of the farmers. In this sense, the volunteers play a central role by providing knowledge and teachings and low cost labor force. Furthermore, according to the interviewees, the key actor and the volunteers are fundamental to increase the social capital of the farmers of the *subak*, mostly by creating a solidary network and by providing a space to discuss and improve together. According to the DfID (2001), “*Social networks facilitate innovation, the development of knowledge and sharing of that knowledge. There is, therefore, a close relationship between social and human capital*” (p. 21). Thus, this connection between farmers and between farmers and volunteers strongly increases the possibility of successfully learning and adopting sustainable techniques.

Moreover, from the analysis it results that, not only adopting organic practices can be a solution to the decreasing agricultural incomes and the deleterious impacts to environment and health, but it can also present a long-term solution to the increasing marginalization of farmers and the declining number of young people deciding to work in the agriculture sector. In fact, 95% of the interviewees believe that the presence of young foreigners on the fields and the potential development of new agro-tourism activities, can motivate part of the new generations of Balinese to work as farmers. Indeed, according to the interviewees, an increase in the interest of young people in farming related activities is already happening and it will continue to grow in the future. Interviewee 20 explained that “*Young want to work in the*

tourism industry and leave farms. But making farms more part of the tourism industry, would help keeping them from leaving". Interviewee 3 added *"Young people are more interested in farming when they see how the sector is developing. It happens already. There is hope for the future. I think we are probably going to see more sustainable tourism"*. Interviewee 5 said that *"young people often visit the permaculture gardens and are curious about the technique, because they see how many people visit the retreat center"*. Furthermore, interviewee 7 explained that multiple Balinese agricultural students, like himself, decide to do internships with either NGOs or on the farms of organic restaurants in order to learn more about how to diversify and increase their organic agriculture profit. He added that they are willing to go back and forth from Denpasar to Ubud to do so: *"We work here with foreigners and study in Denpasar. [...] I think restaurant and farm tourism is good for Bali. To have more young farmers. We like exchange and we want to open organic restaurant after study"*. Interviewee 12 added, *"Increasing agro-tourism like I am doing can push young to stay. That's why we see interns from university stay here and learn and work, they know tourist like Bali farms"*.

According to interviewee 8, creating interest in the young is central to the survival of the profession, but it is important that their motivation is at least partially due to the understanding of the benefits of sustainability and not only to profit. He added *"it is the role of the person promoting organic agriculture to teach the reasons to cultivate like this. We must explain that we want to increase the independency of farmers and improve their social position, and provide healthy food for everyone. Not only being rich"*.

The combination of the increased human capital (better knowledge and skills and more labor), social capital (stronger network and social relations between organic farmers in the *subak*) and natural capital (improved use of the natural resources and environmental services) provides access to new livelihoods strategies, including entrepreneurship related to sustainable tourism. Diversifying the livelihoods strategies, by developing tourism related farming activities can be an ulterior source of empowerment for the farmers and can increase their resiliency in the face of climate related yield losses.

Interviewee 32 has a clear idea of what her community should do:

"We want to increase agritourism. Would be a new business. The labor is there, the culture is there, just need help for the harvesting, etc. There are already so many tourists that come here to look the fields. We could sell as a package to tourists, tell the story of ancestor agriculture to the tourist. Come to help and pay a little. Then leave the young

generation to manage and sell. Sell little packages of products or traditional art. Just for a few dollars a person, but get income. With help from expert and volunteers organize that the young still not married have a group and they discuss all of this”.

As I presented in chapter 9.2 the majority of the interviewees is concerned about the environmental and social impacts of tourism and about the competition between agriculture and tourism over natural resources and labor. For this reason, 81% of them thinks that the increase of voluntourism on organic farms, agro-tourism and ecotourism could participate in making the tourism sector more sustainable and could decrease the competition between the two sectors.

According to many interviewees, despite the positive impacts and promotion of hosts or organizations and their volunteers, the support of the government is necessary to significantly change the tourism sector. According to interviewee 8, the only way to get the government involved in changing tourism is if the population revolts, *“if Balinese don’t get angry and ask to stop this tourism, it’s impossible. But the population thinks they need intense tourism to keep their jobs. Because that’s what the government says. Their objective is 10 million tourists per year, not better tourism. But once the Balinese understand that it is not sustainable for the future they will revolt”*. Interviewee 6 observed that the government must *“change policies to change the tourist sector and the local mentality”*.

According to most interviewees, despite a big part of the mass tourists only visits Bali to relax for a week in modern resorts, enjoying the nightlife and the beach, the majority of the visitors come to experience the Balinese culture, the traditions and the beauty of the landscapes. According to interviewee 3, 12, 31 and many more, if these tourists were attracted towards more sustainable ways of exploring an experiencing Bali, they would. Therefore, the role of the government is not only of helping the locals to develop new sustainable touristic structures, but also to promote and attract mindful tourists.

10.7 Conclusion

This chapter presented how volunteers help their hosts by improving the marketing strategies and the online presence of the WWOOF. Moreover, the analysis identified how volunteers on organic farms and their hosts impact the access of farmers to the different capitals and, therefore, how they help the community to improve and diversify their livelihoods strategies. Indeed, the analysis showed how the hosts and their volunteers build human capital by promoting sustainable practices and educating on environmental and health problems related to conventional agriculture. Furthermore, it showed how the key individual and the volunteers increase the social capital of the farmers by improving the access to the community-based traditional structure of the *subak*, which presents a unique tool for the promotion and the spreading of organic agriculture.

V. Conclusion

11. Conclusion

11.1 Synthesis of the results

This research has shown the challenges and the opportunities of adopting organic practices in Bali. It explored and analyzed the impacts of tourism and voluntourism on organic farms on the adoption of sustainable techniques and how interactions with the volunteers influence farmers' access to the different capitals of the sustainable livelihood framework and, therefore, new and diversified livelihood strategies.

