

Spirituality as ingredient for development of sustainable land management programs?

A literature study on the influence of spirituality on land management decisions

MSc Thesis by Geertje van Wijk

October 2010



WAGENINGEN UNIVERSITY
WAGENINGEN UR



Spirituality as ingredient for development of sustainable land management programs?

**Master thesis Land Degradation and Development Group submitted
in partial fulfillment of the degree of Master of Science in
International Land and Water Management at Wageningen
University, the Netherlands**

Study program:

MSc International Land and Water Management (MIL)

Student registration number:

851108-976-120

LDD-80318

Supervisor:

Dr. Ir. C.A. Kessler

Examinator:

Prof.dr.ir. L. Stroosnijder

Date:

October 25, 2010

Wageningen University, Land Degradation and Development Group

Abstract

One of the biggest challenges of this generation is to overcome the problems of land degradation. Sustainable land management is seen as a promising way to combat land degradation. However, a lot of sustainable land management programs in developing countries have failed. A narrow view, often based on Western economic rational, prevent a holistic view on peasant reasoning and decision making. The role of spirituality in land management is often neglected and this can be seen as one of the reasons that narrows down the holistic view on the way farmers' act in land management.

This literature study shows the existing relation between good stewardship of land and the spiritual experiences of farmers in many ancient agricultural systems. Colonialism and capitalism are factors that caused a breakdown of spiritual values in these systems. This consequently resulted in a loss of land management practices that stimulated good stewardship.

This study argues for revitalization of spirituality to develop appropriate sustainable land management programs on places where traditional values are not totally lost. The key issue should be to revive spiritual values that steer the intrinsic motivations of farmers to act as good stewards of their land. Therefore researchers, NGOs, governments etc. have to work from farmers' (former) world views and experiences. This asks for a fully open-minded, non-biased, participation of these external agencies to become familiar with cultural and spiritual settings.

Before the issue of spirituality can be incorporated in sustainable land management programs it is needed to break through the taboo to address issues of spirituality in development programs and literature. Open dialogues are needed to show the importance of this issue with regard to land management. It is recommended to do further research (both in theory and practice) to address the importance of the topic and to find out how exactly spirituality can be incorporated in sustainable land management programs.

Content

- 1. Introduction..... 5
 - 1.1 Objective 5
 - 1.2 Content 6
- 2. Defining the concepts 7
 - 2.1 Spirituality 7
 - 2.2 Sustainable land management 8
- 3. Land management and spirituality 10
 - 3.1 Ancient land management systems 10
 - 3.2 Elements of spirituality in ancient land management systems 15
 - 3.3 Breakdown of spirituality 16
- 4. Spirituality as ingredient for sustainable land management? 19
- 5. Conclusion 22
- References..... 24

1. Introduction

1.1 Objective

Particularly in developing countries are nowadays more sloping lands and marginal areas taken under cultivation, there are less fallow periods used to restore the soil fertility and there is an increase in deforestation (Lefroy et al., 2000; Nyssen et al., 2009). Resulting land degradation directly affects crop yields, but many impacts are more global: polluted waters, loss of habitats, loss of biodiversity, less resource richness etc (Dumanski, 1997). To overcome the problems of land degradation with a sustainable land management approach is one of today's greatest challenges (Dumanski, 1997).

To combat land degradation many programs are set up during the last decades that focus on sustainable land management. The adoption of soil and water conservation practices and measures was often low, with consequently limited impact of policies and development programs on conservation of land (Ahnström et al. 2008). The reasons for this low adoption were searched in different farm characteristics, like education, age of the farmer, farm size, labour arrangements and income. However, it is uncertain whether the relationship between these factors and the adoption of conservation agricultural practices does exist as universally significant (Knowler and Bradshaw, 2007). The focus of these agricultural policies and development programs was often on an economic rational thinking based on the Western neo-liberalism philosophy. However, motivations are more significant in the decision making process of the farmer than socio-economic and demographic factors (Greiner and Gregg, 2011). Farmers do often not act only by economic reasoning but by an inner motivation that is guided by other values than economics (Greiner and Gregg, 2011). To get a more holistic view of the complexity of farmers' decision making and behavior, the focus of sustainable land management programs therefore has to be broadened by the inclusion of farmers' motivations and goals (Greiner and Gregg, 2011; Knowler and Bradshaw, 2007; Ahnström et al. 2008).

One of the motivations that guides peasant reasoning is that of spirituality (Ver Beek, 2000; Lewis and Sheppard, 2005; Wells and Davis-Salazar, 2008; Barerra-Bassols and Zinck, 2003a; Haverkort and Millar, 1992). In many indigenous agricultural systems is the relation between farmers' and supernatural beings the guidance that motivates farmers to manage the land in a certain way. Unfortunately are spiritual values often neglected in development programs with consequently a lack in understanding of peasant reasoning and failure of development programs.

Ver Beek (2000) states that spirituality is a development taboo and emphasizes the lack of research in this field. He argues that more research is needed on spirituality to come to a better understanding of how indigenous people act and take decisions. This will be helpful to enhance the success of development interventions. With regard to land management, in this research will be pointed out that *a limited focus on spiritual values prevents a full understanding of peasant reasoning and decision making in land management, which led and will lead to failure of development programs on sustainable land management.*

The aim of this study is to investigate what the role is of spiritual values in ancient land management systems and whether we can use this knowledge as a springboard for the development of sustainable land management programs. This will hopefully contribute to renewed insights for the development of sustainable land management programs to combat the current environmental problems.

The objective of the research is *to investigate the role of spirituality as a driver of intrinsic motivation for sustainable land management (SLM)*. This objective will be made operational by answering three sub questions. Namely, (1) *How is the concept of spirituality in relation to SLM defined?*; (2) *In what way is the relation between land management and spirituality in ancient agricultural systems established?*; (3) *In what way can spirituality be useful to develop SLM programs?*

This research will be conducted as a literature study. Small scale farmers in developing countries are the unit of analysis. Spirituality is apparently a topic that is neglected in development literature and a quite new research topic, especially in land management. Besides scientific journal publications, grey literature will therefore be used.

1.2 Content

The focus of this research will be on the role of spiritual values within land management decision making and whether increased attention for this values can lead to more sustainable land management. Chapter two will frame the concepts of *spirituality* and *sustainable land management*. Chapter three will answer sub question two by investigating the relation between land management and spiritual values in ancient agricultural systems. This chapter will also give some attention to the breakdown of spiritual values and the consequences for land management. Chapter four will deepen out the question what we can learn from ancient agricultural systems in relation to the establishment of sustainable land management programs. The focus will be on the importance of including spiritual values in sustainable land management programs and the difficulties to be overcome if this will be achieved. Finally a conclusion will be presented.

2. Defining the concepts

2.1 Spirituality

Spiritual values in relation to land management are hardly investigated (Millar, 2004; Ver Beek 2000). A literature study on this topic is therefore challenged by a good definition of the concept of spirituality. This paragraph explains different ways in which spiritual values and beliefs are defined. It will be concluded with a definition of the concept that will be used in this research.

A promising concept to explain spirituality is that of *spiritual capital*. It is an upcoming concept in development studies and still not clearly defined and widely accepted. It intends to complete the concepts of social and human capital.

Spiritual capital is in literature described in religious and non-religious ways, with often no clear distinction between the two. Both approaches are often mixed up. The religious aspect of spiritual capital is defined as religion capital, that relates to the attachment to a certain religion (Liu, 2007). Within this definition a relationship with God(s) gives happiness, meaning and value to peoples life.

