Universiteit Utrecht

How to be a Permie?

Analyzing Influential Factors Shaping Permaculture Strategies for Overcoming Challenges in Southern Australia.

Image source: https://permacultureapprentice.com/permaculture-property-design-features/

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Abstract

Permaculture, as an alternative and sustainable approach to conventional farming, has been an emerging field of study, primarily focusing on challenges faced and strategies applied during the initiation phase of permaculture enterprises. This research seeks to bridge a critical gap in the existing literature by exploring the factors that shape the strategies employed by long-term successful permaculture practitioners in southern Australia. Through an explorative case study, this research, while partly affirming prevailing literature on permaculture practitioners' challenges, strategies, and the factors that mold these strategies, uncovers unique revelations that shed new light on permaculture practices.

The study uncovers the paramount importance of individual-level factors, notably motivation, intricately intertwined with practitioners' personal values, diverse knowledge, creativity, and adaptability and success perception, while also highlighting the substantial influence of social-level factors, such as shared values, communal interests, and the presence of a supportive community that facilitates their journey. It has become evident that, while posing varied challenges, institutional level factors showed less relevant for the strategic decision-making of the permaculture practitioners.

While focused on the context of southern-Australia, this research has created important insights into the potential of permaculture practitioners, by analyzing examples of long-term success. The research also provides a stepping-stone into the relatively underexplored domain of long-term success in permaculture enterprises, offering promising prospects for future research. Further investigations may extend our understanding and contribute to the advancement of sustainable transformations within the agricultural sector.

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1. Introduction

1.1 Sustainable agricultural transformation

Contemporary agriculture forms one of the major drivers of biodiversity loss (Caro et al., 2022). The intensification of the agricultural sector has converged natural habitats into intensively managed systems (Dudley and Alexander, 2017; Duru et al., 2015), which has led to drastic changes in ecosystem functioning and the delivery of ecosystem services (Cardinale et al., 2012). As food security and food sovereignty are directly affected by the functioning of ecosystems and biodiversity, many scholars call for a drastic shift in the contemporary agricultural system (Gliessman et al., 2018; Pharo et al., 2019; Goïta and Frison, 2020). As a response to these problems, varied innovative forms of agriculture with a more holistic approach have emerged (Krebs and Bach, 2018; Ferguson and Lovell, 2015; Erisman et al., 2016; Duru et al., 2015). As one of these concepts, *permaculture* was developed in the 1970s by biologist Bill Mollison and his student David Holmgren. This concept presents an alternative paradigm of production based on ecological principles, while also providing an ethical framework that enables the design of diverse, sustainable systems suitable for a variety of cultural and ecological contexts (Hathaway, 2016). Consequently, a widespread adoption of permaculture principles could significantly reduce energy, pesticide, and freshwater usage, while improving soil quality, capture large quantities of carbon, satisfy human needs for healthy, nutritious foods and creating more biodiverse agricultural systems (Mollison and Holmgren, 1978; Bhati and Makanur, 2019).

1.2 Problem description and research aim: long-term permaculture

Permaculture has been defined as '*consciously designed landscapes which mimic the patterns and relationships found in nature, while yielding an abundance of food, fiber and energy for provision of local needs*' (Holmgren, 2002, xix) As a concept, permaculture is practiced in varied manners, covering practices in the food industry, such as gardening, and farming, while others develop their work in education consultancy, recreation, landscape design, and writing, or a combination thereof (Genus et al, 2021). The permaculture movement has seen an increase in successful practitioners since its origin in the 1970's (Ulbrich et al., 2019; Fiebrig et al., 2020). While permaculture has long been ignored in scientific literature (Krebs and Bach, 2018), in recent years scholars have started to understand what strategies permaculture practitioners apply to overcome different challenges when initiating an enterprise (Rocha, 2022), as well as what permaculture entrepreneurs

need to set up their business (Genus et al., 2021). While research has been done on the *initiating and starting phase* of a permaculture enterprise (Rocha, 2022; Genus et al., 2021; Hinton et al., 2021; Salleh et al., 2018), literature on *long-term success* in permaculture businesses is lacking. As the viability and continuation of permaculture businesses cannot be guaranteed (Fiebrig et al., 2020), it is important to start gaining knowledge on practitioners that do maintain a successful enterprise. This way, we can start to grasp the potential of permaculture in the shift towards a more sustainable agricultural system, as well as how this potential can be improved.

While permaculture is seen as an important addition to the transition to a more sustainable agricultural system (Roux-Rosier et al., 2018; Fiebrig et al., 2020; Habib and Fadaee, 2022), in practice several challenges are limiting its adoption. For instance, income levels of permaculture practitioners are often lower than those of conventional agricultural businesses (Ferguson and Lovell, 2017). Furthermore, as permaculture is often practiced as a holistic, low-impact lifestyle in addition to a sustainable way of producing food, it differs significantly from the normative, western way of living (Pickerill, 2013). When transitioning to becoming permaculture practitioners, people face social strains as they move away from their cultural and social capital, often tied to their formal careers and labor market (Rocha, 2022). Other key challenges include high labor input and the lack of knowledge on permaculture practices (Didarali and Gambiza, 2019). As a response, permaculture practitioners implement various strategies, such as a work-life based on multiple income streams (Genus et al., 2021) to overcome these challenges, and build towards a long-term successful enterprise.

As previous research on similar sustainable agricultural practices, such as agroecology, showed that social, cultural, economic capital, institutional (Genus et al., 2021), and political factors (Schoonhoven and Runhaar, 2018) account for the strategies of agricultural entrepreneurs, this study will analyze how these factors influence the success strategies employed by permaculture practitioners in addressing specific challenges. For this thesis I will look at the south and southeast of Australia as this is the birthplace of permaculture and holds a high number of successful enterprises (Permaculture Research Institute, 2017; Ferguson and Lovell, 2015). The main research question therefore is as follows:

How can different factors explain the strategies that permaculture entrepreneurs in southern Australia undertake to resolve challenges for maintaining their enterprise?

As permaculture is a localized practice working with native flora and fauna, as well as in a specific political and social context, potential challenges are dependent on the geographical location (Hirschfeld and Van Acker, 2019; Roux-Rousier et al., 2018). The first step will therefore be to go further than the challenges described earlier and identify additional challenges permaculture entrepreneurs can face in southern Australia. The first sub-question will help develop a clear image of what challenges are experienced:

What are the main challenges permaculture entrepreneurs face in the south of Australia in maintaining a permaculture business?

This will give the possibility to then focus on what strategies are applied to overcome these challenges:

What are the strategies that permaculture entrepreneurs in southern Australia use to overcome challenges to successfully maintaining their enterprise?

Some factors have been identified in previous research regarding decision-making processes and strategy development, however not yet in the context of permaculture. Thus, the final sub-question aims to specify what factors determine the strategies chosen in the context of permaculture entrepreneurs, leading to the following:

What factors determine the strategies permaculture entrepreneurs undertake to overcome challenges in South Australia?

With this information gained from answering these questions, I aim to present a set of policy recommendations to create favorable conditions for permaculture entrepreneurs that can enlarge the potential for successful permaculture enterprises. To work towards the research aim, I will

apply an explorative approach in the form of a most-similar case study analysis, as this method is consistently used for the purpose of theory building (Eisenhardt and Graebner, 2007).

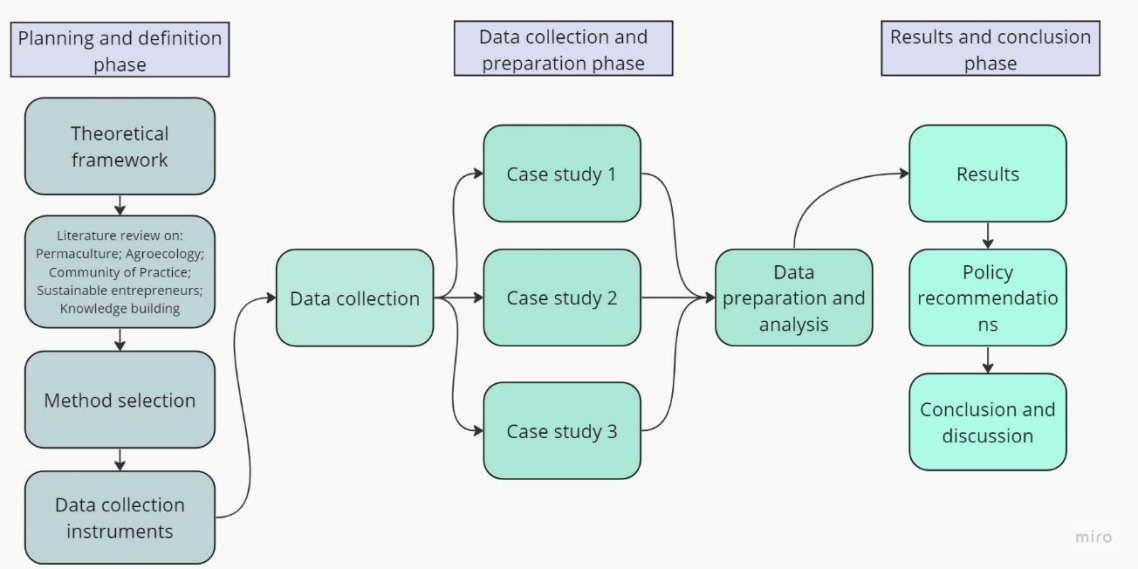
1.3 Scientific and social relevance

Permaculture has long been isolated from scientific literature (Ferguson and Lovell, 2015; Krebs and Bach, 2018). Literature on permaculture thus far has clearly shown its relevance as a sustainable alternative to conventional agriculture (McLennon et al., 2021; Hirschfeld and Van Acker, 2021). Varied scholars have started to grasp what the potential is of permaculture as a niche in the conventional system (Maye, 2016; Ingram, 2018). And while a start has been made on understanding what makes a permaculture needs to be implemented successfully (Genus et al., 2021: Rocha, 2022), there is limited knowledge on how this success can be maintained for a longer period of time. This knowledge gap is where this thesis is aiming to contribute.

Since its development in the 70's, permaculture has grown into much more than a landscape design method (Holmgren, 2002). Through its pragmatic methodological principles, permaculture aims to create autonomous, resilient, and equitable living spaces that maximize the interrelation and synergies between human and nature (Morel et al., 2020a). This way of thinking offers a radical voice against some fundamental pillars of Western modern culture and consumerist behavior, while preserving social justice and individual freedom (Centemeri, 2020). Ultimately, permaculture can open up possibilities for political and social alternatives to industrially organized agriculture (Roux-Rosier et al., 2018). With this thesis we aim to provide recommendations to enhance the potential of permaculture to grow as a practice and help to transition to a more sustainable agricultural system.

1.4 Research framework

Figure 1. Research framework



2. Theoretical background and framework

This chapter will provide a theoretical background on the most relevant concepts applied in this thesis, as well as the development of the framework used to answer the research questions. The first part will dive into a description of permaculture, as well as how it practiced and how it relates to similar concepts such as agroecology. The following section will dive into the identification of challenges, and potential strategies as a response implemented by permaculture practitioners, or those working with similar concepts.

2.1 Permaculture

2.1.1 Understanding and defining the concept

The word permaculture was introduced by Bill Mollison and David Holmgren (1978) referring to 'an integrated, evolving system of perennial or self-perpetuating plant and animal species useful for man'. Since their first publication, they have written a variety of new interpretations and elaborations on the concept (Mollison, 1979; Mollison, 1988; Holmgren, 2002). Later, for example, Mollison described it as sustainable agriculture and settlement design, accompanied by an ethics of care (Holmgren, 2002). Crosby et al. (2014) used the word counterculture to describe permaculture in 1970's as it aimed to respond to the mainstream agricultural and societal trends, but in the contemporary context prefer to describe it as an assemblage as it can be seen as a network, a 'thing' where every individual node is connected. Roux-Rosier et al. (2018) seem to partly fall back on the idea that permaculture can be a response to the contemporary system, as they investigate it as an organizational response to the Anthropocene through the concept of imaginaries. In this paper they state that permaculture imaginaries offer alternative visions of human integration across local, global, and political environments. By trying to get a better understanding of the conceptualization of permaculture Spangler et al. (2021) found that it has a rich diversity of definitions and applications and is continuously evolving, yet some concepts are consistent in all definitions, like the concern of permaculture's failure to cite and acknowledge its rootedness in Indigenous knowledge and distinguish itself from Indigenous alternatives. Ferguson and Lovell (2015) build further on this by confirming struggles permaculture is facing in terms of inclusion and equity, by exploring the relationship between self-identified roles of permaculture practitioners and their socio-demographic characteristics factors.

While the understanding of the concept is not entirely coherent throughout a wide range of publications, the function of permaculture is relatively consistent. Three main functions are assigned to the concept, a technical design practice consisting of a set of principles (Figure 2), a holistic life philosophy or worldview based on a system of ethics, and an interactional social movement (Roux-Rossier et al., 2018; Ferugson and Lovell, 2015; Habib and Fandaee, 2022).

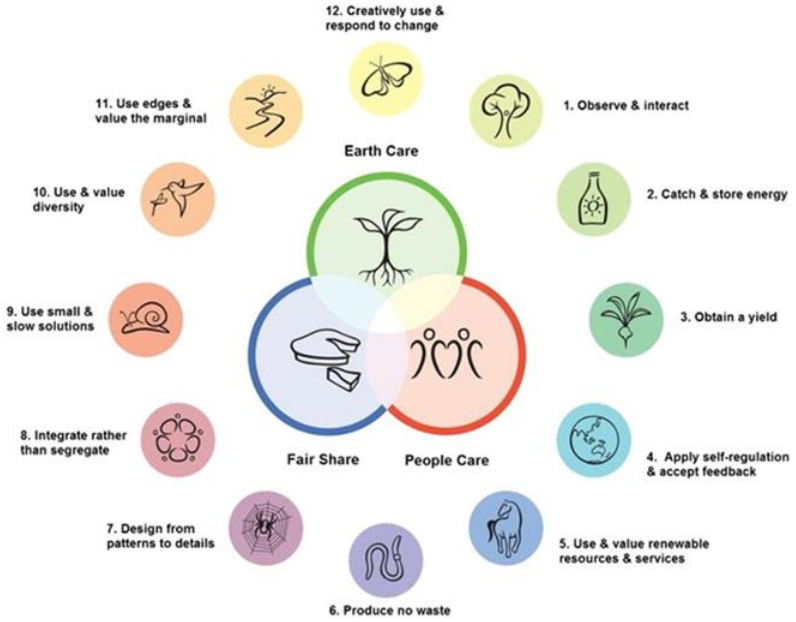
2.1.2 A technical design practice

Firstly, Holmgren (2002) explains that, while permaculture is not the actual landscape, or farming system, it can be used to design, establish and manage these instead. In permaculture design courses, participants learn to design the agricultural, home and social systems in relation to one another, while considering the local ecology and physical resources (Millner, 2016), and applying local knowledge (Salleh et al., 2018). Figure 2 shows an overview of all twelve design principles. In a practical example, Léger and Morel (2016) found that it was possible to create a certain monthly net income based of two main permaculture principles: increasing production on a small manually cultivated area and increasing added value of such production. The farm in question focused on growing short cycle and high added value vegetables which excluded storage crops.

