Master’s Thesis, 60 ECTS
Ecosystems, Resilience and Governance Master’s programme 2010/12, 120 ECTS

INTERPRETATIONS
OF A CULTURAL LANDSCAPE

CASE STUDY IN IMPLEMENTATION OF
ADAPTIVE CO-MANAGEMENT IN BALI’S SUBAK
CULTURAL LANDSCAPE

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INTERPRETATIONS OF A CULTURAL LANDSCAPE:

CASE STUDY IN IMPLEMENTATION OF ADAPTIVE CO- MANAGEMENT IN BALI’S SUBAK CULTURAL LANDSCAPE

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Master thesis Ecosystem Resilience and Governance 2012,
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ABSTRACT

Cultural landscapes are places that have developed distinct characteristics from the interaction of people and nature. Actors with different roles in a cultural landscape will interpret the value of the landscape features differently. By combining these perspectives, or knowledge systems, a more complete interpretation can be included in development of an adaptive and collaborative environmental management systems. The principles of such adaptive co-management have guided a management initiative in the province of Bali, Indonesia. It aims to safe-guard a selected region of a unique landscape shaped by peaceful water-sharing among Bali’s rice farmer associations, known as *subaks*. The current challenge is to effectively engage the communities in its implementation. The site is nominated as a Cultural Landscape World Heritage (CLWH) to UNESCO, which is an opportunity to involve the national and provincial administrations in a management strategy.

A key assumption is that knowing each other’s interpretations will contribute to building an effective management plan and implementation. In this study perspectives from two stakeholder groups, the management committee and local farmers, have been assessed to understand how they interpret the landscape values. The perspective of a practical knowledge system is contrasted to the scientific knowledge system, although both groups share an understanding of the values of the subak landscape. These knowledge systems were made explicit with visualisation methods in qualitative interviews.

Furthermore, the local farmers interpreted the CLWH nomination as an opportunity for tourism and development, although stressing that tourism may have negative effects. The management committee, on the other hand, perceived the CLWH nomination as a tool to attract attention not only from tourists, but also support from the national and provincial government. It can be concluded that the CLWH nomination has achieved involvement and attention from government actors and supported development of an adaptive co-management plan. The Balinese CLWH nomination has potential for evolving environmental management and combine local and scientific knowledge systems, based on the shared place-based lived experience of the subak landscape.
ACKNOWLEDGEMENTS

I would like to take this opportunity to thank my supervisors for our discussions, your immensely valuable input and guidance. A special thanks to Anna Emmelin for supporting me throughout the process and for our collaboration.

My thanks go to friends in Bali; to Pak Alit Artha Wiguna for introducing me to valuable contacts and describing the complexity of Balinese life, to Ibu Rama and her family for all I learned in the time I spent in their home, to Pak Kaler for your hospitality, and to Rachel and Stephan Lorenzen for your support in Bali and the shared experiences of Balinese traditions. Thank you Wiwik and Shanti, Professor Wayan Windia and Pak Iwan for making me feel very welcome and being open to discuss the process of the subak Cultural Landscape World Heritage nomination.

I also thank my thesis student group for valuable discussions, suggestions and encouragement through the writing process.

The thesis fieldwork was funded with a Minor Field Study Scholarship from SIDA, Swedish International Development Cooperation Agency.

Front page image: Painting in Balinese style, Shandita 2011, Ubud, Bali. The picture reflects the mental model of what takes place and what has value in the landscape. In this image the people are engaged in ceremonial and farming activities of rice cultivation.
# List of Contents

**Abstract** .............................................................................................................. 2

**Acknowledgements** .......................................................................................... 3

**List of Contents** .................................................................................................. 4

- Index of figures and pictures ................................................................................. 5
- Acronyms and local terms in Balinese/Indonesian .................................................. 6

1. **Introduction** ..................................................................................................... 7

   1.1 Problem statement ......................................................................................... 9
   1.2 Aim and Research questions ........................................................................ 10

2. **Background and Theory** .................................................................................. 11

   2.1 Landscapes as social-ecological systems ..................................................... 11
   2.2 Implementation of adaptive co-management .............................................. 12
      2.2.1 Shared Vision and leadership ............................................................... 15
   2.3 Knowledge systems ...................................................................................... 18
      2.3.1 Learning ............................................................................................... 19
      2.3.2 Interpreting the landscape ................................................................... 20

3. **Study Site- The Subak Cultural Landscape** ................................................... 22

   3.1 Subak and village structure ......................................................................... 26
      3.1.1 Subak .................................................................................................. 26
      3.1.2 Village structure in Bali ...................................................................... 27
   3.2 Defining the social-ecological system ......................................................... 28
   3.3 Challenges for the Subaks ........................................................................... 30
   3.4 Institutional set-up and adaptive co-management plan ............................... 30
   3.5 World Heritage designation ........................................................................ 33

4. **Methods** ......................................................................................................... 36

   4.1 Field work .................................................................................................... 36
   4.2 Sampling ....................................................................................................... 37
   4.3 Interview guide and visualisation tools ....................................................... 39

5. **Results** ........................................................................................................... 43

   5.1 Unique features of the landscape ............................................................... 46
   5.2 Challenges and needs for the community .................................................. 48
   5.3 Future outlook ............................................................................................. 50
   5.4 Perceived implications of the WH inscription ........................................... 52
   5.5 The role of the governing assembly ........................................................... 54
   5.6 Respondents reactions to interview method .............................................. 56

6. **Discussion** ...................................................................................................... 58

   6.1 Implementation of adaptive co-management .............................................. 59
      6.1.1 Administration ...................................................................................... 60
      6.1.2 Tourism .............................................................................................. 61
   6.2 Reflecting on data and methods .................................................................... 63
   6.3 Interpretations of landscape values ............................................................. 64
7. CONCLUSIONS AND FUTURE RESEARCH ........................................................................67
REFERENCE LIST ........................................................................................................68
APPENDICES ................................................................................................................73
   APPENDIX A ..............................................................................................................73
   APPENDIX B ..............................................................................................................76
   APPENDIX C ..............................................................................................................77

INDEX OF FIGURES AND PICTURES

<table>
<thead>
<tr>
<th>FIGURE</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>ADAPTIVE CO-MANAGEMENT PROCESS.</td>
</tr>
<tr>
<td>2</td>
<td>FROM VISION TO STRATEGY</td>
</tr>
<tr>
<td>3</td>
<td>MAP OF GEOGRAPHICAL LOCATION OF STUDY</td>
</tr>
<tr>
<td>4</td>
<td>MAP OF BALI</td>
</tr>
<tr>
<td>5</td>
<td>VIEW OF SUBAK LANDSCAPE</td>
</tr>
<tr>
<td>6</td>
<td>ORGANISATIONAL STRUCTURE OF THE GOVERNING ASSEMBLY (GA) OF THE CULTURAL LANDSCAPE BALI PROVINCE</td>
</tr>
<tr>
<td>7</td>
<td>CATEGORIES OF CULTURAL WORLD HERITAGE BY UNESCO.</td>
</tr>
<tr>
<td>8</td>
<td>TIMELINE FOR NOMINATION</td>
</tr>
<tr>
<td>9</td>
<td>STUDY SITE VILLAGE</td>
</tr>
<tr>
<td>10</td>
<td>VISUALISATION IN QUALITATIVE INTERVIEWS</td>
</tr>
<tr>
<td>11</td>
<td>VISUALISATION TOOLS</td>
</tr>
<tr>
<td>12</td>
<td>THE PROPOSED STRUCTURE OF THE MANAGEMENT PLAN FOR THE SUBAK CULTURAL LANDSCAPE</td>
</tr>
<tr>
<td>13</td>
<td>SIGN FOR THE WH NOMINATION</td>
</tr>
</tbody>
</table>
### Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BPTP</td>
<td>Bureau of Agricultural Research and Technology Assessment, Bali Department of Agriculture</td>
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<tr>
<td>CLBP</td>
<td>Cultural Landscape Bali Province, the name chosen for the CLWH nomination of the subak cultural landscape</td>
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<tr>
<td>CLWH</td>
<td>Cultural Landscape World Heritage</td>
</tr>
<tr>
<td>GA</td>
<td>Governing Assembly of the Cultural Landscape Bali Province, used also to refer to the Secretariat of the GA</td>
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<tr>
<td>ICOMOS</td>
<td>International Council of Monuments and Sites</td>
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<tr>
<td>UNESCO</td>
<td>United Nations Educational Scientific and Cultural Organization</td>
</tr>
<tr>
<td>WH</td>
<td>World Heritage</td>
</tr>
<tr>
<td>WG</td>
<td>Working Group of the Governing Assembly</td>
</tr>
</tbody>
</table>

### Local terms

<table>
<thead>
<tr>
<th>Term</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Banjar</td>
<td>Traditional Balinese hamlet</td>
</tr>
<tr>
<td>Desa Adat/Desa Pakraman</td>
<td>Customary village</td>
</tr>
<tr>
<td>Desa Dinas</td>
<td>Administrative village</td>
</tr>
<tr>
<td>Dewan Pengelolahan</td>
<td>Governing Assembly</td>
</tr>
<tr>
<td>Kelihan/Pekaseh</td>
<td>Head of or leader of village or subak</td>
</tr>
<tr>
<td>Pemangku/Pak Mangku</td>
<td>Balinese village or subak priest of commoner cast</td>
</tr>
<tr>
<td>awig-awig</td>
<td>Customary rule book for subaks and desa adats</td>
</tr>
<tr>
<td>tek-tek</td>
<td>A subak member’s defined rights and duties for a share of water from the irrigation system</td>
</tr>
<tr>
<td>tirtha</td>
<td>Holy water</td>
</tr>
<tr>
<td>gotong-royong</td>
<td>Balinese social working groups formed ad-hoc, informally or formally, to attend to various tasks pertaining to religious or secular matters</td>
</tr>
<tr>
<td>subak</td>
<td>Balis farmer-managed canal-irrigated rice cultivation system</td>
</tr>
</tbody>
</table>
“A landscape is defined by our vision and interpreted by our minds”
(Meinig 1979)

1. INTRODUCTION

In a time with increasing pace of change and global interactions, cultural landscapes around the world are challenged with attempting to maintain, or evolve the way people and nature interact (Young et al. 2006). Originally, cultural landscapes were shaped by the restrictions posed by local resources, and activities developed respecting the biophysical boundaries of the landscape. There has, of course, always been changes in conditions and interactions between nature and people. Through trade and markets cultural landscapes have evolved and adapted. Today, we are reminded to also keep the impact of human activities within the biophysical boundaries on a global level, that is within the limits of what the planet as a whole can sustain (Rockström et al. 2009). The local challenge of the past has become a global challenge. Especially, with the realisation that there may be unforeseeable threshold effects in environmental systems on both local and global scales (ibid.).

Cultural landscapes have dimensions and qualities of reconnecting to the limits of the biosphere. As environments have co-evolved with practices, distinct local landscapes and cultures have developed (Norgaard 1984). That heritage, from human actions and interaction with nature in everyday life, has also resulted in specific spiritual practices(Taylor and Lennon 2011). Those spiritual dimensions give people a sense of place and belonging, and
evoke emotions and memories and can be a link from the past into the present. This dimension makes cultural landscapes suitable for sources of knowledge for reconnecting to the capacity of the biosphere as a life supporting system (Odum 1989).

The spiritual and practical aspects of cultural landscapes are well represented in the gravity-irrigated rice cultivation landscape in Bali, Indonesia. This landscape is shaped by the paddy-rice cultivation and water co-ordination in so-called subaks. Subaks are farmer associations for irrigation allocation. Selected areas of the subak landscape in Bali have been nominated as a Cultural Landscape World Heritage (CLWH) by the Indonesian government since 2007 (CLBP 2010). This means that a new management organisation will be implemented to support and manage the subak landscape. Modern approaches to management often emphasise the role of leadership skills and vision (Westley and Mintzberg 1989). This makes the subak an interesting case considering that they have monitored, navigated and negotiated the available water for large irrigation areas for millennia, driven by cosmological and ceremonial practices of rice cultivation (Lansing, 2006). Bali is known as a place of enormous amounts of rituals following the Balinese calendar and cosmology, and forms a central part of the Balinese lifestyle (ibid.). The lived experience of activities in everyday life, the learned dispositions and traditions that form the habitus (Bourdieu 1984) of the Balinese people, are framed by these ceremonies. This shared understanding of the world, beyond personal identity, may be an important contribution to the capacity of the Balinese to adapt, evolve, and continue to thrive. This has been exhibited by the Balinese for decades, maybe centuries (Picard 1997).