The three months of field research in Bali allowed me to immerse myself in the complex farming reality of the island. By triangulating the statistical data and the qualitative answers of the interviewees collected on the field, with my observations, I was able to analyze the regional Balinese agricultural context and, at least partially, understand the complicated social, economic and ecological conditions faced by local farmers. Finally, I was able to answer my three specific research questions. In the next sections of this conclusion, I sum up the results and determine if the initial hypotheses can be confirmed.

11.1.1 First hypothesis

The first part of this thesis helped me answer my first research question: How did agricultural practices evolved in Indonesia? What are the contextual forces affecting the types of agricultural strategies taken by Balinese farmers? What are the opportunities and challenges related to the adoption of organic agriculture techniques?

The results obtained mostly confirmed my initial hypotheses. Indeed, the main reasons for farmers to adopt sustainable agriculture are health, ecology and profit. Furthermore, as expected, the lack of governmental support has been indicated by most of the farmers as one of the main limits to a successful transition to sustainable farming. Nevertheless, in my hypothesis, I did not focus on the limits posed by the lack of education on matters of sustainability and health. The significant association between education level and agricultural groups is proof that better access to education and information is essential to effectively implement new agricultural techniques.

Moreover, the analysis showed how fear of change and lack of motivation present another major constraint to the willingness of farmers to adopt organic practices. These feelings are mostly caused by 50 years of Green Revolution techniques, which have reduced the cultural and social importance of farming and have increased the contradictions in relation to the Balinese three causes of wellbeing, the *Tri Hita Karana*, the harmonious connection between humans and god, humans and humans and humans and nature. Indeed, the harmonious connection between humans and nature has been strongly faltering because of the intensive use of chemicals and the subsequent soil degradation.

As I present in the next section, the deep connection of the population to the agriculture sector has also been impacted by the exponential growth of tourism on the island.

11.1.2 Second hypothesis

The analysis allowed me to answer my second specific research question: What are the impacts of tourism on the evolution of organic agriculture in Bali? Does tourism increase the demand for this kind of agriculture? What kind of socioeconomic impacts does tourism have on the farmers?

With this study, I was able to determine the contrasting impacts of tourism on the livelihoods strategies of the farmers and on their agricultural practice. Furthermore, I explained how the agriculture and the tourism sectors compete over natural resources (mainly land and water) and labor (due to the higher salaries of tourism related jobs). This causes a loss of both natural and human capital in the *subak*. Furthermore, the attractiveness of the tourism sector has caused an increasing marginalization of farmers, mostly affected by an abandonment of the sector by the younger generations.

Nevertheless, as I predicted in my hypothesis, the tourism sector is responsible for an increasing demand for organic products, which has drove to a growing adoption of organic agriculture techniques. What I did not consider in my hypothesis, is the vulnerability of this demand. Indeed, according to multiple interviewees, in the case of external shocks (such as extreme weather events or political unrest) the dependence from the tourists' demand would result in a crisis of the sector. In this case, farmers could decide to switch back to conventional agriculture in order to answer the demand for non-organic, cheaper products consumed by the local population. The fall of the demand for organic products, due to the

small affluence of tourists following the 2017-2018 volcanic eruption of Mount Agung, showed the pertinence of this concern. Indeed, the decrease of tourism affluence resulted in significant economic losses for the farmers, which have not been able to sell their products.

Most of the interviewees are convinced that, to have a significant and resilient change, the local population has to be informed on the benefits of a healthy and sustainable diet, in order to increase the local demand for organic products and decrease the vulnerability related to the tourists' demand.

11.1.3 Third hypothesis

Finally, the analysis allowed me to answer my third research question: What are the impacts of farm volunteer tourism on the livelihoods of the inhabitants of rural Bali? What role do WWOOF and other volunteer organic farms have on the promotion and the implementation of sustainable agricultural techniques in the communities they are located in?

First of all, I was able to confirm my hypothesis on the importance of voluntourism for the diversification of the livelihoods strategies of the rest of the rural community. Indeed, the sector helps creating new jobs, such as homestay hosts, housemaids, cooks, bartenders, servers, guides, drivers and artisans. In fact, the volunteers often require tourist-like activities and services.

Second, I was able to assess the impacts of volunteers on the host himself/herself. Mostly, the visitors provide a cheap source of labor force for the owner, but they also give a chance of increasing the income by paying for accommodation or different activities. Moreover, the volunteers help the hosts with computer related aspects, which allow farmers to grow their network and increase their business opportunities.

Third, the analysis of voluntourism on organic farms has confirmed my hypothesis by exposing how the presence of volunteers can help the host, which is often a motivated and knowledgeable key individual, to promote sustainable agricultural practices in the community. Indeed, the exchanges and the connections between foreigners and farmers are a central source of education and information for non-organic cultivators and mostly for the younger generations. In fact, seeing young westerners interested in agriculture and working on the fields has been indicated by the interviewees as an important factor motivation young

people to not abandon the sector and get involved in the development of agriculture related sustainable tourism.

As explained by Biel (2016) *“in reducing physical input, we do require something more intangible to replace it: human capacity, knowledge, wisdom”* (p. 3). In this sense, voluntourism on organic farms plays an important role in increasing the human capital of the farming communities, which is necessary to change agricultural strategies and achieve new livelihood outcomes:

“As well as being of intrinsic value, human capital (knowledge and labour or the ability to command labour) is required in order to make use of any of the four other types of assets. It is therefore necessary, though not on its own sufficient, for the achievement of positive livelihood outcomes” (DfID, 2001, p. 19).

Finally, this analysis has allowed me to assess how, despite the general lack of support from the *subak* leaders, the traditional community-based *subak* structure provides a platform for key individuals and their volunteers to encourage other farmers to change agricultural techniques. Indeed, the connections and the trust between farmers of the same *subak* present a unique tool for the promotion and the spreading of organic agriculture. Furthermore, the persistence of the centrality of religion and traditional culture in Bali, can also present an opportunity to return to customary organic agriculture.

11.2 Conclusion

This research allowed me to hear the concerns of the farmers, their points of views and as indicated by MacRae (2011):

“useful lessons can be learnt in relatively small, peripheral, and atypical corners of the rice world such as Bali. It also reminds us once again, given the preponderance of top-down, quantitative, macroeconomic studies, that local-level ethnographic studies are much needed in order to reflect the often-overlooked perspectives of farmers in the fields and in the communities in which they live” (p. 91).