The second way in which spiritual capital is defined, is as something what makes life meaningful. In this light Rima (2005) describes that the concept goes behind the economic reasoning in terms of monetary wealth and that it adds a moral dimension in terms of meanings and values to material wealth and the way people act (Rima, 2005). Spiritual capital contains the elements that motivate people in their daily life, like joy, justice, equality, respect and forgiveness. This means that meanings and values do not have to be religious, but they explain according to Zohar and Marshall (2004, cited by Rima 2005) where an individual, community of organization exist for, what it aspires and what it takes responsibility for.

It can be stated that people are driven by a deeper sense giving in life, like happiness and inner satisfaction. Spiritual capital can be seen as this sense giving, the food for the human spirit, that gives vitality and life to wealth (Zohar and Marshall, 2004).

Ver Beek (2000) separates religion and spirituality by explaining that religion is generally an *institutional set of beliefs and practices regarding the spiritual realm* while spirituality focuses on the personal side of beliefs that influence daily life. However, he also explains that in practice spirituality and religiosity are commonly entangled because people explain their spirituality through a religious perspective. Ver Beek (2000) defines spirituality as *“a relationship with the supernatural or spiritual realm that provides meaning and a basis for personal and communal reflection, decisions and action.”* (Ver Beek, 2000 p. 32)

From the above point of views we can conclude that spiritual values explain the belief systems of people. It relates to the sense giving of life and to a motivational framework that gives direction to human behavior. This is closely related to what Ryan and Deci (2000) explain as *intrinsic motivation*.

Motivation means that you are moved to behave in a certain way. Intrinsically motivated means that you act in a certain way because of inherent satisfaction instead of acting because of any pressure, rewards or consequences (Ryan and Deci, 2000). The inner psychological need, for example joy or interest directs the way you behave.

Beside this psychological dimension, is in my opinion also the religious aspect of spirituality an inner drive that motivates people. The relationship with God(s) gives a feeling of connection between all aspects in life. For many indigenous people it creates a strong notion and conviction that life is a unity that consists of three

integrated domains, namely the natural world, the human world and the spiritual world (Haverkort, 2006). This integrated world view determines an inner motivation that gives meaning and direction to peoples life. Greiner and Gregg (2011) explain it with the metaphor that farmers' motivations serve as a pair of glasses through which management options are assessed and decisions are justified.

According to the above views on spirituality and related motivation that steers behavior, this research will frame spirituality as

the inner motivational framework, related to a supernatural or spiritual realm, that provides meaning and basis for personal and communal reflection, decision and action.

2.2 Sustainable land management

Land management

Hurni (1997) refers to land as natural resources like soil, water and living organisms in a defined spatial unit and tries to explain management as *"an activity on the ground, using appropriate technologies in the respective land use systems."* (Hurni, 1997 p. 211).

Combining these two definitions can lead to the following definition on land management: The activities and use of appropriate technologies on soil, water and living organisms in a defined spatial unit. In this literature study the (small scale) farmer will be seen as the manager of the land at field scale.

Although this research will be focused on agriculture mainly, it should be noted that land management is not about agriculture alone. It is also about forestry, conservation and environmental management (Dumanski, 1997). Land management and agriculture will be both used in this paper to refer to land management.

Sustainability

According to Dumanski (1997) is sustainable agriculture a part of sustainable land management and land management subsequently a part of sustainable development (see figure 3). A widely used definition of sustainable development is from the Brundtland report (1987) where sustainable development is defined as *"development that meets the needs of the present without compromising the ability of future generations to meet their own needs."*

Central in agricultural sustainability is that agriculture works with nature instead of against it. Present needs are met by optimizing yield improvements instead of maximizing external inputs (Dumanski, 1997). The needs for future generations are guaranteed by matching land management practices and uses to the constraints of the environment so that environmental capacities are not exceeded (Dumanski, 1997).

Sustainable land management is according to these definitions the appropriate use of the land to meet the needs of today's and future generations.

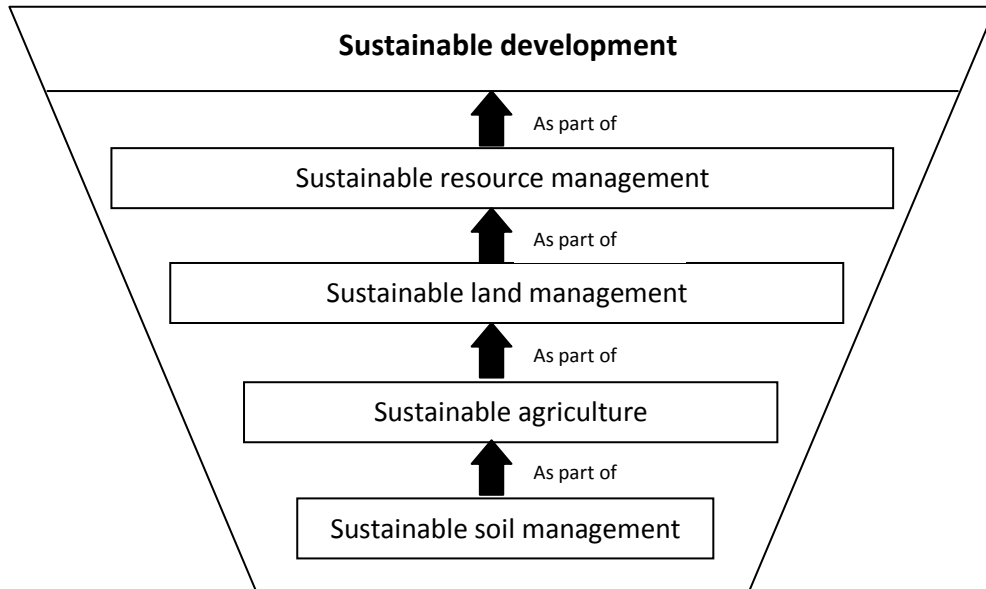


Figure 3 – Relationships among sustainable development, sustainable agriculture and sustainable land management (Dumanski, 1997 p. 217)

The concept of stewardship is in line with what is captured in the definition of sustainable land management.

“Stewardship is the responsible use (including conservation) of natural resources in a way that takes full and balanced account of the interests of society, future generations, and other species, as well as of private needs, and accepts significant answerability to society.” (Worrell and Appleby, 2000, p. 269)

In this definition *management* is seen on a broader scale of *responsibility*, towards society, nature and future generations. In the light of spirituality there is often also a question of responsibility related to the spiritual realm or supernatural beings. In this case the sentence *‘and ultimately to God(s)’* can be added to the definition (Worrell and Appleby, 2000). Good stewards use their experiences and motivations to adapt to changes and to develop responsible management of their land (Anhström et al., 2008). Good stewardship will be used in this literature study to refer to good care of the land in a sustainable way.

3. Land management and spirituality

In this chapter the relation between land management and spiritual values will be investigated. This will be done by looking at ancient agricultural systems and how spirituality is an incentive in these systems to manage the land in a certain way. World views from the Andes, Africa, Mexico, Honduras and India will be described in their relation to decision making processes in agriculture. The examples are coming from specific case studies on the relation between land management and spirituality. Although some spiritual values are common in a whole continent, country or region this does not count for all the given perspectives. The information given on continent, country or region level should therefore be handled with care to avoid generalization.

This chapter is written in the present tense however it should be noted that some world views, visions and rituals in the agricultural systems are not existing anymore nowadays, because of external influences. In paragraph 3.3 the reasons for the breakdown of these systems and values will be described in more detail.

3.1 Ancient land management systems

Andes

A lot of research is done on the agricultural system of the Andes. This intriguing system contains elements of sustainable land management with agricultural practices and decision making processes that survived over centuries. The role of spirituality is described as a major driver of this form of land management (WinklerPrins and Barrera-Bassols, 2004).

Although recent trends show a change in the way land is managed, some methods are still used frequently. The practices vary from place to place because of different climatic and socio-cultural conditions in the Andes (Rist et al., 1999; Halloy et al., 2005).