UNESCO WH designations have a special category for cultural landscapes in the WH listing since 1992. This is a strong message that supports the notion that culture and nature are interconnected, and that intangible cultural values are linked to the physical natural landscape (Taylor and Lennon 2011). The intangible value is here referred to as the meaning the land has to its people, in everyday practice or in cosmological understanding.
1.1 PROBLEM STATEMENT

This thesis is based on a case study of implementation of adaptive co-management in the subak Cultural Landscape of Bali Province (CLBP). A new management plan is part of the nomination for WH. The nomination and Management Plan (Annex4 2010) were submitted to UNESCO in 2010, and the current challenge is to implement it in the communities. It is a large and complex project to put a new management plan into place. One aspect of this is the level of shared understanding among stakeholders, of the goals, benefits and challenges of a new co-ordinated management, and the implications of WH status.

A key assumption is that knowing each other’s interpretations and possibly building a new shared one through education and participation programmes, can contribute to building an effective management plan and implementation (Olsson, Folke, and Hahn 2004; Berkes 2009; Olsson et al. 2007). The interpretation of a place is shaped by a person’s perception and influenced by his knowledge system. This interpretation is thus different if it is based on UNESCO’s criteria for WH, the interpretation by researchers, local people, government or other stakeholders. This is likely to impact the implementation of the management plan, as well as the continued management of the sites. Thus, it is valuable to identify which different knowledge systems that are represented, and also to understand what values are shared across groups of stakeholders.

Drivers of change on the global scale; increasing connectivity in social and economic terms, urban development, increasing resource use per capita, increasing greenhouse gases, and more (Crépin et al. 2011) are affecting Bali as part of the global dynamic system and changing the conditions of the subak landscape. Although some rate of change is inherent to any landscape and society, these human induced dynamics increase the rate of change. The subak cultural landscape is faced with such changes, which become additional management challenges. Adaptive co-management is a strategy that is developed to handle such changing conditions, consequently it is interesting to asses how the new management is implemented in the subak landscape.
1.2 AIM AND RESEARCH QUESTIONS

The purpose of this research is to uncover a set of different interpretations of what is valuable in the landscape. It contributes with a display of different interpretations made by different groups of environmental stewards, that share the same habitus but also belong to different knowledge systems (Sörlin and Ernstson 2009; Carpenter et al. 2009). The two groups included in this study are the in-direct management of the Governing Assembly (GA) for the Cultural Landscape World Heritage (CLWH) nomination, and farmers in a community, here referred to as direct managers of the landscape. Based on this the following research question is pursued:

- What do different managers of the landscape interpret as valuable and how does this impact the implementation of adaptive co-management in the changing subak cultural landscape?

To be able to discuss the research question I investigated the following more specific sub-questions:

1. How far has the process of implementing adaptive co-management in the subak cultural landscape come?
2. What are the interpretations that people in different management positions have about the landscape and the change that it is undergoing?
3. What are the perceptions and expectations that people have of the implementation of adaptive co-management in the subak Cultural Landscape, and the World Heritage nomination?

These questions are relevant to the interpretation and implementation of management plans in cultural landscapes, such as other sites listed as UNESCO Cultural Landscape World Heritage sites and UNESCO Biosphere Reserves1, as well as giving insights to the current implementation process in the subak cultural landscape in Bali. The study is also a contribution to methodological development for eliciting individual interpretations of a landscape using visualisation in qualitative interviews.

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1 The Man and the Biosphere programme is a UNESCO programme "aiming to set a scientific basis for the improvement of the relationships between people and their environment globally" (http://www.unesco.org/new/en/natural-sciences/environment/ecological-sciences/man-and-biosphere-
“Information, as such, is not Interpretation.

Interpretation is revelation based upon information.

But they are entirely different things. However all interpretation includes information.”

(Freeman Tilden 1957, Interpreting Our Heritage)

2. BACKGROUND AND THEORY

2.1 LANDSCAPES AS SOCIAL-ECOLOGICAL SYSTEMS

Literature on landscapes is sensitive to the cultural and spiritual aspects of the interaction between people’s activities and the modified landscape that it gives rise to (Stephenson 2008; Taylor 2009). The strength of the concept of landscapes lies in acknowledging that humans have shaped the landscape, while the landscape has defined the space for human activities. The scale of a landscape may vary from what can be seen by the eye; a landscape view, to a wider area of common land-use or shared values. These feedbacks, the mutual impact of human activities on nature and the impact of natural conditions on peoples choice-space, are qualities of complex adaptive systems (Folke et al. 2005).

Complex systems of nature and society are framed as social-ecological systems in resilience thinking, and emphasises the interlinkage and importance of both aspects (Folke 2006). The systems approach focuses on the non-linear behaviour and unforeseeable thresholds that indirect interactions give rise to (Levin 1998). In a time of increased pressure on natural resources on a global and local level the solutions for safe-guarding food and material
provision as well as cultural values, cannot be sought in social and ecological systems separately but rather in understanding them as integrated (Steffen 2006). Risk, change, and uncertainty increase the challenge for management institutions, and there are many examples of implementation of adaptive strategies for sustainable management (Olsson et al. 2007; Berkes 2009). However, common critique to systemic thinking is that it does not account for human intentionality, especially concerning emergence of new patterns. Human agency is relevant in all social-ecological system, not least in adaptation to drivers of change and initiating change (ibid.)

2.2 Implementation of Adaptive Co-management

To deal with a landscape where human activities of e.g. trade, tourism, industrialisation and technology advancements continuously create different dynamics and feedback-loops, management practices have to adapt to social as well as ecological changes. Adaptive management is the process of managing the use of, and interaction with, natural resources through continuous learning. This learning concerns the state and dynamics of the site for monitoring change through a selection of ecological and social indicators (Gadgil, Berkes, and Folke 2010). The learning process and status of indicators are used to update the management plan in an adaptive process. This process allows managers and inhabitants to learn continuously, and to respond to feedbacks in the ecological system and make timely efforts to handle change, thus increasing the systems social-ecological resilience (Schultz and Lundholm 2010). Resilience refers to the capacity of a system to withstand disturbances and continue to thrive (Folke, 2006).

Collaborative management is a framework to enable multiple types of knowledge to synergise and to share different types of knowledge. Such co-managing structures integrates collaborative problem solving processes and take social conditions into account (Berkes, 2009). Adaptive management and co-management are sprung from different traditions; ecology, and common-pool management, literature respectively (p.1698, ibid.). They have been combined to address the issues of adapting to change, while ensuring legitimate and fair processes. Participation in management and interactive learning has been suggested to enhance relatedness and engagement in a learning process, and can enhance understanding for
environmental issues that are sometimes perceived as distant (Lundholm and Plummer 2010). Participation is more attractive within established social networks on community level, and this increases the probability to reach high levels of participation and sense of ownership for the management process (Ostrom 2005 as cited in Folke, Hahn, Olsson, & Norberg, 2005).

The implementation of adaptive co-management process rests on the assumption that loops of learning on many levels are the foundation for the design and implementation of a management plan (see fig. 1) (Mitchell, Rössler, and Tricaud 2009). The first phase of establishing adaptive co-management involves getting agreement among stakeholders on the principles and structure for management and understanding the values and the landscape as perceived by different actors. Based shared vision can be developed that can guide and unite the continued efforts. The next step is to define the management objectives, the specific goals to be achieved, and identify what the challenges and opportunities of the place may be. This work can be concluded in a management strategy. The second phase is implementation of established strategies by a co-ordinating body and local actors, and other involved stakeholders. The third phase is on-going throughout adaptive co-management to track the effectiveness of the programmes and assess how they relate to fulfilling the set mission. Evaluation and adaptation to changes in both ecological and social dynamics is the basis of adaptive co-management. The fourth phase is to adapt the management plan and overall strategies and programmes based on the results from monitoring selected indicators. This will ensure that the management plan integrates new learning from all stakeholders.
Figure 1. Adaptive co-management process.

Adaptive co-management can be divided into different steps, and here I show the steps in a learning loop, that develop through smaller learning cycles (as seen on the right hand side of the figure). The step-wise implementation starts with combining knowledge systems and establishing shared objectives and mission. That is followed by implementation of the strategy and then monitoring. The final phase is adaptation, which is then fed back into refining the strategy and goals. The management project can move through this loop several times, and sub-sets of the management plan can make their own loops in a process of adapting actions and progress to the needs of the community and ecosystem and constantly update their knowledge. (Graphic developed from text and figures, p. 37 Mitchell et al. 2009)
2.2.1 Shared Vision and Leadership

Learning and adapting are important factors in managing landscapes. The adaptive co-management literature suggests that a key to success is to couple that with a clear vision and leadership that can guide the process (Olsson et al. 2007). This aligns with a definition of leadership centred on individuals that have the ability to engage others in a shared meaning and vision, build trust and take action to translate vision into action (Bennis, 2003). These capabilities may emerge in interaction with the followers, and effective leadership can be fulfilled through a variety of leadership roles (Westley and Mintzberg 1989). The assumption that individuals and their leadership is key to effective adaptive co-management has to be understood in the context that a functional institutional framework is in itself not sufficient, just as it is not resilient to rely on a single visionary leader (Walker and Salt 2006). A combination of visionary leadership and functional institutions at the right scale, have been seen to create desirable outcomes (Olsson et al. 2004).

The purpose of a shared vision that describes a desired future is to keep the organization moving in the same direction. It can guide programme initiatives to fulfil on the shared aim (Smith, 2006; Angelica 2006). Guidelines for Cultural Landscape World Heritage management by UNESCO supports the idea that learning about the site as a participatory process, leads up to negotiating a shared vision for the landscape (Mitchell, Rössler, and Tricaud 2009). In discussions amongst diverse stakeholders on different levels, the shared aim should not compromise expressions of diversity of view-points and desired outcomes (Schultz et al., 2007). Some argue that diversity in objectives, and handling the conflicts that arise, can enrich and allow multiple goals to be achieved within a shared framework (Ljung 2001). An inclusive and broad vision can inspire all stakeholders to collaborate, while the aims and objectives can be more concrete and practically oriented (Mitchell, Rössler, and Tricaud 2009). The management plan is thus a vehicle to translate the vision, objectives and chosen strategy for governance, into programmes that can fulfil on the objectives and realise the vision (see fig. 2).
One of the most studied examples of implementation of adaptive co-management is the Biosphere Reserve Kristianstad Vattenrike (The water kingdom of Kristianstad) (Folke et al. 2005; Hahn et al. 2006; Schultz, Folke, and Olsson 2007; Olsson et al. 2007). It is an example of a cultural landscape that is managed in an adaptive and collaborative way. In the wetland management in Kristianstad Vattenrike an adaptive management regime was able to shift the perception of a water-sick flood-prone agricultural area. It came to be valued as a water-rich and biodiverse area respecting the integrity of the wet meadows and river (Olsson et al., 2007). The initiative to manage the wetland started twenty years ago when a key actor from the County Museum created collaboration between networks for water quality management, bird conservation and cultural heritage, as well as local farmers. Previous discrepancies in environmental understanding regarding problems of declining bird populations, deteriorating water quality, and the ceasing of traditional agricultural practices, were replaced by trust.
between actors mediated through this new bridging network. The nature of the new social network supported implementation of a new vision and new institutions.

Re-organization within the existing institutions was guided by a vision that was broad and inclusive of multiple interests (Westley 2002). The core of the social networks of Kristianstad Vattenrike became a municipality organization, in 2005 (Olsson et al., 2007), and was formally institutionalized as an advisory body for environmental decision-making, but without a formal decision making role (Folke et al., 2005). The BO is tightly linked to local farmer associations and has earned high levels of trust taking an active role in conflict resolution and solution finding.
2.3 KNOWLEDGE SYSTEMS

In a management structure it is worthwhile to return to the question “whose values are we addressing and whose heritage is it?” to ensure that different knowledge systems are analysed (p.1340, Taylor, 2009). “Whilst acknowledging the importance of establishing professional standards of practice for protection of the world’s cultural heritage, it is imperative that universality of practice and adoption of standards do not overwhelm local values.” (ibid. 2010) This points out that stakeholders on all levels should be allowed to voice their interpretation and knowledge of the landscape values, as in the example of Kristianstad Vattenrike.

Knowledge system is used to denote different ways of generating and validating knowledge, such as scientific knowledge, local knowledge, indigenous knowledge or traditional knowledge. These terms are examples of commonly used systems of knowledge, although there is great variability on how different authors and users define and delimit knowledge systems (see for example, Agrawal 1995, Berkes 2009). Knowledge systems can be distinguished on basis of three components; substance, methodological and epistemological choice for producing knowledge, and how it is embedded in a context (Agrawal 1995). Indigenous knowledge refers to the practice and generation of knowledge by a defined indigenous group (epistemological criteria), whereas traditional and local knowledge is based on the local context of learning and adapting in a place (substance and methodological criteria). The boundaries of who belongs to the same knowledge system is not easily defined, and it should be up to the carriers of knowledge to define that for themselves (Mauro and Hardison 2000). The term habitus (Bourdieu 1984) is useful to consider the shared values based on lived experiences. The habitus could be seen as an epistemological basis, or worldview for a knowledge system. A knowledge system could also arise from practical activities. Then the criteria of the system are based in shared substance; being farming or maintaining irrigation channels that is shared among practitioners.