2.1.3 An ethical framework

In addition to the design principles, figure 2 also shows permacultures ethical framework consisting of 3 points. As a system of ethics, permaculture is based on regenerating ecosystems and their life forms, taking care of people and distributing yields fairly and in a just manner (Roux-Rossier et al., 2018; Ferguson and Lovell, 2015). Care for Earth includes the nurturing of the soil, forests and water, by working with nature and preventing damage to ecosystems. Care for people includes looking after one's self, kin and community, by working with others and assisting those without access to healthy food and water, as well as designing sustainable systems that produce life's necessities. Finally, fair share includes setting limits on consumption and reproduction by redistributing surplus production to those who need it, as well as building economic lifeboats and modifying lifestyles (Hathaway, 2015; Rhodes, 2012).

Figure 2. Permaculture ethical framework and design principles.



Source: M.D. Hathaway, 2016.

2.1.4 The movement

Lastly, Fadaee (2019) emphasizes that permaculture exhibits analytical dimensions of a movement, as it is structured through various groups, organizations, events, and action repertoires. These elements coalesce with a distinct set of ideas and beliefs, which are seamlessly integrated into extensive networks of local and international practitioners. Both national and international permaculture events provide the possibility for both practitioners as well as enthusiasts to share ideas and diffuse the movement. According to McAdam (2013), the permaculture movement has influenced contemporary environmental movements such as the ecovillage and degrowth movement in different ways.

Furthermore, permaculture seems to show similarities to more complex social movements such as lifestyle movements (Haenfler et al., 2012), as some aspects of the movement are more individualized. Often the aim lies in the transformation of practices rather than targeting state and legislation (Fadaee, 2019).

2.1.5 Permaculture in practice

While the previous sections gave a look into the conceptualization of permaculture, the aim of this part is to build a comprehension on how permaculture is viewed and applied within businesses. Firstly, Genus et al. (2021) conducted research at varied permaculture enterprises in the UK and found that their respondents frame permaculture as a framework, a set of ethics and a design approach. Ultimately, it is seen as a 'way of being', inspiring and framing rather than solely business activities. This becomes evident when looking at the roles of these practitioners within their organizations. While activities such as food growing, consultancy, tutoring and designing were mentioned, others stated that their tasks are related to health and wellbeing. While three main business types were identified: teaching, food growing, and garden design and maintenance, permaculture entrepreneurs are also working in publishing, cosmetics, tourism, community development, holistic therapies, writing, construction, IT and jewelry making.

2.1.6 Success in permaculture enterprises

As the core aim of this research is to analyze successful permaculture enterprises, this section will dive into the perception and definition of success among these enterprises. How practitioners perceive success influences their business goals and aims (Reijonen and Komppula, 2007) and can therefore explain the chosen strategies to deal with challenges. Genus et al. (2021) found that adhering to the permaculture principles affects how permaculture practitioners perceive the meaning of success. They showed that inspiration, working with like-minded people positive feedback, serving local communities, being sustainable, making a difference, bringing about change, and uniqueness of the business create a sense of satisfaction of the practitioners, making their permaculture enterprise worthwhile. Furthermore, they stated that different perspectives on more classical business drivers and aims can cause controversy within permaculture communities, due to a controversial relationship between the ethical principles and profit making.

2.1.7 Permaculture versus agroecology

The definition of permaculture provided above shows much overlap with the similar concept of agroecology. Where permaculture is described as a framework, design practice and movement, Wezel et al. (2009) describes agroecology as a science, movement and practice. Furthermore, agroecology is an integrative study of ecology encompassing ecological, social and economic

dimension (Francis et al., 2003). While Hathaway (2015) states that permaculture is a form of agroecology, Krebs and Bach (2018) explain that their main differences lie in the conscious design of agroecosystems on the side of permaculture. Agroecology has introduced landscape design for the reorganization of farming systems since only recently (Krebs and Bach, 2018), while for permaculture design and the architecture of the land is imbedded in its foundation (Mollison and Holmgren, 1978).

While there may be differing conceptual views on the overlap between permaculture and agroecology, practical tools reveal significant similarities, particularly in the application of methods such as crop diversification, polyculture, crop rotations, and mixed crop-livestock systems (Holmgren, 2002; Suh, 2022).

2.2. Challenges for permaculture enterprise

This section will dive into the literature on both permaculture, relatable practices and similar concepts such as agroecology to create an understanding of what challenges these practitioners face and can face during different phases of their enterprises.

2.2.1 Permaculture challenges

Rocha (2022) applied the concept of sustainable entrepreneurship to permaculture practitioners and analyzed what barriers these people need to overcome to become permaculture entrepreneurs. Their focus was on changes one needs to go through regarding their 'habitus', described as a set of dispositions that inclines people to perceive, analyze and react in certain ways; it provides a basis for perception, appreciation and action (Lizardo, 2004). They found that, when coming in contact with permaculture, people experience great discomfort with their values and ways of living and face great strains as they move away from their cultural and social capital. Furthermore, individuals within permaculture communities can experience challenges regarding the differences in their values and approaches, as well as the communication regarding possibilities of permaculture and the complexity of their underlying relationships (Ulbrich and Pahl-Wostl, 2019).

Ferguson and Lovell (2015) showed that economic viability for permaculture businesses is relatively low compared to other agricultural farms. This can partly be explained by the fact that

economic yields produced through permaculture practices do not match those of conventional farming techniques (Didarali and Gambiza, 2019), resulting from a high level of manual work (Morel et al., 2016). Genus et al., (2021) stated that permaculture entrepreneurs face similar challenges as other microbusinesses, such as managing finance, marketing, and obtaining funding which could limit potential growth.

2.2.2 Relatable challenges

As an addition to permaculture-specific challenge, literature on related concepts has been analyzed as well. This is done by looking at the practices that are often used in by permaculture practitioners, such as crop-diversification, polyculture, crop rotations, and mixed crop-livestock systems (Holmgren, 2002; Suh, 2022) to see what challenges farmers face that apply these practices, as well as similar concepts such as agroecology.

Knowledge challenges have been mentioned by a variety of scholars who analyzed sustainable agricultural practices (Morel et al., 2020b; Aare et al., 2021; Hilimire, 2011; Nie et al., 2016). These range from individual, farmer level to systemic level challenges. Sustainable farming practices, including permaculture, apply crop diversification as well as crop-livestock methods (Holmgren, 2002), meaning that farmers need knowledge of a large variety of plants, crops and animals as well as their interlinkages, while also having proper management skills and knowledge regarding owning a business. According to Nie al. (2016) younger farmers often lack experience, training or background in working with animals, leading to the loss of animal husbandry knowledge needed to incorporate livestock in an already complex system to manage. Another potential challenge found by Morel (2020b) encompasses the individualistic mentality, or identity of farmers, and more specifically how they deal with uncertainties (Hogg, 2007).

Knowledge related challenges and shortcomings can also be found on a systemic level, as agricultural advisors are often specialists in specific strings of production and are less or not familiar with diversified methods. As a result, farmers experience higher costs as they require the help of multiple advisors. Furthermore, a lack of political interest in diversified farming methods has thus far led to limited research and education on the matter, this requires individual farmers to consult alternative sources (Aare et al., 2021).

Agricultural legislation and regulations are often based on conventional farming practices (Morel, 2020b; Aare et al., 2021; Hilimire, 2011). As a result, diversified practices face a variety of challenges. In the EU for example, the exclusive use of specific breeds of animals are permitted, which are less efficient for holistic, diversified farming practices (Morel, 2020b; Aare et al., 2021). While, in 2003 Australia implemented the Grain and Graze program to incorporate more crop-livestock methods, by the end in 2016, many farmers still moved towards specialized crop production (Hacker et al., 2009). Other identified challenges regarding legislation concern for example the processing of produce before retailing. Intensive lobbying from the large-scale, industrialized farming sector makes changes in legislation and regulations that are more favorable for small-scale farmers who apply different methods, much more challenging (Clapp, 2021). Iles (2021) explained that Australia in particular, has an agricultural competitiveness policy, causing supermarkets and food processors to pursue low-cost strategies that are often neglected towards environmental concerns, and result in a high market competition.

In summary, a variety of challenges related to social connections, knowledge, legislation and economics are identified from both permaculture as well as agroecology practitioners. The change in habitus and social surroundings is strongly related to the initiating phase of the practices (Rocha, 2022), as well as that of limited experience with certain practices. Knowledge of the practitioners regarding different practices and skills can be both a short and long-term challenge, depending on the individual, while systemic knowledge, as well as differences in values within permaculture communities, and legislative challenges are most likely to have long-term impacts.

2.3 Strategies to overcome challenges

This section dives into a variety of strategies identified in existing literature that are used by permaculture practitioners to address challenges related to knowledge, legislation, and social relations. These strategies were identified by analyzing the existing literature on permaculture practices, showing commonly applied practices and focus areas of permaculture practitioners and communities. The identified strategies address deeper rooted challenges regarding limited knowledge in- and outside permaculture communities, inconsistent and lower income streams, and social relations by focusing on long term solutions

2.3.1 Knowledge related strategies

2.3.1.1 Permaculture communities

Firstly, considering the three ethics of permaculture "earth care, people care, and fair share", it is argued that community-building is central to permaculture (Holmgren, 2002; Canty, 2019), for example for creating community capacity for food sovereignty (Williams, 2017). Centemeri (2018) states that permaculture exemplified a community-based approach to creating and sharing value.

Furthermore, to understand the development of knowledge and skill within permaculture communities, varied literature (Ingram et al., 2014; Ulbrich and Pahl-Wostl, 2019; Habib and Fadaee, 2022) has linked permaculture to the concept of Communities of Practice (CoP). Wenger et al. (2002) states that CoPs are groups of people who share their knowledge and expertise on shared problems, passions or concerns, by interacting on an ongoing basis. Engagement in actions and interactions facilitates learning, but it embeds this engagement in culture and history (Wenger, 2000). CoPs are well known for their learning energy and processes, as social learning can contribute to a feeling of belonging. Literature by Ingram et al (2014) found that inward-looking perspectives, however, such as permaculture, present barriers that have not yet been overcome.

Boundaries of CoPs are fluid as they arise from different enterprises, different ways of engaging with one another, different histories, ways of communicating and capabilities. Boundaries are important to learning systems as they connect communities and offer learning opportunities. Learning at boundaries can be maximized when experience, competence and interests are in close tension (Wenger, 2000). Ingram et al. (2014) confirmed this theory, as permaculture practitioners in the UK with strong core practices enabled learning and interactions to take place with other learning systems, although this was limited to those systems with similar perspectives. Ulbrich and Pahl-Wostl (2019) found that boundary processes strongly depended on initiatives of key individuals. They also showed that the permaculture framework can assist individuals to creatively embed values that are in strong contradiction with the dominant paradigm. They link this to the concept of empowerment, which can be achieved through a comprehensive understanding, meaningful engagement and manageable steps of action (Ulbrich and Pahl-Wostl, 2019)

In Wenger et al. (2002) concept, individual identity plays a central role in the learning process within communities of practice. Identity combines competence and experience to shape an individual's unique way of knowing. The ability to navigate boundaries and engage in learning hinges on one's capacity to temporarily set aside their identity within the context of the community. Learning processes are deeply intertwined with community, identity, and boundary dynamics, creating a dynamic environment for knowledge sharing.

2.3.1.2 Co-creating knowledge

In their research on knowledge co-creation in agroecology, Triste et al (2018) found that inspirational practices and technical knowledge are essential factors for the process of co-creating knowledge, which takes place at boundaries of CoPs between researchers, farm advisors and farmers. Co-creation processes can enhance a farmer's tactic knowledge, which is indispensable in sustainable agricultural development as it is context specific and holistic. It encompasses both farmer's skills and helps to craft mental models, ideals and values. Sharing tactic knowledge can be done through socialization, which involves engaging in practical experience and interactions or also observing people in practice (Wenger et al., 2002), and externalization processes, which enhances the shareability and usefulness for future use. Important is the dynamic interactions and clear roles of involved parties. Farmers should provide farm-specific knowledge for research purposes which then can be used for farm specific advice as well as conceptual knowledge (Triste et al., 2018). This reflects the externalization process. On the other hand, sharing practical and experiential knowledge amongst farmers, under supervision of advisors, gives them confidence and capacity to apply new practices and diffuse innovations. This reflects the socialization process. Furthermore, for the process of co-creating knowledge, Mariano and Awazu (2017), showed that individual-level factors of motivation, capabilities and reflexivity, meso-level factors of teamwork and shared understanding, and macro-level factors of institutional rules and culture are influential for the possibility of co-creation.

2.3.1.3 Situated and social learning

Ulbrich and Pahl-Wostl (2019) approached knowledge creation in a different manner, and how showed individuals gather information and gain knowledge is heavily dependent on their learning

dynamics and situated learning. Furthermore, learning processes are social activities occurring in a network, are therefore socially shaped and define a group's ability to draw on what they perceive as relevant knowledge to solve problems, developing their social capital. Linking the concept of social learning to agriculture, Chaudhuri et al. (2021) states social learning is key to the adoption of new, sustainable agricultural methods. Furthermore, they state that the distribution of new knowledge is strongly linked of farmer-to-farmer interactions.

2.3.2 Socio-economic strategies

2.3.2.1 Polyincomes

Genus et al. (2021) found that approximately half of their target group has a work life based on "polyincomes", meaning that they are receiving an income from another source than their permaculture enterprise. This is similar to the research from Didarali and Gambiza (2019) who found that of their target group, permaculture contributed over 40% of the total income, however mixed livelihood strategies were needed to supplement their income with other sources. Genus et al. (2021) also showed that permaculture practitioners often have a variety of tasks and income sources within their permaculture enterprises such as selling products, doing consultancy, teaching, and designing.

2.3.2.2 Community supported agriculture (CSA)

According to Lang (2010), community supported agriculture causes consumers and farmers to form direct connections (Lang, 2010), aiming to revitalize local agricultural economies, preserve farmland, enhance community food security, and educate consumers about farming and the environment. The goal is to cover true costs of production by dividing fairly among consumers (Ostrom, 2007). CSA share price should be set to cover operation costs and yield a fair return to the farmer's labor, leading to financial benefits for farmers. Previous study showed that the presence of a "core group" management model, where a group of members perform many of the organizing and communication tasks for the farms, can lead to higher incomes and share prices, more hired workers, and engaged in more social events and low-income programs (Brown and Miller, 2008).

