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Jenny Bischofberger, Evelyne Gab, Stefan Liehr

Who is interested and how will they
be involved?

**A stakeholder analysis with respect to desertification
tipping points in dryland social-ecological systems**



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Abstract

In the past years, it has become evident that stakeholder analysis, integration and dialogue must be embedded in research on complex problems of sustainability, such as desertification in dryland social-ecological systems (SES). In literature there is broad consensus that stakeholder analysis and integration constitute the groundwork for a successful and relevant project design. However, as funds and time are often limited, stakeholders are frequently selected ad hoc instead of methodologically structured. There is a lack of agreement concerning the usage of different methods and also a lack of precise information when it comes to how, when and why the analysis is applicable in specific projects. To integrate stakeholders from the very beginning we conducted a stakeholder analysis in the feasibility study of a social-ecological research project. For that purpose, we identified stakeholders and then grouped them according to their attributes, interest and influence and whether they were affected and/or effecting. This paper presents the evaluation of the stakeholders and their involvement, and it also documents the communication plan for the main phase of the research project.

We identified 121 individual stakeholders which were subdivided into eleven main stakeholder groups ranging from scientific institutions to civil society. A stakeholder workshop and focus groups confirmed and further specified the initial stakeholder list as well as the research questions. Key players are the local farmers and their farmers unions who are the natural resource managers and their mouthpiece. The Namibian universities and the Namibian Ministry for Environment and Tourism could become key players if the cooperation can be strengthened on an institutional respectively faculty level and if the interest is kept up via established contacts. So the cooperation with these key players should be actively fostered, e.g. by joint events, joint field experiments and regular updates. By structuring the stakeholder analysis into three steps and analyzing effect and affectedness as well as interest and influence of stakeholders, a precise way of selecting stakeholders was investigated. In addition to these results of joint learning, the active involvement of stakeholders from the very beginning led to a support for the project and an interest in cooperation at a very early stage. For the main phase, we therefore expect to gain a higher and more sustainable quality of the capacity development and dissemination. In the main phase of the project a second stakeholder workshop will be conducted to send an important kick-off signal. This stakeholder analysis and integration showed that stakeholder dialogues should be a reflexive and iterative process and that the content and the rules should be part of open discussions from the very beginning of this process.

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Abbreviations

BMBF	Bundesministerium für Bildung und Forschung; Federal Ministry of Education and Research, Germany
CuveWaters	Project „Integrated Water Resources Management in Central Northern Namibia (Cuvelai-Basin)“, 2006-2015
DTP / DTPs	desertification tipping point /points
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH
MAWF	Ministry of Agriculture, Water and Forestry, Namibia
MET	Ministry of Environment, Namibia (especially: Department of Environmental Affairs)
MoEAC	Ministry of Education, Arts and Culture, Namibia
NAU	Namibia Agricultural Union
NNFU	Namibian National Farmers Union
NRMP	Namibian Rangeland Management Policy and Strategy
NUST	Namibian University for Science and Technology
OPTIMASS	Project „Options for Sustainable Geo-Biosphere Feedback Management in Savanna Systems under Regional and Global Change“, 2014–2018
ORYCS	Project „Options for Sustainable Land Use Adaptions in Savanna Systems: Changes and Risks of Emerging Wildlife-Based Management Strategies under Regional and Global Change“, 2018–2021 (planned)
SASSCAL	Southern Africa Science Service Centre for Climate Change and Adaptive Land Management
SES / SESs	Social-ecological system / systems
UNAM	University of Namibia

1 Introduction

In the past years, it has become evident that stakeholder analyses, integration and dialogue must be embedded in research on the complex problems of sustainability (Stoll-Kleemann & Welp 2006, Jahn et al. 2012). One example for such a complex problem is desertification in social-ecological systems found in drylands (Linstädter et al. in prep.). Taking the interplay between society and nature into account, the general concept of social-ecological systems (SES) helps to outline real-world problems, to structure the research process and to develop the research design in a transdisciplinary mode (Liehr et al. 2017). Transdisciplinary research projects not only aim for new scientific knowledge but also aim to make this knowledge accessible for society (Jahn et al. 2012). In the case of desertification, societal stakeholders¹ can be land users, policy makers and also educational organizations who will in future profit from the information gained (Bischofberger et al. 2018) by improving the existing knowledge base and practice of prevailing different management options. Thus, the integration of stakeholders in a research project and also the foregoing and continued analysis are indispensable for the investigation and assessment of sustainable and applicable management options that are dealing with desertification. Paying particular attention to the stakeholders and their involvement in the project help to better understand the setting of the local context and conditions under which different practices are carried out: knowledge is exchanged, institutions are in place and working, and technologies are used. All of this constitutes the basis for the further development of evidence-based, adapted solutions (Liehr et al. 2017).