Knowledge systems are increasingly discussed in adaptive co-management literature (Schultz and Lundholm 2010; Berkes 2009). As an addition to the management perspective, that sometimes has a business influence, knowledge systems highlights that there is diversity of goals and interpretations of landscapes. When adaptive co-management is introduced in
communities, it has to be adapted to the specific local habitus and interpretations. This can be achieved through shared learning processes (Berkes 2009).

2.3.1 Learning

Learning is commonly referred to in natural resource management literature, but with many different meanings (Armitage, Marschke, and Plummer 2008). Some scholars focus on the learning that takes place between stakeholders and different knowledge systems in co-management with focus on local knowledge (e.g. Bodin et al. 2006; Andersson, Barthel, and Arhné 2007; Elmqvist et al. 2004). Others analyse different institutions that work as learning platforms (Schultz & Lundholm, 2010). Some scholars refer to learning as a cognitive process of developing new perceptions and interpretations (e.g. Krasny, Lundholm, & Plummer, 2010; Lundholm & Plummer, 2010).

In the discourse of adaptive co-management learning has mainly focused on social learning among stakeholders (Berkes and Folke 1998, Pahl-Wostl et al. 2007, Schmuki 2010). There are a few exceptions such as Westley’s study of a single manager, which explores in detail the role and decision of an individuals’ learning and actions (Westley 2002). Her study is based on in-depth interviews with one individual, illuminating the cognitive sense making and learning process in managing a complex adaptive system. Such results cannot be generalized, however they provide insights for understanding nuances of interacting with, or managing a complex social-ecological system.

Cognitive learning assumes that people have an intention when they learn, or express what is valuable, as well as when they act (e.g. Piaget 1926; Vosniadou 2008 as cited in Lundholm, 2004). This implies that actions are based on the predicted outcome, however this is not necessarily a causal relationship. If a person acts based on an expected outcome, but without a causal link, this is called a teleological relationship (ibid.). This means that the actor does something in order to achieve something, and will choose the specific action that he believes will take him in the desired direction. The expectation of an outcome could be based in experience, but also in belief system. This means that an individual may perform an action based on the belief that it will generate a certain outcome.
2.3.2 Interpreting the Landscape

Taylor (2009) argues that the landscape construct is particularly valid in the Asian context and reflective of the relationships between people and nature in traditional and spiritual communities. This notion of mutual dependence reflects a humanistic view rather than the scientific one of separating nature and people. The landscape construct thus allows for the emotional relationship to be reflected in emerging natural resource management. This has been supported by the UNESCO cultural landscape World Heritage convention since 1992.

Based on information we can make interpretations, however interpretations go beyond the facts to a level of understanding and making sense (Taylor and Lennon 2011). Interpretation here refers to the description that individuals give of a place, based on their lived experience and understanding. People organise their understanding of the world in mental representations and beliefs in cultural and social structures. Such cognitive representations of an external system elicited through people’s accounts will always be a limited representation of the real system (Doyle and Ford 1998). A combination of different knowledge systems has potential to include more components of reality in a shared interpretation. Eliciting interpretations may support critical analysis of value and may reveal an individual’s context and specific understanding of the link between resources and usage (Kempton 2001; Strauss and Quinn 1997; Doyle and Ford 1998). This approach has been used in natural resource management to explore how people relate to fresh water and wastewater management in South Africa (Biggs et al. 2008).

In conservation projects there is also an interpretation involved to select what to conserve and to identify what the specific values of a place are, in addition to scientific data. The interpretation can be made from the point of view of inhabitants, researchers or other groups. From this follows that when describing the outstanding values for conservation in nominations to WH sites the authors make certain interpretations of what is valuable in the landscape based on the researchers expertise and their understanding of the landscape. This interpretation will be based on mental models of the professionals. However the scientific interpretation may benefit from complementary interpretations by other stakeholders. In a recent doctoral thesis Kamel (2011) investigates how residents and visitors interpret the
meaning of a cultural heritage. In answering the question *How do visitors/residents perceive their cultural heritage sites?* he finds that both groups perceive value in the experienced significance a place has for people. He categorises those values in five groups\(^2\). The values perceived by the respondents are qualitatively different from the criteria for *outstanding universal value*\(^3\) of most WH descriptions. This is an example of identifying different values in scientific knowledge system and local residents knowledge system.

Different interpretations of challenges are based on the individual’s context (Lundholm, 2004). It is worth emphasizing that, important decisions that impact livelihoods require an open communication to account for different contexts. Thus, the factual, experienced, and value based content and interpretation of the situation by different stakeholders should be included (Sjöström 1987 cited in Lundholm, 2004a). In environmental management the different stakeholders will have different contexts, in which they place issues. For example a farmer may frame the challenge of water scarcity as part of basic conditions for his or her livelihood and ability to grow enough food, while a hotel operator places the issue in an economic setting and his project of delivering fresh water for his customers convenience. This may frame what kind of solutions they prefer to handle the situation. Including people with different knowledge systems is a viable path for accounting knowledge systems to avoid that one perspective dominates.

\(^2\) The five categories of significance in the axial code are: appropriateness, representativeness, narrativeness, memory-recalling, engagement, uniqueness, balance and movement (Kamel, 2011).

\(^3\) *Outstanding universal value* is the key criteria for inclusion on WH list, UNESCO.
"My grandfather said - always look at the penjor. The top is a symbol of life, and it goes down to the ground in an arch, it looks like a rice crop when it is ripe.

We grow and grow, but eventually as you grow tall you have to arch to look down. To remember where we came from. Remember those still at the bottom. Because if you don’t see the fertile ground, you will not grow again. The more Bali develops the more it should give to the people.”

(Interview with IW)

3. STUDY SITE- THE SUBAK CULTURAL LANDSCAPE

Bali is an autonomous province of Indonesia, and one of 17 000 islands in the archipelago with tropical monsoon climate just south of the equator. The religion in Indonesia is mainly Muslim, however in Bali 91% of the population of approximately 3,5 million are Balinese-Hindu (Lorenzen 2011). The island is 5,637 square kilometres and the central parts are dominated by volcanic mountains, of which two are still active. The distinctive geography of central Bali is characterised by the slopes of the volcanoes with deep ravines with rivers that cut through the landscape and have created conditions for irrigated rice terraces. The central and south area of the island is called the rice-bowl of Bali and enjoys water-flows throughout the year with annual precipitation between 1,700mm and 2,200mm, in two distinct seasons; rainy season and dry season. Rice paddies cover most of the land in this region from the coast to the maximum altitude for rice cultivation on the mountain slopes, and rice is by far the most important crop (p. 16, Lorenzen, 2011).

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4 A penjor is a 12 meter bamboo pole decorated with rice, fruits, banners and flowers that Balinese families erect by the family compound to celebrate ceremony days.

5 8° degrees south of the equator, 115° east.
The study is situated in the Cultural Landscape WH nomination of four sites, with features that represent the main components of the Balinese subak system of gravity-irrigated rice paddies (see map in fig. 4). The sites selected for the nomination represent the historical evolution of the subaks, including the oldest subaks and water temples in Bali according to archaeological research (CLBP, 2010). They have been selected because of their importance for the rituals associated to water and irrigation management including lakes and temples. The sites represent the integration of the subaks and irrigation in the landscape including productive forest gardens, forests, mountains and lakes. Regional and traditional ceremonies are an important factor for the preservation and management of the landscape. Even though these values are very strong and alive, it is not certain that they will be able to withstand the hard pressures of economic needs (Lorenzen, 2011). The main outstanding universal value of the nomination is the philosophy of Tri Hita Karana (The three causes of goodness) that is said to be manifested in the landscape through temples, ceremonies and rice cultivation. The nominated sites have been selected in relation to the threats from land conversion and
The island of Bali with the nominated sites of the subak Cultural Landscape World Heritage marked. The arrow marks the location of the study site, within site C. Catur Angga Batukaru, for interviews with farmers and village priests.

development processes in the landscape and the livelihood of the inhabitants, which are referred to here as the direct managers of the landscape.

Here is a brief description of the four sites (see fig. 4 for map of Bali with the sites marked).

A. Lake Batur and Pura Ulun Danu Batur – the island’s greatest lake and temple dedicated to irrigation and water ceremonies.

B. Pakerisan watershed – a small subak landscape divided in three subaks, and important temples and archaeological evidence of being one of the oldest irrigation systems, and they continue to grow native rice.

C. Catur Angga Batukaru – a large subak landscape with 14 subaks and water temple networks and also a sacred landscape with four temples in a mandalic structure.

D. Taman Ayun temple – a temple managed by the Prince of Mengwi
The four sites are very different from each other, in both size and identity. It is relevant to consider the sites of the nomination as a unity that has shared features and also creates the pillars for sustaining all aspects of the cultural landscape that are deemed valuable in the management plan (CLBP 2010). The co-ordination of management of the sites is assigned to the Governing Assembly (GA) of the CLWH that sits under the administration of the Department of Culture of Bali Province.
3.1 SUBAK AND VILLAGE STRUCTURE

3.1.1 SUBAK

The subak is a water and irrigation management group, which is formed by farmers that share a water source from a spring, a well, or a stream. Lansing (2006) describes the subak organisation as a bottom-up democratic association governed by consensus among the members based on locally agreed regulations called awig-awig\(^6\). The word subak also refers to the physical structure of gravity fed-irrigation canals that lead spring water in streams into the agricultural areas with rice paddies. The irrigation systems are structured with dams, accompanied by a temple. Canals lead the water horizontally along the hillsides, sometimes for several kilometres through tunnels and aqueducts, to downstream subaks. At the entry to each subak there is a split that separates the water flow, and this is repeated to distribute water into each farmers’ set of paddies. The average size of land for Balinese farmers is 0.3-0.5 ha which is divided into smaller paddies depending on the topography of the land (Lorenzen, 2011). Within each farmer’s land, that person is free to choose how to distribute the water, having some dry paddies for vegetable crops, and some wet paddies for rice cultivation. The subaks have a set of temples for their ceremonies associated with the phases of rice cultivation. The sharing of the common pool resource of irrigation water has been investigated, both in terms of the social organisation and with regards to measurements of how the actual water division coincides with the allocations made based on traditional measures called tek-tek (Lansing 2006; Lansing et al. 2009).

According to Lansing et al. (2009) the evolution of the irrigation canals of the subak system in Bali has self-emerged as a function of accessibility to water, and need for additional land for rice cultivation in a self-emerging ‘budding model’. This model says that the subaks along a water source have developed organically as buds on a branch rather then through top-down planning of irrigation extensions. The evidence is based on archaeological dating that shows that the peripheral subaks are younger than the ones located closer to the water source in the region’ that was included in the study. In other regions, such as the more flat lowlands of

\(^6\)The awig-awig were mainly orally preserved rules in Bali until the Indonesian government encouraged all subaks to capture them in written form (Schulte-Nordholt, 1994)

\(^7\)This research was performed in the central-east subaks of Pakerisan watershed, close to the temple Tirtha Empul. The subaks in this region are usually only around 0,5 ha (Lansing 2006, Lorenzen 2012).
south Bali, scholars suggest that the local kingdoms have influenced the governance and construction of the subak systems. However, now in the colonial and post-colonial era they can be considered as farmer managed irrigation systems (discussed by Lorenzen, 2011 p. 105-106, Lansing & Vet, 2012).

3.1.2 Village structure in Bali

To understand the organisation of subaks and also the formal administrative system in Bali, it is useful to know something about the customary village structure and function. The Dutch colonial administration divided the customary hamlets (banjar) into administrative villages, Desa Dinas, in the 1930’s (Schulte-Nordholt 1994). The banjars have responsibilities to the local temples and one or more banjars make up a customary village, Desa Adat. A unit of at least three temples (Pura Puseh, Pura Bale Agung and Pura Dalem) identifies a customary village. The customary villages are concerned with temple maintenance, ceremonies and village matters. The national administrative village system, Desa Dinas, sometimes overlap with the Desa Adat but not always. In this thesis I will refer to customary village when using the word village. The subak organisation is separate but overlap with Desa Adat and banjar, and the same individuals are members of both communities.

Picture 1. View of subak landscape.