Andean individuals have a holistic view on their life. Their conception of life consists of three worlds (see figure 4) (WinklerPrins and Barrera-Bassols, 2004; Rist and Dahdouh-Guebas, 2006; Rist et al., 1999). These three spheres of life form an integrated part. The spiritual life (Pachakamak) stands for the invisible forces that influence life on earth, but where humans have no influence on. The social life (Pachank-macha-a) is the interaction of living beings in society that makes life and reproduction possible. The material life (Pachamama) is central for all forces that make life on earth possible. It are the more visible things on which humans can interact like the natural landscape. Daily life (Pancankiri) forms the center of those three interrelated spheres. It includes everything that happens in real life: the activities that make life to be continued.

Pachamama plays an important role in daily life. It is also described as Mother Earth that habitats the land (van Kessel and Cañasaca, 2003; WinklerPrins and Barrera-Bassols, 2004). People believe that they have to care for the land to please Mother Earth. In return they will receive the benefits that contribute to a good harvest (Boelens, 2008). Communication between human and Mother Earth takes place through rituals (van Kessel and Cañasaca, 2003; WinklerPrins and Barrera-Bassols, 2004). According to Rist et al. (1999) a ritual is a *“spiritual activity carried out by humans in order to create spiritual conditions for a certain material or social event that they wish to happen”*. An example is that farmers please Pachamama at the beginning of the season through a ritual for good crop conditions.

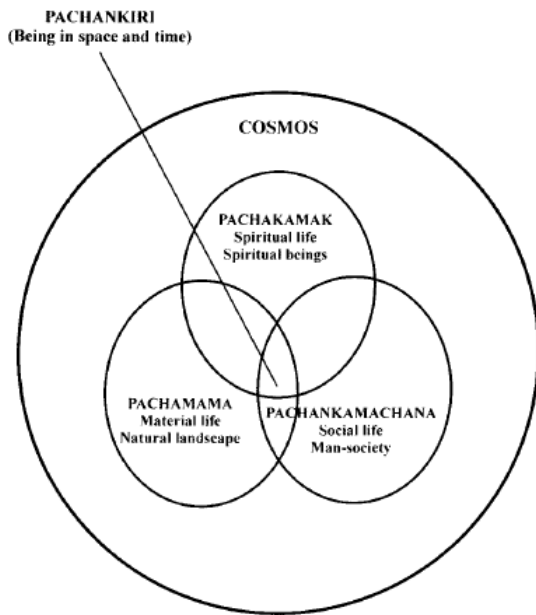


Figure 4 – Andean concept of life (Rist et al. 1996 cited by Winkler Prins and Barrera-Bassols, 2003 p. 147)

People believe that punishment will take place, for example in the form of natural hazards and disasters, if the harmony will be lost between humans and Pachamama (Rist and Dahdouh-Guebas, 2006; van Kessel and Cañasaca, 2003; Rist et al., 1999). Building a good relation with Pachamama is therefore the most important element of life, it is the way Andean people give meaning and values to their life.

The close and good relationship with Pachamama and the community is even more important than building up wealth (van Kessel and Cañasaca, 2003). Within this view of life, work is not defined as an economic productive activity, but as a part of 'life-raising', where land management is an expression of respect and care that the world as a living being needs.

Andean people are guided by elements of spiritual capital, like happiness, affection, respect, harmony and reciprocity (Hernandez, 2002). This reciprocity

concept became already clear in the relationship between humans and Pachamama, where it is believed that good stewardship of the land will be blessed with good crop conditions and yields. However this relationship of reciprocity and harmony also exists between people, plant, animals, nature and spiritual beings.

Time is experienced as cyclic, as a kind of spiral process that is closely related to signs in nature (WinklerPrins and Barrera-Bassols, 2004; Rist et al., 1999.; Hernandez, 2002; Boelens, 2008). The future is in this sense a repetition of the past with a changing specific context. Daily life is observed and interpret according to what happened in the past. Temporal happenings are valued in this cyclic notion of time and help people to deal with it (Hernandez, 2002). New needs are therefore based on former experiences.

Land management practices and landscape structures are closely related to this cyclic notion of time. The agricultural cycle is for example based on years of observations of astronomy (Rist et al., 1999). These observations are based among other things on registration of the seasons, measurements of the eclipses and planet rotations and star settings. A high knowledge level on nature is obtained from these observations. This communication with nature helps to find out for example when technical interventions are needed, whether a year will be dry or wet, what the best sowing time will be, which plots (regarding climate and soil) are most suitable for the coming season etc. New and existing knowledge is constantly tested and practiced.

WinklerPrins and Barrera-Bassols (2004) also indicates a high knowledge level on soils and classification gained through this experiential knowledge over times. It can be stated that the Andean belief system (Kosmos) drives the management practices (Praxis) of the people and creates a high knowledge level on soils and land (Corpus). Land management practices are for example terraces; fertilization of the soil by incorporation of manure and ashes; minimum soil disturbance; pest and disease control by good timing of planting, selecting of plants and multiple cropping and rotation (WinklerPrins and Barrera-Bassols, 2004; Halloy et al., 2005; Rist et al., 1999).

Farmers choose for security instead of optimization regarding their production, with a production that is probably lower than the maximum yield (Halloy et al., 2005). Therefore risk spreading strategies are used like

multiple cropping. Production is also assured by taking into account the different characteristics of plots, like soil and climatic conditions.

Long term practicing of this Andean system has positive impact on the land. The good stewardship guarantees elements of a sustainable land management system (Halloy et al., 2005). This clearly shows the commitment of Andean farmers to their fields which is mainly induced by their spiritual beliefs and values.

African examples

David Millar did a lot of research throughout Africa on the subject of cosmivision. Although African world views are not homogenous throughout the country, Millar found a common perspective (Millar, 1999). It was believed that land does not belong to humans, but that it belongs to ancestors or a God (Workineh, 2005; Millar, 1999). The living beings are the custodians of the land. They have to take care for it so that they can pass

it through to the yet unborn generation.

In this vision the world is integrated with the cosmos. Nature is seen as a living being that works together with mankind. The earth is therefore not seen as a property that can be used in the way human want, but needs to be taken care of in a way that benefits the whole community (including the unborn).

Gonese (1999a) explains this integrated world view from an example in Zimbabwe with the Shona people (see figure 5). Like in the description of the Andes the Shona people see life as a unity that consists of the natural,

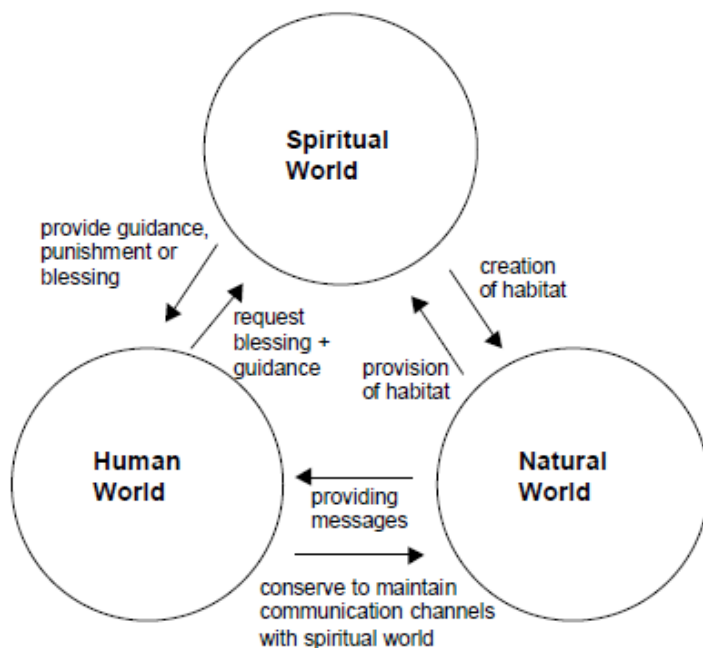


Figure 5 – Shona cosmivision according to Gonese (1999a)

spiritual and human world. The creator of the human and natural world has his habitat in the spiritual world, together with different spirits. This spiritual world has his habitat in the natural and human world, for example in sacred natural places, human bodies and particular animal species.