Indeed, according to different critics (Werner, 2017; TVO, 2011; Miller & Mair, 2015), global volunteerism could bring to a sort of commodification of development, which risks to

focus the aid sector more on the interests of the voluntourists than those of the local populations. Nevertheless, this thesis has shown that, if put in place in a conscious and adequate way, this estimated 2 billion dollar industry (Baart, 2016) can bring financial support and labor in vulnerable and poor areas, can increase knowledge and expertise in specific fields and can create positive social and cultural impacts on both the volunteers and the local communities.

To conclude, agricultural challenges in Bali are related to natural resource competition with the ever-growing tourism sector and land degradation due to fifty years of chemical inputs overuse and other Green Revolution technologies. These two aspects have resulted in an increasing marginalization of farmers. This study has identified how lack of education and governmental support strongly limit the willingness of farmers to adopt organic techniques and it revealed how determined key individuals, knowledgeable of the local context and the local challenges, and their volunteers play a central role in providing the missing information, expertise and motivations to change.

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Annexes

Annex 1. International tourism, number of arrivals in Indonesia.

Source: World Bank. Indonesia.

<http://data.worldbank.org/indicator/ST.INT.ARVL?end=2015&locations=ID&start=1995>



Annex 2. International tourism, expenditures (current US\$) in Indonesia.

Source: World Bank. Indonesia.

<http://data.worldbank.org/indicator/ST.INT.XPND.CD?end=2015&locations=ID&start=1995>

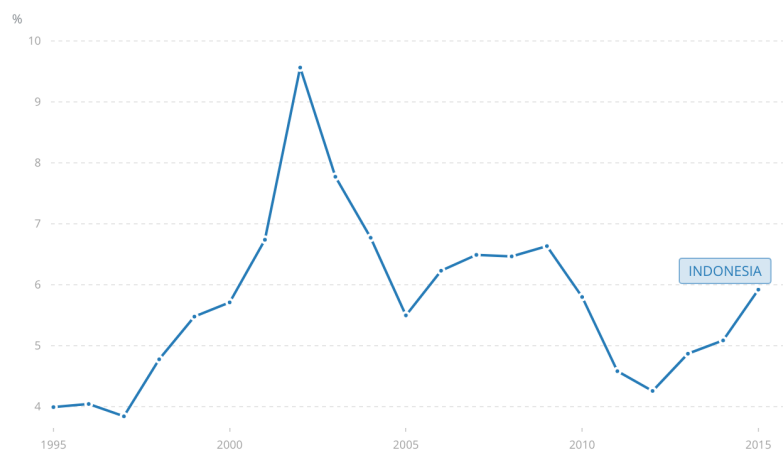


Annex 3. International tourism, expenditures (% of total imports) in Indonesia

Source: World Bank. Indonesia.

<http://data.worldbank.org/indicator/ST.INT.XPND.MP.ZS?end=2015&locations=ID&start=1995>

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Annex 4:

Questionnaire

Questionnaire number _____

Identification _____

Date:

Time:

Location:

(Name or nickname of the interviewee: _____)

Remarks:

What kind of products:

0. Socio-demographic information

1. Where do you work (location of farm/NGO/Government)?

Regency:

1 Badung

2 Bangli

3 Buleleng

4 Gianyar Gianyar

5 Jembrana

6 Karangasem 7

7 Klungkung

8 Tabanan

9 Denpasar

10 Other island: _____

11 Other country: _____

1b. Subak/Village: _____

1c. Do you live there too? Yes , no .

1d. If no, where: _____

2. Gender: Male , Female

3. Age? Less than 18 , 18-29 , 30-39 , 40-49 , 50-59 , more than 60

4. Where were you born? _____

Regency:

1 Badung

2 Bangli

3 Buleleng

4 Gianyar Gianyar

5 Jembrana

6 Karangasem 7

7 Klungkung

8 Tabanan

9 Denpasar

10 Other island: _____

11 Other country: _____

5. How long have you lived in this community? 0-1 years , 2-5 years , 6-10 years , more than 10 , always .

If you were not born here, why did you move here? _____

6. Number of people living in your household? 1 , 2-4 , 5-7 , 8 or more

7. Marital status? Single , married , divorced , separated , widowed

8. Profession/s? Farmer , construction , tourism activities , Government – department of agriculture , NGO , driver , Other _____. Main income from _____

9. Do you own the house you live in? Yes , No: rented , borrowed , living with family , volunteers accommodation , other _____

10. Did the house belong to your parents? Yes , no .

11. Description of the members of the household:

	Relationship to you	Age	Primary occupation
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			

12. Who is the primary provider of income in your household? _____
 Interviewee , partner , children , parents , similar income between partners/family , Owner of the center/hostel . Other : _____

13. Level of education? Primary , junior high , high school , practical university , university

14. Profession of your parents and grandparents?

14a. Father: _____

14b. Paternal grandmother: _____

14c. Paternal grandfather: _____

14d. Mother: _____

14e. Maternal grandmother: _____

14f. Maternal grandfather: _____

A. [First main objective] To examine the evolution of agricultural practices in Bali.

15a. Do you own the farm you work on?

Yes , No: rented , borrowed , family's , work , volunteer , shared system , other

15b. Do you work on other plots of land? Yes , No . If yes: : rented , borrowed , family's , friends , Shared system , , other _____

16a. If you own a plot of land, did it belong to your father before you? Yes , no .

16b. If yes, and your grandfather before him? Yes , no .

17. When did you start: being organic/ working on this farm/this organization?

0-1 years , 2-5 , 6-10 , 11-15 , 16-20 , 21 or more .

18. What is the size of your land? _____

19. Is your farm organic/sustainable? Yes , no .

20. Size of the land of the subak? _____

21. How many farmers are in your subak? _____

22. How many of these farmers produce sustainable/organic products? _____

a) Sub-objective 1.1: To understand the development of new agricultural practices in Bali.