View of rice paddies with newly planted red rice stretching over multiple subaks. There are two volcanic mountains in the background, and cow sheds in the fields in the foreground. Photo Gabriella Silfwerbrand.
3.2 DEFINING THE SOCIAL-ECOLOGICAL SYSTEM

As described earlier the strength of a social-ecological analysis lies in the integrated approach. However, it is useful to identify the components that make up the social and ecological parts of the system to clarify the subject of study. The subak landscape is defined by the productive areas of wet-rice cultivation and the forest gardens’ ecological systems. The ecology of the paddy rice is a semi-aquatic system with a continuous flow of water through the rice terraces. Rice is a non-aquatic plant that has adapted to the flooded conditions of rice paddies which gives it a competitive advantage over weeds (Lorenzen, 2011). The rice, like grains in general, require nitrogen, potassium and phosphates and this can be added as organic fertiliser made from manure\(^8\), or chemical fertiliser with concentrated nitrogen (N), potassium (K) and phosphate (P). The natural irrigation water already contains nutrients that it carries from the potassium and phosphate rich volcanic soils of the upland forest (Lansing et al. 2001).

Previous research on the subak-related ecology and agriculture has been done to understand the impact that fertilisers and pesticides have on the crop and soil structure (Lansing et al. 2001) the impact that upstream fertiliser application has on the downstream fields, and the impact on the shoreline coral reefs due to increased nutrient loading (Lansing et al. 2001, ArthaWiguna 2002). At the watershed scale the forested areas (forest and forest gardens) are important for the biophysical water cycle and regeneration of the springs for irrigation water and potable water. The upstream freshwater lakes ecosystems are also part of the ecological system (CLBP 2010).

The social system in this landscape is the subak and village organisation and their respective temple responsibilities. All rice farmers belong to a subak, as they rely on the subak to get their allocation of water. Subak is also central to ceremonies that aim to improve harvests (Lansing, Lansing, and Erazo 1998). All villagers also belong to a customary village (Desa Adat) that is primarily concerned with the local temple ceremonies. In addition, there are so-called dry-land subaks (subak abiyani), farmer’s organisation for the forest gardens, which are separate from the irrigation subaks. It follows that the social system consists of the social

\(^8\) Organic fertilizer consists of matured manure from cow or chicken, ash, probiotic bacteria (personal communication with producer of fertilizers in subak)
organisation in the villages and subaks. The in-direct managers of the subak landscape that are setting up the new management plan, and the regional and provincial government agencies are also part of the social system. Of course, the local social system has links to other scales through business agreements for selling rice, tourism activities, national certification schemes etc. Also the ecological aspect has links outside the local area through import of chicken feed, chemical fertilisers, chemical pesticides and genetically enhanced rice seeds, which detaches the local activities from local resource availability.
3.3 CHALLENGES FOR THE SUBAKS

The ecosystem interactions in the traditional subak landscape have been mapped thoroughly, but there are new challenges that impact the social-ecological system, such as run-off from chicken and egg production, water scarcity and decreased capacity for the forested areas and soils to capture precipitation. In her recent thesis Lorenzen (2011) asks questions about the limits to the production system of subaks’ rice cultivation in terms of labour, water and land. The rice fields have become tourist attractions, and provide new avenues for off-farm income and also more pressure to sell the land as price of land has increased with demand from tourism industry. Also Lorenzen (2011) argues that while regular working hours and stable incomes form off-farm jobs are attractive, growing rice still provides a secure food source in times of economic instability and stored rice can serve as “savings account”. Schmuki (2009) lists some key factors that are threatening the subaks system. They are overuse of technology packs\(^9\) that has lead to loss of soil fertility, tourism that brings demand for land and fragmentation of rice terraces, loss of forest and water shortages, low price for rice coupled with increased cost of living. This results in a steady flow of people from agriculture to other livelihoods.

3.4 INSTITUTIONAL SET-UP AND ADAPTIVE CO-MANAGEMENT PLAN

The development of the adaptive co-management plan is a part of the nomination process of the Cultural Landscape World Heritage site (CLBP 2010). The organisation is structured after the model of another Indonesian site, the Bunaken National Marine Park in Sulawesi. The nomination dossier is based on long-term research in archaeology, anthropology, agriculture and more (CLBP, 2010) and adaptive co-management was considered suitable although it is a novel concept for the provincial administration of Bali. Implementation of this management process requires new structures, and crosses boundaries of existing regional administrative structures.

\(^9\)Technology Packs were distributed to farmers during the Green Revolution that began in the 1960’s. Cultivation technology package included newly bred high-yielding varieties (HYV), chemical fertilisers and pesticides, hand-held tractors, and threshers. The new high-yielding varieties produced up to double the yield of local varieties and matured in a shorter period of time (Scholz 1998: 532). Yet to achieve optimal yields these modern varieties required a balanced input of concentrated chemical fertilisers and pesticides and a continuous supply of irrigation water. (From Lorenzen 2011, p. 151)
The dossier outlines a management body, the Governing Assembly (GA), as part of the Department of Culture with a secretariat with key functions (see fig. 5). The working secretariat and its task groups have members from the Department of Culture, experts in agriculture and international relations, as well as named representatives from other government departments. The structure relies heavily on work from the five Working Groups (WG) made up of non-named representatives from administrative departments of the province. The dossier clearly states that the purpose of this structure was to include those who already manage the various areas in forestry, agriculture, fishery, tourism, and to include subak members in the management planning. Each Working Group is responsible for a strategic priority area (see box 1).
Both UNESCO and recent literature emphasise the need for participation in development of management plans, so that it meets the communities’ ecological and socio-economic needs (Mitchell, Rössler, and Tricaud 2009; Olsson et al. 2007). The nomination dossier outlines a framework for a management plan that can be filled in with detailed actions that can contribute to the goals for the project, and create benefits to the communities. The stated objective of the management plan is *Ecosystem conservation and Livelihood*, and supported by five strategic priorities (see box 1).

### Box 1. Strategic priorities of the management plan (p6-2 CLBP 2010)

**I. Livelihood protection and enhancement** for *subak* institutions and their members, as guardians of Bali’s unique cultural landscape;

**II. Conservation and promotion of ecosystem services** to ensure sustainable use of natural resources upon which *subaks* and their farming systems depend;

**III. Conservation of material culture** to preserve and enhance the authenticity of sites and structures as a living manifestation of Bali’s heritage;

**IV. Appropriate tourism and educational development** within the site, to achieve a balance between public and visitor education, generation of tourism-based revenue, and conservation.

**V. Infrastructure and facility development** consistent with preservation and enhancement of the cultural landscape.
3.5 World Heritage Designation

The aim of World Heritage sites is to support safeguarding of the World’s cultural and natural heritage by listing sites with outstanding universal values (Mitchell, Rössler, and Tricaud 2009). There are two categories of World Heritage listings, the Natural Heritage and Cultural Heritage, with a sub-category of Cultural Landscape Heritage for landscapes that combine the works of nature and humans (see fig. 6). The definition of a cultural landscape builds on the ideas presented of interaction between nature and humans as one system, and suggests that culture is the product of this interaction.

![Diagram of UNESCO World Heritage categories]

**Figure 6. Categories of Cultural World Heritage by UNESCO.**

The CLBP is nominated in the category of continuing landscape. “A continuing landscape is one which retains an active social role in contemporary society closely associated with the traditional way of life, and in which the evolutionary process is still in progress. At the same time it exhibits significant material evidence of its evolution over time.” (Operational Guidelines 2008, Annex 3 of UNESCO)

The World Heritage Committee, with support from the UNESCO Secretariat the World Heritage Centre in Paris, invites signatory nations of the *Convention Concerning Protection of Cultural and Natural Heritage*, adopted in 1972, to submit nominations for sites in their territory for the World Heritage list. The role of UNESCO is to provide guidelines for criteria of outstanding universal value and provide documents and guidance for nominations from the signatory countries. UNESCO’s role is not, as some groups have mistakenly believed, to actively seek out sites to include on the list (Putra and Hitchcock 2005).
Indonesia is a signatory of the Convention, and has actively proposed sites for listing as World Heritage with four successful sites in 1991 (Borobodur Temple in Java, Prambanan Temple in Java, Komodo National Park on Komodo, Ujung Kolon National Park in Java), and three more up until 2004 (Tropical Rainforest Heritage of Sumatra, Lorentz National Park in Papua, Sangiran Early Man site in Java) (Putra & Hitchcock, 2005). A site in Bali was previously proposed, the mother temple Pura Besakih, but not designated as a World Heritage largely due to local opposition based on concerns with administrative management and misunderstanding of the procedure of nomination to become World Heritage. The first nomination of a Cultural Landscape World Heritage in Indonesia, the subak Cultural Landscape of Bali Province, is proposed in the sub-category of continuous landscapes and is a living monument.

The World Heritage inscription of a site in the Bali province has been through several phases over the past 10 years. The preparation for the current nomination was supported by the Governor of Bali and a Planning Committee for the Governance of the Proposed World Heritage sites, a group that later emerged as the Governing Assembly in June 2010 (see timeline in fig. 7). Before the establishment of the GA, there was a disconnect between the Planning Committee and subaks, and need for increased learning of ecological knowledge from agricultural practitioners (Schmuki, 2010). This was addressed through the five priority area Working Groups and plans for participatory planning and assessments with local communities. The GA has focussed most attention in recent years on establishing legal frameworks and to secure government funding for the CLBP, to be able to implement the participatory and strategic actions of the management plan. The process of nomination for inscription is currently in a phase of establishing communication with residents and stakeholders, building networks for necessary processes to build capacity in the organisation of the CLWH10.

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10 Stockholm resilience centre has an on-going agreement through a Memorandum of understanding with UNESCO (since 2007) and has committed to collaborate with the Governing Assembly of the subak Cultural Landscape sites. In the nomination dossier of the Cultural Landscape Bali Province it says that “The (Stockholm Resilience) Center, a premier institution for environmental research and adaptive governance of social-ecological systems at Stockholm University, will support research, capacity building,
Figure 7. Timeline for nomination.

Milestones since the first submission of the subak Cultural Landscape World Heritage in 2007, until the expected vote for inscription in mid 2012. (CLBP, 2010)
"Every individual is a sliver or a building block of a common history and common future"

(Andrea Hvistendahl, 2011, about her exhibition in Forum for Living History)

4. METHODS

4.1 FIELD WORK

The data in this study is based on fieldwork during 8 weeks in Bali, Indonesia during January and February 2012. I made contact with my main informants through Professor Steve Lansing, who has collaborated substantially with many of the members of the Governing Assembly. Through these contacts I was invited to several official meetings of the Provincial Department of Culture, and also spent time in villages within the nominated areas, and visited all the nominated sites. Data collection was based on interviews and some additional informal conversations. My co-supervisors, Anna Emmelin and Professor Steve Lansing, were involved in the development of a concept for Visitors facilities for the subak CLWH and my interview results were expected to contribute to this creative process, hence the additional questions in the interview guide regarding visualisation and presentation for visitors.

The interview design was developed in collaboration with Anna Emmelin with experience of facilitation and process management in the field of environmental communication. I also had support from Andrea Hvistendahl who has worked with artistic and visual expressions for group membership processes. The study and interview guides were designed to be sensitive to
the on-going process of the GA, WH nomination, and on-going communication to implement adaptive co-management. One objective was to support the members of the GA to clarify their personally perceived aim of the management plan, and to identify what different actors perceived as valuable in the landscape (Ljung 2001).

The work presented here is an explorative, inductive study where the research questions were refined during the time of the study, as there was no previously held hypothesis of the perceptions that the different actors may have had about the landscape. Having said that, the fieldwork was preceded by literature studies of previous work on the Balinese subaks and culture, as well as the adaptive co-management literature for a solid prior understanding of the context.

4.2 SAMPLING

Within the case study site five informants each were sampled from two categories, a) members of the Governing Assembly secretariat (see figure 5) referred to as in-direct managers and b) farmers and priests in a rural village living within the site for adaptive management, referred to as direct managers. The individuals in the in-direct management group have different backgrounds and professions, and all have university degrees and these interviews were conducted in English. The five informants from the direct managers group were recruited through a contact with the subak leader (kelihan subak) and were local inhabitants in a rural mountain village, Desa Adat Jatiluwih in Catur Angga Batukaru. These informants were, or had been, farmers and two respondents were also village priests (see Appendix B for further details on the informants). The interviews were conducted by field assistants in Balinese and Indonesian, who also translated the responses into English. It is worth noting that Indonesian is the administrative language, while Balinese has a complex structure of levels depending on who you are addressing. In the interviews the respondents tended to respond in Indonesian, even when addressed in Balinese, possibly due to the unfamiliarity of the status level of the interviewers. This may have impacted the willingness of the respondents to share some negative view-points.
I focused on the village Jatiluwih, in site C. Catur Angga Batukaru, as it has maintained its rural qualities, and is an exemplary display of the spectacular view of the rice paddies. At the same time it is undergoing change due to increasing streams of visitors (2500 visitors annually CLBP, 2010 p. 4-15), developments of cafés, more egg and chicken farms, as well as villas for foreigners. These impacts from globalisation may reach other villages of the nominated sites (CLBP 2010). The community has developed some ways of managing tourism, through cafeterias and marked view-points and parking.