2.3.2.3 Holistic business approach

In the *Visual Guide to Permaculture*, Loeks (2017) described permaculture as a holistic business approach and way of farming. A business goal within such an approach should include a quality-of-life statement, the forms of production, and a future resource base. The idea behind this approach is to create profit resilience, where investments are made in ecosystem services, yourself, and the community to make sure they can support you back. To achieve profit resilience, a holistic budgeting approach is needed where the needs of the farmers, farm business and agro-ecology are considered. This is for example done through Holistic Resource Management (HRM) instead of traditional cash flow management. Within HRM there is financial planning through which the goal is profit rather than production, meaning that profit is planned and wages for farmers are set upfront oppositely to using the end of the year profit. Providing secure and constant wages for farmers. Another method which is used is the Brown Brain Investment which states that building soil will enhance diversity and ultimately profit through more products and resources. Emphasizing on the maximization of symbioses, farmers can improve the quality and quantity of yields and reduce its expenses.

2.3.2.4 Ecovillages

Ecovillages, first introduced by Gilman and Gilman (1991) are known for their sustainability-focused practices, technologies and objectives. Ecovillage communities, experiment with ways of living which prioritize ecologically, relationally, economically and socially sustainable practices. Not all ecovillages are practiced from a permaculture ideology, nor are permaculture practitioners' part of an ecovillage by default (Esteves, 2017). This does not alter the fact that both concepts show a strong overlap in ideology and practice. Ecovillages apply a systemic approach to global issues, addressing interrelated problems of social alienation and ecological degradation by building local sustainable communities. Permaculture is a practical approach to the design of integrated human and natural systems, often adopted by the ecovillage movement and tailored to local contexts and communities (Litfin, 2012). An example is the Blacksnake village in Eastern Australia which uses the permaculture principles to grow their produce (Price et al., 2020).

2.4 Factors influencing strategic decision-making

2.4.1 Factors influencing permaculture strategies

As highlighted in the introduction, previous research has shown that strategic choices an entrepreneur makes are influenced by a variety of factors (Genus et al., 2021; Schoonhoven and Runhaar, 2018). Table 1 gives an overview of the identified factors that are relevant for the strategies outlined earlier. As, however, other potential strategies are yet to be identified, this section will furthermore aim to identify additional important factors. This will be done by delving into the literature on influential factors in strategic decision-making by sustainable entrepreneurs, shown in table 2. To structure the factors, they will be categorized in either individual, social or institutional level.

Table 1. Challenges, strategies and influential factors

Challenges	Strategies	Relevant factors	References
Limited knowledge on individual and systemic level Differences in values and views within communities	Permaculture communities and knowledge building	*Individual level:* Identity Individual motivation Capabilities and fortunate circumstances Reflexivity Social capital *Social level:* Shared understanding Easy shareable and useful knowledge Experience, competence and interests are in close tension Meaningful engagement Manageable steps of action	Triste et al., (2018); Mariano and Awazu (2017); Wenger et al. (2002)
Limited knowledge on individual and systemic level	Co-creating knowledge	*Individual level:* Inspirational practices Technical knowledge *Social level:*	Triste et al. (2018);

		Clear roles and tasks between actors Shared understanding	Wenger et al. (2002)
Financial and management	Polyincomes and diversification	*Individual level:* Income sources from outside permaculture enterprise Multiple income sources from permaculture enterprise	Genus et al. (2021); Didarali and Gambiza (2019)
Financial and management	Community Supported Agriculture	*Social level:* Direct connection between farmer and consumer Upfront payment Presence of 'Core group"	Lang, 2010; Ostrom (2007); Brown and Miller, 2008
Financial and management	Holistic business approach	*Individual level:* Holistic business goal (three components) Holistic budgeting Holistic Resource Management	Loeks (2017)
Losing social relations	Ecovillage	*Social level:* Prioritize ecologically, relationally, economically and socially sustainable practices.	Esteves (2017)

2.4.2 Sustainable decision-making of agricultural entrepreneurs

A concept showing significant overlap with the holistic business approach is the more generally applied concept of sustainable entrepreneurship. Patzelt and Shepherd (2011) defined it as the use of opportunities to create goods and services in a manner that sustains the natural and communal environment and provides development gains for entrepreneurs. As these types of entrepreneurs are required to make complex decisions and think systematically, they need a strong internal motivation (Kuckertz and Wagner, 2010), specific environmental knowledge (Patzelt and Shepherd, 2011), and have incentives that go beyond their personal gains (Hallberg, 2018).

In their research on knowledge, motivation and early-stage outcomes of sustainable agricultural entrepreneurship, Mupfasoni et al. (2018) found that knowledge on environmental sustainability is better developed then social and economic sustainability, and pro-activeness is a more determining factor compared to risk taking and innovativeness. Sargani et al. (2020), Yasir et al. (2021) and Gholamrezai et al. (2021) found influential factors for an individual's attitude towards sustainability-oriented intentions and agricultural entrepreneurship. Factors such as passion, awareness, opportunity recognition, and subjective norms overlap with research done by Lans et al. (2014). They looked at the relationship between entrepreneurs' competence, and the development and performance of small-scale agricultural businesses, and found that business goals and awareness influence the performance and competence, while initial opportunity identification, influence by goals, self-efficacy, passion and vision, and is strongly associated with competence development.

Other factors Sargani et al. (2020) and Yasir et al. (2021) like their social norms, overlap with those identified by Van Dijk et al. (2016) who found factors that are of relevance in one's decision-making in a community, or social level. They found that group norms, as well as group facilitation for the decision-making are influential in the decision to integrate sustainable practices in agriculture. Gholamrezai et al. (2021) also acknowledged the influence of other actors on the decision-making of sustainable entrepreneurs, like the public's view on organic products as well as different forms of media. Koe and Majid (2014) showed that social pressure as a social norm has a significant towards sustainable entrepreneurship. These factors strongly overlap with an individuals' cultural capital and social capital. Ashdown et al. (2020) defines cultural capital as a resource that a community or society shares that illustrates their values, traditions and perspectives. It strongly represents a person's well-being, including a sense of health, contentment, fulfillment, free will and harmony.

While social and individual factors are of great importance in a person's decision-making process, contextual factors such as the policy and economy should not be overlooked (Schoonhoven and Runhaar, 2018). Gholamrezai et al. (2021) found that intervening conditions such as the influence

of international and national policies, support by the government and other institutions, as well as the development of technical and technological infrastructure are relevant factors.

Table 2. Factors influencing strategic decisions sustainable entrepreneurs

Level	**Factor**	**Specific factors**	**Reference**
Individual	Personal characteristics	Opportunity identification Goal setting Passion and vision Self-efficacy Subjective norms Internal motivation Specific environmental knowledge	Lans et al. (2014); Sargani et al. (2020), Yasir et al. (2021); Gholamrezai et al. (2021); Kuckertz and Wagner (2010); Patzelt and Shepherd (2011)
	Financial capital	Social incentives Access to finance	Hallberg (2018) Lawal et al. (2016)
Social	Social capital and cultural capital	Community support Social norms/Social pressure Group facilitating Traditions Values	Van Dijk et al., (2016); Koe and Majid (2014)
Institutional	Political	Influence of agricultural policies	Gholamrezai et al. (2021); Long et al. (2019)

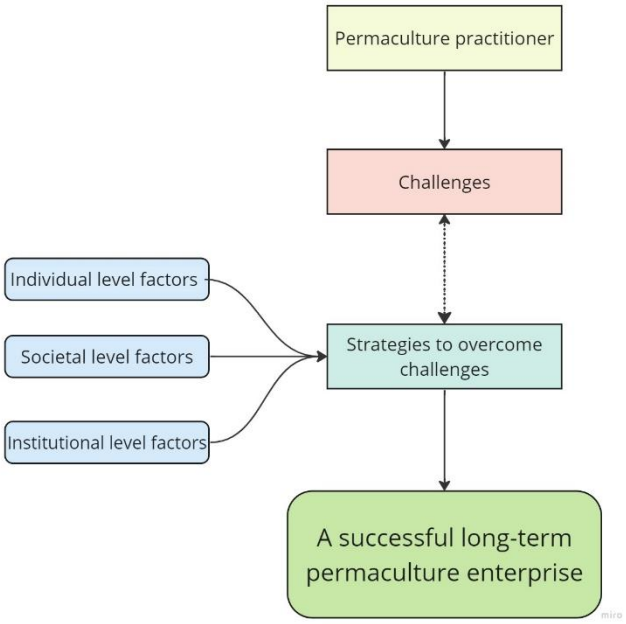
2.5 Conceptual framework

For this analysis, a new conceptual framework is constructed considering the identified individual, social and institutional level factors, which influence the decision and implementation for certain strategies to overcome challenges for a long-term successful permaculture enterprise.

Permaculture practitioners are experiencing a set of challenges, which are responded to by varied strategies. These strategies are influenced by three level factors, individual social and institutional level. Indicators for a successful long-term permaculture enterprise are based on the perception of success from the practitioners as

Genus et al. (2021) found that adhering to the permaculture principles affects how permaculture practitioners perceive the meaning of success. They showed that inspiration, working with like-minded people positive feedback, serving local communities, being sustainable, making a difference, bringing about change, and uniqueness of the business create a sense of satisfaction of the practitioners, making their permaculture enterprise worthwhile. Furthermore, they stated that different perspectives on more classical business drivers and aims can cause controversy within permaculture communities, due to a controversial relationship between the ethical principles and profit making.

Figure 3. Conceptual framework



3. Methodology

Before diving into the methods that were used in this thesis, this chapter will first give contextual information on the Australian agricultural sector.

3.1 The Australian agricultural sector – case explanation

This section provides essential contextual information about the Australian agricultural sector, which forms the backdrop for the research conducted in this thesis. It outlines key aspects of the Australian agricultural landscape, including policies, challenges, and historical influences, to help readers understand the context in which the study is situated.

Australia's historical trajectory has been significantly shaped by colonialism, leading to agricultural practices that prioritize European produce without considering local ecosystems (Griffiths, 1997; Gergis, 2018). Subsequently, government policies have undergone a dramatic shift towards neoliberal deregulation, within a broader framework of productivist development, corporate dominance, and deteriorating livelihoods for farmers. This neoliberal approach has left farmers more vulnerable to global market dynamics, fluctuating crop prices, and industry pressures (Iles, 2021). Additionally, Australia's supermarket sector is highly consolidated on a global scale, further influencing policy directions aimed at enhancing farmers' positions in the global market.

In recent years, Australian agricultural policies have prioritized increasing the sector's value, with investments targeting seven main areas (Australian Government 2020). However, there is a notable absence of a cohesive and strategic approach to these endeavors. One pressing issue facing the Australian agricultural sector is the simultaneous push to enhance productivity and output while experiencing a decline in the number of farms. This trend raises concerns about the sector's long-term sustainability (Iles, 2021; Lockie, 2015). In contrast to the European Union, Australia lacks a comprehensive income support approach for its farmers. Instead, the focus is on funding agri-environmental projects, typically allocated to local or regional organizations rather than individual farmers. This funding structure often results in farmers only receiving partial compensation for transitioning to more sustainable practices, thereby limiting the overall adoption of such practices (Higgins et al., 2008).

Australia's agricultural production primarily targets export markets, with approximately 70% of the production being exported, with more investments to help agribusinesses expand and grow their export (Australian Government Department of Agriculture, Water and the environment, 2020). This recent policy emphasis on increasing agricultural exports contrasts with the core principles of permaculture, which advocates for meeting people's needs within ecological limits, promoting responsible consumption, and balancing surplus through reproduction and redistribution on a local scale (Holmgren, 2002).

Australia stands as one of the countries most severely affected by climate change globally. The agricultural landscape has been transformed in ways that present challenges for farmers seeking to apply agroecological practices. These transformations demand more effort and resources, making it increasingly difficult for many farmers to adopt such approaches (Iles, 2021). Indigenous knowledge, which could offer valuable insights, often remains invisible in this context (Mayes, 2018). The food industry's considerable influence also limits the visibility of alternative approaches, leaving relevant stakeholders struggling to envision other possibilities.

Social organization emerges as a critical driver for scaling sustainable agricultural practices. Social movements, farmer networks, field school systems, and similar initiatives play a crucial role in disseminating knowledge about sustainable agriculture alternatives. In Australia, there exists a rich tradition of farmer-to-farmer learning, which contributes significantly to the dissemination and adoption of sustainable agricultural practices.

In summary, this section sets the stage for the subsequent research by providing a comprehensive overview of the Australian agricultural sector, highlighting key policy areas, challenges, historical influences, and the impact of climate change. It also underscores the importance of social organization and learning in driving the adoption of sustainable agricultural practices within this context.

3.2 Explorative case study

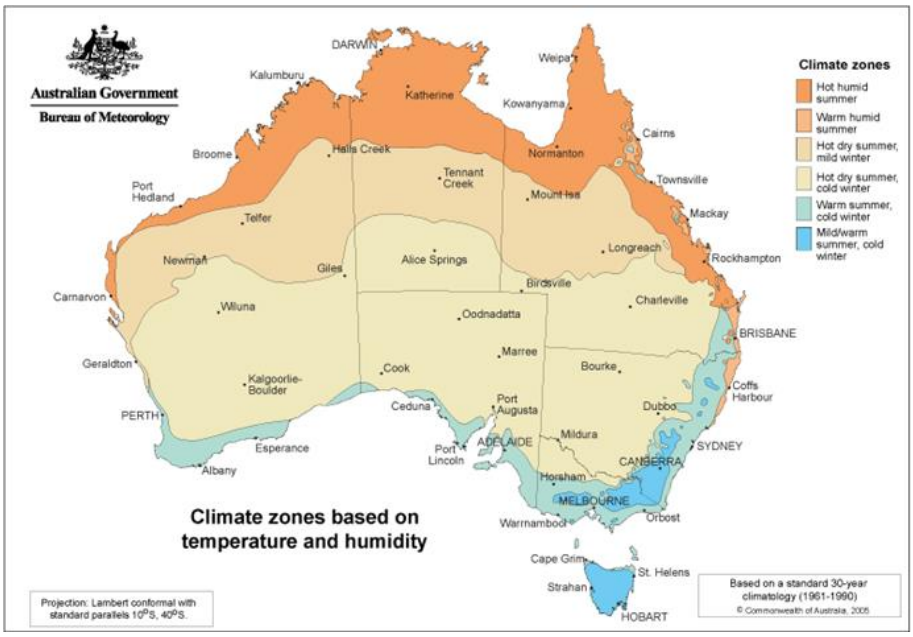
The objective of this thesis was to investigate a scarcely researched phase of permaculture enterprises, namely long-term success. The theoretical framework identified some challenges used

by permaculture entrepreneurs, strategies to overcome these challenges, and influential factors. As long-term permaculture enterprises, however, remained relatively unexplored in literature, I applied an explorative case study analysis specified to long-term enterprises. This approach helped to comprehend what factors influence the decision-making process of entrepreneurs for strategic management to overcome challenges (Gerring, 2004). The theoretical analysis showed that the relevance of some challenges, such economic viability, is determined by individual level factors, such as one's perception on the matter (Fiebrig et al., 2020; Felber, 2015). For this reason, in-depth information regarding permaculture entrepreneurs' views and experiences regarding challenges were required.