23. Does the government help the transition to sustainable agricultural practices? Yes , no .

How? _____

24. Do you get any governmental subsidies? Yes , no .

If yes, for what? _____

25. On your land you use: organic compost , organic fertilizers , organic pesticides/insecticides/fungicides , chemical fertilizers , herbicides , pesticides/insecticides , other , _____

26. What do you think are the main reasons farmers use chemicals?

Easier , faster , less effort , higher income , subsidies , government help , policies , subak decision , more demand , higher yield , other : _____

b) Sub-objective 1.2: To identify the role of the subak and other cultural and religious customs and institutions in adopting new agricultural practices.

27a. Today how connected are agriculture and the Balinese culture/religion?

A lot , a little , indifferent , not much , not at all , I don't know .

27b. Compared to the past: a lot less , less , same , more , a lot more , I don't know .

Why? _____

28a. Do you think that the subak has a big influence on the agricultural practices of the farmers?

A lot , a little , indifferent , not much , not at all , I don't know .

28b. Compared to the past: a lot less , less , same , more , a lot more , I don't know .

How? _____

29a. Do you think that the subak plays/could play a role in establishing sustainable agriculture?

Yes , no .

How/why? _____

29b. In the subak do you discuss the possibility of going organic? Yes , no .

c) Sub-objective 1.3: To understand the challenges and opportunities of switching to sustainable agriculture.

30. Are you certified organic? Yes , no . Why? _____

31. Do you consider your farm organic/sustainable? Yes , no . Why? _____

32. Do you consider certification a limit? Yes , no . Why? _____

33. How long after switching to organic do you start seeing improvements? (yield, quality, profit, ...)?

0-0.5 years , 0.51-1 years , 1.1-2 years , 2.1-5 years , more than 5.1 .

34. Did you decide to switch to organic because of the leader of your subak? Yes , no .

35. Did you decide to switch to organic because of other farmers in your subak? Yes , no .

36. What are the main reasons for changing to sustainable/organic agricultural practices? Opportunities?

Higher revenue/profit , health , better for the environment , subsidies , policies , easier , faster , less effort , diversification , more demand , subak decision , other : _____

37. What are the limits/problems of organic agriculture?

Lower revenue , costs , no subsidies , lack of government support , complicated , slow , a lot of effort , demand , impossibility to do other jobs , certification , fear of different practice , pollution , lower yield, other : _____.

38a. Do you think that farmers in Bali keep using chemicals to be faster and to be able to do different jobs? Yes , no .

38b. If yes, what kind of jobs? Construction , tourist drivers , hotels and restaurants staff , Other tourism related jobs , other _____

B) [Second main objective] To investigate the impacts of tourism on agricultural practices and on the livelihoods of the community.

39. How would you describe the level of tourism in your area?

Too high , high , correct , low , too low , I don't know

40. What kind of tourist would you like to see more?

All , eco-tourist/agro-tourists , volunteers , none , other : _____.

41. What kind of tourist would you like to see less?

All , eco-tourists/agro-tourists , volunteers , loud/party , none , other : _____.

a) Sub-objective 2.1: To investigate the role of tourism in changing towards more sustainable agricultural practices.

42. Have you changed your agricultural practices because of tourism? Yes , no .

How/why? _____

43. Does tourism give better opportunities for switching to organic agriculture? Yes , no .

How? _____

44. Do you think that the demand for organic food (from restaurants, hotels, tourists, middle-class) is enough to push towards a change of the practices? Yes , no .

Why? _____

b) Sub-objective 2.2: To identify the impacts on the livelihoods of the communities and the environment.

45a. Has your life changed because of tourism?

Yes, a lot , yes , indifferent , no , not at all , I don't know .

45b. Is your job related to tourism? Yes , no .

How? _____

46a. Has tourism changed the community?

Yes, a lot , yes , indifferent , no , not at all , I don't know .

46b. If yes, how?

Very good , good , some good some bad , bad , very bad , I don't know .

47. Positive changes:

i) _____, ii) _____, iii) _____,

Comments? _____

48. Negative changes:

i) _____, ii) _____, iii) _____,

Comments? _____

49. How often do you interact with tourists?

Often , occasionally , rarely , never , I don't know .

50. Nature of the interactions? Social , work , both , other _____

51. Are there new jobs in the community because of the tourists (such as work in bars, restaurants, hotels or as hiking guides, drivers, etc.)? Yes , no . Which ones: _____

52a. Has there been a change in the perception of farmers in the "new" touristic Bali? Yes , no .

52b. Do farmers feel poorer or/and marginalized? Yes , no .

Why? _____

53. Do young people tend to abandon the farms to do different jobs? Yes , no .

What do they think about agriculture? _____

What kind of jobs? _____

54. Has there been strong land conversion from agricultural to other uses in your area? Yes , no .

To what? _____

Because of whom? _____

C) [Third main objective] To investigate the role of organic farm volunteering on the local farmers' ways of living and working.

55. How many volunteers do you have at the same time? 0 , 1-2 , 3-4 , 5 and more .

How many per year? 0 , 1-2 , 3-4 , 5-15 , 16-30 , 31 and more . and more.

56. Are they qualified/experienced? Yes , no , some yes, some no . Comments?

a) Sub-objective 3.1: To understand the impacts of voluntourism on organic farms on the agricultural practices.

57. Do you think that farms/NGOs with volunteers help promoting better agricultural practices in the subak and in the community? Yes , no . How? _____

58. Do you promote organic agriculture? Yes , no . How? _____

59. Do you think that the agricultural practices of the rest of the community have improved because of volunteers? Yes , no . How? _____

60. The volunteers: receive technical competences , bring technical competences , both .

Comments? _____

b) Sub-objective 3.2: To identify the impacts of voluntourism on the livelihoods of the community.

61. Do volunteers help the community? Yes , no .

How?

62. Creation of new jobs? Yes , no .

63. The benefits are mostly financial (payment to volunteer)? Yes , no .

(How much does a volunteer pay per week? _____)

64. Are the payments by the volunteers divided in the subak/community? Yes , no .

65. What are the main benefits on the community?

i) _____, ii) _____, iii) _____,
Comments? _____

66. What are the main limits?

i) _____, ii) _____, iii) _____,
Comments? _____

67. How often do you interact with volunteers?

Often , occasionally , rarely , never , I don't .