There have been previous studies in the region, recently a survey study in 2009 (Fox et al. in progress) of 51 farmers showed that almost all stated that collaboration in the subak was continually strong, and two thirds believed that the subak landscape would remain thanks to subak rules and the importance of rice for their livelihood. Based on this it was deemed a suitable study area to understand more about the community knowledge system and the perceptions of the landscape integrity. A survey study, or interviews with individuals from more villages could reveal more variations in perceptions and provide more breadth in interpretations, however the data gathered here is aimed to be a first analysis of knowledge systems to guide further participatory initiatives for adaptive co-management.

Picture 2. Study site village.

Left: Street view in rural village where interviews took place. On the left hand side is a buffet restaurant on the village land, and to the right is a view point for tourists that come to see the spectacular view over the rice paddies. Right: The view over the rice fields. Photo Gabriella Silfwerbrand.
4.3 Interview Guide and Visualisation Tools

Qualitative interviews is a tool to enter another persons perspective, to find out what is on their mind and collect their stories (Patton 2002). There are various degrees of formality in interviews from informal conversational interviews; interview guides with detailed questions but some variation in follow up questions, to standardized interviews where the same questions are asked the same way in every interview (ibid.). The design and flow of questions is crucial, as “the quality of the information obtained during an interview is largely dependent on the interviewer” (p. 341, ibid.). This requires thorough preparation. In this study I used interview guides, which allowed for new input in the conversation. This technique is not suitable for generalisations of the data, and the sample is not representative in the way a survey with a large sample could be. However it gives a more nuanced individual picture that can capture cultural expressions and interpretations.

The interview guide concerned two areas: firstly the individual interpretation of the subak landscape, and secondly perceptions of the management plan, implementation process and WH nomination. To engage the informant to share personal values and visions the interview started with questions related to their village and what they appreciated and considered unique there. With the in-direct managers an additional section regarding their motivation to engage in this project on a voluntary basis was included. The interview was then grounded in a detailed description of a village and a discussion of the challenges of that place. The sequence of questions was arranged to create a story that started with a description of the present, then discussed the changes that are occurring and how these affect the community, and lastly considered what could happen next, what an ideal future of the landscape could look like, and how it could come about (Interview guide Appendix A). The interview process was supported by using visualisation tools.

Visualisation tools are said to help to focus the informant, engage other senses and avoid rambling (Collie 1957 as cited in Harper, 2010). The tools used in these interviews are based on the work of the artist Andrea Hvistendahl, partly based in theories of Frances Stewart on group membership (Stewart 2004). Hvistendahl has created a game board where individuals can visualise the interaction between groups in a social setting, and she assigned certain
meanings to each symbol. The same designed pieces were used in the interviews of this study, where I chose to let the informant assign meaning to each piece as a part of the flow of the interview (see picture 3 and 4). In previous observations of the pieces being used\textsuperscript{11}, and interviews with participants, I concluded that this method could be suitable for eliciting interpretations in an interview. It aided the users to disentangle complexity and get an overview of a system that they themselves were part of. The study of visualisation tools and interview design was a substantive part of the preparation work for the field study.

\textbf{Picture 3. Visualisation in qualitative interviews.}

Right: Interview setting with direct manager. Two field assistants interview a village priest. Left: The visualisation pieces before an interview with a direct manager, a rice farmer. The interviewee was asked to imagine that a circular plate represented the village, and to place other pieces symbolising different features on top of the plate throughout the interview. Photo: Gabriella Silfwerbrand.

\textsuperscript{11} The pieces belong to the board games and art piece "Verklighetens Spelplaner" by Andrea Hvistendahl displayed at an exhibition about intolerance at The Living History Forum in Stockholm, Sweden, sept 2011-dec 2012.
In the interviews with direct managers they used the pieces to highlight unique features of the village, where the village was symbolised with a circular plastic disc. The in-direct managers, on the other hand, were presented with a stylised map of the four nominated sites. This was used as a background for their visualisation (see picture 4). Using a map was deemed relevant for the in-direct managers who will need to consider both variation and similarities and links between sites that cover a large area (CLBP, 2010, chapter 1). Visualisation tools, and maps, require a capacity for abstraction and assigning value to an innate object, and also a map introduces a certain mental model of the world seen from above.

After transcription the interview data was processed to facilitate analysis. Through meaning condensation (Kvale 2009) the interview data was processed into excerpts that could be grouped into themes that corresponded to the pre-defined sections of the interview. Sometimes responses emerged when discussing a different section, and I adapted the flow of questions to the interview situation. The responses resulted in six themes in two sections. The first section contained four themes. The first theme, *Unique features of the landscape*, was the respondents’ interpretations of the current landscape features. The analysis and discussion of what is changing and what people in the landscape are facing was grouped under *Challenges for the Community*, and what they expressed as issues that need to change in relation to the interpretation of the current situation was grouped as *Needs*. The *Future outlook* was the next theme, which included what they would like to have or create in the future. The second section dealt with *Perceived implication of the WH inscription* in management and the *Role of the Governing Assembly*.

The data from the interviews was used to discuss variations in knowledge systems, interpretations of value and the perception these managers have of the process to implement adaptive co-management. This was compared to and supported with two documents; the principles and suggestions for a Management plan (Annex 4, CLBP, 2010), and the Actionplan for 2012 (Annex 3, CLBP, 2010).
**Picture 4. Visualisation tools.**

Left: The stylistic map, with the four nominated sites and temples marked in black, which was used in interviews with the in-direct managers. A small map of Bali was inserted above the drawn map. Right: is the result of an interview where an in-direct manager has described a typical village in the Catur Angga Batukaru area. The symbols represent temples (bell), rice paddy (triangle), collaboration/subak (circles), chicken farms (ball of strings), visitors (airplane), no attention from government (eye) etc. Pieces by Andrea Hvistendahl. Photo: Gabriella Silfwerbrand.
5. RESULTS

Here I will present the interpretations of the landscape given in the interviews with a) the members of the Governing Assembly secretariat, the in-direct managers of the landscape, and b) the interviewed rice farmers in a village in the nominated site, referred to as the direct managers of the landscape. The results are contrasted with analysis of the Management Plan for the subak Cultural Landscape (Annex 4, CLBP, 2010). For a table summarising the interview results see Appendix C.

The first research question concerns how far the process of implementing adaptive co-management has come. This is based on analysis of the nomination dossier, the Management Plan and responses from the interviews. The dossier for the nomination of the subak Cultural Landscape states “a management plan has been adopted ... based on adaptive co-management by diverse stakeholders in a social-ecological landscape” (p. 5-1, CLBP, 2010). The principles of the management plan have been developed and agreed upon, and has legitimacy from more than ten stakeholder meetings between 2008 and 2010, with representatives invited from all relevant government agencies, water temple priests,
customary village leaders, and *subak* leaders (p. I-6, Annex 4 & CLBP, 2010; Fox et al., in progress). I suggest that an initial phase of learning took place in this period through stakeholder engagement of local, regional, provincial and national government representatives. It resulted in the establishment of the current Governing Assembly in 2010 and documentation of the sites, and a detailed proposed Management Plan (Annex 4 2010) based on adaptive co-management principles.

The proposed adaptive co-management is outlined as two parts, as shown in figure 8. The first part of the Management Plan concerns establishment of policies, structures and systems based on adaptive co-management principles (Annex 4 & CLBP 2010). The proposed structure consists of legal framework that gives legal rights to the GA, among other things. It also contains establishment of processes for participatory assessment and participatory mapping of ecosystem values of the sites, followed by participatory planning for activities that can support the aims of integrated management. Until now the focus on establishing legal frameworks, and a lack of budget, has delayed implementation of the suggested participatory approach structures (this is however included in the Action Plan for 2012). This confirms that the first step of finding an approach is complete, and now they have begun the step to establish objectives as outlined in the nomination.

The second part of the Management Plan consists of suggested actions that would support the management objectives, through five identified strategic priorities (see figure 8).
Figure 8. The proposed structure of the Management plan for the subak Cultural Landscape.

The first part is a policy structure with legal frameworks and participatory assessment and planning. The second part is the set of actions or programmes divided into strategic priorities that are meant to support the management objectives.

The nomination dossier main aim is to fulfil the requirements for nomination, and emphasis is on the scientifically established values, through a number of disciplines, in order to convincingly describe the outstanding universal value of the subak cultural landscape. The dossier was developed in collaboration between different scholars, and with input from meetings with the local communities. Nevertheless the dossier and management plan mainly reflects a scientific knowledge system, which is sometimes complemented with local knowledge. The adaptive co-management plan is an example of an idea developed in the western traditions, which is overlaid the existing subak organisation and the government administration.
5.1 **Unique features of the landscape**

The second research questions concerns the interpretations that people in different management positions have about the landscape and the change that it is undergoing. The members of the GA secretariat mainly referred to the *intangible* values of the landscape as distinctive and valuable, such as the subak organisation as a symbol for the connectivity people have to the land (PI). Another informant from the GA explained that sharing of water over large areas, a potentially conflict prone endeavour, has very few conflicts through the subaks organisation (IW). Water is an important resource for wet rice cultivation, and most of the water use is not consumptive as the out-flow is returned to the natural waterways (PW).

The collaborative efforts in water sharing, and temple ceremonies, are guided by Balinese-Hindu philosophical ideas, and one informant said that the values of harmony and “*always remembering the gods and give small in everyday life*”(IS) is outstanding among the Balinese. This idea is supported by another informant who remarked that “*where there is nature and people, there is always a temple*”(PW), and the physical structures of the temples harbours the intangible value of honouring the gods. The philosophical underpinning for the successful collaborative action in the Balinese tradition, and as pointed out in the nomination dossier for World Heritage, rests on Tri Hita Karana (The three causes of goodness). One informant describe that it is “*the main philosophy of Bali that we should make the balance between the people and people, people and environment, people and the god.*”(PA). Again in accordance with the nomination dossier, many informants said that the subak is a symbol of these relationships, and one of them said “*this [the subak] is [a] manifestation on Tri Hita Karana, to make harmony between eachother, between farmers, between subaks.*” (PW).

The water sharing in subaks, and manifestation of Tri Hita Karana on the landscape level, have emerged from the co-operation between farmers and between villages on a local scale. Nevertheless, the farmers, or direct managers, that were interviewed expressed some different ideas of what they perceived as unique in the landscape. The focus was on the *tangible* outcome of rice farming: the characteristic red rice of their region. One farmer, who is also village priest described that “*the most unique thing in this village is the red rice.... Although there’s red rice in other village, the taste would not be the same. The Jatiluwih red rice has unique taste, that’s why the price of the red rice from here is different.*” (PMA)
The importance of the red rice appeared in every interview with farmers and village priests. They also pointed out other items that they thought were unique: the coffee of the Robusta variety grown in the forest gardens, the oxes used for ploughing, boulders in the landscape and the quality of logs (PAR, PNA, PRM). Only one farmer said that the scenery was a distinct feature of the place (ISR). The farmers also expressed the importance of the local temples and religious ceremonies of the temple. This perception is shared with the in-direct managers of intangible values of temples for reverence and collaboration. The particular village where the interviews took place has a central temple, which is part of the listed temples in the nomination for World Heritage (CLBP, 2010). This temple is part of an intricate hierarchy and specific symbolism, and the interviewed temple priest said “The function of [the temple] Pura Luhur Petali ... is the wishes of all elements, but originally.....the temples are for the subak” (PMA). One farmer said that this temple brings worshippers from all over Bali, that “all people in Bali “nyungsung” [support] those temples” (ISR). They also described ceremonies and co-operation special to this village such as a ceremonial ritual that acknowledges a forest god in the shape of a deer. This ceremony takes place every six Balinese months that manifests cooperation in the village, and as one temple priest said that with “the local wisdom, comes spiritual direction that can not be denied.” (PMA)
5.2 Challenges and Needs for the Community

There are admittedly changes in this landscape that are influencing the features that are highly valued and outstanding, on the village scale and for the whole island. The informants in this study confirmed many of the challenges that have been documented (CLBP, 2010 Chapter 4; Lorenzen, 2011). In the area of co-operation informants in both direct and in-direct manager roles expressed that the collaborative work (gotong-royong) in the rice fields has diminished, and is currently most prevalent in religious ceremonies and not in the agricultural work. A member of the GA secretariat said that, “in the subak organisation they can’t do anything if they don’t have collaboration. Before they had very good collaboration, to work on the water canals, planting, harvesting. Now I think money is more powerful, now everyone needs more money. So now the time will be decided by the money. Now we don’t have the groups for the harvest. It’s one single person, or paid labour.” (PA).