Furthermore, as some factors consider individual characteristics, it was useful to get to know participants on a personal level, which was made possible through in-depth data collection methods (Neha, 2021). A case study analysis, where the cases were chosen based on the 'most similar' design (Levy 2008). This entails that the individual, social and institutional factors form the independent variable, and the strategies that permaculture entrepreneurs use to overcome challenges, the independent variable.

Initially the case selection was done based on intervening and independent variables found in Annex 1. The case selection was limited to the states of South-Australia, Victoria and New South Wales. After an expert interview was done as well as the first 2 interviews, it became clear that intervening legislative factors were either on a local or national level rather than state level. And thus, the independent, institutional factor seemed to be less relevant than expected prior to the data collection. In the process of finding participant, one person was included in the research who is located in the state of Queensland. As the institutional factor was less relevant, I looked whether the intervening variable of climate was similar for this single participant compared to the other participants. As this participant is located near Brisbane it was assumed based on figure 4 that there is a similar climate and thus could be included in the data collection. A core reason for the inclusion of this participant was that they are part of an ecovillage, making it possible to analyze how this pre-determined strategy assists in overcoming challenges.

Figure 4. Australian climate zones



Source: Australian Government, Bureau of Meteorology, 2023.

Using Australia as a case study, offers a valuable context for generalizing theoretical insights by applying the established framework to real-world scenarios. It provides an opportunity to test the applicability and effectiveness of the theoretical factors identified in the framework in a practical setting. Through this case study, we can gain a deeper understanding of how these factors interact and influence the strategies adopted by permaculture practitioners in a specific socio-economic and environmental context. This empirical testing allows for the refinement and validation of the theoretical framework, making it more robust and transferable to similar sustainable agricultural practices and contexts globally.

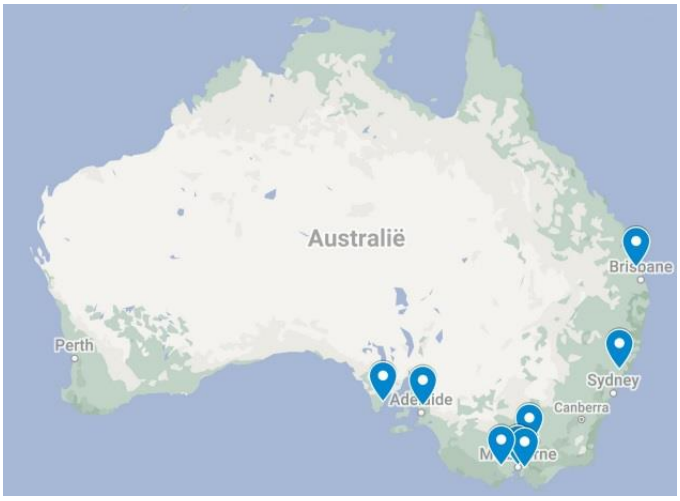
3.3 Respondent selection and data collection

Finding respondents was done through a general internet search, as well as using larger organizations such as Permaculture Victoria (2017) to find practitioners and more local groups as well, such as Holmgren Design (2023). Via these overarching organs I was able to approach some respondents directly through their websites or emails, while others were contacted through spokespersons of local groups.

As a primary criterion for selecting respondents, individuals were required to demonstrate the practical application of permaculture principles within their businesses, with a preference for those holding official or unofficial permaculture certifications. Furthermore, their practices needed to be registered as a business, and provide some form of revenue. In terms of including successful enterprises in this analysis, previous research showed that the perception of success for permaculture practitioners is depended on the adherence to the permaculture principles and so strongly depends on the individual practices (Genus et al., 2021). Therefore, no specific criteria for 'successful enterprises' could be developed. Instead, when contacting potential respondents, the question whether they would see themselves successful and suitable for this research.

Ultimately, nine respondents meeting these criteria were identified, with eight participating in interviews and one providing responses via email. While two of these respondents lacked permaculture certifications, they were included due to their active utilization of permaculture principles in their enterprises. The remaining respondents possessed either official or unofficial permaculture certifications. In table 3 an overview of the respondents, and a description of their enterprise is shown. As made clear in the previous chapter, permaculture is a concept applied in a variety of manners and businesses, which I aimed to reflect in the respondent selection. While some are mainly focused on farming practices, others are more involved in educational, consulting or designing practices, or a combination of these activities.

Figure 5. Location of the respondents



As the aim of the research was to identify challenges and the corresponding response in form of strategies, I used the method of a semi-structured interview, and created a topic list which offered possibilities for input by the interviewed to present new information, which was not found in the literature review in previous chapter. This list was sent to the participants prior to the interview to give them time to read through the topics and produce potential answers for the interview. Before conducting interviews, all participants also signed a consent form which assured anonymity, the right of withdrawal, and confidentiality of their information (Annex 2).

The topic list, found in Annex 3, was designed in such a way that the first and majority part of the interview gave the opportunity for the participants to present their main challenges, and their strategic responses. During the interviews I made an effort to influence their answers by presenting information as little as possible to minimize bias. When I found that no new information was given by the participants, I focused on the last part of the topic list in which previous identified challenges and strategies were presented to the participants, to check whether these were present in these instances.

Interviews were conducted via Microsoft Teams during July and August. Microsoft Teams has the functionality to produce a live transcript while the interviews were being conducted, which then only needed small adjustments which were made in Microsoft Word before transferring the texts into NVivo for the data analysis.

Table 3. Overview of research respondents

Respondent	State	Activities and income streams	Enterprise and/or practitioner background
1	Victoria	Selling variety of produce Project consultancy Camping spots Teaching Permaculture Design Course Farm tours Learning exchange	An 8-hectare self-reliant permaculture farm in North Central Victoria. Besides producing organic produce, the farm provides recreational options, as well as a variety of educational possibilities; farm tours, workshops, and courses can be attended. Also, the farm aims to be a source of activism and social change, by for example aiming to empower people to make changes and providing housing opportunities for the community. Permaculture principles are implemented throughout all aspects of their enterprise.
2	Victoria	Selling variety of produce Forestry as an investment product Tenant(s) Insurance payout	For 30 years they have been gradually doing more farming, and since 2020 full-time. Farming 152 hectares in Victoria a 600-milimeter rainfall country. Nearly 120 hectares is designated for plantation forestry, hosting a variety of trees, while the remainder holds cattle. While working with the permaculture principles, they do not consider themselves as a typical permaculture practitioner.
3	South Australia	Consulting Selling variety of products Events and tours Courses and teaching	15 Hectare property in a 400mm rainfall area, where a high variety of crops and products is grown. Aiming to demonstrate that sustainable food production could be economically and environmentally viable. Their mission statement is threefold: to demonstrate that land can be managed in an environmentally sustainable way, producing healthy food and a healthy income; To share information and skills for land management, self-reliance, conservation and food production with other people; To create a rich and beautiful place to live, to work and to raise children with balance, wisdom and skills.
4	Victoria	Supplying food for the larger estate Farm tours Selling products in harvest shop Classes	Sister company of a larger estate which is a wedding and conference center. The interviewee is the head gardener, and they provide food for the center, as well as tours and some produce for visitors. They're working towards using their location as a hub where people can come learn and practice permaculture, to build something for the community.
5	South Australia	Selling products online and at farmers markets	A 100-acres farm built from the idea that health is created from healthy food and the health of the environment. They produce pasture raised meats, chicken and lamb, as well

		Partner works as an electrician	as eggs, with the aim to eventually also produce beef. They apply the permaculture principles in conjunction with a similar concept; regenerative agriculture.
6	Victoria	Edible garden design Consulting Garden tours Speaker and teacher for events Designing and selling informative signs Monetizing social media Writing	With experience as an environmentally friendly landscaper, and garden maintainer, they now apply this experience throughout edible garden designing and consultation, spreading their knowledge through teaching, speaking, writing, and social media, while developing a sustainable, permaculture and regenerative farming-based project to feed themselves and the community.
7	Victoria	Selling trees Writing for magazines Teach PDC (Permaculture Design Course) Classes and workshops Renting out part of business Designing backyards	Started on their first property 25 years ago under the permaculture principles, this respondent was the second person in the state of Victoria to be full-time and fully reliable on permaculture. While they sell about 700 varieties of fruit trees in their nursery, they also offer a variety of classes, consultancy and design, and teach the PDC.
8	Queensland	Consultation Gardening Garden tours Writing books and articles Teaching a variety courses	In the permaculture field for 40 years with a specific focus on spreading knowledge through courses, teaching and writing books and articles. Described themselves as an activist by heart that doesn't work for monetary purposes. They developed a course through which they teach people how to teach permaculture. Ecovillage lifestyle where permaculture design is underneath the whole village and community environment.
9	New South Wales	Selling variety of produce Permaculture design (designing mostly smaller properties) Host events (such as workshops) Teach PDC	Two-acre farm near Sydney in New South Wales which is still growing. They are currently selling a variety of produce to the community and aim to be able to supply food for 10 to 20 households. The main part they have been focusing on is designing permaculture properties, and now also sharing their experience and knowledge through

In order to guarantee reliability and validity of the results, multiple interviews were done throughout southern Australia amongst a varied group of permaculture practitioners. For the selection of respondents, emphasis was put on the differences in experience, age, type of enterprise as well as level of permaculture involvement, to create a complete image of the practical situation. Furthermore, all answers from the respondents were considered throughout the result section so a wide range of perspectives and experiences were accounted for. It is therefore expected that these results would be largely reproducible in a similar context. When looking at a country or region with a different context, however, the results might show different outcomes.

3.4 Data analysis

This research has applied a thematic analysis, a method used for identifying, analyzing and interpreting patterns of meaning, or themes, with qualitative data (Braun and Clarke, 2013). Generally, thematic analysis can be divided into two basic approaches. An approach defined by an emphasis on coding reliability is often deductive, meaning that the analysis moves from theory to the development of themes and coding (Braun and Clarke, 2013). For this research, however, a qualitative approach that advocates for a flexible approach to coding and theme development was more fitting, as this form of coding tends to create more depth in the outcomes of the data (Terry et al., 2017). As a result, this research has conducted an inductive thematic analysis which helped to identify patterns and themes throughout the data. According to Cascio et al. (2019), the technique of open coding of semi structured interviews generates rich thematic analysis, which gives preference to participant's perspective, prioritizing validity, which is an assessment of whether the findings align with my intended research objectives, and whether that corresponds with the answers and experience of the participants (Schensul and LeCompte, 2013). For this reason, I applied the open coding method to the fully transcribed interviewees in NVivo, following a similar process as Terry et al. (2017), who formed codes in an ‘organic’ matter. The interviews were coded separately because respondents had different types of businesses and focus areas, experiences, practices and geographical areas. After this initial coding stage was completed for all respondents, the next step was to find sub-themes, and later main themes that encapsulated the initial codes. Once all interviews had a set of main themes, I looked for overarching themes amongst all interviews. The main themes were compared and analyzed for similarities among respondents and used for the result chapter.

4. Results

This chapter will present the results from the nine interviews conducted for this research and answer the three sub-questions of this research. The first section is divided into 5 sub-sections which jointly cover all the identified and experience challenges from the respondents. The second section presents the identified strategies respondents apply to overcome the challenges. These strategies, while some obviously arose from the interviews, mostly needed to be interpreted more intensively. A total of 7 strategies were identified that address at least one of the abovementioned challenges. The third section explores what factors are influential and essential in the strategy development of the respondent. An overview of all challenges, who experienced them, their strategies and influential factors will then be presented in a table.

4.1 Successful permaculture enterprises

4.1.1 Holistic financial success

Monetary success in permaculture enterprises is viewed as a means to fulfill various interconnected objectives rather than the primary goal. Respondents, such as respondent 1, emphasized that financial success is a resource to work toward their ideological vision of a better world. For respondent 8, achieving a balance between monetary success for sustaining the individual and the team, while also caring for the environment, is pivotal. It is noteworthy that even when respondents rely on their businesses as a source of income, their businesses are self-sustaining.

4.1.2 Impact and making a difference

The central focus for the success of these permaculture practitioners is making a positive impact on their community, environment, and themselves. For instance, respondent 1 is committed to building a better world, and their efforts are aligned with this overarching goal. Respondent 6 emphasizes teaching people to provide for themselves, while respondent 5 concentrates on enhancing environmental and community health. Respondents find satisfaction in creating change, uniqueness, serving local communities, and receiving positive feedback from like-minded individuals.

4.1.3 Prioritizing community and customer wellbeing

Community and customer health and wellbeing are fundamental goals for the majority of respondents (1, 3, 5, 6, 7, 8, and 9). These values manifest in various ways, such as educating people about self-care and sustainable practices (respondent 4, 6, 8, and 9) and offering high-quality, unique products and services that promote individual and environmental health and wellbeing (respondent 1, 2, 5, 6, and 7). Positive feedback and responses from their communities confirm the success of these efforts.

4.1.4 Personal gain and autonomy

While collective and environmental goals are central, respondents also aim for personal gain and autonomy. For example, respondent 7's objective is for their business to provide for their needs and maintain alignment with permaculture ethics and principles. Autonomy and self-sufficiency are vital for their financial success. Respondent 5 evaluates success in terms of the ability to take time off and achieve work-life balance. For respondent 6, receiving recognition for doing good aligns with their goals of helping people succeed in their practices, providing a sense of personal gain and validation.

4.2 Identified challenges

The first sub-question of "*What are the main challenges permaculture entrepreneurs face in the south of Australia in maintaining a permaculture business?*" is answered by identifying the challenges the permaculture practitioners encounter. The first challenges that I'll go into overlap with the previously identified challenges in chapter 2, while the latter cover newly identified challenges which were found through this analysis.

4.2.1 Governmental interventions and legislation

Throughout the interviews it has become clear that the national government is perceived as an essential actor in a variety of challenges, as it is portrayed as only having economic interests (respondent 3), actively working against permaculture practitioners (respondent 7), and with it, upholding the unwanted status quo (respondent 1).