The human world communicates with the spiritual world via the natural world. These rituals take often place under specific sacred trees. To keep the communication channels between human and spiritual world it is important for the Shona people to create a favorable environment where flora and fauna can have their habitats. This means that conservation of biodiversity is a key issue to prevent migration of animals and loss of plant species biodiversity. It is believed that punishment takes place, in the form of drought, diseases and conflicts, when the rules and norms that protect the environment are exceeded (Gonese, 1999b).

Workineh (2005) explains the environmental ethics of the Oromo, a large ethnic grouping in Ethiopia. They believe that the land is given by *Waaqa* (God) and that they are allowed to use it. However, it is not allowed to benefit from nature, while unnecessary destroying the natural things. Workineh (2005) further explains that

the moral values are not always related to a supernatural God. The rules to handle nature with care are in place even when there is no belief in God.

An important element of the Oromo's worldview is *saffuu*. *Saffuu* regulates the activities of human beings and helps people to connect natural laws with divine laws. The concept has everything to do with respect and is the regulator to avoid overexploiting of natural resources. This is embedded in a deeply held belief that destroying land and resources limits peoples survival. It is described that violation of the *saffuu* will have his effect on the relation between human and nature, but it is not described in what way this happens.

Workineh (2005) explains that land management practices are given direction by *saffuu*, but does not go into detail about how land management practices are given shape. It is described that tilling the land, animal husbandry, planting trees and hunting have their own moral codes. Practical experiences (based on e.g. rainy seasons, the movement of the stars, the solar cycles, behavior of animals etc.) are the basis of the Oromo's knowledge on how to practice good agriculture (Workineh, 2005). For example: the knowledge on growing characteristics of crops and trees, suitable environments for planting, rainfall requirement, planting times, harvesting times and crop care. It is believed that some trees have a special relationship with God and should be handled with extra care.

As the examples of Ethiopia and Zimbabwe show, spiritual values as respect for and communication with divine beings or nature give the direction in which the indigenous farmers build up their agricultural knowledge. They form an intrinsic motivation to practice their agriculture in a certain way.

Central America

Barrera-Bassols and Zinck (2003b) and Pulido and Bocco (2003) describe in two different places in central Mexico the sustainability of the traditional farming system. They see different elements in land management practices that are a sign of 'good care' for the land. Land management practices are for example crop rotations to compensate nutrient deficiencies; timely planting to control the water balance; use of deposition (by fencing, bunds, terrain leveling, mulching) to restore soil fertility; applying manure; ploughing along the contour and fallow periods to restore soil fertility.

The position and location of the land determines besides the land management practices also the land use type. Land on steep slopes for example is used for forest, but not for agriculture. Mid-slope positioned land is seen as suitable for agriculture when a fallow period is taken into account.

In contrast to Pulido and Bocco (2003), Barrera-Bassols and Zinck (2003b) link this sustainable land management elements to spirituality. They describe that farmers' land management knowledge (on water, climate, soils and relief) and practices are based on years of experience and are derived from the meaning that farmers attach to land. This symbolic meaning is related to the fact that indigenous people see the land as the mother of all living being. It is believed that reciprocity between land, plants and humans makes life on earth possible. This requires good care and respect for the land. Good care of the land can secure health and survival, through cropping and harvesting. In this sense human needs have to be met without destruction of the resource potential, to keep up with the symbolic meaning of land as life support system.

Barrera-Bassols and Zinck (2003b) furthermore show the existing relation between agricultural practices and spirituality by explaining that the production cycle is coupled to the climatic and religious calendar of the Mexican farmers.

Another example that shows the relation between spirituality and land management is coming from The Lenca. The Lenca is an indigenous group, living in the highlands of central and western Honduras. Lenca farmers' resource management is closely related to their world view (Wells and Davis-Salazar, 2008; Ver Beek, 2000). The way farmers interact with their environment is coming from a process of 'giving meaning', where the relationship between human and nature is established in the *compostura*. This is a set of ceremonies that is practiced to compensate for the collection or manipulation of natural resources (Wells and Davis-Salazar, 2008). Extraction of resources can be the use of productive soils, the use of water, certain plants and animals. The activities as planting and harvesting crops, hunting or collecting firewood are thus compensated with ceremonies.

It is believed that ancestors are residing in the environment (including the agricultural fields) and that extraction of resources should be 'paid' back to them to maintain a good relation. An altar with different 'gifts', like chocolate, alcohol and blood, serve together with prayers as the payment. The ceremony ends with a meal. The performance and frequency of the ritual depends on the activity you have to pay for. Non-payment will be punished with failed harvests, famine, hurricanes, sickness etc.

The agricultural practices of the Lenca people are shaped by their spiritual awareness. The Lenca example shows that a strong consciousness exists about what, when and why you extract natural resources from the environment. This can mean that land management is done with care in order to avoid the disturbance of existing relations with the environment.

Eastern Ghats India

Gowtham Shankar (1999) describes from the experiences of the organization COMPAS¹ the world view of about sixty indigenous communities that live in one of India's major natural resource bases, Eastern Ghats. Most of the people live in forested areas in the mountains. There is a strong belief that nature, mankind and the spiritual world are interrelated and that divine beings control every part of life. Ramakrishnan (2005) states that traditional mountain societies are often characterized by this strong relationship with nature and natural resources and that spiritual dimensions play an important role.

Mother Nature gives protection and direction to the life's of the people. Supernatural beings and ancestral spirits are devoted in rituals to protect mankind (Gowtham Shankar, 1999). These rituals are also performed before people practice any agriculture, for example before starting to fell trees, before distribution of suitable land and before hunting. It is believed that some plants and animals are sacred and need to be handled with care.

The communal organization is controlled by traditional institutions which influence for example the calculation of the cropping calendar and festival dates, the relationship with the divine beings and the performance of rituals. It is believed that the community will be punished by divine beings with crop failure, cattle death and sickness when rituals are not performed in the good way or by miscalculations of the festival dates. Agricultural practices have to be planned and carried out in a good way so that they do not disturb or upset the divine beings.

The knowledge level on soil conservation and land management related to this cosmovision is visible in the different practices, like mixed cropping, shifting cultivation, land allocation on base of suitability, use of terraces to control erosion and application of manure.

¹ COMPAS (comparing and supporting endogenous development) is "an international network implementing field programmes to develop, test and improve endogenous development (ED) methodologies." (COMPAS, 2010)

3.2 Elements of spirituality in ancient land management systems

Although the described examples should be handled with care to avoid generalization, some common features became visible in the traditional land management systems. When we for example look at the definition of land management in terms of stewardship

“Stewardship is the responsible use (including conservation) of natural resources in a way that takes full and balanced account of the interests of society, future generations, and other species, as well as of private needs, and accepts significant answerability to society.” (Worrell and Appleby, 2000 p. 269)

we see that this is very much in line with how the farmers of the described ancient agricultural systems managed their natural resources. Farmers show a high responsibility for all the living beings (their land, the community, the flora and fauna) but also for the coming generation. This responsible decision making regarding land management has a lot to do with the relationship between humans and divine beings. This relationship forms a motivational framework that is deeply imbedded in a cultural and social context and influences the human-environment interaction and traditional knowledge.