This is not surprising in a globalised world, but is worth noting as a driving force that erodes some collaborative practices and may affect the integrity of the landscape. The interviewed farmer said that it is not viable to survive on farming alone due to small landholdings that are split into smaller parts through inheritance (see Appendix B for size of land per family). The interviewed farmers had multiple sources of income, many have coffee plantations, one respondent work in construction, and another does labour in bamboo plantations or at rice harvest. The diversity of sources of income is a way to secure income and steady food supply. The farmers interpreted their economic situation as difficult, they expressed that the prices are fluctuating and increase “Nowadays, everything is just more expensive than it used to be. For instance, we used to buy 1 kg of rice and 1 kg of sugar for 10,000 rupiahs, now it’s 10,000 for [only] 1 kg of rice” (PNA).

The interviewed farmers and priests were asked about their more immediate needs. The answers that emerged were needs for aid for road and water duct repair and construction, tax relief, economic support for ceremonies, education in rice farming and support to market the organic red rice of the region. The in-direct managers of the GA said that the farmers most needed land tax relief, water and water duct repair, and road maintenance. In addition they need support to create co-operatives for increasing the purchase power of the subaks and make them more independent from strong market actors was suggested (PW).
The in-direct managers did not express detailed knowledge of the farmers’ situation in the interviews, although this may be knowledge that they have and that just was not discussed in the interviews. Some different views of the farmers’ work situation were expressed such as “Sometime [they do other work] if they have time, maybe after harvest. But their main job is as a farmer… Maybe because of the ceremonies you need so much time at home.” (PW) whereas other respondents have the understanding that farmers in general have more than one occupation to create sufficient income, which has been shown in the interviews with farmers of this study. One person in the GA said that a relative in a subak village used to “make concrete and worked a couple of hours and could then go back and take care of the children and fields… it didn’t give her enough money because the prices are going up, so she started working in the egg factory and she has to be there early at seven everyday.” (IW). The in-direct managers acknowledged that the villages get fragmented as many go to work outside of the village, mainly in the tourism industry in the south parts of Bali.
5.3 Future Outlook

The villagers that were interviewed were asked what they would like to leave for their children and discussed the future of their village and the immediate landscape. One farmer hoped the rice fields would always be maintained and the gardens always preserved, and continued by emphasising to “keep using organic fertilizer to maintain the fertility of the soil” (ISR). One village priest focused his answer on the collaboration in the village and wished for a future where people keep worshipping, and spend more time in the temple for guidance and the prosperity of the village (PMA). Another farmer agreed that the landscape should be maintained as rice paddies, and also elaborated on the role of tourism and said, “I wish there will be many visitors [who] come to this place and will develop the village” (PNA). The understanding that tourism is a positive factor in the development of the village was also expressed by another farmer who wanted his son to work with tourism in the village, and also believed that the income from tourism would help to develop the village (PNA). One of the villagers wanted a future where the younger generation is attracted back to the village and farming activities, by modernisation and mechanisation of rice farming and education that raise the value of farming (PRM). The demographic situation dominated by the older generation was reflected in the interviews. The age of the interviewed farmers ranged from 30 to approximately 75 years, and the youngest farmer was an exception in the demographics according to the leader (Kelihan) of the subak (see Appendix B for details).

The wishes for the local landscape, and hopes for changes through tourism and education, are partly in accordance with vision held by the in-direct managers of the GA. One person envisioned that the subak landscape would be internationally and nationally renowned for the unique peaceful and effective sharing of water as a common pool resource (IW). The exploitative trends in other parts of Indonesia and the Badung region¹² in Bali were pointed out as something that an integrated management plan could safeguard against (PI). Two of the informants also emphasised that they wanted to educate visitors about the connection between all the people and places in Bali, not least through the philosophical tradition of Tri Hita Karana. They said that the site could be “a place to come to learn, for example about sharing a water source. There are lots of things that can be done (and developed). Waste management. Traffic management.” (IW)

¹² Badung is the most developed region of Bali in the southwest part of the island, this is also where the airport is located.
The in-direct managers emphasised the importance of raising the quality of living for farmers and support them economically to make it more viable to work in agriculture. Among them it was clear that the role of the farmer is crucial for managing the landscape and they described that the rice agriculture in Bali is the underpinning of the rich Balinese-Hindu culture, which in turn is what many believe is an important attractor for tourists to come to the island (Picard, 2006). Linked to this, three of the five respondents from the GA expressed a concern that the tourism is exploiting the values of rice agriculture, the landscape and views, without compensating the farmers.
5.4 PERCEIVED IMPLICATIONS OF THE WH INSCRIPTION

The third research questions asks -What are the perceptions and expectations that people have of the implementation of adaptive co-management in the subak Cultural Landscape, and the World Heritage nomination?

It is noted that not all the interviewed farmers had prior knowledge of their village being inside an area that is nominated, by the Indonesian government, to become a Cultural Landscape World Heritage. Two of the informants, who had not heard of this initiative, thought that it had something to do with tourism (ISR, PNA). One respondent had been surveyed previously (Fox et al. forthcoming) and one had been interviewed many times in his role as temple priest by researchers and journalists that have interest in the World Heritage nomination. One respondent had heard of the nomination, but was unclear on what the benefits would be for the farmers and expressed a fear that things may change and that there would be new rules like restrictions to build sheds in the fields. “Yes, I have heard of it. There are stories about it in the community. However, the community doesn’t know what is the benefit for them.” (PRM). One farmer said that the nomination had increased the price of rice from this region, and that it brought income, “There is an influence. Admission money from tourists (entering the village) is used to build the village” (PMA). Others rose that the tourists do not know how to behave in their landscape, and said “There will be a lot of foreigners (tourists), which are not accompanied by their tour guide. They might enter the temple without knowing the rules. It can deteriorate the holiness of the temple.” (PMR)

The members of the GA agreed that having the sites of the subak Cultural Landscape heritage listed as World Heritage by UNESCO, would bring attention to the region and to Bali, but in some different ways. Two of the informants emphasised that it would bring visitors, and saw it as an opportunity to focus on the quality of experience that visitors have. This could mean to give insight to the stories of the landscape and to create responsible tourist arrangements, rather than to attract larger quantities of visitors. “I hope we can count on not just quantity of tourists but also quality. That it doesn’t become like in Pisa, Italy that people flock and wait in line just to get a picture. Picture tourism. We don’t want that to happen.” (IW). As a

13 Another informant form the Governing Assembly explained that the entrance fee money does not benefit the farmers, as it is divided between the local government and the Desa Adat (Customary village).
UNESCO listed site the defined outstanding universal values would be acknowledged and was thought to enable more fair agreements with tourist operators.

Another aspect of visibility is the hope that an acknowledgement from UNESCO will raise the attention and commitment from local and national governments to support farmers, and one informant stated that the government was not paying a lot of interest since agriculture does not bring in much money to the state (PW). The nomination to UNESCO World Heritage list has already attracted attention from the international research community (Schmucki 2010, Fox forthcoming, Ramalingam forthcoming) and this is expected to increase. One informant suggested that would be an opportunity to develop the scientific knowledge base of Indonesian scholars (IS). A related hope seems to be that a wider community could contribute to the subak heritage project. However, one informant had a different take on the role of UNESCO as a receiver of new knowledge from Bali, where UNESCO provides no more than a platform to share knowledge.

“We can share with UNESCO that we can take care of and protect our landscape, and we can become a best practice case to learn from. First we give then we can get. Show the world that we can protect and preserve our landscape.” (PI)

Picture 5. Sign for the WH nomination.

A sign notifying the community of the world heritage nomination next to a local temple in the Village Jatiluwih, temple Pura Petali. The sign is in Indonesian. Photo Gabriella Silfwerbrand.
5.5 THE ROLE OF THE GOVERNING ASSEMBLY

As many of the interviewed farmers were still unfamiliar with the UNESCO process, and the plan to implement an integrated management plan, they cannot be expected to be aware of the Governing Assembly and its function. One of the village priests, who is also a farmer, pointed out that the GA should be aware that “if (GA) wants to make a rule, you have to ask the farmers first, to see if they agree or not. If the tourism (here) is improving, what’s the benefit for us, farmers?” (PRM). In informal conversations with villagers in the area, one subak leader said that the GA has to ask the subaks what their plan is for the coming years, before they make new management plans. A person from a neighbouring subak expressed a concern by asking “What will the UNESCO World Heritage listing do for me?”

The work of the GA itself will have an impact on the site, and the members of the GA have ideas about their own role in the landscape management. They all agree that their role is to be a bridge for communication between the farmers and the government. This is expressed as “finding out what the farmers need” (PA); to establish agreements between government departments, to support the farmers and consolidate an agreed management plan. It is also to co-ordinate efforts that link farmers with tourism industry, and co-ordinate foreign research projects. In one interview the role of acting as a filter or mediator between the parties was emphasised. “To involve people and people, people and government, the outside world, research, tourists. In the Dewan Pengelolahan [Governing Assembly] these things meet, get filtered and communicated what groups want that satisfy both sides. If yes good, if not find a solution to what can we do.“(IW)

More concretely the informants expressed that the mission of the subak cultural landscape heritage is to empower and support the farmers in the sites by creating economic support from the government through synergistic collaborations with tourism, and also to empower the existing social institutions of subaks and farming practices. In one interview it was suggested that every subak should be supported to become a co-operative that could buy material for rice cultivation at better prices and make the subaks stronger economically\(^{14}\) (PW). There

\(^{14}\) This is a proposal that was discussed in a meeting among government departments concerning the future of the subaks and the Head of the Provincial Ministry of Culture has suggested a training programme to educate all subak leaders and possibly support them in creating co-operatives. (Meeting 2, 2012 02 21)
were also some suggestions for implementation to achieve these missions. The status and income of farmers are suggested to benefit from organic farming initiatives and branding of local rice that can be sold at higher prices\textsuperscript{15}, and raising the value of the rice-farming landscape in tourism industry through educational and interpretative programmes for tour guides and villagers. To set up international research collaborations that can learn from and further study the sustainable water resource management in subaks, and educational activities with schools to educate the next generation of the heritage of their land.

When asked who they trusted to lead the village through change and turbulent times, the responses from the in-direct managers was that the temple and prayer is the source of power and transformation (PI, PA). Also among the direct managers, especially the priests, it was said that the village has to come together and collaborate to become prosperous, whereas the common farmers referred to important individuals for advice in times of change. Such individuals are the Agricultural extension office (BPTP) workers that collaborated with the farmers for organic rice cultivation, and the traditional leaders of the subak and village, “the Kelihan Adat [can improve the village], because he can organize and manage the people.” (ISR) and “Pak Subur [the kelihan subak] and Kelihan Desa Adat [can improve the situation in the village], because they can guard the village” (PNA).

\textsuperscript{15} Lorenzen (2011) describes a case within the nominated sites of an upland farmer-business collaboration that was terminated because the farmers did not see the incentives and benefits for them to collaborate with businessmen in Denpasar. The farmers then organised themselves as a co-operative and now successfully sell organically labeled rice directly to markets in Ubud, central Bali.
5.6 Respondents reactions to interview method

The response to the visualisation tools was overall very favourable of stimulating more clarity and detail in descriptions. I observed that most of the in-direct managers readily embraced the idea of using the plastic pieces in their descriptions, and once they were familiar with the pieces they easily assigned them to represent different features of influences in the farming communities that were discussed. One interviewee said “the pieces (that represent) what we have are more than the pieces of the challenges. It’s much stronger than the coming threats... We can still manage, we don’t have to change all of the new influence but we can adapt and squeeze them in” (IW). The use of a map was a clear aid in focusing on the different parts of the multi-site that will be integrated in adaptive co-management, and support clarity in discussing the different parts and interactions on different levels from the village community, to Balinese society and global processes of trade and tourism.

The in-direct managers were positive and encouraging in using the tactile tools in participatory programmes and pointed specifically to situations when individuals from farming and policy meet, thus representing different knowledge systems. A man in the in-direct management said, “When we discuss about the site we must use this (visualisation pieces)... Now we don’t know what they think. This is more clear ... Please use this technique when you speak with farmers” (PW) and wanted to learn how the tools work in interviews with farmers. Another interviewee in in-direct management said “The little pieces would be perfect, accept that ... it would be great if these pieces are assigned to represent something they know, like the yellow triangle [always] means rice paddy” (IW).