68. Nature of the interactions? Social , work , both , other _____

69. Do you think that volunteers respect more the Balinese culture compared to conventional tourists? Yes , no .

c) Sub-objective 3.2: To evaluate the potential of voluntourism in increasing the sustainability of touristic sector.

70. Do you think that a mix of tourism and agriculture (WWOOFing, agro-tourism, etc.) could create new interest in the sector for the new generations? Yes , no .

Why/How? _____

71. Do you see WWOOFing/agro-tourism/ecotourism as a possible local solution to the lack of sustainability of the agriculture and touristic sectors? Yes , no .

How? _____

Bullet questions:

How do you grade from 1 to 10 the following things (1 very low, 10 very high)?

72. Level of pollution in the area:

1 , 2 , 3 , 4 , 5 , 6 , 7 , 8 , 9 , 10 .

73. Level of chemicals used in agriculture in the area:

1 , 2 , 3 , 4 , 5 , 6 , 7 , 8 , 9 , 10 .

74. Level of production/income of your farm:

1 , 2 , 3 , 4 , 5 , 6 , 7 , 8 , 9 , 10 .

75. Do you have any question for me?

Thank you!

Annex 5: SPSS Statistics: frequency and descriptive analysis (relevant)

3. Age

Farmer Group			Frequency	Percent	Valid Percent	Cumulative Percent
Organic with volunteers	Valid	18-29	5	27.8	27.8	27.8
		30-39	7	38.9	38.9	66.7
		40-49	2	11.1	11.1	77.8
		50-59	2	11.1	11.1	88.9
		60 or more	2	11.1	11.1	100.0
		Total	18	100.0	100.0	
Organic without volunteers	Valid	30-39	2	13.3	13.3	13.3
		40-49	3	20.0	20.0	33.3
		50-59	7	46.7	46.7	80.0
		60 or more	3	20.0	20.0	100.0
		Total	15	100.0	100.0	
Non organic	Valid	18-29	1	10.0	10.0	10.0
		30-39	1	10.0	10.0	20.0
		40-49	2	20.0	20.0	40.0
		50-59	3	30.0	30.0	70.0
		60 or more	3	30.0	30.0	100.0
		Total	10	100.0	100.0	

8. Profession

Farmer Group			Responses		Percent of Cases
			N	Percent	
Organic with volunteers	Profession ^a	Profession Farmer	15	40.5%	88.2%
		Profession Consultant	5	13.5%	29.4%
		Profession business manager or owner	5	13.5%	29.4%
		Profession Tourism activities	4	10.8%	23.5%
		Profession NGO	4	10.8%	23.5%
		Profession Driver	1	2.7%	5.9%
		Profession Other	3	8.1%	17.6%
		Total	37	100.0%	217.6%
Organic without volunteers	Profession ^a	Profession Farmer	15	57.7%	100.0%
		Profession business manager or owner	2	7.7%	13.3%
		Profession Tourism activities	2	7.7%	13.3%
		Profession Department of Agriculture	2	7.7%	13.3%
		Profession Other	5	19.2%	33.3%
		Total	26	100.0%	173.3%
Non organic	Profession ^a	Profession Farmer	10	62.5%	100.0%
		Profession business manager or owner	1	6.3%	10.0%
		Profession Tourism activities	2	12.5%	20.0%
		Profession Other	3	18.8%	30.0%
Total	16	100.0%	160.0%		

a. Dichotomy group tabulated at value 1.

26. Reasons Chemicals

Agricultural Group			Responses		Percent of Cases		
			N	Percent			
Organic with volunteers	ReasonsChemicals ^a	Reasons for chemicals use: Easier	13	26.0%	72.2%		
		Reasons for chemicals use: Faster	14	28.0%	77.8%		
		Reasons for chemicals use: Less effort	4	8.0%	22.2%		
		Reasons for chemicals use: Higher income	4	8.0%	22.2%		
		Reasons for chemicals use: Subsidies	2	4.0%	11.1%		
		Reasons for chemicals use: Government help	3	6.0%	16.7%		
		Reasons for chemicals use: Policies	2	4.0%	11.1%		
		Reasons for chemicals use: Subak decision	1	2.0%	5.6%		
		Reasons for chemicals use: More demand	1	2.0%	5.6%		
		Reasons for chemicals use: Higher yield	1	2.0%	5.6%		
		Reasons for chemicals use: Other: Land quality	1	2.0%	5.6%		
		Reasons for chemicals use: Other: Climate	1	2.0%	5.6%		
		Reasons for chemicals use: Other: Lack of government support	2	4.0%	11.1%		
		Reasons for chemicals use: Other: Lack of education	1	2.0%	5.6%		
		Total			50	100.0%	277.8%
		Organic without volunteers	ReasonsChemicals ^a	Reasons for chemicals use: Easier	11	20.0%	73.3%
				Reasons for chemicals use: Faster	14	25.5%	93.3%
Reasons for chemicals use: Less effort	11			20.0%	73.3%		
Reasons for chemicals use: Higher income	2			3.6%	13.3%		
Reasons for chemicals use: Subsidies	2			3.6%	13.3%		
Reasons for chemicals use: Government help	3			5.5%	20.0%		
Reasons for chemicals use: Policies	3			5.5%	20.0%		
Reasons for chemicals use: Subak decision	4			7.3%	26.7%		
Reasons for chemicals use: More demand	1			1.8%	6.7%		
Reasons for chemicals use: Other: Lack of government support	4			7.3%	26.7%		
Total				55	100.0%	366.7%	

Non organic	Reasons	Chemicals ^a	Reasons for chemicals use:			
			use: Easier	6	27.3%	60.0%
			use: Faster	8	36.4%	80.0%
			use: Less effort	3	13.6%	30.0%
			use: Higher income	1	4.5%	10.0%
			use: Government help	1	4.5%	10.0%
			use: Subak decision	1	4.5%	10.0%
			use: Other: Climate	2	9.1%	20.0%
	Total			22	100.0%	220.0%

a. Dichotomy group tabulated at value 1.