Firstly, multiple respondents stated that national legislation is designed for, and even in conjunction with, large agricultural businesses (respondents 1, 3, 6 and 7), showing strong overlap with research from Morel (2020b), Aare et al. (2021), and Hilimire (2011). As a result, respondents experience financial consequences as, for example, practitioners need to replace materials unnecessarily (respondent 7). Another example is given by respondent 1, who stated: "*The Australia's dairy laws are really written in consultation with large scale industrial agribusiness and the laws serve as gatekeepers for agribusiness*". As a result, they are not able to sell their goat cheese made from raw milk, as these dairy laws prohibit the sale of raw milk products in Australia. Confirming the research from Clapp (2021), getting official approval is difficult for small enterprises, as it requires high costs and time-investments. Ultimately, both respondents 3 and 7 portray the national government as actively working against sustainable small-scale agricultural businesses: "it is an uphill battle to promote or get assistance for small-scale or sustainable farming" (respondent 3). An example is the amount of 'red tape' which is required to implement certification for the processing animal products (respondent 5), also found by Clapp (2021), create more housing (respondents 1, 8), and use and sell certain products (respondents 1, 4).

In addition to the national level, local level governments are perceived to be inconsistent with their legislation due to limited knowledge on permaculture and how it is practiced (respondent 2 and 9). Respondent 9, for instance mentioned: "(..) *local laws that don't seem to make sense to us* (...) *it might clash with the state government law. And then not allowed us to do it anyway, like that sort of thing*". As a result, loopholes and uncertainties make good decision-making and investments more difficult (respondent 9) and leads to frustration and a negative view towards governmental agents (respondent 2, 7). Respondent 2 mentioned that this frustration makes it more difficult for them to comply with these results, while respondent 1 deliberately looks for the boundaries of rules and cross these as a necessary means to change legislation.

4.2.2 Financial and management

The second category of challenges identified incapsulates both financial and management related challenges. In line with research from Ferguson and Lovell (2015), some respondents addressed difficulties with generating a consistent and even sufficient income from their permaculture enterprises (respondent 5, 8, 9). As a result, respondent 8 stated that they are losing people back to

mainstream farming because they weren't earning money from permaculture. In general, both respondent 6 and 7 stated that small-scale farming, such as permaculture are not easy ways to make money in a country like Australia.

While not all respondents are experiencing difficulties regarding their overall income, they do experience similar economic challenges as those who do have income related challenges, for example high labor costs, difficulty obtaining properly skilled workers, as well as material, and personal values and ideals that are in the way of charging costs for their services. High labor costs are causing issues for multiple respondents (respondent 3, 5, 8). Respondent 3 mentioned that alongside the high costs, obtaining volunteers through WWOOFing (World Wide Opportunities on Organic Farm) is essentially illegal. Both respondents 5 and 8 explicitly mentioned having issues with paying for help that is needed to be able to do all their tasks. This high diversification of tasks leads to un-optimized business activities and growth (respondent 5, 8, 9). Respondent 8, for instance, explained that without help they are not able to spend time on marketing and promotion, which is in line with the research from Genus et al., (2021). While respondent 5 explained that they are experiencing physical limitations in their work, which is limiting their output and potential sales, confirming research by Morel et al. (2016).

Furthermore, high costs for a workforce can only become an issue when a workforce is found, which shows itself to be a challenge for different respondents (respondent 1, 5, 6). For respondent 1, skilled and knowledgeable peers are needed "*who's management and understanding of the property deepens over time rather than the having the turnover*".
Respondent 5 and 6, however, explain that their location in rural areas means there is a very small population of potential workers and volunteers they can consult.

In addition to a small workforce, the limited availability of proper materials, resources and technology is also common challenges for the respondents. Technology and mechanization are often expensive, difficult to attain, and not built for small-scale farming (respondent 3, 6). Material and resource shortages such as organic fertilizers and pest-controls (respondent 6, 7), are a result of large businesses buying these materials (respondent 7), or a small number of ecological businesses which can provide these materials (respondent 6). Respondent 5 explained that, due to

strict legislation also addressed in the previous section, there are only a small number of poultry-processing businesses requiring travel-time and costs: "(…) *at the moment we're travelling, I think it's 600 kilometers to the nearest abattoir for chicken*".

Another business-related challenge concerns a finite number of business opportunities and a small and specific clientele (respondent 8, 9). In their teaching activities, respondent 8 mentioned that their clientele is limited to teaching only people who are already interested in permaculture. According to respondent 9, however, their clientele should also not have too much knowledge, as then their services would probably be dispensable.

4.2.3 Social perception and awareness

Knowledge related challenges on an individual, social and systemic level have been identified in previous research (Morel et al., 2020b; Aare et al., 2021; Hilimire, K., 2011; Nie et al., 2016). Through analyzing the interviews, it has become clear that insufficient public and institutional awareness of permaculture and its practices, as well as the resulting public perception and characterization of permaculture form a variety of challenges for these respondents.

Firstly, feelings of undervaluation and underappreciation in both monetary and personal matters are common issues addressed by respondents 4, 5, 6, 8 and 9. Permaculture is occasionally portrayed as being "*hippie*" (respondent 1, 3). Respondent 9 mentioned that there's an "anti-*hippie*" sentiment towards permaculture, making them feel not taken seriously. They state that this is caused due to unawareness of the concept, even leading to difficulties in obtaining insurance.

While sharing information is inherent to the permaculture ethic of fair share, there is a general expectation that knowledge related services are provided for free (respondent 6, 8). Respondent 6 explained that this is the result of some permaculture practitioners sharing information and knowledge for free, while respondent 8 states it has to do with permaculture being about gardening and "s*omething about it being alternative*". As a result, respondent 6 explained that clients are contesting their expertise and experience causing both frustration and undervaluation.

"*It is actually a bit of a permaculture thing that people think ohh everybody can do, and actually that's a bit of an issue with like, cause I earn money from writing and teaching. And there's a kind of a view in some of the permaculture world (...) they put all their writing for free. (..) everything they do for free, that it's, it's just really odd thing actually, that I just feel like you just can't do everything for free because you can do a certain amount, it has to be a balance you know, and otherwise it's just. people kind of using you.*" - Respondent 6

In addition to undervaluation of services, other respondents mentioned the challenge of general undervaluation and limited demand of good and healthy produce (respondent 1, 4 and 5).
Respondent 4 views the influence of large corporations, such as supermarkets, in combination with the lacking general knowledge regarding farming, as a source of this undervaluation. By undershooting their prices, supermarkets create an unrealistic expectation in terms of pricing. Moreover, there is the issue of aesthetic expectations, making produce that do not fit into this image, less desirable.

The challenges stemming from public perception are not confined solely to the general public but extend into permaculture communities as well. A notable example comes from respondent 7, who shared their experience of facing criticism from within the permaculture community. This criticism centered around their perceived level of doing too much and being too commercialized. According to Koe and Majid (2014), this can be a form of social control which is inherent to social capital.

"So we brought the other things customers want and did exceptionally well on that day. And within a few weeks I got a letter to say that we weren't welcomed to come next year because we were too commercial. The word I'd use is we're too professional." - Respondent 7.

A final challenge highlighted in the realm of business management revolves around the continuation and succession of the enterprises (respondent 2, 3, 6). These respondents place great importance on preserving their efforts and ensuring the ongoing value of their businesses.

"*I don't want to sort of from beyond my grave tell my children what they must do with things, but at the same time I don't want to waste value. I see farmland as being an incredibly important resource, in a way that very few people do*". - Respondent 2

4.2.4 Large companies and conventional farming industry

Large corporations in the food industry form the third source of challenges for the respondents. While the previous section already briefly mentioned the influence of this industry on the public's perception of food pricing and aesthetics, additional challenges were found.

Industrial agricultural, for example, forms a competition on the food market due to their high volume and low prices, significantly reducing the potential customer base (respondent 1, 4, 5, 7). As a critique of this large-scale production both respondents 1, 4 and 5 address that the quality and integrity of both crops and meat produced by these large corporations are very poor. Consequently, according to respondent 1, people tend to dislike fruit, making sales even more difficult: (…) "*very low price and it's difficult to sell my tree crop produce in that context because people don't even like fruit, have too much of it and doesn't taste any good*". To explain why the public accepts low-quality products, respondents 1, 4, and 5 all attribute this to a lack of public awareness of sustainable grown food.

Moreover, as already briefly mentioned earlier, large-scale agricultural corporations are highly influential in Australia's agricultural legislation and policies (respondent 1, 3, 4, 5, 6, 7) with respondent 1 and 7 stating that these businesses are dictating legislation. While respondent 6 stated that the same people are involved in both the government and large corporations, according to respondent 7 there is much non-Australian ownership in large businesses now, portraying Australia like "*a little America*".

4.2.5 Climate change

Among the respondents there exists a spectrum of concern regarding climate-related challenges, with some showing less or no immediate apprehension (respondents 5 and 6). Conversely, for others, climate change is already manifesting as a source of diverse and pressing challenges (respondent 2, 3, and 7). For instance, respondent 3 explained that climate change has economic

effects as it impedes their capacity to grow some crops, as well as requires investments for climate adaptation. Furthermore, respondent 2 has experienced devastating bush fires, destroying a large part of their crops. Though they were properly insured, forestry insurances are currently unattainable due to high losses insurance companies endured. Overall, respondent 7 expects that, when climate change will not be taken seriously and big changes are not made, Australia will not have any farms left in a couple of decades.

4.2.6 Conclusion challenges

In this section the identified challenges were outlined. It has become clear that, while some overlap with the literature was found, the results do indicate that other challenges are present. Financial viability as well as legislative challenges were previously identified in literature (Morel, 2020b; Aare et al., 2021; Hilimire, 2011), while social perception, the extent of influence of large business, and climate change did not clearly come out of the literature review. The challenge for social perception that was previously identified was regarding the change in social habitus (Rocha, 2022), however, the social perception issues now were on a much larger scale ranging from permaculture communities to national legislative level. Furthermore, the results showed a link between different challenges, for instance, a lack of social awareness and the resulting social perception of permaculture were a result of the lack of knowledge on a societal and institutional level.

4.3 Identified strategies to address the challenges

This section outlines the identified strategies the permaculture practitioners apply to address the abovementioned challenges, and with it answer the second sub-question of '*What are the strategies that permaculture entrepreneurs in southern Australia use to overcome challenges to successfully maintaining their enterprise?*'. Similar to the previous section, the first strategies are similar to those found in literature, while the last two present new insights.

4.3.1 Building a permaculture community

The theoretical chapter did identify the importance of sharing of passions, values, concerns and interacting amongst a group essential for a Community of Practice (CoP) as a strategy to overcome knowledge-related challenges (Wenger et al., 2002; 2000). Outcomes of the interviews, however,

have shown that communities function as much more than solely possibilities to address knowledge related challenges, but also address management related challenges. The establishment and cultivation of a community, as exemplified by the respondents, serves a multifaceted purpose that combines both practical and strategic elements. The underlying motivations behind these community-building efforts are deeply rooted in fostering self-reliance, facilitating knowledge and information sharing, and nurturing a healthy environment. Simultaneously, this strategy is applied to spread and grow the importance of permaculture and its purpose, and ultimately strengthen the enterprises. In other words, community building helps to address challenges regarding the public's perception of permaculture, inconsistent and unsure income, and the availability of resources. These strategies are closely aligned with the Visual Guide to Permaculture from Loeks (2017), through profit resilience is created by investing in the community, self, and the environment.

One prominent objective is the pursuit of community sufficiency, an aspiration interwoven with the provision of tangible communal resources (respondent 1, 6, 7, 8). This dual-purpose approach not only enriches the experience of running the enterprise but also functions as an empowering force, positively influencing others. As respondent 1 articulated, "You need the team and community, with and for the community," highlighting the interdependence that lies at the heart of community-building efforts. An example of these efforts is shown by the involvement of respondent 3 in initiating a non-profit association to support farmers and food artisans via a farmers' market, further exemplifying the commitment to community development. The significance of teamwork was also emphasized by respondent 4 who highlighted the value of collaborative problem-solving within the community.

A community also serves as a source of support, motivation and inspiration. It becomes a source of understanding during challenges and provides essential mental support (respondent 5), assistance in times of need (respondent 7), and the provision of resources (respondent 2, 6, 8). An example of this support is the prevalence of an abundance mentality within the community, minimizing internal competition and amplifying mutual support, a viewpoint shared by respondent 1, 6, 7 and 8. Respondent 7 underscored the significance of community support by elucidating their practice of offering business opportunities within their network and actively assisting young entrepreneurs in establishing and nurturing their enterprises. This commitment to fostering the

growth of fellow entrepreneurs exemplifies the spirit of corporation and collaboration that underpins their community-building efforts.

The concept of "social license" and the importance of social approval emerge as paramount factors in both the sustainability and progression of new projects and endeavors, as underscored by respondents 1 and 4. Remarkably, respondent 1 goes a step further, prioritizing social license and appropriateness above mere legislative correctness, highlighting the heightened significance placed on community acceptance and endorsement in their decision-making process. This emphasis on social approval serves as a testament to the profound influence and power of community sentiment in shaping the trajectory of projects and activities.

"(..) *there's a lot of things that happen here that aren't specifically legislated for, and if I said is it OK if I did do this, the answer would be no, (..) but they're really good strategies and they're, if well managed they are, socially appropriate and environmentally appropriate, you know, really good* ". – Respondent 1

Establishing a community where individuals can foster connections, at its essence, revolves around corporation and goodwill. For respondents 7 and 8, this endeavor has yielded acknowledgment and respect from within their community, giving them the possibility of putting themselves at the forefront of their marketing strategies and enterprise image, ultimately helping them connect to people even more. Notably, community building transcends personal connections and extends into the realm of business strategy, as demonstrated by respondents 7, 8, and 9. They share the belief that forging connections with people enhances the likelihood of these individuals returning for their products and services. A tangible example of this principle lies in the context of farmers markets, which serve as a potent avenue for connecting with people, expanding one's community, and facilitating sales (respondent 1, 3, 5, 7, 8). However, it's crucial to acknowledge that, as with any strategy, there are potential downsides. For some, the considerable time investment and the need to strike a balance between input and output make participation in farmers markets a matter of careful consideration rather than an unequivocal certainty (respondent 1, 7).