Most of the described conceptions of life are based on the triad of a human, natural and spiritual world. Reality does not exist on its own, but stays in complex relation to these three worlds and to the cyclic notion of time. Knowledge on traditional agricultural practices is established by years of experiences to cope with environmental conditions and is induced by the strong notion of the interrelationship of human, nature and spiritual realm.

The responsibility to care for nature is coming from an intrinsic motivation that farmers have to please the spiritual realm (ancestors, divine beings, spirits) to receive the right environmental conditions to practice land management and to avoid punishment in the form of natural hazards and disasters. Nature also needs to be sustained because it is seen as a channel to communicate with the spiritual realm. There is also a high responsibility to sustain the natural resources to fulfill the needs of the coming generations. This responsibility causes a social cohesion between individuals, where land management practices have the aim to fulfill subsistence needs (risk spreading) for the community instead of the aim to produce for own gain (maximization). The high level of respect and responsibility should not be seen as imposed from the spiritual realm. The close connectivity between the three spheres of life makes that farmers are driven by a deeply held belief that respect and responsibility are the right way to act.

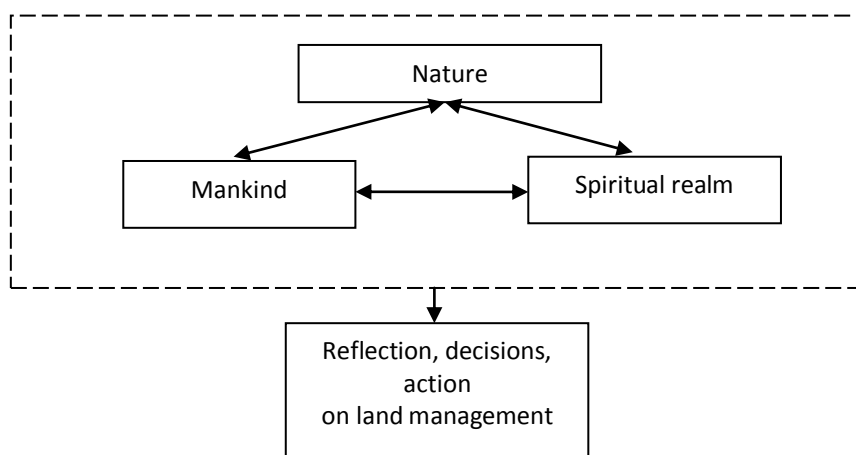


Figure 6 – World view of indigenous farmers related to land management

We can see a highly balanced world, that is maintained through spiritual practices. Communal leadership plays often an important role in the maintenance of the human, nature, spirituality relation, by taking leading tasks in the performance of rituals and festivals, by establishing the cropping calendar or by giving advice regarding the land management practices to be used.

Decisions regarding land management are related to the responsibility and reciprocity that is created by the interrelationship of 'the three worlds' (see figure 6). Spirituality is in this sense not disconnected from action, but is interwoven with the physical aspects of life.

3.3 Breakdown of spirituality

Despite the high adaptability of the ancient agricultural systems to uncertainties and the flexibility to change, indigenous land management systems are often not able to keep as sustainable as they were over long periods of time (Barerra-Bassols and Zinck, 2003). This paragraph will describe the breakdown of spirituality, that drives land management practices and decisions, by the exposure of the systems to external influences. It should be noted that the described ancient agricultural systems did not underwent the same processes of cultural change in the same way, to the same extent and at the same time. But in general it can be stated that the described trends developed since the last centuries by upcoming globalization and during colonization.

Globalization resulted in an exposure to another economic system thinking (Wells and Davis-Salazar, 2008; Achterhuis, 2010). Despite the high resilience of the ancient agricultural systems to climatic and environmental changes, there was less resilience to these socio-economic changes (Hernandez, 2002). Where the ancient agricultural systems are based on a relation between human, nature and spirituality, the Western world separates this triad (Haverkort, 2006). This creates a difference in approach towards the relationship with nature, with a 'preservation' style used by non-Western cultures and 'change and control' approach used by the Western societies (Ward, 2008).

Capitalistic thinking became leading and emphasized the Western approach to deal with nature. The focus on capitalism (accumulation of wealth) goes beyond the principles of spiritual capital. Spiritual elements of justice, mutual trust and respect disappeared because of the tendency to exploit the land and relationships for personal benefit (Rima, 2005). Intrinsic motivations to take good care of the land (good stewardship) induced by farmers' world views suffered because of the expansion of this capitalistic thinking. Extrinsic motivations, like the pressure to behave according the new economic principles, became leading.

Colonialism and capitalistic development approaches were based on the idea that you can use the natural resources you want and that it is necessary to accumulate wealth in terms of money (Rolston, 2006; Rima, 2005). The conviction to take care for future generations started to suffer because of exploiting the land for own benefit (Escóbar, 2006; Rima, 2005). The communal cohesion and reciprocity that was established from farmers' world view consequently disappeared (Rima, 2005; Rist and Dahdouh-Guebas, 2006; Halloy et al. 2005; Haverkort, 2006). Material wealth was valued higher than the former non-material wealth of justice, wellbeing, respect, equality and forgiveness (Rima, 2005).

From the examples of paragraph 3.1 and 3.2 it became visible that communal traditions and control are highly valued, for example to keep in touch with divine beings. However the focus on productivity (partly induced by policies) undermined the position of (spiritual) leaders (Bellon, 1995). Communal control was disappearing which also influenced the breakdown of spiritual values in relation to land management (Hernandez, 2002). For example agricultural decisions (planting, harvesting), rituals and festivals performed or regulated by the

community institutions were lost. Individual interests became more important and conflicts arose about how to manage and control the natural resources (Barrera-Bassols and Zinck, 2003). This process is fostered by growing communication possibilities and media influences and resulted in new needs and migrations to cities that cause further loss of traditional agricultural knowledge (Halloy et al., 2005; Haverkort, 2006). As Price (2007) stated, pressure from markets and cash “*undermines what farmers know as the right thing to do*” (Price, 2007 p. 10). This loss of a motivational framework and site specific agricultural knowledge led to a fostering of environmental degradation in the form of depleted ground waters, dried wetlands, loss of biodiversity, deforestation and acceleration of land degradation (Bellon, 1995; Ramakrishnan, 2005; Maathai, 2006).

The internationalization of the food production made that farmers focus more and more on the economic profitability of their production. Modern farming systems were introduced that replaced the complex farming strategies that farmers developed over years to cope with their environment (Barrera-Bassols and Zinck, 2003b; Barrera-Bassols and Zinck, 2003; Millar, 2004; Sillitoe, 1998). This resulted in efficiently manageable monocultures, cultivation of unsuitable areas to fulfill the production needs and use of external inputs like chemicals and inorganic fertilizers (Chapin et al., 2009; Halloy et al. 2005; Gonese, 1999a). Nature was and is sacrificed for development and economic benefit (Ward, 2008).

Gonese (1999a) and Maathai (2007) explain that the introduction of new religions (by colonialism and increased communication possibilities) also changed the spiritual thinking of indigenous people. The practices of these new religions were not in line with the community traditions. Traditional spiritual practices were no longer allowed, neglected or labeled as wrong. Rituals and festivals disappeared or changed which has his effect on the cropping calendar and land management practices. Traditional ways of storing knowledge (e.g. folk songs) were lost. The influence on spiritual practices resulted in a loss regarding the integration of a spiritual, natural and human world (Gonese, 1999b). This was crucial for the future of land management, because this triad formed the intrinsic motivation for good stewardship of land. Moral duties regarding land management disappeared with the above mentioned problematic consequences for the environment (Gowtham Shankar, 1999).