In literature there is broad consensus that stakeholder analysis and integration constitute the groundwork for a successful and relevant project design. Thus, a good cooperation with stakeholders is indispensable for the success of transdisciplinary projects (Reed et al. 2009; Jahn et al. 2012; Nastran 2013). However, as funds and time are often limited, stakeholders are frequently selected ad hoc (Reed et al. 2009). In the initial planning phase, it is important to analyze who the key stakeholders are and which positions, interests and influence they have (Grimble and Wellard 1997, Franz 2018). It is necessary to understand who can influence a research project and who is affected by the achievement of a project's objective (Freeman 2010, Achterkamp & Vos 2007, Reed et al. 2009). This way characterized stakeholder groups can be included when planning their participation and when it comes to choosing the appropriate strategy and collaboration method.

Although the literature on this topic offers a solid theoretical framework for stakeholder analyses in different areas, such as spatial planning and natural resource

¹ "A stakeholder in an organization is (by definition) any group or individual who can affect or is affected by the achievement of the organization's objectives." (Freeman 2010, p. 46). Freeman's approach was developed for the scientific field of economy, namely strategic management, therefore negative effects from stakeholders on a company were in the focus. As researcher we wish to include positive effects from stakeholders, too, especially with regard to capacity development and dissemination. Therefore we use the term "to effect" instead of "to affect".

management in general (Reed et al. 2009; Nastran 2013), agreement is lacking when it comes to the usage of different methods and precise information and concerning how, when and why the analysis is applicable in specific projects (Billgren and Holmen 2008; Reed 2008; Reed et al. 2009; Jepsen and Eskerod 2009; Hage, Leroy, and Petersen 2010; Rastogi et al. 2010). This paper aims to provide a stakeholder analysis for a social-ecological project on desertification (Kéfi et al. 2016; Kachali 2007). So, our questions are: Whom do we need to address in the process of our research? How do we identify actors who have a stake in our research results?

We identified stakeholders and grouped them according to attributes. This paper presents the evaluation of the stakeholders to show their possible involvement in the main phase of the research project.

The text starts by giving information about the general background of the research project (NamTip). Subsequently we introduce our social-ecological approach to the stakeholder analysis which includes the integration of the stakeholders. These study results will provide the groundwork for further stakeholder management in the following phases of the project.

2 Background of the NamTip project

This section introduces the research question and gives information about the area in which the NamTip project is taking place, and also on our SES approach. The project consists of a feasibility study and the main project. The stakeholder analysis at hand was carried out during the feasibility study. NamTip's research focuses on desertification tipping points (DTPs) in SESs and is located in Namibia, the driest country in sub-Saharan Africa. According to the call for a research and development project on tipping points at the interplay of social and ecological systems (BioTip) of the German Ministry of Education and Research, the project is based on the general background of the National Strategy on Biodiversity (NBS) of the German Government since biodiversity is a prerequisite for ecosystem services (ESS), which are in turn vital to human and planetary welfare (BMBF 2015).

2.1 Research question

NamTip's aim is to help acquire a better understanding of the most pressing tipping points in dryland ecosystems, which are the thresholds to desertification (Reynolds et al. 2007, Kéfi et al. 2016). The overarching research questions are: How do DTPs evolve? Can corresponding ecosystem changes, including their ecological and social drivers be identified? The research focuses on management options for rangeland ecosystems prone to DTPs with an emphasis on the practical implementation and on the scientific support for sustainable policy formulation for dryland regimes. Hence capacity development and dissemination are fundamental.

The NamTip research project deals with the intricate interactions of two complex systems: society and ecology. Scientific understanding of DTPs in drylands is a first step towards successfully managing sustainable land use. Ecology will reveal the relationships between the different parts of the (local) ecosystem and it can identify external reasons for deteriorating resources (e.g. change of framework conditions or anthropogenic behaviour). Social science will show (local) societal relations within society, e.g. how and under which conditions decisions are made.

The SES research approach focuses on the societal connection to the environment, especially societal dependencies on ESS. That is why it integrates different fields of knowledge, social and natural science as well as empirical and local knowledge, with action and possible options for change. This is set against the background of local conditions and their specific context with typical as well as transferable attributes. A SES-view on DTPs not just merges social and ecological knowledge; it rather observes and examines “the dependency of social groups with respect to essential ecosystem services” and the reciprocation of the ecosystem to societal activities (Renaud et al. 2010; Hummel et al 2017). This way a real world problem is integrated into research and results will not only fit the real world problem, but through stakeholder integration they can be implemented sustainably.

2.2 Study area

Drylands constitute about 45 per cent of the worldwide land surface and are mainly located in Africa and Asia (Prävälje 2016). With global warming, here, particularly people’s livelihoods are at stake. Up to two billion people worldwide rely on dryland ecosystems, half of them for their daily survival (UNEMG 2011). Maladapted land use can be a crucial driving force for the degradation of savannahs and related ESS, e.g. via increased erosion. Degradation of ESS has become a serious challenge, exerting negative impacts on the ecosystem, livestock production and livelihoods (Kassahun et al. 2008). Particularly socially disadvantaged people depend heavily on rangeland vegetation as forage for their livestock (MEA 2005; Phelps and Kaplan 2017), which is the prevalent food production path in marginal agricultural land (Reid et al. 2014). It is estimated that drylands constitute 78 per cent of the global grazing area (Asner et al. 2004) and 35 per cent of land-bound net primary production (MEA 2005).