4.3.2 Educate the public and themselves

A variety of challenges mentioned earlier can be drawn back to a lack of awareness of the public on the importance of permaculture, the amount of work and effort practitioners put into their practices, as well as the broader perception of the food industry. By educating the public the respondents are enhancing appreciation for their efforts, teaching people on the importance of good quality products and practices for themselves and the environment, diversifying their income streams, and empowering others to join their cause. This knowledge sharing and the sharing of values is showing overlap with research by Centemeri (2020), Canty (2019) and William (2017). According to respondent 5, the increase of awareness and understanding of sustainable farming practices can even enhance the standards and sustainability of conventional farming practices. Their approach to accomplish this is to enhance awareness amongst the public regarding sustainable farming and to focus on their positive practices rather than dishonoring the work of others. As knowledge-sharing is part of the core ethic 'Care for People' (respondent 8), a variety of methods are identified through which the respondents aim to educate the public and themselves.

4.3.2.1 Workshops, events and teaching permaculture

A prominent and evident strategy for disseminating knowledge within the permaculture community is the provision of classes, workshops, and certification programs. This approach is widely embraced by the respondents as a means of educating and empowering individuals. Notably, several respondents, including respondent 1, 3, 7, and 8, highlighted their involvement in teaching the Permaculture Design Course (PDC). Respondent 1 also noted their role in overseeing and facilitating other tutors teaching this course.

In addition to PDC, various workshops and classes are facilitated such as, horticulture, fermentation (respondent 4), garden design (respondent 9), cider making, and animal husbandry (respondent 7). These comprehensive educational offerings underscore the commitment of respondents to providing a holistic and practical approach to permaculture and related disciplines. While most of these teachings are on-site, respondent 6 specifically mentioned the importance of online channels such as YouTube.

Through noteworthy strategies, respondent 8 does not only address the challenge of a limited

clientele, but also works around the issue of a negative perspective of permaculture. Going beyond the teaching of these courses, they highlighted their efforts in providing courses on social permaculture and how to teach permaculture, as well as consultations on how people can improve the functioning and success of their communities. By doing this, they expand their potential clientele to those already strongly related to permaculture. Furthermore, for those who are not aware of permaculture, respondent 8 explained that for these groups they would include permaculture in a less obvious manner.

Finally, respondent 7 stated they put efforts in professionalizing permaculture by setting up a Guild and speaking at international conferences and engaging with businesspeople to improve the understanding of permaculture and spread its message in a more corporate setting.

4.3.2.2 Farm and garden tours

Farm and garden tours are a way to showcase sustainable farming and gardening practices, and are a widely applied service (respondents 1, 3, 4, 6, 7). This shows overlap with the concept of knowledge co-creation in a Community of Practice, created when engaging of practical experiences and observing people as an example takes place (Wenger et al., 2002). By setting a right example for the public, respondents aim to function as a sustainable steward and a source for empowerment, inspiration and knowledge (respondents 1, 3 and 6). As an illustrative case, respondent 4 discussed their aspiration to transition their garden tours from being primarily recreational to having a clear educational focus, catering to students in the fields of permaculture, horticulture, and Technical and Further Education (TAFE).

Furthermore, to counter a prevailing characteristic and stereotype that permaculture properties are unorganized and chaotic, respondents 4 and 9 explained how they are actively developing a visually captivating property accessible to the public. Their aim is to present permaculture in a manner that is not only visually pleasing but also aligned with broader mainstream sensibilities, ultimately seeking wider acceptance and promoting the image of permaculture as an attractive and viable choice. Lastly, while garden tours function as an income stream in itself, they also serve opportunities to sell other products and services, and meet potential new clientele (respondent 1, 4, 6, 8).

4.3.2.3 Consultation and design

Finally, one other way that multiple respondents spread their knowledge is through consulting (respondent 1, 3, 6, 7, 8, 9). While respondent 1, 6, 7 and 9 all offer consultation possibilities regarding design and implementation for properties and garden, and self-reliant permaculture projects, respondent 8 focuses on the "creative facilitation and helping with people's group dynamic for groups and organizations, which is part of permaculture to permaculture". These consulting activities extend the reach of their expertise, allowing them to help others with their permaculture-related projects, design needs, and overall sustainability goals. Respondent 6 highlights that effective teaching, coupled with the ability to motivate and inspire individuals, necessitates meaningful interactions. Their experience shows that online consultation, for instance, can lead to misunderstanding of information.

4.3.2.4 Expand own knowledge

The Permaculture Design Course (PDC) emerged as a common source of knowledge and certification for multiple respondents, including respondent 1, 3, 4, 6, 7, 8, and 9. Additionally, horticulture also holds significant importance as a wellspring of inspiration and knowledge. Some respondents expanded their expertise through formal horticulture courses, while others initially delved into horticulture and later incorporated permaculture principles. The reasons behind the continual pursuit of knowledge and certification were varied. For instance, respondent 9 articulated their endeavor to attain horticulture certification, which is recognized by legislators as opposed to permaculture certification. They emphasized the value of recognized qualifications in professionalizing their work, stating, "I've actually been to TAFE, I've done this. It's a recognized qualification. So that was probably a very important step in professionalizing it."

In addition to formal courses and certifications, respondents employed diverse avenues for expanding their knowledge. These included self-taught practices (respondent 1), independent research on topics such as legislation (respondent 9), generational experiences (respondent 2), drawing inspiration from rural and local knowledge (respondent 3), and previous knowledge and experience on horticultural (respondent 4).

Lastly, as relevant sources of knowledge, respondents 5, 6, 7, and 9 explicitly mentioned the importance of learning from experienced professionals and others with expertise in their field. This approach allowed them to apply acquired insights to their own businesses. Respondent 9 specifically compensated for the absence of business experience within their immediate circle by learning from experienced individuals and professionals. Respondent 6 highlighted the importance of exploring alternative learning methods, such as understanding Aboriginal knowledge, which offers a unique perspective and enriches their learning journey. Lastly, respondents 5 and 7 pointed out that local government offerings, such as counseling services and skill-building programs, served as valuable resources for acquiring new skills and knowledge.

4.3.3 Polyincome and diversification

Diversification serves as the cornerstone of the enterprises examined in this research, allowing for a multifaceted approach to their operations and income streams (Genus et al., 2021; Didarali and Gambiza, 2019), addressing financial related challenges. On a broad scale, respondents employ diversification as a fundamental strategy in their professional practices, resulting in a multitude of revenue sources. An overview of their diverse activities can be found in table 3. Through diversification of income streams and practices, the respondents increase their income resilience, and thereby addessing some income and climate related challenges.

Respondents 1, 3, 4, 5, 8, and 9 exemplify this diversification by engaging in the production of various agricultural products, which they sell through different channels like farmers markets, websites, and social media. Additionally, they complement their farming activities with at least one other source of income. Respondent 5, for instance, works full-time as a farmer but receives support from their partner's job. Furthermore, the knowledge-based activities described earlier, such as farm tours, workshops, classes, and teaching courses, serve a dual purpose by not only disseminating knowledge but also generating income for the respondents. Additional sources of income include having tenants or individuals rent portions of the property, enjoying passive income, and receiving governmental income, such as pensions, as described by respondents 2 and 8.

Diversification within their produce offerings enables these respondents to establish a more consistent income stream and income security. For instance, respondent 5 effectively combines high-input, quick-turnover products with low-input, slow-turnover products. And respondent 9 highlights the advantages of maintaining a diverse array of income streams and tasks, despite the occasional challenge of managing and prioritizing them. This approach provides stability and adaptability, particularly when one income stream experiences a slowdown. As respondent 9 put it, "When not employed doing something off the farm, we just use that downtime to work on the market garden and get it up to speed."

Diversification also emerges as a key strategy for addressing climate change-related threats. Respondent 6 explicitly recognizes the relevance of native plants in this context, reflecting how diversification enhances resilience in the face of environmental challenges. Lastly, diversification aligns with the goal of self-reliance, enabling respondents to depend significantly on their own land, as emphasized by respondent 8. This self-sufficiency ethos underscores the importance of diversification in achieving greater independence and sustainability.

4.3.4 Holistic business management

To address challenges related to income, potential workforces, undervaluation and critiques and climate change, many respondents articulated the central focus of their business as the enhancement of the ecological environment through fair and sustainable practices, showing characteristics of a holistic business approach (Loeks, 2017). Respondent 1 for instance, explains that their aim to build and provide for a larger community should not affect the integrity of their property. Respondent 3 articulated four specific metrics to gauge environmental viability, such as product energy/input energy ratios, income/cost of non-renewable inputs ratios, soil health indicators, and the percentage of land allocated to biodiversity plantings and reserves, while also emphasizing the importance of being a “good employer”, The overarching goal is to produce ethically while prioritizing environmental and human well-being (respondent 5). The focus of self-care is visible in the importance of generating a sustaining income while reinvesting revenue was deemed vital by many respondents, facilitating self-sufficiency and community reliance (respondent 1, 3, 4, 5). It also allowed for the pursuit of quality time off and self-care, contributing to their well-being and the health of their communities (respondent 5, 7, 9). A level of self-care is

also evident in the response of respondent 7 in dealing with critiques of people in their permaculture community, through which they create a level of distance towards these critical voices as they cannot satisfy everyone.

In addition to the findings that are linked to previous research, some other interesting outcomes regarding business and management decisions and aims were identified. For instance, providing high-quality products and services emerged as a common theme among respondents. This emphasis on quality was seen as a source of pleasure and satisfaction, with respondents 1, 2, 5, and 6 highlighting their dedication to delivering excellence. Personalized strategies, expert advice, and quality services were emphasized as important aspects of their approach. Respondent 7 adopted a strong customer-centric orientation by offering a full-service business model and catering to niche interests.

Furthermore, the importance of slow and substantial development, coupled with a critical assessment of clientele, was a recurring theme. Some emphasized the significance of building the right client base and adopting a localized approach to problem-solving, as exemplified by respondents 1, 6 and 7. When asked about their aim and view on success, respondent 8 outlined a holistic view of success, striking a balance between income generation, environmental stewardship, caring for people both within and outside their organization, and self-care.

Some practitioners focus on themselves in their promotion of their business, which was often when they practiced permaculture outside of the location of their enterprise. For example, when speaking at events, doing consultancy work and showing their expertise (respondent 7 and 8). Respondent 8 explained that they would use all projects that they do as a promotion for themselves. Respondent 1, however, mentioned that they deliberately did not do this as they want to encourage others instead to “engage in a cult of personality that might make me seem like I’m amazing in a way that might disempower or discourage others”. Lastly, several respondents explicitly distanced themselves from conventional business roles, preferring to view their enterprises as expressions of their values and purpose, rather than merely profit-driven endeavors, as articulated by respondents 2, 8, and 9.

4.3.5 Inhabiting an ecovillage

A notable predetermined strategy involves the establishment of an ecovillage, which helps to address challenges regarding management and knowledge. For respondent 8, who lives in an ecovillage has proven to be a valuable source of knowledge and support within the community, similar to findings by Litfin (2012). Its cooperative structure has necessitated that the respondent acquires new business skills, which helped to address limited the issue of limited knowledge. Additionally, the village operates a trading system that enables residents to exchange surplus produce among themselves, helping the respondent to deal with income.

Furthermore, the ecovillage serves as a platform for organizing events and markets, facilitating opportunities to connect with new individuals and expand the respondent's personal community. It also provides a platform for selling products and services, contributing to the overall sustainability and growth of the community. According to respondent 8, an ecovillage can serve as an example of solutions for governmental decisions and policies: "*I'm working, you know from the outside, but influencing government decisions and policies from the outside and from experience where you know they're looking for solutions, and we're living a solution by living in an ecovillage*."

4.3.6 Push for legislative changes

The issue of navigating legislation and regulations is a notable concern for respondents, with various approaches and viewpoints evident among them. Respondent 1 advocated for pushing boundaries to effect change in legislation, highlighting the importance of engaging with responsible actors in the process. This proactive stance reflects a willingness to challenge existing laws and regulations in pursuit of more favorable outcomes. Respondent 9 shared that older colleagues and farmers often recommend a more nonchalant approach, suggesting that some individuals may choose to operate without excessive concern for compliance and wait to see if any issues arise. Conversely, younger practitioners like themselves, are less likely to take this approach due to a combination of limited financial resources and a desire to avoid legal troubles while still relatively new to their fields.

"It comes up a lot amongst like our groups of friends and farmers and things like that where yeah, like I said, the older ones are usually like, you just do it and you like, you wait to see if anyone

cares. And then a lot of us younger ones are like, we don't have a lot of money. We don't wanna play, get in trouble. Yeah. You just kind of relatively new to the fields. You don't wanna kind of start off badly with the, with a lot of issues." - Respondent 9

Furthermore, respondent 7 shed light on the challenges posed by new laws that can make trading and selling more difficult. Additionally, they noted the hurdles associated with participating in farmers markets, including joining associations, paying fees, and adhering to rules that may not necessarily benefit farmers. In response to these obstacles, some groups have opted to operate outside the established system, organizing "free markets" where participants operate with greater autonomy and flexibility, circumventing the regulatory constraints imposed by formal farmers markets.

These differing perspectives and approaches underscore the complex interplay between regulations, personal risk tolerance, financial considerations, and the desire to promote and sustain sustainable farming and gardening practices within the constraints of existing legal frameworks.

4.3.7 Creative, flexible and adaptive decision-making

In managing their enterprises, respondents employ a wide range of strategies that are deeply influenced by personal factors, fostering a creative, flexible, and adaptive approach to their work. These strategies address a multitude of challenges, from employment and cost management to task diversity and monetization of self-taught skills.

One prevalent approach is the use of alternative workforce arrangements and volunteering to address the challenge of high labor costs. Respondents tap into knowledge exchange networks and programs like WWOOFing to help manage their tasks efficiently, while seasonal employment offers further flexibility (respondents 1, 3 and 8). Some also leverage opportunities to teach in places that provide meals, reducing cost (respondent 8).

The diverse nature of tasks within these enterprises requires adaptive decision-making. Respondents prioritize tasks based on urgency and feasibility, ensuring they make the most efficient use of their resources. Monetizing self-taught skills is another strategy adopted by some

respondents, though this is not easily done for all as personal values for monetizing certain skills remains an issue for some (respondents 6, 8). Pricing strategies also show flexibility and are shaped, for example by ongoing trends (respondent 2) or individual preferences (respondent 6). Respondent 7 who bases their pricing on target audiences (respondent 7) stated that “Anyone that asked, I'll do it. I just have a bit of a different price scale. If it's government, I charge them a lot more. And if its community or touch them a lot less since”.

Creativity plays a crucial role in a variety of strategies. For example, during challenging periods like the COVID-19 pandemic, respondents found innovative uses for surplus produce (respondent 5). Furthermore, some respondents opt for alternative lifestyles, seeking cheaper living arrangements and accessing free governmental courses to save time and resources (respondent 5, 8, 9). Creative and efficient problem-solving techniques are employed by considering local challenges and solutions. Respondent 6 for example addresses the issue of shortage of materials and workforce by making own materials where possible. Furthermore, they also started to monetize their YouTube channel, which they initially started to spread knowledge and help save time for information sharing (respondent 6). Overall, the respondents continuously balance idealistic values with practical business drivers, all while juggling multiple activities (respondent 2, 5, 6, 9).