In general it can be stated that people became disconnected from their land, to which they attach significant spiritual value (Ward, 2008). They experience a loss of identity, because the external influences undermined their integrated world vision (Ahnström, 2008). On the one hand they want to keep the relation with Mother Earth, on the other hand they want to be involved in identities of ‘the West’ (van Kessel and Cañasaca, 2003). Being uncoupled from your roots makes that traditional values are not valued in the same way as before. The strong link between spiritual values and land management disappeared with consequently the loss of unwritten laws, traditional norms and regulations. This caused a higher vulnerability of the systems towards environmental degradation.

Development organizations and environmental agencies neglected the importance of spirituality and in some cases perhaps even intensified the above described process of the breakdown in spiritual values. Projects were and are based on the same narrow utilization view with a focus on promising technological interventions, education and awareness raising programs to combat the environmental degradation (Hunka et al., 2009; Boelens, 2008; Ahnström, 2008).

Farmers are often blamed for project failures. They are titled as ‘unwilling’ to participate or to sustain the project goals and are blamed that they increase the problems of degradation by being primarily utilitarian (Millar, 1999; Ahnström, 2008). However it is in my opinion questionable whether we can fully blame farmers.

Perhaps we should focus more on the used approach, that misinterpret local identities and that thought to have influence on farmers' decision making (Sillitoe, 1998; Sillitoe and Marzano, 2009; Raymond et al., 2010; Barrera-Bassols and Zinck, 2003; Haverkort and Millar, 1992). Programs focus on the economic profitability of a farm as driving factor in development. Even nowadays one of the indicators of sustainable land management is enhancing economic performance (productivity) (Dumanski, 1997). However if an integrated world view is used as intrinsic motivational framework to act in a sustainable matter it is in my opinion not needed to focus on profitability. The fact is that farmers value higher goals as responsibility for community and future generations and respect for nature much higher than economic profitability (Greiner and Gregg, 2011).

As Rolstone (2006) states, ecology or economy can be used to show how we can do things and what will probably work. However scientific disciplines have no authority to make the social decisions. These are made by the farmers on basis of how they value things. Here, spirituality becomes important, as the domain that asks the questions of valuation (Rolstone, 2006). Farmers do not put themselves in the center during this valuation, but they see the world as a unity (where land is for example a living being on the same level as a human).

This holistic view on the world and the environment prevents processes that are aimed at self-interest. Perhaps this is the crucial difference with the approaches used in development programs, where a utilization view is used to promote good care of land. This is not in line with how many indigenous communities undertook good stewardship, namely from a intrinsic motivational framework. Financial driven policies and land management programs therefore undermine the role of spirituality as significant factor for decision making processes in land management and as tool to promote good stewardship.

4. Spirituality as ingredient for sustainable land management?

The question then remains whether spirituality can serve as ingredient for the development of appropriate sustainable land management programs. This chapter will focus on important elements that can be useful to establish good stewardship of land.

When we look at the examples of ancient agricultural systems it becomes clear that in some systems elements of sustainable land management are visible, which are induced by the spiritual experiences and perceptions of the farmers. It should be noted that I do not want to make the statement that traditional agricultural systems are per definition sustainable. However as Bellon (1995) describes, in each system are sustainable elements. In general we can see that the used land management approaches in ancient agricultural systems are a sign of good stewardship. The close connection to land and the high responsibility towards nature and future (on different levels) are important elements that fit to a sustainable land management approach.

This intrinsic motivation is directed by the worldview of indigenous communities, where the interrelation between the physical and spiritual world shapes the decision making and management of land. In my opinion should the focus on farmers' world view and motivations be the starting point when one wants to develop sustainable land management. It is important *to trigger the motivation of being a good steward* to achieve more appropriate projects on sustainable land management. This is in line with what Greiner and Gregg (2011) recently concluded from conservation research in Australia: effectiveness and efficiency of conservation practices can be enhanced by taking into account farmers' stewardship ethics. Farmers who value stewardship high are more leaning towards adoption of good management practices. It is therefore important to focus on motivations that trigger good stewardship instead of on socio-economic or demographic characteristics.

Farmers' intrinsic motivation should become again in line with their world view so that good stewardship can become strengthened. Therefore a shift should be made in sustainable land management programs towards the accumulation of spiritual capital (Danah Zohar and Ian Marshall, 2004). Farmers have to be called on their moral duties so that they will become (again) convinced to take good care of their land. This should not be reached with external pressure or power but by stimulating inner motivations. Developing sustainable land management (good stewardship) will therefore be a more 'socio-political' than technical activity (Gonese, 1999).

Box 1 explains the steps that I see as necessarily to trigger intrinsic motivations of farmers to act as good stewards. If action needs to be taken on sustainable land management with eye for the role of spirituality, the **first step** should be to *overcome the taboo of addressing spirituality*. Ver Beek (2000) tries to explain the absence of literature and

Box 1 – Steps to promote good stewardship

Leading element: Trigger intrinsic motivations (induced by spirituality) of farmers to act as good stewards.

1. Breakthrough of the taboo to address spirituality
2. Revitalization of spirituality to recreate good stewardship
 - Working from farmers' world views and experiences
 - Participation of experts should be fully open-minded
 - Mutual learning (scientific and local knowledge) about strengths and weaknesses
3. Focus on places where traditional values are not totally lost

avoidance in development programs of this topic. He mentions that the topic of spirituality is probably avoided because researchers do not want to impose the spiritual perspectives of locals; researchers feel uncomfortable to address spiritual issues and to raise funds for research on this topic because of the Western secular society they live in; it is sometimes a sensitive issue that can raise conflicts between groups. Ver Beek (2000) argues that avoidance of the topic can minimize the full understanding of locals and can induce a more scientific/materialistic development approach.

In my opinion the biases on this topic should be recognized in open dialogues. In this way the importance of spirituality in peasant decision making processes can become fully appreciated. Writing about spirituality and the importance of this factor in development of sustainable land management can offer legitimacy on the topic, which can result in the development of appropriate programs.

The fact that there are nowadays trends visible in the Western world that revalues the concept of stewardship make my hopes running high that open dialogues on spirituality will be taken place. For example in different religions in The Netherlands is a change visible that emphasizes good stewardship of the earth (Duurzame Kerk, 2010). Stewardship, triggered by a moral duty, is used as a sustainable renewed approach that is needed to balance the human and natural world instead as an approach that allows human to master over nature. Also in agriculture is more attention for practices that go beyond economic reasoning (Anhström et al., 2008). For example organic farming get feed on the ground. These systems often started from a motivational framework that is not in line with the ideas of conventional farming, that sees farming often as (economic) business. There is in general more attention for the role of humans in the changing environment (e.g. the debate on climate change). These developments are in my opinion promising for increased attention towards the connectivity between human and nature and the often devastating economic utilization view. This attention for connectivity (in the Western world) can open a way to discuss the role of spirituality as the driver of responsibility and respect towards nature.

Step two is about *revitalization of spirituality to recreate good stewardship*. Revitalization of local perceptions regarding spirituality should become central in the development of land management strategies. If programs want to build up farmers' capacity and want to succeed, programs have *to respond to farmers' values and perceptions* (Gonese, 1999b; Ver Beek, 2000).

One way to respond to peoples worldviews is to become familiar with spiritual traditions and culture. COMPAS (comparing and supporting endogenous development) and AZTREC (Association of Zimbabwe Traditional Environmental Conservationists) are organizations that already have experiences with this way of developing resource management in the Andes and Zimbabwe (Haverkort, 2006; Gonese, 1999a). Researchers, extension officers, NGOs, governments etc. (further on called 'experts') have to be educated to deal in a non-biased way with a different reality. Therefore participation within a culture is needed, to learn when, why and how certain traditions are rooted and get shape. This requires a new way of thinking. Traditions and rituals should not be set aside as something that is happening outside experts' reality. It is important that experts will become familiar with a different reality and see the significance. Local traditions and spiritual experiences has to become a part of the experts' world of experience. Which means that experts have to step out of their ivory tower to feel and experience what local people belief (Millar, 1999; Boelens, 2008).