28a. Influence subak

Agricultural Group			Frequency	Percent	Valid Percent	Cumulative Percent
Organic with volunteers	Valid	A lot	9	50.0	50.0	50.0
		A little	7	38.9	38.9	88.9
		Indifferent	2	11.1	11.1	100.0
		Total	18	100.0	100.0	
Organic without volunteers	Valid	A lot	13	86.7	86.7	86.7
		A little	2	13.3	13.3	100.0
		Total	15	100.0	100.0	
Non organic	Valid	A lot	9	90.0	90.0	90.0
		A little	1	10.0	10.0	100.0
		Total	10	100.0	100.0	

28b. Compared to past

Agricultural Group			Frequency	Percent	Valid Percent	Cumulative Percent
Organic with volunteers	Valid	A lot less	1	5.6	5.6	5.6
		Less	13	72.2	72.2	77.8
		Same	4	22.2	22.2	100.0
		Total	18	100.0	100.0	
Organic without volunteers	Valid	A lot less	2	13.3	13.3	13.3
		Less	7	46.7	46.7	60.0
		Same	5	33.3	33.3	93.3
		More	1	6.7	6.7	100.0
		Total	15	100.0	100.0	
Non organic	Valid	A lot less	1	10.0	10.0	10.0
		Less	3	30.0	30.0	40.0
		Same	6	60.0	60.0	100.0
		Total	10	100.0	100.0	

29a. Subak potential for organic

Agricultural Group			Frequency	Percent	Valid Percent	Cumulative Percent
Organic with volunteers	Valid	Does not know	4	22.2	22.2	22.2
		Yes	12	66.7	66.7	88.9
		No	2	11.1	11.1	100.0
		Total	18	100.0	100.0	
Organic volunteers	without Valid	Yes	13	86.7	86.7	86.7
		No	2	13.3	13.3	100.0
		Total	15	100.0	100.0	
Non organic	Valid	Yes	5	50.0	50.0	50.0
		No	5	50.0	50.0	100.0
		Total	10	100.0	100.0	

29b. Discuss on going organic

Agricultural Group			Frequency	Percent	Valid Percent	Cumulative Percent
Organic with volunteers	Valid	Does not know	3	16.7	16.7	16.7
		Yes	8	44.4	44.4	61.1
		No	7	38.9	38.9	100.0
		Total	18	100.0	100.0	
Organic volunteers	without Valid	Yes	14	93.3	93.3	93.3
		No	1	6.7	6.7	100.0
		Total	15	100.0	100.0	
Non organic	Valid	Yes	4	40.0	40.0	40.0
		No	6	60.0	60.0	100.0
		Total	10	100.0	100.0	

40. Tourist More

Agricultural Group			Responses		Percent of Cases
			N	Percent	
Organic with volunteers	TouristMore ^a	Tourist you want to see more: All	3	11.5%	16.7%
		Tourist you want to see more: Eco-Tourists or agro-tourists	14	53.8%	77.8%
		Tourist you want to see more: Volunteers	5	19.2%	27.8%
		Tourist you want to see more: None	1	3.8%	5.6%
		Tourist you want to see more: Other	3	11.5%	16.7%
		Total	26	100.0%	144.4%
Organic volunteers	without TouristMore ^a	Tourist you want to see more: All	1	3.6%	6.7%
		Tourist you want to see more: Eco-Tourists or agro-tourists	11	39.3%	73.3%
		Tourist you want to see more: Volunteers	8	28.6%	53.3%
		Tourist you want to see more: None	1	3.6%	6.7%

		Tourist you want to see more: Other: Rich	2	7.1%	13.3%
		Tourist you want to see more: Other	5	17.9%	33.3%
	Total		28	100.0%	186.7%
Non organic	TouristMore ^a	Tourist you want to see more: All	1	9.1%	10.0%
		Tourist you want to see more: Eco-Tourists or agro-tourists	4	36.4%	40.0%
		Tourist you want to see more: Volunteers	1	9.1%	10.0%
		Tourist you want to see more: None	2	18.2%	20.0%
		Tourist you want to see more: Other: Rich	3	27.3%	30.0%
	Total		11	100.0%	110.0%

a. Dichotomy group tabulated at value 1.

41. Tourist Less

Agricultural Group			Responses		Percent of Cases
			N	Percent	
Organic with volunteers	TouristLess ^a	Tourist you want to see less: Loud or party tourists	6	30.0%	33.3%
		Tourist you want to see less: None	6	30.0%	33.3%
		Tourist you want to see less: Other: Mass Tourism	3	15.0%	16.7%
		Tourist you want to see less: Other: Disrespectful	5	25.0%	27.8%
		Total	20	100.0%	111.1%
Organic without volunteers	TouristLess ^a	Tourist you want to see less: Loud or party tourists	3	17.6%	20.0%
		Tourist you want to see less: None	12	70.6%	80.0%
		Tourist you want to see less: Other: Backpackers	2	11.8%	13.3%
		Total	17	100.0%	113.3%
Non organic	TouristLess ^a	Tourist you want to see less: All	1	10.0%	10.0%
		Tourist you want to see less: Loud or party tourists	4	40.0%	40.0%
		Tourist you want to see less: None	4	40.0%	40.0%
		Tourist you want to see less: Other: Backpackers	1	10.0%	10.0%
		Total	10	100.0%	100.0%

a. Dichotomy group tabulated at value 1.