The interviews in the farming village displayed very different types of interactions with the visualisation tools. All the informants engaged in using the pieces, however my sense was that the two informants that belong to the priesthood had greater ability in describing the situation using the pieces. However it seemed that the colour and shape of the pieces did not affect the choice of which piece would represent a certain feature. For example, the informants used the same shape and colour to represent different things, or different shapes to represent the same thing. One informant thought that the pieces did not help much at all to describe his everyday activities (PNA). Another farmer in the village expressed that the pieces are useful to depict complex relationships and discuss among many people, but not useful for describing simple
things like the village temples (PRM). It was interesting to observe the variation in adopting the interview tools, and this was in line with what was expected from the study design.
“Managing the values, with their material, physical evidence and nonmaterial associations, so that they remain of outstanding universal value, is the particular challenge for World Heritage cultural landscape managers.”
(p. 5 Mitchell, Rössler, and Tricaud 2009)

6. DISCUSSION

Adaptive co-management is a step-wise learning process to develop place specific strategies for managing, monitoring and evaluating a changing environment. This thesis aimed to investigate how the perceptions held by direct managers and in-direct managers, influences the implementation of adaptive co-management in the changing subak landscape. Implementation of the Management Plan has faced many challenges; nonetheless there is evidence that there are common values as seeds for an inclusive vision for the subak CLWH.

I suggest that understanding how different groups interpret the landscape, through their respective knowledge systems, contributes to implementation of adaptive co-management. In the case of the subak landscape there is evidence of shared values and interests as a Balinese habitus (Bourdieu 1984). Nevertheless, the in-direct management group of the secretariat belongs to an epistemologically scientific knowledge system, whereas the local farmers have the practitioners’ local knowledge of the place.
6.1 Implementation of Adaptive Co-Management

Implementation of a management plan by a state or provincial agency that impacts the lives and livelihoods of local communities can be problematic, even when the goals are noble. Applying the World Heritage designation as an instrument to attract interest from government agencies, local communities, and global research communities raises many questions, such as what the purpose of the designation is and who may benefit. The commonly held notion of a World Heritage as a museum that is frozen in time is contradicted in guidelines UNESCO have published for managing CLWH (Mitchell, Rössler, and Tricaud 2009). The WH convention and the reviewing committee, ICOMOS, are in favour of allowing for change in designated areas, and encourage management committees in signatory countries to discuss boundaries for accepted levels of change.

So what is the rationale for establishing additional management in a landscape? In Bali the case is argued in the nomination that the rate of change and tourism development are increasing and may soon reach the designated areas that still have the unique characteristics of the subak landscape intact (CLBP, 2010). Thus WH designation is thought to prevent influence from tourism industry, and economic incentives, that erode the landscape. Another argument is that the management plan, through measures that increase the living standards and support community values, give the local community a wider range of choices for their livelihood. This can prevent the market forces from making the choice for them, and it becomes a viable, and possibly attractive, alternative to maintain current rice cultivation and water sharing practices. As such, the WH designation has a dual role of attracting tourists and providing an opportunity to create structures that can direct tourists adequately and funnel resources to those in need.
6.1.1 Administration

The last hundred years of history in Bali has been marked by standardised descriptions and external management, first by the Dutch colonial rule 1908-1949 who created simplified standardised descriptions of Balinese village customs which separated religious practice (agama) and customs (adat) (Picard, 1996; Schulte-Nordholdt 1994). The Dutch colonials were concerned with restoring the original “village Bali” (p.120 Schulte-Nordholdt) and safeguard Balinese customs from external influences. Ethnographers of the time (such as Korn and Liefrinck cited in Schulte-Nordholt 1994) even suggested that Bali should be closed off to avoid harmful influences. The descriptions and subsequent management process had profound impacts on the communities across the island. Thereafter, the Indonesian nation state introduced religious regulations that resulted in emphasis on Hindu scriptures in the Balinese religion and an ethnic revival that was integral to the building of the Indonesian multi-ethnic state (Picard 1996). This legacy calls for a management plan that allows the local communities to describe and interpret their practice and customs from their own context and knowledge system, and to accommodate for continuous change. Picard (1996) reminds that “ethnic identities...are dynamic responses to new situations brought about by the state “ (p.206). As this study can confirm, the local community may not appreciate the same features that are identified as outstanding universal values of a site from within their context, and this is not unusual for WH sites (Mitchell, Rössler, and Tricaud 2009).

The point of departure for the analysis is that the Indonesian government and Province of Bali have chosen to support the development, and implementation of a Management plan for the subak cultural landscape as part of a nomination for a CLWH in Bali. It was, however, not until year 2012 that the GA was able to compile all the actions from the regions and the province in a joint annual Action Plan (Annex3 2012). The moderate progress of implementation of the management plan and bureaucratic obstacles during the previous years could be due to diverging views and expectations on the outcomes of the CLWH designation. The project has support from government officials of the Indonesian State and the Province of Bali, however the process may have been slowed down in hierarchical and sometimes
corrupted power structures\textsuperscript{16}. This has caused obtrusion in the bureaucratic processes, especially in the process of consolidating budget posts from multiple regions.

There is some suspicion towards government initiatives, and respondents expressed that they find guidance and direction through temple ceremonies. The farmers said that they trusted their local village leaders and subak leaders to lead them through change or transformations, which is promising for the devolved power structures advocated in adaptive co-management (Berkes, 2009). The Management Plan outlines that the subaks and customary villages ought to be represented, on a rotational basis, in the Working Groups of the GA to ensure that their views are included. However, since the members of the Working groups are commended to GA from other government offices, and have other main duties, they have not convened regularly and the local communities have, in fact, not had possibilities to participate and represent the farmers in the Governing Assembly (Personal communication with member of GA, Feb 2012). This is similar to the situation in a Cultural Landscape World Heritage in a neighbouring country, the Rice Terraces of the Philippine Cordilleras. Representatives of government agencies were mandated to the Ifugao Terraces Commission, but felt that this task was imposed on them and it resulted in minimal funds and time allocated to the programmes (Mitchell, Rössler, and Tricaud 2009). The commission was abolished, and it took many years, and deterioration and threats to the landscape values, until the local Ifugao provincial government and local communities (SITMO) could establish community-based conservation programmes based on traditional knowledge and values.

6.1.2 TOURISM

An ethnic revival of Bali was suitable for tourism development, and after the slump in oil revenues that Indonesia faced in the mid 1980’s, the focus on Bali, and the attractive Balinese culture, as tourist target was intensified (Picard, 1996). Extensive development made in south Bali started to raise concerns for environmental degradation and declining quality of the Balinese tourist product (ibid.). This concern was repeated in the interviews with members of the GA secretariat when they discussed that the CLWH inscription could avoid sprawling

\textsuperscript{16} In international corruption rating on the perceived level of public corruption index, Indonesia scores 3 out of 10, indicating widespread corruption of "abuse of entrusted power for private gain", Transparency.org accessed 15/4/2012.
tourism development. UNESCO acknowledges that the World Heritage inscription attracts tourists, who need to be catered for through interpretation centres and facilities (UNESCO paper 26). Tourism is a way of fulfilling the aim of providing public appreciation for the outstanding values, and provides income that is sometimes expected to offset the costs of improved management (Mitchell, Rössler, and Tricaud 2009).

It is not trivial to predict the increase in tourism streams following a World Heritage inscription, however the fear that tourism can destroy and pollute fragile environments and threaten local cultures is recognised by UNESCO (p.94 Mitchell et al., 2009). Positive and negative outcomes have been identified around the world. Close collaboration and involvement of local communities can ensure that tourism is sensitive and that infrastructure and activities meet the local needs, and can support maintenance of the traditional agricultural and ceremonial practices. The interviewed farmers had a positive attitude and experience of tourists, and that is related to that they think that more tourist would bring more value. However, some raised that the tourists need to be educated and keep to the rules of the villages, such as not entering the temples at certain times. UNESCO’s guidelines argue that it is imperative that the host community is continually involved in the planning and operation of tourism management (Mitchell, Rössler, and Tricaud 2009). The proposal by the in-direct managers, that increased tourism revenues will attract the attention of the provincial government, indicates that they hope for substantial tourism revenues, and the assumption that government projects are guided by economic incentives, but also that government support would still be needed.

Negative impacts on the landscape as destruction of the rice terraces, loss of authenticity of the cultural expression, and continued transfer to non-rice farming activities and migration by the young, are real threats. A tourism strategy based on conservation and heritage values is a key to successful navigation to find a balance between local needs and tourists’ enjoyment of the landscape values. This may further increase the touristic value, because authentic experiences and local storytellers are attractive to visitors and raise their satisfaction (p. 95, Mitchell et al., 2009). An important question to address is, whose interpretation of the landscape is presented to the tourists? Here it is again important to combine the practical and scientific knowledge systems that have been identified in this study.
6.2 Reflecting on Data and Methods

The two sample groups were interviewed with a similar interview guide, in different languages, English and Balinese/Indonesian respectively. The sampling was selective and spread across age groups, albeit the majority of the informants were male. The male and the female direct managers responded that they worked in the rice fields together with their spouse. Lorenzen (2011) shows in her work that the older men of the family spend most of the time tending to the rice field, supporting the assumption that male farmers are more prevalent in the subak landscape.

Using symbols is a way of engaging multiple senses that can evoke different memories and ideas in the informant, as discussed in for example visual methods using photography (Harper 2002). In this more elaborate interview technique it is key that the interviewer is comfortable with the tools to transmit a sense of security to the informant. Here I, as the interviewer, had used the visualisation pieces extensively, and also familiarised the field assistants with the visualisation technique before interviewing. The visualisation tools used aided in creating clarity and supported the informant in describing the external influences and interaction between drivers and the village community. For example it helped to clarify the key features of a rural village, such as local traditional beliefs and amusements, and how external drivers, such as outflux of young labour and introduction of television have influenced village life (IW). This clarity is a starting point for further discussions on how different individuals perceive the system in their personal context.

The in-direct managers were in favour of using the method further, and perceived it as helpful and clarifying, while the interviewed farmers were less apt to make use of the pieces. Similar methods of visualisation have been used in participatory mapping of mental models (such as Participatory Rural Appraisal, see Chambers, 1994; Tripathi, 2004; Warren, 2005) where the community is involved in developing and assigning meaning to maps and symbols. This could make it more meaningful to use for visualisation and dialogue. The visualisation methods using maps and pawns was a step in that direction and could be used to ensure that the intangible values and interpretations by the villagers are included in the management plan in all phases of the implementation. This methodology could be furthered into full elicitation of mental models (D’Andrade 2005).
6.3 Interpretations of Landscape Values

The implementation phase of new management calls for further combination of knowledge systems. This can achieve broad participation and creation of structures of devolved power and shared responsibility across the levels of management, from local communities to national government. One could argue that all the interviewees belong to a local knowledge system that belongs to the distinct culture and tradition, that is the habitus, of Bali. They have some knowledge of rice cultivation and acknowledge this as an important part of the culture. However the farmers have a practitioners’ knowledge of rice cultivation and irrigation, with continuous monitoring. Whereas the members of the Governing Assembly are embedded in the Balinese cultural and traditional knowledge, they are also involved in scientific knowledge generation through University education. These reflect two different knowledge systems, with different methodologies and substance, as is reflected in the respective perceived values. Both knowledge systems are part of the same habitus, the shared values of lived experience.

The farmers perceive the local red rice and local temples as most unique to their valley, while the GA focuses on the larger landscape scale irrigation through subaks, and landscape beauty as outstanding values of the landscape. This can be understood as context dependent interpretations of value, as features are valued from the individual or cultural context of the respondent (Cecilia Lundholm 2004a). The landscape and island view of the GA is informed by the scientific explanations in the nomination dossier of outstanding values and challenges, and some of the interviewees have also been involved in informing the nomination dossier. Spiritual connections to the land and temples were discussed in depth in interviews with indirect managers, and an integral part of the outstanding values.

The spiritual connections and ceremonies were not discussed as vividly by the direct managers, and my interpretation is that it is because they are an integral part of life that is not elaborated on, albeit being central to their world-view. The exceptions were the priests who readily discussed religion. The collaboration aspect was discussed by many of the interviewed. Collaboration that was seemingly present in agriculture before, now only remains in the domain of ceremonies. Collaboration here means more than just helping each other; some argue that contributing time for collaboration functions as a second currency in
exchanges in the village that contribute to the Balinese cultural resilience (Lietaer and Meulenaere 2003). Complementing monetary contributions with time contribution allows communities, Desa Adat and Banjars, to mobilise for large projects based on both types of resources and level out some of the income variation and support a strong cultural fabric (ibid.).
6.4 VISION FOR THE FUTURE

Vision is central for navigating change, according to some resilience thinking scholars (Olsson et al. 2007; Folke et al. 2005). The background for a vision that emerges from this study is that there are outstanding values on multiple levels. On the landscape level it is the water sharing mechanism that supports traditional rice cultivation and links to the ceremonial activities in villages that maintains balance to the gods. The local level is the tangible features of the landscape as the rice and other produce, as well as the practice of rice paddy cultivation, ceremonies for the gods and village collaboration that are considered desirable to safe guard. An inspiring and inclusive vision would have to include at least these two perspectives on the landscape, the landscape view and the local view.