This way of addressing participation is challenging, because it means first listening before supporting (Rist et al. 1999). Experts have to learn to look *open-minded* to communities, without being too much focused on the adoption of innovations (and on the question whether these are economically beneficial) (Rist et al. 1999). This

should make experts aware of the strong connectivity between land management and spirituality. It will help experts to see which motivations direct the behavior of farmers.

It is needed to discuss inside and outside science and between disciplines to create a holistic view with understanding of how farmers learn, teach and experiment (Barrera-Bassols and Zinck, 2003a; Haverkort, 2006). Important is 'respect' to establish the relationship with leaders, rituals and the community (Gonese, 1999a). Locals have to decide finally on the goals they want to reach (Ver Beek, 2000). In which way do they for example want to receive assistance, how do they want to establish sustainable land management and what will be the role of spiritual traditions.

The aim of local people and the indigenous institutions should be leading in the establishment of good stewardship of land. However this can lead to conflicting issues, scapegoating processes, dictatorial ideas and suppression of vulnerable groups (Sillitoe and Marzano, 2009). To overcome this problem it is in my opinion needed to construct a non-biased exchange of scientific and local knowledge to see what can be offered to each other (Sillitoe and Marzano, 2009; Rist, 2004; Millar, 1999; Gonese, 1999a; Barrera-Bassols et al., 2006). This implies intercultural communication instead of knowledge transfer (Rist, 2005). Identities have to be shared, without any dominance. This will offer a *mutual learning process* where opportunities and obstacles from everyone's worldview, practices and goals can be shared (Haverkort, 2006). Nowadays this way of thinking gets attention with the current experiences on 'social learning'. The appreciation of and deep respect for each others' ideas will stimulate appropriate interventions, because of the underlying intrinsic values and motivations that are triggered (Sillitoe, 1998).

In **step three** I argue for the revitalization of spirituality on *places where traditional values are not totally lost*. A focus should be on local (sustainable) production systems in traditional rural cultures (Barrera-Bassols and Zinck, 2003a). A lot of world views and traditions disappeared and therefore often also the good stewardship of land. I am doubting what the options are for places where the traditional values and institutions are already completely lost and where farmers are not familiar anymore with ancient traditions related to good stewardship. Recommendations and options for the development of a sustainable land management approach are therefore in my opinion first of all applicable on places where traditional agricultural practices and spiritual values are still visible and can be revived.

Even if the above outlined ideas can be a starting point to create a better understanding of farmers, their world views and decision making processes, we still have to deal with the trend of globalization which emphasize on free markets and production, increased consumption and materialism (Workineh, 2005; Social Science Institute, 1997). However, in the Western world are in my opinion renewed interests visible for different aspects of spirituality that connects people and nature. This makes the time ripe to invest in the inclusion of spirituality in research and development programs to offer a more holistic understanding of peasant reasoning and underlying motivations. The rehabilitation of spiritual values can lead back to the revaluation of the connectivity between human and nature, where respect and responsibility are reintroduced to revive the traditional good stewardship regarding land management.

5. Conclusion

This final chapter will connect the different chapters to give an answer on the main research objective *to investigate the role of spirituality as a driver of intrinsic motivation for sustainable land management (SLM)*. First of all will be explained how spirituality and sustainable land management are defined and related to each other. Furthermore will the relation between land management and spirituality in ancient agricultural systems be explained. Some insights will be given on how spirituality can be useful in the development of SLM programs and finally some recommendations will be given for further research.

Spirituality is framed as *the inner motivational framework, related to a supernatural or spiritual realm, that provides meaning and basis for personal and communal reflection, decision and action*. Spirituality can direct towards sustainable management of the land, because of farmers' deep notion of responsibility towards society, nature and future generations. Sustainable land management relates in this sense to good stewardship. *"Stewardship is the responsible use (including conservation) of natural resources in a way that takes full and balanced account of the interests of society, future generations, and other species, as well as of private needs, and accepts significant answerability to society."* (Worrell and Appleby, 2000, p. 269)

In the light of spirituality the sentence *'and ultimately to God(s)'* can be added to the definition to show the responsibility towards the spiritual realm or supernatural beings (Worrell and Appleby, 2000).

Chapter three gave an answer on sub question (2) *In what way is the relation between land management and spirituality in ancient agricultural systems established?* The chapter showed that different ancient agricultural systems were quite sustainable over a long period of time. The moral duty (intrinsic motivation) of farmers to practice good stewardship was induced by their worldview. Farmers experienced a unity between the spiritual, human and natural world, which creates responsibility and respect towards nature, future and spiritual beings. Responsible and respectful use of the land led to sustainable land management.

The analysis showed furthermore that neglecting the role of these spiritual values within land management decision can cause a failure of development programs on sustainable land management. Programs did not take fully into account peoples world view, because of a bias to address the topic and because of a dominance of western ways of thinking. Globalization and colonialism played to some extent a role in the breakdown of spiritual values with negative consequences for the management of the land in terms of environmental degradation.

Spirituality was in ancient agricultural a leading element in the establishment of good stewardship. Chapter four therefore investigated sub question (3) *In what way can spirituality be useful to develop SLM programs?* The chapter concludes that a focus on spirituality, rooted in culture and traditions, can be a starting point to regenerate a more holistic view on what farmers motivations are to manage their land. The spiritual values that are still existing in a community and which related to good stewardship should be revived so that intrinsic motivations as respect and responsibility will become again leading in land management. This can be done by strengthening farmers' traditions on agricultural knowledge, practices and rituals. This asks for a new way of thinking and working for scientists, NGOs and governments. Relations should be build up that avoid the dominance of Western knowledge and approaches.

The ongoing westernization and breakdown of traditional values is a difficult point in the development of sustainable land management programs. To what extent is it possible to take a different direction in this trend? More research is needed to find out how to handle this. I recommend that future research will further explore

the relation between spiritual values and land management (both in theory and in practice). An open-minded approach to address this issue can in my opinion be promising in the establishment of a more sustainable land management strategy.

Spirituality, rather than economy, can provide a more holistic understanding of the relationship between human and nature (Donner, 2007). So if we want to go back to the real drivers of land management we have to include spirituality in sustainable land management programs. In this way we can overcome the development failures of the past and revive the intrinsic motivations of farmers to act as good stewards.