43. Better opportunities to switch to organic because of tourism

Agricultural Group			Frequency	Percent	Valid Percent	Cumulative Percent
Organic with volunteers	Valid	Yes	15	83.3	83.3	83.3
		No	3	16.7	16.7	100.0
		Total	18	100.0	100.0	
Organic without volunteers	Valid	Yes	15	100.0	100.0	100.0
Non organic	Valid	Yes	10	100.0	100.0	100.0

45b. Job related to tourism

Agricultural Group			Frequency	Percent	Valid Percent	Cumulative Percent
Organic with volunteers	Valid	Yes	13	72.2	72.2	72.2
		No	5	27.8	27.8	100.0
		Total	18	100.0	100.0	
Organic without volunteers	Valid	Yes	12	80.0	80.0	80.0
		No	3	20.0	20.0	100.0
		Total	15	100.0	100.0	
Non organic	Valid	Yes	2	20.0	20.0	20.0
		No	8	80.0	80.0	100.0
		Total	10	100.0	100.0	

47. Positive Changes Tourism

Agricultural Group			Responses	Percent of	
				N	Percent
Organic volunteers	with PositiveChangesTourism ^a	Positive changes: Higher Income	6	15.4%	33.3%
		Positive changes: Demand for organic products	9	23.1%	50.0%
		Positive changes: Promotion of organic practices and healthy food	4	10.3%	22.2%
		Positive changes: Sustainability and better waste management	5	12.8%	27.8%
		Positive changes: New or more jobs	3	7.7%	16.7%
		Positive changes: Social or cultural exchange	5	12.8%	27.8%
		Positive changes: Other	7	17.9%	38.9%
		Total		39	100.0%
Organic without volunteers	with PositiveChangesTourism ^a	Positive changes: Higher Income	10	28.6%	66.7%
		Positive changes: Demand for organic products	2	5.7%	13.3%

		Positive changes: Promotion of organic practices and healthy food	5	14.3%	33.3%
		Positive changes: Sustainability and better waste management	3	8.6%	20.0%
		Positive changes: New or more jobs	5	14.3%	33.3%
		Positive changes: Social or cultural exchange	5	14.3%	33.3%
		Positive changes: Other	5	14.3%	33.3%
	Total		35	100.0%	233.3%
Non organic	PositiveChangesTourism ^a	Positive changes: Higher Income	9	64.3%	90.0%
		Positive changes: Demand for organic products	1	7.1%	10.0%
		Positive changes: New or more jobs	2	14.3%	20.0%
		Positive changes: Other	2	14.3%	20.0%
	Total		14	100.0%	140.0%

a. Dichotomy group tabulated at value 1.

48. Negative Changes Tourism

Agricultural Group			Responses		Percent of Cases
			N	Percent	
Organic volunteers	with NegativeChangesTourism ^a	Negative changes: Lack of respect	5	17.2%	27.8%
		Negative changes: Cultural difference	7	24.1%	38.9%
		Negative changes: More pollution	3	10.3%	16.7%
		Negative changes: Overpopulation or too many tourists	3	10.3%	16.7%
		Negative changes: None	4	13.8%	22.2%
		Negative changes: Other	7	24.1%	38.9%
	Total		29	100.0%	161.1%
Organic volunteers	without NegativeChangesTourism ^a	Negative changes: Lack of respect	2	9.1%	13.3%
		Negative changes: Cultural difference	4	18.2%	26.7%
		Negative changes: More pollution	3	13.6%	20.0%
		Negative changes: Land conversion	4	18.2%	26.7%
		Negative changes: None	5	22.7%	33.3%

		Negative changes: Other	4	18.2%	26.7%
	Total		22	100.0%	146.7%
Non organic	NegativeChangesTourism ^a	Negative Cultural difference	3	27.3%	30.0%
		Negative Land conversion	3	27.3%	30.0%
		Negative None	3	27.3%	30.0%
		Negative Other	2	18.2%	20.0%
	Total		11	100.0%	110.0%

a. Dichotomy group tabulated at value 1.

49. Interaction with tourist

Agricultural Group			Frequency	Percent	Valid Percent	Cumulative Percent
Organic with volunteers	Valid	Often	14	77.8	77.8	77.8
		Occasionally	3	16.7	16.7	94.4
		Rarely	1	5.6	5.6	100.0
		Total	18	100.0	100.0	
Organic volunteers	without Valid	Often	9	60.0	60.0	60.0
		Occasionally	3	20.0	20.0	80.0
		Rarely	3	20.0	20.0	100.0
		Total	15	100.0	100.0	
Non organic	Valid	Often	2	20.0	20.0	20.0
		Occasionally	1	10.0	10.0	30.0
		Rarely	3	30.0	30.0	60.0
		Never	4	40.0	40.0	100.0
		Total	10	100.0	100.0	

50. What kind of interactions

Agricultural Group			Frequency	Percent	Valid Percent	Cumulative Percent
Organic with volunteers	Valid	Social	3	16.7	16.7	16.7
		Work	2	11.1	11.1	27.8
		Both	13	72.2	72.2	100.0
		Total	18	100.0	100.0	
Organic volunteers	without Valid	Social	2	13.3	13.3	13.3
		Work	6	40.0	40.0	53.3
		Both	7	46.7	46.7	100.0
		Total	15	100.0	100.0	
Non organic	Valid	Does not apply	3	30.0	30.0	30.0
		Social	4	40.0	40.0	70.0
		Work	1	10.0	10.0	80.0
		Both	2	20.0	20.0	100.0
		Total	10	100.0	100.0	

51. New jobs

Agricultural Group			Frequency	Percent	Valid Percent	Cumulative Percent
Organic with volunteers	Valid	Yes	17	94.4	94.4	94.4
		No	1	5.6	5.6	100.0
		Total	18	100.0	100.0	
Organic without volunteers	Valid	Yes	15	100.0	100.0	100.0
Non organic	Valid	Yes	10	100.0	100.0	100.0

52a. Change perception farmers

Agricultural Group			Frequency	Percent	Valid Percent	Cumulative Percent
Organic with volunteers	Valid	Yes	13	72.2	72.2	72.2
		No	5	27.8	27.8	100.0
		Total	18	100.0	100.0	
Organic without volunteers	Valid	Yes	7	46.7	46.7	46.7
		No	8	53.3	53.3	100.0
		Total	15	100.0	100.0	
Non organic	Valid	Yes	4	40.0	40.0	40.0
		No	6	60.0	60.0	100.0
		Total	10	100.0	100.0	