4.3.8 Conclusion strategies

In essence, the strategies presented here reflect the resourcefulness of the respondents in managing their enterprises while staying true to their values and goals. Each approach is tailored to their unique circumstances and priorities, showcasing the diverse range of strategies employed within the realm of sustainable farming and gardening practices, as well as educational and consulting activities. Overlap is visible with previously identified literature, especially within the strategies of community building and education (Centemeri, 2020; Canty, 2019; William, 2017), holistic business management (Loeks, 2017), inhabiting an ecovillage (Litfin (2012), and polyincomes and diversification (Genus et al., 2021; Didarali and Gambiza, 2019). Actively trying to change legislation and creative, adaptable and flexible enterprise management and decision-making present new insights for the existing literature on permaculture practices.

4.4 Factors influencing strategies

This section presents the factors that have been identified as influential for the strategies discussed earlier. These factors were determined through a critical analysis of the strategies, assessing the elements that play a crucial role in their success. Furthermore, these factors were compared to existing literature to identify any overlaps and confirm their relevance. As opposed to the previous two sections, this section will not refer to specific respondents, but rather focus on the identified strategy description to identify the factors.

4.4.1 Permaculture communities

Relevant factors for community building among the respondents are evident at both individual and social levels, similar to the findings in the research by Mariano and Awazu (2017) and Wenger et al. (2002), at the individual level, personal motivation plays a pivotal role in community development and initiation, similar to the findings by Ulbrich and Pahl-Wostl (2019). Respondents are motivated to build self-reliance facilitating the sharing of knowledge and nurturing a healthy environment. This motivation serves as a driving force reaching this goal despite varied challenges and can be acknowledged as a key factor for varied strategies (Table 4). Furthermore, motivation also shows to be a result of community building, as respondents highlighted how being surrounded by like-minded people motivates them to overcome challenges.

In the case of the respondents in this research, empowerment serves as both a goal and a driving force for community building. This concept is in line with the findings of Ulbrich and Pahl-Wostl (2019), who highlighted how empowerment enables individuals to creatively integrate their values, even in the face of contradictions with the prevailing dominant paradigm. This empowerment is built through comprehensive understanding, meaningful engagement, and manageable steps of action. Comprehensive understanding is visible in how respondents are connecting to people who are involved in permaculture and other similar practices. Important factors for this comprehensive understanding can be linked to similarities in personal and social values (Yasir et al., 2021; Koe and Majid, 2014), experiences, and interests (Wenger et al., 2002). These factors are also related to community engagement and are manifested in the spirit of corporation, collaboration, and goodwill exhibited by the respondents. The concept of an abundance mentality exemplifies the positive view respondents hold toward community dynamics, emphasizing a sense of plenty rather

than scarcity. To create manageable steps of action, much emphasis is put on the importance of the support and help from their team and community, similar to the findings of community support and facilitation by Van Dijk et al. (2016).

Finally, the respondents emphasized the significance of social license and approval, underscoring their commitment to considering the opinions, views, and needs of their communities and those around them when making decisions and conducting activities within their enterprises. This shows a strong overlap to the factors of subjective norms (Lans et al., 2014; Gholamrezai et al., 2021), and social norms (Koe and Majid, 2014).

4.4.2 Education

4.4.2.1 Educate the public

It has become clear that proper certification, an example of an of inspirational practices and technical knowledge factor (Triste et al., 2018), is essential for offering garden and farm tours and teaching classes and workshops. Throughout their efforts to share knowledge, the respondents engage in meaningful interactions with people through practical experiences and examples, which Wenger et al. (2002) stated as socialization. To facilitate these interactions, facilitation options are essential, which are similar to the factors of capabilities and fortunate circumstances from Mariano and Awazu (2017).

As the awareness of permaculture and the way it is perceived is not always consistent, respondents need to be aware and considerate of these perceptions, overlapping with the relevant factor of reflexivity (Mariano and Awazu, 2017). This reflexivity is visible in, for instance, the offering of client-based curricula. Finally, respondent 7 and 8 showed that a level of respect and prestige from the community is needed for people to accept your knowledge and expertise. This factor is new compared to the literature review.

4.4.2.2 Expand own knowledge

Several key factors significantly influence the education and learning processes of the respondents. Motivation, akin to the findings of Mariano and Awazu (2017), serves as a prominent driving force. One notable motivator is the pursuit of additional certification, often spurred by the desire

for official recognition. Financial resources play a pivotal role, enabling respondents to invest in their educational pursuits—an aspect not extensively covered in the literature review. Generational experience and prior knowledge provide a robust foundation for their learning journeys.

Furthermore, the respondents highlight the importance of learning from those with more experience, such as mentors and peers within their communities. Showing contrast to the findings from Wenger (2000), who emphasized the importance of experience and competence of those involved in knowledge building to be in close tension. This dynamic reflects a unique aspect of their learning process.

Finally, access to free governmental counseling services and programs emerges as a significant factor that enhances the respondents' educational opportunities. This aspect, not extensively explored in prior literature, contributes to creating a conducive environment for their ongoing growth and development.

4.4.3 Diversification and polyincome

Multiple income sources from either outside or within the permaculture enterprise, what Genus et al. (2021) described as “polyincomes” is a key strategy for the respondents to build financial resilience. From both the results of this research as well as previous research (Genus et al., 2021; Didarali and Gambiza, 2019), it has become evident that diversification and “polyincomes” are inherent to a permaculture enterprise. All respondents, except two, received income from multiple activities within and outside their enterprise. The two respondents who show fewer clear relations to permaculture, do not have additional activities that provide an income, but are financially assisted by either their partner or governmental subsidies. It is therefore concluded that the application of a polyincome dependents on the level of application of permaculture.

Furthermore, for a polyincome approach, access to farmers' markets serves as a crucial channel for selling their products and engaging with the community, facilitating their businesses' growth and public recognition. Governmental income sources, such as pensions, provide financial security and stability, particularly for older respondents, allowing them to pursue their permaculture activities without financial stress.

Diversification, a key aspect for these permaculture practitioners, relies on creativity and proactivity in various tasks. These traits are crucial for adapting to changing circumstances and seizing opportunities. Additionally, diverse knowledge and skills are necessary, encompassing both business management and various farm or garden-related activities, such as expertise in native plants, effective marketing, and strong communication skills. These competencies collectively contribute to the successful management of their enterprises.

4.4.4 Holistic business approach

Key factors for adopting a holistic business approach and management include a strong understanding of the environmental impact of the enterprise, reflecting the importance of knowledge. Additionally, motivation to establish an ecologically conscious community aligns with holistic business goals (Loek, 2017). This commitment to sustainability is evident in the respondents' personal values, as they take pleasure and satisfaction in delivering high-quality products. These personal values extend to their holistic perspective on success and self-promotion. For these individuals, their enterprises serve as expressions of their values and purpose rather than being solely profit-driven. This holistic approach prioritizes environmental and community well-being alongside financial considerations.

4.4.5 The ecovillage lifestyle

In the context of ecovillages, the relevant factors differ slightly from other strategies. Rather than focusing on what factors drive respondents to join such a community, the emphasis is on how ecovillages provide opportunities and strategies to address previously identified challenges. Key measures include knowledge and support, trading systems, and community events; showing strong overlap with that of community building. Ecovillages offer residents access to valuable knowledge and support within the community, establish trading systems that enhance community resilience, and facilitate community events to strengthen community relations and generate income by selling products. In summary, ecovillages provide a unique environment where knowledge sharing, resource exchange, and community-building activities contribute to sustainable living and economic viability. Relevant factors of the ecovillage lifestyle show strong overlap with those of community building and will therefore be merged in the overview in table 4.

4.4.6 Pushing legislative change

In the strategy of pushing for legislative changes, several factors come into play. Firstly, there is an element of risk-taking involved, which can be influenced by the respondent's age and experience. Older, more experienced individuals often advocate for a bolder approach, encouraging a "wait and see if anyone cares" mentality. In contrast, younger and less experienced individuals tend to be more cautious, fearing negative consequences due to their limited experience in the field.

Another critical factor is the active engagement with responsible actors in the legislative process. Respondents who actively reach out, communicate, and collaborate with decision-makers and relevant authorities are more likely to influence legislative changes. This engagement requires a proactive stance and a willingness to change and adapt from both the respondents and governmental bodies.

4.4.7 Creative, flexible and adaptive decision-making

Varied social level factors were identified that are of importance for this strategy: possibilities for alternative workforce, access to knowledge exchange and volunteering. While this partly can be linked to the factor of community support by Van Dijk (2016), the availability of a community is essential before this can provide the needed support. Therefore, both community support as well as access to alternative workforce are identified as factors. Furthermore, on a personal level, a variety of factors appeared to be of relevance for the adoption of a creative and adaptive approach, such as opportunity identification and capability to prioritize tasks based on urgency and feasibility. Personal values also proved to be of relevance for monetization of services, based on what they found appropriate. Finally, one respondent consults the institutional level factor of market pricing for their monetization strategy.

4.5 Challenge and strategy overview

Table 4 gives an overview of the strategies that are identified as well as the challenges the strategies address. Findings shown in italic writing are new compared to previous literature. Also, it should

be noted that, although respondents are facing certain challenges, this does not necessarily mean they have applied the linked strategies.

The overview demonstrates that the strategies of community building, holistic business management, public education, and creative, flexible, and adaptive decision-making encompass a broad spectrum of challenges. Moreover, although some factors at the institutional level were identified, it is clear that social and, in particular, individual-level factors were much more prevalent. It becomes evident that motivation, personal values, diverse knowledge, creativity, and proactivity are recurring individual-level factors, and for social-level factors, community support and shared values, experiences, and interests appear to be relevant factors.

Table 4. Identified challenges, strategies and influential factors

Strategy	Addressed challenges (experienced by respondents)	Factors influencing strategic decision per level
Permaculture communities	Generating a consistent/sufficient income (5, 8 and 9) Expensive and difficult to obtain resources, materials and technology (3, 5, 6, 7) *High labor costs* (3, 5 and 8) *Unoptimized business due to high diversification* (5, 8 and 9) *Small potential workforce* (1, 5 and 6) *Feeling undervalued and underappreciated* (4, 5, 6, 8 and 9)	*Individual level:* Motivation. *Social level:* Similarities in values, experience and interests, community support and facilitation, and subjective and social norms.
Educating the public.	Generating a consistent/sufficient income (5, 8 and 9) Large-scale competition (1 ,4, 5 and 8) *Feeling undervalued and underappreciated* (4, 5, 6, 8 and 9) *Expectations for free services* (6 and 8) *Undervaluation of products/limited demand* (1, 4 and 5) *Large businesses setting low standards and offering bad quality* (1, 4 and 5)	*Individual level:* Technical knowledge, reflexivity, capabilities and *fortunate circumstances.* *Social level:* *Socialization and prestige.*
Expand own knowledge.	Inconsistent and lacking local legislation (2, 7 and 9)	*Individual level:* Motivation, financial resources, generational and previous knowledge. *Social level:* Knowledgeable and experienced peers. *Institutional level:* Free governmental services.
Polyincomes and diversification	Generating a consistent/sufficient income (5, 8 and 9) Large-scale competition (1, 4, 5 and 8) *High costs for climate adaptation* (3)	*Individual level:* *Level of permaculture application.* Creativity, proactivity and diverse knowledge and skills.
Ecovillage	*High labor costs* (3, 5 and 8)	*Individual level:*

		Motivation *Social level:* Similarities in values, interests, subjective and social norms. Community support and facilitation.
Holistic business management.	Generating a consistent/sufficient income (5, 8 and 9) *Small potential workforce* (1, 5 and 6) *Feeling undervalued and underappreciated* (4, 5, 6, 8 and 9) *Undervaluation of products/limited demand* (1, 4 and 5) Critique from permaculture community (7) Large-scale competition (1, 4, 5 and 8) *Limiting yield and crops due to climate change* (3 and 7)	*Individual level:* Personal values, contextual knowledge, and motivation.
Push for legislative changes.	National legislation made for large business (1, 3, 6 and 7). Inconsistent and lacking local legislation (2, 7 and 9)	*Individual level:* Risk perception, age and experience, proactive and willingness to change legislation *Social level:* Active engagement *Institutional level:* Proactive stance and willingness to adapt
Creative, flexible and adaptive decision-making.	*High labor costs* (3, 5 and 8) *Unoptimized business due to high diversification* (5, 8 and 9) *Small potential workforce* (1, 5 and 6) Expensive and difficult to obtain resources, materials and technology (3, 5, 6, 7) Limited clientele (8 and 9) Expectations for free services (6 and 8) *High costs for climate adaptation* (3) Climate change related hazards (2)	*Individual level:* Personal values, opportunity identification, prioritization, creative, efficient, innovative. *Social level:* Possibilities for alternative workforce *Institutional level:* Market pricing

5. Discussion

5.1 Reflection on the findings

This research has analyzed successful permaculture enterprises in Australia. Here I will present the findings of this research in linkage to previous literature on permaculture enterprises. First, how success is perceived is of importance to create contextual understanding in the decision-making process of the respondents for their strategies, as well as to how they perceive strategies. It has become clear that creating and providing for a healthy community, while taking care of themselves, and the environment, and providing good quality products and services, is at the core of success for the respondents. This holistic perspective on success aligns with the findings of Genus et al. (2021), who also emphasized the importance of business uniqueness, although this aspect was not as prominently highlighted in this research.

As anticipated based on the literature reviews, the application of agroecology literature proved to be suitable, as various identified challenges in this research appeared to align with the agroecology literature. For example, knowledge and legislation related challenges showed to be important and common challenges for the respondents. In line the findings from Morel (2020b), Aare et al., (2021) and Hilimire (2011), it has become clear that the legislative landscape in southern Australia is build and designed by and for large-scale, conventional agribusinesses, actively minimizing the freedom and possibilities of permaculture practitioners to apply the permaculture principles.

In the study by Didarali and Gambiza (2019), it was noted that limited economic yields in permaculture do not match those of conventional farming practices. This research found that limited economic viability in the respondents' permaculture enterprises is partly the result of high manual labor and limited possibilities for additional workforce, which poses a limitation to possible yields, showing overlap with findings from Morel et al. (2016). In addition to the existing literature, this analysis revealed that public perceptions of permaculture, particularly the tendency to generalize, have constrained the client base for the respondents, resulting in difficulties in continuing to make sales. Also, previous research on permaculture emphasized the challenge of economic viability as major for permaculture practitioners (Ferguson and Lovel, 2015; Didarali and Gambiza, 2019). While this appears to be an existing challenge for the respondents of this research, as described above, it was of less relevance than anticipated. Practical enforcement of

permaculture principles, as well as creativity and adaptability of the respondents showed to be of great relevance in addressing financial issues. While financial stability and comfort are a goal for the respondents, more pressing challenges were visible.