References

- Achterhuis, H. 2010. *De utopie van de vrije markt*. Lemniscaat b.v. Rotterdam, The Netherlands. Number of pages 319.
- Anhström, J., Höckert, J., Bergea, H.L., Francis, C.A., Skelton, P., Hallgren, L. 2008. Farmers and nature conservation: What is known about attitudes, context factors and actions affecting conservation? *Renewable Agriculture and Food Systems* **24** (1): 38-47
- Barrera-Bassols, N., Zinck, J.A. 2003a. Ethnopedology: a worldwide view on the soil knowledge of local people. *Geoderma* **111**: 171-195
- Barrera-Bassols, N., Zinck, J.A. 2003b. 'Land moves and behaves': indigenous discourse on sustainable land management in Pichataro, Patzcuaro Basin, Mexico. *Geografiska Annaler* **85 A** (3-4): 229-245
- Bellon, M.R. 1995. Farmers' Knowledge and Sustainable Agroecosystem Management: An Operational Definition and an Example from Chiapas, Mexico. *Human Organization* **54** (3): 263-272
- Boelens, A.B. 2008. The rules of the game and the game of the rules. Normalization and resistance in Andean water control. Ph.D. Wageningen University.
- Brundtland, 1987 Our Common Future, Report of the World Commission on Environment and Development. World Commission on Environment and Development, 1987. Published as Annex to General Assembly document A/42/427
- Chapin, S.F., Carpenter, S.R., Kofinas, G.P., Folke, C., Abel, N., Clark, W.C., Olsson, P., Smith, D.M.S., Walker, B., Young, O.R., Berkes, F., Biggs, R., Grove, J.M., Pinkerton, E., Steffen, W., Swanson, F.J. 2009. Ecosystem stewardship: sustainability strategies for a rapidly changing planet. *Trends in Ecology and Evolution* **25**(4): 241-249
- COMPAS. 2010. Welcome to the compas website. Viewed on the 2nd of August 2010 <http://www.compasnet.org/>
- Donner, S.D. 2007. Domain of the Gods: an editorial essay. *Climate Change* **85**: 231-236
- Dumanski, J. 1997. Criteria and indicators for land quality and sustainable land management. *ITC Journal* **3/4**: 216-222
- Duurzame Kerk. 2010. Welkom op duurzamekerk.nl. Viewed on the 6th of October 2010 <http://www.duurzamekerk.nl/>
- Escóbar, 2006. Amerindian cosmovisions and sustainable endogenous development. Viewed on the 31st of August 2010 <http://www.compasnet.org/afbeeldingen/Books/Moving%20worldviews/Escobar.pdf>
- Gonese, C. 1999a. The Three Worlds. COMPAS Newsletter – February 1999.
- Gonese, C. 1999b. Culture and Cosmvision of Traditional Institutions in Zimbabwe. Viewed on the 27th of September 2010 http://www.compasnet.org/afbeeldingen/Books/Food%20for%20Thought/fft_13.pdf
- Gowtham Shankar, K.J.N. 1999 Tribalagro-ecology and cosmvision.
- Greiner, R., Gregg, D. 2011. Farmers' intrinsic motivations, barrier to adoption of conservation practices and effectiveness of policy instruments: Empirical evidence from northern Australia. *Land Use Policy* **28**: 257-265
- Halloy, S.R.P., Ortega, R., Yager, K., Seimon, A. 2005. Traditional Andean Cultivation Systems and Implications for Sustainable Land Use.

- Haverkort, B. 2006. Dialogues within and between different sciences: issues and strategies from endogenous perspective.
- Haverkort, B., Millar, D. 1992. Farmers' experiments and cosmovision. *ILEIA newsletter*: 26-27
- Hernandez, A.C. 2002. Andean culture and sustainable human development in the Andes.
- Hunka, A.D., Groot, de W.T., Biela, A. 2009. Visions of Nature in Eastern Europe: A Polish Example. *Environmental Values* **18**: 429-452
- Hurni, H. 1997. Concepts of sustainable land management. *ITC Journal* 3/4, Enschede, The Netherlands, pp. 210–215.
- Kessel, J. van, Cañasaca, F.M. 2003. Contexts, concepts and controversies. *COMPAS Magazine* 9/2003
- Knowler, D., Bradshaw, B. 2007. Farmers' adoption of conservation agriculture: A review and synthesis of recent research. *Food Policy* **32**: 25-48
- Lefroy, R.D.B., Bechstedt, HD, Rais, M. 2000. Indicators for sustainable land management based on farmer surveys in Vietnam, Indonesia and Thailand. *Agriculture, Ecosystems and Environment* **81**: 137-146
- Lewis, J.L., Sheppard, S.R.J. 2005. Ancient values, new challenges: indigenous spiritual perceptions of landscapes and forest management. *Society and Natural Resources* **18**: 907-920
- Liu, A. 2007. Measuring Spiritual Capital as a latent variable. The RM Institute. Viewed on the 30th of August 2010 <http://www.researchmethods.org/MeasuringSpCapital.pdf>
- Maathai, W.M. 2006. *Ongebroken-autobiografie*. De Geus BV, Breda The Netherlands. Number of pages 429.
- Millar, D. 1999. Traditional African worldviews from a cosmovision perspective. Viewed on the 25th of May 2010 http://www.compasnet.org/afbeeldingen/Books/Food%20for%20Thought/fft_11.pdf
- Millar, D. 2004. Interfacing two knowledge systems: Local Knowledge and Science in Africa. Paper for the Compas panel in the conference: Bridging Scales and Epistemologies: Linking Local Knowledge with Global Science in Multi-Scale Assessments, Alexandria.
- Nyssen, J., Poesen, J., Deckers, J. 2009. Land degradation and soil and water conservation in tropical highlands. *Soil & Tillage Research* **103**: 197-202
- Price, L.L. 2007. Locating farmer-based knowledge and vested interests in natural resource management: the interfact of ethnopedology, land tenure and gender in soil erosion management in the Manupali watershed, Philippines. *Journal of Ethnobiology and Ethnomedicine* **3**: 30
- Pulido, J.S., Bocco, G. 2003 . The traditional farming system of a Mexican indigenous community the case of Nuevo San Juan Parangaricutiro, Michoacán, Mexico. *Geoderma* **111**: 249-265
- Ramakrishnan, P.S. 2005. Mountain Biodiversity, Land Use Dynamics and Traditional Ecological Knowledge. *Global Change and Mountain Regions* 551-561
- Raymond, C.M., Fazey, I., Reed, M.S., Stringer, L.C., Robinson, G.M., Evely, A.C. 2010. Integrating local and scientific knowledge for environmental management. *Journal of Environmental Management* **91**: 1766-1777
- Rima, S.D. 2005. Spiritual Capital. Ph.D. Thesis.
- Rist, S., San Martin, J., Tapia, N. 1999. Andean cosmovision and self-sustained development.

- Rist, S. and Dahdouh-Guebas, F. 2006. Ethnoscience – A step towards the integration of scientific and indigenous forms of knowledge in the management of natural resources for the future. *Environ Dev Sustain* **8**: 467-493
- Rist, S. 2004. Endogenous development as a social learning process. COMPAS Magazine Sept/2004.
- Rolston, H. 2006. Caring for Nature: What Science and Economics Can't Teach Us but Religion Can. *Environmental values* **15**: 307-313
- Ryan, R.M., Deci, E.L. 2000. Intrinsic and Extrinsic Motivations: Classic Definitions and New Directions. *Contemporary Educational Psychology* **25**: 54-67
- Sillitoe, P. 1998. Knowing the land: soil and land resource evaluation and indigenous knowledge. *Soil Use and Management* **14**: 188-193
- Sillitoe, P., Marzano, M. 2009. Future of indigenous knowledge research in development. *Futures* **41**: 13-23
- Social Science Institute, 1997. Technical Report. Stewardship, Spirituality And Natural Resources Conservation: A Short History.
- Ver Beek, K.A. 2000. Spirituality: a development taboo. *Development in Practice* **10** (1): 31-43
- Ward, T. 2008. Cosmivision versus Neoliberalism: An Indigenous Alternative to Modernist Development in the Sierra Nevada de Santa Marta. LASA Student Conference.
- Wells, E.C., Davis-Salazar, K.L. 2008. Environmental worldview and ritual economy among the Honduran Lenca. *Research in Economic Anthropology* **27**: 189-217
- WinklerPrins, M.G.A., Barrera-Bassols, N. 2004. Latin American Ethnopedology: A vision of its past, present, and future. *Agriculture and Human Values* **21**: 139-156
- Workineh, K. 2005. The Rehabilitation of Indigenous Environmental Ethics in Africa. *Diogenes* 207: 17-34
- Worrell, R., Appleby, M.C. 2000. Stewardship of Natural Resources: Definition, Ethical and Practical Aspects. *Journal of Agricultural and Environmental Ethics* **12**: 263-277
- Zohar, D., Marshall, I. 2004. *Spiritual Capital: Wealth We Can Live By*. Berrett-Koehler Publishers, Inc. San Francisco. Number of pages 173.