52b. Feel poorer or marginalized

Agricultural Group			Frequency	Percent	Valid Percent	Cumulative Percent
Organic with volunteers	Valid	Yes	15	83.3	83.3	83.3
		No	3	16.7	16.7	100.0
		Total	18	100.0	100.0	
Organic without volunteers	Valid	Yes	5	33.3	33.3	33.3
		No	10	66.7	66.7	100.0
		Total	15	100.0	100.0	
Non organic	Valid	Yes	5	50.0	50.0	50.0
		No	5	50.0	50.0	100.0
		Total	10	100.0	100.0	

57. Farmers w volunteers promote

Agricultural Group			Frequency	Percent	Valid Percent	Cumulative Percent
Organic with volunteers	Valid	Yes	18	100.0	100.0	100.0
Organic without volunteers	Valid	Yes	14	93.3	93.3	93.3
		No	1	6.7	6.7	100.0
		Total	15	100.0	100.0	
Non organic	Valid	Does not know	1	10.0	10.0	10.0
		Yes	9	90.0	90.0	100.0
		Total	10	100.0	100.0	

60. Volunteers competence

Agricultural Group			Frequency	Percent	Valid Percent	Cumulative Percent
Organic volunteers	with Valid	Receive technical competences	1	5.6	5.6	5.6
		Bring technical competences	1	5.6	5.6	11.1
		Both	16	88.9	88.9	100.0
		Total	18	100.0	100.0	
Organic volunteers	without Valid	Does not know	1	6.7	6.7	6.7
		Receive technical competences	1	6.7	6.7	13.3
		Bring technical competences	1	6.7	6.7	20.0
		Both	12	80.0	80.0	100.0
		Total	15	100.0	100.0	
Non organic	Valid	Does not know	2	20.0	20.0	20.0
		Receive technical competences	1	10.0	10.0	30.0
		Bring technical competences	2	20.0	20.0	50.0
		Both	5	50.0	50.0	100.0
		Total	10	100.0	100.0	

Annex 6: SPSS Statistics: correlation matrix and chi-squared tests

For lack of space, the correlation matrix has been simplified to include only the significative and useful correlations.

Correlation matrix 1

		Age	Level of education	For how long
Age	Pearson Correlation	1	-.396**	.375*
	Sig. (2-tailed)		.009	.013
	N	43	43	43
Level of education	Pearson Correlation	-.396**	1	-.548**
	Sig. (2-tailed)	.009		.000
	N	43	43	43
For how long	Pearson Correlation	.375*	-.548**	1
	Sig. (2-tailed)	.013	.000	
	N	43	43	43

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

Chi-square test 1

Farmer Group * Level of education Crosstabulation

Count

			Level of education					
			Primary	Junior high	High school	Practical university	University	Total
Farmer Group	Organic volunteers	with	0	1	2	3	12	18
	Organic volunteers	without	4	3	3	1	4	15
	Non organic		3	2	4	0	1	10
Total			7	6	9	4	17	43

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	17.497 ^a	8	.025	.020		
Likelihood Ratio	21.224	8	.007	.015		
Fisher's Exact Test	17.280			.009		
Linear-by-Linear Association	13.207 ^b	1	.000	.000	.000	.000
N of Valid Cases	43					

a. 13 cells (86.7%) have expected count less than 5. The minimum expected count is .93.

b. The standardized statistic is -3.634.

Symmetric Measures

		Value	Approximate Significance	Exact Significance
Nominal by Nominal	Phi	.638	.025	.020
	Cramer's V	.451	.025	.020
N of Valid Cases		43		

Chi-square test 2

Farmer Group * For how long Crosstabulation

Count

		For how long					Total
		0-1	1.1-5	5.1-10	More than 10	Always	
Farmer Group	Organic with volunteers	3	3	5	1	6	18
	Organic without volunteers	0	0	2	1	12	15
	Non organic	0	0	0	0	10	10
Total		3	3	7	2	28	43

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	17.302 ^a	8	.027	.016		
Likelihood Ratio	21.555	8	.006	.006		
Fisher's Exact Test	14.368			.012		
Linear-by-Linear Association	13.659 ^b	1	.000	.000	.000	.000
N of Valid Cases	43					

a. 12 cells (80.0%) have expected count less than 5. The minimum expected count is .47.

b. The standardized statistic is 3.696.

Symmetric Measures

		Value	Approximate Significance	Exact Significance
Nominal by Nominal	Phi	.634	.027	.016
	Cramer's V	.449	.027	.016
N of Valid Cases		43		

Chi-square test 3

Farmer Group * % organic in Subak Crosstabulation

Count			% organic in Subak						
			.00	.02	.05	.06	.08	.10	.16
Farmer Group	Organic volunteers	with	0	0	0	1	1	1	1
	Organic volunteers	without	0	1	0	0	0	1	2
	Non organic		4	0	3	1	0	0	0
Total			4	1	3	2	1	2	3

Farmer Group * % organic in Subak Crosstabulation

Count			% organic in Subak						
			.20	.25	.30	.31	.36	.37	.40
Farmer Group	Organic volunteers	with	1	2	1	0	0	0	0
	Organic volunteers	without	2	0	0	1	1	1	1
	Non organic		1	0	0	0	1	0	0
Total			4	2	1	1	2	1	1

Farmer Group * % organic in Subak Crosstabulation

Count			% organic in Subak		
			.57	1.00	
Farmer Group	Organic with volunteers		1	4	13
	Organic without volunteers		0	5	15
	Non organic		0	0	10
Total			1	9	38

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	43.405 ^a	30	.054	.009		
Likelihood Ratio	49.655	30	.013	.009		
Fisher's Exact Test	36.143			.008		
Linear-by-Linear Association	5.147 ^b	1	.023	.022	.010	.000
N of Valid Cases	38					

a. 48 cells (100.0%) have expected count less than 5. The minimum expected count is .26.

b. The standardized statistic is -2.269.

Symmetric Measures

		Value	Approximate Significance	Exact Significance
Nominal by Nominal	Phi	1.069	.054	.009
	Cramer's V	.756	.054	.009
N of Valid Cases		38		