I have identified Ecosystem conservation and Livelihood as the objectives of the Management plan. These are instrumental goals and are clearly important, however they may not fulfil the unifying function of an inclusive vision. Westley and Mintzberg, which have influenced literature on adaptive co-management, argue for a collaboratively developed vision (1989). They suggest that a vision is the communicated idea, not the idea in itself, and it is developed in interaction with an active community (p.20, ibid.) and manifested through repetition of painting the picture of the future in words. This can be achieved for example through participatory approaches.

However, visioning is to forecast based on the present situation, and such a discussion of the over-arching objectives, has to build on the existing shared values. This could enable pursuit of common goals, and still allow for complementary knowledge systems and interpretations to co-exist. The CLBP Management Plan acknowledges that the farmers and the local community are the direct managers of the land, and co-creators of the landscape values. Thus, their improved livelihood and economic situation are pathways to achieve the vision for the landscape and enhance their resilience to withstand external economic incentives to abandon their ancestors land. The two stakeholder groups’ interviewed here have many shared values that could support concerted action and shared objectives. This exemplifies this Balinese community as a case with potential for evolving the environmental management and combine knowledge systems that are local, scientific, and lived experience.
7. CONCLUSIONS AND FUTURE RESEARCH

The CLWH nomination has, albeit some hurdles, provided a platform to focus attention on the subak cultural landscape heritage and united stakeholders from public, non-governmental and local communities. The CLBP management committee has the opportunity to frame the management goals and vision to go beyond the commitment of protecting, conserving and communicating the identified outstanding universal values. I have found that there are many shared values among stakeholders, and that is a solid foundation for agreeing on such shared objectives. For a cultural landscape those objectives should focus on preserving, responsibly evolving, and establish limits for change of, the identified landscape values. Those values are embedded in the two distinct but overlapping knowledge systems distinguished here. Combining values from knowledge system could improve the implementation of the adaptive co-management process. In this case the World Heritage criteria and initiative is aiding a local initiative to implement adaptive co-management.

In this study I have addressed shared values and knowledge systems of in-direct and direct managers, another relationship that could be analysed is the relationship between the GA and the Provincial and State Governments. This study has emphasised perceived values and the individuals’ interpretations of the landscape and not gone into depths to identify other barriers to the implementation process, although there is much to investigate in the judicial and administrative process in this case. The GA secretariat is an active group and there are many areas of research that could support their endeavour to manage the subak landscape adaptively. Research into design of community based tourism structures, participatory mapping of community values, and to assess water quality due to fertilization and farm run-off, to name a few. These would all benefit from participatory needs-based research approaches and develop the understanding of the variation within and between knowledge systems.
REFERENCE LIST


APPENDICES

APPENDIX A
Table A1. Interview guide for direct managers (farmers and village priests)

<table>
<thead>
<tr>
<th>Themes</th>
<th>Leading question</th>
<th>Probing questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>Let's imagine that your village is this round plastic board. You are welcome to use the plastic pieces to depict what we talk about.</td>
<td></td>
</tr>
<tr>
<td>Description of activities and the village</td>
<td>What do you do for a living?</td>
<td>Who are doing these different things? Is it your relatives, villagers, others?</td>
</tr>
<tr>
<td></td>
<td>What do others in the village do?</td>
<td>In your opinion, what is special in this village?</td>
</tr>
<tr>
<td></td>
<td>What do you have/what is there in the village?</td>
<td></td>
</tr>
<tr>
<td>Challenges and needs</td>
<td>What do you feel is changing in the village?</td>
<td>What is being disrupted?</td>
</tr>
<tr>
<td></td>
<td>What is still working well in the village despite the changes?</td>
<td>What are you missing or feel that you need?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>What would you like to have differently?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Who or what could make the situation in the village better?</td>
</tr>
<tr>
<td>Vision</td>
<td>What would you like your children to have here in the village when they grow up?</td>
<td>Would you like to share this uniqueness?</td>
</tr>
<tr>
<td></td>
<td>What are the most unique things about your village that cannot be found in other places?</td>
<td>How?</td>
</tr>
<tr>
<td>Implications of the pending UNESCO designation and the role of GA.</td>
<td>Have you heard about the World Heritage nomination before?</td>
<td>How do you think it may impact the village and your life?</td>
</tr>
<tr>
<td>It has been nominated, but not yet decided, to be a World Heritage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Completion</td>
<td>Is there something you would like to add?</td>
<td>How did you like the pieces and the map that we have used?</td>
</tr>
<tr>
<td></td>
<td>How was it for you to be interviewed?</td>
<td></td>
</tr>
</tbody>
</table>
Table. A2. Interview guide for in-direct managers (members of GA secretariat)

<table>
<thead>
<tr>
<th>Theme</th>
<th>Leading question</th>
<th>Probing questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>What do you value about Bali and the nominated sites of the subak Cultural Heritage?</td>
<td>Is there a place/location that represents that to you?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>What does that place look like?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>What have you experienced there that is special to you?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Is this place in the WH site, or is there a site in the nomination that have some of these qualities?</td>
</tr>
<tr>
<td></td>
<td>Please mark it on the map, and use the pieces to describe the place.</td>
<td></td>
</tr>
<tr>
<td>Motivations</td>
<td>What activities take place there?</td>
<td>Who is doing these activities?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>What do these people want, to be able to live the lives they live?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Are other parts of the site important for this? Is this important for other parts of the site?</td>
</tr>
<tr>
<td></td>
<td>Is this similar in other parts of the WH site?</td>
<td></td>
</tr>
<tr>
<td>Description of the selected area</td>
<td>What do you feel is happening in this place now?</td>
<td>What situations are this group/persons good at dealing with?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>What is not working as well for this group/persons?</td>
</tr>
<tr>
<td></td>
<td>Where do you think there is lack of communication?</td>
<td>What is there, such that if they had it, would make a difference to the situation we &quot;identified as a challenge&quot;?</td>
</tr>
<tr>
<td>Challenges, needs</td>
<td>If you were telling your children about the WH nomination and management, and the challenges, to your grandchildren in 20 years-what would you say?</td>
<td>What would you want to happen in the story now, and who would do that?</td>
</tr>
<tr>
<td>Implications of the pending UNESCO designation and the role of the Governing Assembly</td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------------------------------------------------------------------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>If the values of the cultural landscape was told through Balinese tradition how would that be?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Give examples of expression, like dance, art, performance.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Where do you see your place on this map?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Please mark with a piece.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>What is the role of the Dewan?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Could you mark that on the map?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>What do you think is the role and value of the UNESCO World Heritage nomination?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>What do you think will happen after the vote in May?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Completion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is there something you would like to add?</td>
</tr>
<tr>
<td>How did you like the pieces and map that we have used in the interview?</td>
</tr>
<tr>
<td>Do you think you could use something similar and to this method, adapted to the site, in participatory planning in the sites?</td>
</tr>
</tbody>
</table>
APPENDIX B

Table B.1. Five respondents that are members of the Governing Assembly were interviewed.

<table>
<thead>
<tr>
<th>Informants</th>
<th>PI</th>
<th>IW</th>
<th>PA</th>
<th>PW</th>
<th>IS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Role in GA secretariat</td>
<td>Coordinator for Monitoring and Evaluation</td>
<td>Coordinator for Programmes unit</td>
<td>Operational chief</td>
<td>Coordinator for external consultants</td>
<td>Executive Secretary</td>
</tr>
<tr>
<td>Profession</td>
<td>Participatory mapping specialist</td>
<td>University Head of Department</td>
<td>Agriculture extension officer</td>
<td>University Professor</td>
<td>University Lecturer</td>
</tr>
<tr>
<td>Gender</td>
<td>male</td>
<td>female</td>
<td>male</td>
<td>male</td>
<td>female</td>
</tr>
<tr>
<td>Role in GA secretariat</td>
<td>Monitoring and Evaluation Coordinator</td>
<td>Programme Coordinator</td>
<td>CEO</td>
<td>Advisor coordinator</td>
<td>Executive Secretary</td>
</tr>
</tbody>
</table>

Table B.2. Five respondents that live in a village in the nominated site were interviewed, using the visualisation methodology. The respondents were farmers, one of them was not currently farming as he was dedicated full-time to temple responsibilities.

<table>
<thead>
<tr>
<th>Informant</th>
<th>PRM</th>
<th>ISR</th>
<th>PAR</th>
<th>PNA</th>
<th>PMA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Approximate age and gender</td>
<td>Male 60+</td>
<td>Female 50+</td>
<td>Male 40+</td>
<td>Male 30+</td>
<td>Male 60+</td>
</tr>
<tr>
<td>Household size</td>
<td>2</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Farming</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Not anymore-has sharecroppers on his land</td>
</tr>
<tr>
<td>Size of field 100 are=1 ha</td>
<td>30 ares</td>
<td>17 ares</td>
<td>60 ares</td>
<td>30 ares</td>
<td>Unknown.</td>
</tr>
<tr>
<td>Temple duties</td>
<td>Temple priest in village temple</td>
<td>Attend ceremonies and give offerings</td>
<td>Attend ceremonies and give offerings</td>
<td>Attend ceremonies and give offerings</td>
<td>Temple Priest in Pura Petali</td>
</tr>
<tr>
<td>Other sources of income</td>
<td>Retired teacher, coffee and banana garden</td>
<td>Ox, Pig, chicken, Coffee garden</td>
<td>Construction</td>
<td>Logging labour, carry rice for other farmers, picking cow feed</td>
<td>Not known</td>
</tr>
<tr>
<td>Subak</td>
<td>Telabah Gede</td>
<td>Telabah Gede</td>
<td>Telabah Gede</td>
<td>Telabah Gede</td>
<td>Telabah Gede</td>
</tr>
<tr>
<td>Village and hamlet</td>
<td>Desa Jatiluwih, Banjar Kawan</td>
<td>Desa Jatiluwih, Banjar Kawan</td>
<td>Desa Jatiluwih, Banjar Kawan</td>
<td>Desa Jatiluwih, Banjar Kanjin</td>
<td>Desa Jatiluwih, Banjar Kanjin</td>
</tr>
</tbody>
</table>
### APPENDIX C

Table C.3. Comparison of views and perceptions between the in-direct managers of the subak cultural landscape site and direct managers in a rural village community. The responses are not listed in order of importance, and similar results from the two groups are listed in similar order for clarity only.

<table>
<thead>
<tr>
<th>Social-ecological system</th>
<th>In-direct managers n=5</th>
<th>Direct managers in one village n=5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unique features of the landscape</td>
<td>Socio-spiritual organisation and collaboration of water sharing in subaks Physical structures of water sharing</td>
<td>Red rice Local temples and ceremonies</td>
</tr>
<tr>
<td>Challenges for the community</td>
<td>Economic - high land-tax Young generation leave the village Waste management Poor image of farmers</td>
<td>Economic – unpredictable prices Young generation leave the village Small land-holdings Water availability</td>
</tr>
<tr>
<td>Needs of the community</td>
<td>Improved infrastructure Education in farming Organise the farmers to become stronger economically Higher income from agriculture</td>
<td>Aid for road construction and water duct repair Education for improved practices in the gardens and rice fields Help to promote the red rice</td>
</tr>
<tr>
<td>Vision and future outlook</td>
<td>To control tourism so that it benefits local communities Economic and social support for subaks</td>
<td>A prosperous village thanks to cooperation and to tourism Maintain the rice paddies</td>
</tr>
<tr>
<td>Adaptive co-management implementation process</td>
<td>Attract visitors as a threat and an opportunity Attract attention from Government and International Community</td>
<td>A tourist attraction Increased income from rice Not yet aware of the WH initiative*</td>
</tr>
<tr>
<td>Perceived implications of World Heritage designation</td>
<td>A bridge between government and local communities, find out what the farmers need and coordinate initiatives Develop a management plan, implement and conduct participatory planning, mapping and monitoring (and more)</td>
<td>Not known** GA has to ask the farmers before making decisions</td>
</tr>
</tbody>
</table>

* three of the informants were aware of the nomination to be part of a Cultural Landscape World Heritage

**only one informant mentioned the Governing Assembly, the others were not of aware of it.