Findings from Morel (2020b) and Hogg (2007) established that knowledge-related challenges existed on both individual and institutional levels. Nevertheless, the outcomes of this research revealed that knowledge-related challenges are present on the social and institutional level, however, less prevalent on the individual level. The respondents seemed to gain new knowledge of practices and skills whenever they needed and, unlike the former findings, did not perceive this as a challenge.

Rocha's research in 2022 revealed that individuals might encounter discomfort when deviating from their cultural and social capital as they transition into new environments, which is a typical challenge for the *initiating phase* of enterprises. As expected, this phenomenon did not apply to the respondents in this study, as they had already assimilated into their permaculture surroundings over time. Nevertheless, this observation could potentially elucidate the outcomes related to the devaluation of their practices. It suggests that individuals who are not part of the permaculture community or environment may have different values and perspectives, leading to the devaluation of permaculture practices when assessed from outside perspectives. As this finding was not previously identified, it is assumed to be an addition to existing literature. Finally, this research found that devaluation of practices and activities due to lack of awareness and a negative social perception showed to be a relevant challenge for permaculture practitioners, which also appears to add to permaculture literature.

Looking at how this research refers to the existing literature in terms of strategies, similarities as well as differences were found. Firstly, the focus on building permaculture communities overlaps with previous literature from Maye (2016) and Ulbrich and Pahl-Wostl (2019). It was expected, however, that permaculture communities would function as a means to address mostly knowledge related challenges. Community development, however, also functions as a strategy to address management and economic challenges. For example, community building increases the number of possible volunteers that helps to deal with high labor costs and limited workforce. Furthermore,

contrary to Wenger's (2002) emphasis on the importance of similarities in experience and competence among those involved in knowledge building, this research revealed that permaculture practitioners actively seek the mentorship and guidance of peers with more experience and knowledge to enhance their own understanding and expertise.

In addition to existing literature, two new strategies were identified. First, while legislation was already a known challenge, the literature review did not clearly show a strategy to deal with this challenge. This research, however, found that some permaculture practitioners are actively pushing for legislative change through different measures. On the one hand they would advise and engage with relevant legislators and policymakers to share their thoughts and plea for change. On the other hand, some would look for the legal boundaries of some actions and practices and cross these boundaries if these actions have a positive impact on the environment and community. It has become clear that the community building to build social license is key for this specific measure.

Additionally, the strategy of creative, flexible, and adaptive decision-making, as identified in this research, contributes to the existing literature by shedding light on the importance of responding creatively to challenges. This strategy is likely developed through the implementation of certain permaculture principles, which advocate for observing and interacting with the environment and encouraging creative responses to issues.

It's important to note that while these strategies are discussed separately, they are closely interconnected and often have causal effects on one another. These strategies provide opportunities and synergies for each other. For example, community building can open doors to creative workforce selection, as well as influence legislative changes by focusing on community needs and values rather than solely adhering to legal constraints. This interconnectedness emphasizes the holistic approach of permaculture practices in addressing challenges.

In reflection, it is evident that motivation plays a more significant role in permaculture strategies than initially anticipated. While Ulbrich and Pahl-Wostl (2019) emphasized the importance of motivation for community development, this research reveals that motivation is not only a driving force but also a result of various strategies, including knowledge acquisition and community

building. Moreover, the factors related to expanding one's knowledge, such as the need for financial resources, generational experience, and prior knowledge, are novel contributions compared to the existing literature. The role of prior knowledge, in particular, presents a new insight for the diversification and polyincome strategies, along with the factors of permaculture application level and age. Considering that the last two strategies are relatively new in the literature, the combination of these strategies with the identified factors inherently offers a fresh perspective on the field of permaculture practices.

5.2. Limitations

This research employed Australia as a case study to apply the established conceptual framework to a real-world context. While the framework appeared suitable for the Australian setting, it's important to note that national-level legislation and large-scale agricultural corporations played significant roles in the identified challenges, strategies, and influential factors. The generalizability of this framework and the research findings hinges on the extent to which the institutional context of other regions resembles that of Australia. Certain findings may be more broadly applicable, particularly those related to individual and social factors that align with or are influenced by permaculture principles. For instance, creativity and adaptability are fostered by permaculture principles and are likely to remain consistent across different contexts.

Additionally, the research demonstrated that the framework should be viewed as a dynamic, cyclical process rather than a linear one. The respondents, while considering themselves successful, continue to encounter new challenges and must continually implement new or adapted strategies. Individual, social and institutional level factors in the framework are also portrayed as having a similar impact on the strategies, however, level of impact is not considered. The outcomes of the research have shown that factors level factors, while present, are less influential in the overall set of strategies.

Furthermore, even though a deliberate choice was made to apply a qualitative version of the thematic analysis on the data, this approach can be a limiting factor, as the subjectivity of the researcher is seen as an integral part to the analysis process (Terry et al., 2017). Meaning that my

interpretation of the data and code and theme development is highly influenced by my knowledge and perception on certain topics.

Finally, another factor that can impact the research outcomes is the selection of respondents. The way challenges were perceived and addressed depended on various factors, including the respondents' experience as permaculture practitioners, their prior employment and business approaches, as well as their individual values and perspectives. While efforts were made to involve a diverse group of respondents with different backgrounds and experiences, the perception of challenges could have been different with alternative respondents included in the study.

5.3 Implications for further research

While this research brought new insights into the existing literature, it has also created new possibilities for future research. Firstly, this research has primarily focused on elucidating the strategies employed by permaculture practitioners to address various challenges. To gain a deeper understanding of the effectiveness of these strategies and their impact on permaculture practices, future research should be directed toward assessing the outcomes and success of these strategies. This analysis can provide valuable insights and recommendations for both policymakers and practitioners to enhance these strategies and their alignment with perceived challenges.

Additionally, this study has identified a set of influential factors for permaculture practitioners in southern Australia. To validate and generalize these findings in a broader context, future research should investigate the significance of these identified factors. This can be achieved through quantitative analysis involving a larger and more diverse population to determine the applicability of these factors beyond the current study.

Furthermore, while this research suggests that the devaluation of permaculture practitioners and their practices may stem from a lack of awareness and understanding, in-depth research is required to uncover the genuine sources of this devaluation. Identifying the root causes will enable permaculture practitioners and future policies to develop targeted strategies for addressing the knowledge and awareness gap more effectively.

5.4 Policy recommendations

Motivations and values of both the individuals and their communities are of great importance to overcome challenges. Their motivation improves the livelihoods of people and improving the environment should be supported and stimulated rather than suppressed and overcomplicated. For example, an important finding is that permaculture practitioners spend much time spreading awareness regarding their practices and its relevance, and with it educate the public. Efforts should be made to increase knowledge of permaculture practices, and the quality of products and services.

Furthermore, the respondents of this research addressed that existing legislation is focused on large-scale agricultural practices, confirming findings by Morel (2020b), Aare et al. (2021) and Hilimire, (2011). Instead, national as well as local legislation should be developed in line with the needs of permaculture practitioners. This could be done by, for example, involvement in the development of legislation.

Finally, when developing new legislation, it's essential to address the issue of inconsistencies between national and local legislation. This research has highlighted that local legislation is currently out of alignment with national regulations, creating uncertainties for practitioners and hindering their ability to make investments that support growth. Resolving these discrepancies and ensuring that local legislation aligns with national regulations is crucial to provide a more supportive and conducive environment for permaculture practitioners to thrive and promote sustainable agricultural practices. This alignment will help remove barriers and foster the implementation of permaculture practices.

6. Conclusion

This research was set out to increase the knowledge understanding of permaculture practice with the aim of understanding what influences the strategies these practitioners undertake to resolve different strategies. This was done by analyzing conducting an explorative case study in southern Australia, the birthplace of permaculture. Results from this research have provided new insights into the long-term success of permaculture enterprises which showed useful for policy recommendations that help improve the position and possibilities for these practitioners in Australia. It built further on existing knowledge by exploring a limited researched phase of permaculture enterprises; long-term success. On the one hand this research confirmed previous literature on permaculture practices by exploring the presence of challenges and strategies this researched determined. While on the other hand it extended to this body of literature by identifying new challenges and strategies, specified to an understudied phase of these enterprises.

The main goal was to answer the main research question of: "*How can different factors explain the strategies that permaculture entrepreneurs in South Australia undertake to resolve challenges for maintaining their enterprise?"* The theoretical framework indicated that influential factors can be found on individual, social and institutional level. Relevant factors were identified on all levels, this research, however, found that individual and social factors in particular are relevant for varied strategies.

An important factor for many strategies, especially related to education, community building and changing legislation, is the personal motivation to be a sustainable stewards by improving the health of the community and environment. This motivation is built by the individuals' values, proactivity and creativity, as well as how the values, experiences, interests and norms overlap with their community. Diverse knowledge is essential for diversification and knowledge spreading and gaining, which sits at the heart of sustainable stewardship and permaculture.

While permaculture values are inherent in the respondents, these ideologies sometimes hinder the monetization of certain services, leading to feelings of devaluation. Practitioners continue to strive for a balance between business imperatives and personal values, and they exhibit flexibility and adaptability in addressing new challenges, creatively solving problems arising from inconsistent

jobs and climate-related threats. Financial stability, though considered important, is primarily seen as a means to sustain the overarching purpose of preserving the health of the environment, community, and self. The research has also shed light on the significance of building a community and providing support to others. This not only earns respect and appreciation but also acts as an insurance and safeguarding mechanism within the permaculture community. Nevertheless, there is a certain degree of social control within this network.

The potential of permaculture practices, which can significantly contribute to sustainable transitions in agriculture (Roux-Rosier et al., 2018; Fiebrig et al., 2020; Habib and Fadaee, 2022), can be enhanced by promoting and nurturing motivation, creativity, and permaculture values both at an individual and community level, as well as aligning legislation to support these practices. Rather than facing hindrances through unsuitable legislation and devaluation, creating an environment that encourages and appreciates permaculture practices both legally and socially will be instrumental in advancing these sustainable and regenerative agricultural approaches. By fostering motivation, instilling strong values, and ensuring that legislation is supportive, we can unlock the full potential of permaculture for a more sustainable and environmentally conscious agricultural sector.

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Annex 1

Table 2. Criteria case selection

Type of variable	Category	Description
Intervening variable	Market regulations	National market regulations
	Climate	All cases have similar climate
Independent variables	Institutional factor	Cases are located in different legislative states: South-Australia, Victoria, New South Wales.
	Individual and social factors	Depending on the participants.

Annex 2

INFORMED CONSENT FORM (INTERVIEW)

In this study we want to learn about what challenges you experience as a permaculture practitioner and what strategies you apply to overcome these. Participation in this interview is voluntary and you can quit the interview at any time without giving a reason and without penalty. Your answers to the questions will be shared with the research team. We will process your personal data confidentially and in accordance with data protection legislation (the General Data Protection Regulation and Personal Data Act). Please respond to the questions honestly and feel free to say or write anything you like.

I confirm that:

- I am satisfied with the received information about the research;
- I have no further questions about the research at this moment;
- I had the opportunity to think carefully about participating in the study;
- I will give an honest answer to the questions asked.

I agree that:

- the data to be collected will be obtained and stored for scientific purposes;
- the collected, completely anonymous, research data can be shared and re-used by scientists to answer other research questions;

I understand that:

- I have the right to see the research report afterwards.

Do you agree to participate? o Yes o No

INFORMATION SHEET (INTERVIEW)

INTRODUCTION

You are invited to take part in this study permaculture practices. The purpose of the study is to learn about what strategies permaculture practitioners apply to overcome challenges. The study is conducted by Amy Liebregts who is a student in the Msc programme Sustainable Development, Earth System Governance at the Department of Sustainable Development, Utrecht University. The study is supervised by Dr. Hens Runhaar.

PARTICIPATION

Your participation in this interview is completely voluntary. You can quit at any time without providing any reason and without any penalty. Your contribution to the study is very valuable to us and we greatly appreciate your time taken to complete this interview. We estimate that it will take approximately 60 minutes to complete the interview. The questions will be read out to you by the interviewer. Some of the questions require little time to complete, while other questions might need more careful consideration. Please feel free to skip questions you do not feel comfortable answering. You can also ask the interviewer to clarify or explain questions you find unclear before providing an answer. Your

answers will be noted by the interviewer in an answer template. The data you provide will be used for writing a Master thesis report and may be used for other scientific purposes such as a publication in a scientific journal or presentation at academic conferences. Only patterns in the data will be reported through these outlets. Your individual responses will not be presented or published.

DATA PROTECTION

The interview is also audio taped for transcription purposes. The audio recordings will be available to the Master student and academic supervisors. We will process your data confidentially and in accordance with data protection legislation (the General Data Protection Regulation and Personal Data Act).

Audio recordings will be deleted when data collection is finalized and all interviews have been transcribed.

Annex 3

Topic list interviews – Australian permaculture farmers.

- Length interview: appr. 1 hour
- Semi structured interview

Introduction

The aim of my research is to get an understanding of how successful permaculture practitioners maintain their business within a national and even global context where conventional farming remains the status quo, and shapes most of the legislation and regulations. Practical research on permaculture has been limited thus far, however, important lessons can be learned from those who form their business around its principles. Through my analysis thus far I have identified a variety of challenges and strategies that are experienced and implemented by permaculture practitioners and those who follow similar concepts. The main goal for this talk is to detect whether there are additional challenges you experience, and most importantly, what strategies you apply to address these challenges.

Topic	**Type of questions and topics to discuss**	**Time**
General	Questions related to the business size, practices, experience of the farmers/context on the business, sources of income, etc. Questions such as: - What is the main focus of your business (farming, education, tourism etc.) - How do you apply the permaculture principles? - What is the size of your farm? - Are you involved in a form of environmental markets, co-operative, trust (e.g., Biodiversity Conservation Trust)	10 min
Challenges	What do they perceive as pressing challenges to maintain their business successfully? Day-to-day and longer-term challenges which affect the feasibility? Personal, social, economic, institutional, practical level challenges?	15 min
Strategies	What do the farmers do to address these challenges?	25 min

	What strategies are on an individual level, and what are on a community level? What do they perceive as successful business?	
Previously identified (research)	Challenges and strategies regarding: - Level of individual and societal knowledge - Income and diversification - Community supported agriculture - (Holisitc) business approach - Policies, regulations and subsidies	10 min