Fig. 1: Stakeholder meeting during a farm drive (Photo: ISOE, 2017)

Namibia faces problems common for many drylands: more than 60 per cent rural population, scarce natural resources, infertile land, extreme climate events (e.g. droughts), population growth and urbanization processes (Reynolds et al. 2007). About 50 per cent of Namibia's savannas are already suffering from negative effects (de Klerk 2004; Joubert et al. 2013), prompting the Namibian Government to call for urgent action to halt degradation and restore savannas to again be productive and resilient (MAWF 2012).

The research area, the Greater Waterberg Landscape (GWL) approximately 250 kilometers northeast of Windhoek covers an area of over 19.000 square kilometers. It was chosen for research as it offers different land-use intensities and types of rangeland in close proximity, communal and freehold rangelands, communal conservancies and a national park. As is typical for semi-arid areas, the annual rainfall sums up to 350-450 millimeters, with extreme inter-annual variations (SASSCAL 2018, Mendelsohn 2006), e.g. extreme drought. This feasibility study had the advantage of being able to draw on relevant ecological and management data that were collected in other research projects (OPTIMASS, CuveWaters, SASSCAL) which were carried out in the same area and it also could reconnect with local stakeholders via already established networks.

3 Methodological framework of the stakeholder analysis

The first step of the stakeholder analysis was to identify the parties concerned by drawing up an according list. In a second step, we categorized them, first according to the degree they can effect or are affected by DTP (Chevalier and Buckles 2008). Subsequently we used the attributes 'interest' and 'influence' to categorize stakeholders into key players, context setters, subjects and crowd (de Lopez 2001). That way we were able to prioritize the stakeholder groups. The final step was to decide on future cooperation with the identified stakeholders which resulted in a stakeholder communication plan (Reed et al. 2009; Reed 2016; Nastran 2013) (Appendix I).

3.1 Step 1: Identifying and characterizing stakeholders

To identify stakeholders we fell back on networks that had been established in previous projects (Schramm 2012) like CuveWaters, OPTIMASS and SASSCAL, and we established a stakeholder list. Using the expertise of these stakeholders, a snow-ball-system developed (Reed et al. 2009). Based on this, a stakeholder workshop was held in Windhoek to validate the identified stakeholders and to find out about their positions and possible involvements into the subject (Huntington et al. 2003, Franz 2018). The workshop was prepared with and conducted by a local facilitator, who helped adapt the program to local conditions and needs, as he is more aware of cultural signs and can improve the quality of the dialogue (Stoll-Kleemann & Welp 2006; Schramm 2012).

At the workshop a generally comprehensible introduction to the project was given and participants also had time to get familiar with each other (Huntington et al. 2003; Reed 2016). The stakeholders had the opportunity to contribute their expert knowledge and experience, to ask questions, give feedback and make suggestions in joint discussions. In particular, they were asked for a feedback ("active echo") on the planned research topics to enable an adjustment of the project's framework to the local problems and needs and therefore strengthen the project's relevance. In consequence, this helped to adjust the research questions. In working groups, stakeholders ascribed to themselves attributes, such as their level of engagement (observer, advisor and implementer) and the possible area of contribution (research, training/capacity development, case study/site and policy) in a format that was similar to a world café (Franz 2018). This later helped to categorize them and to identify key stakeholders. Referring to the results obtained, the workshop participants were asked to name other stakeholders who had so far not been contacted. The results of the workshop were processed in a report and sent to the stakeholders as a further step of their integration (Reed 2016) (Appendix II).

After the workshop, focus groups were identified and interviews conducted with those participants who were either very interested in further cooperation or who

could not attend the workshop. Within focus groups, they discussed the project's approach and DTPs in order to elicit information (Stoll-Kleemann & Welp 2006), and to increase the level of the stakeholders' engagement and contribution. This proceeding also helped to expand the consortium's networks. During a field visit, following the workshop, the consortium established further contacts to local stakeholders such as farmers, conservancy² members and traditional authorities in the study region.

To stay in touch, especially with the strongly interested workshop participants, stakeholders were approached via email or telephone for further reactions and to complement the feedback for the analysis and also to maintain their motivation (Schramm 2012).

3.2 Step 2: Categorizing stakeholders

Following an analytical top-down categorization (Reed et al. 2009; Reed 2016; Schramm 2012) the identified stakeholders were classified into eleven groups according to their institutional linkage. For the feasibility study we focused on stakeholders at the institutional and not at the individual level. The researchers designed two matrices: an affected-effecting matrix and an interest-influence matrix. The affected-effecting matrix shows the degree to which these institutions can effect the DTPs or how they are affected by them. The interest-influence matrix presents institutions with a strong interest in and a high influence on the project itself and its respective topic. Within this grid the stakeholders were ranked according to their levels of interest and influence. According to Reed et al. (2009) and de Lopez (2001), 'key players' have a strong interest in and influence on the project, and should therefore receive special attention. 'Context setters' have a high influence but little interest in the project, and should be monitored and actively managed. 'Subjects' are stakeholders with high interest and low influence; and the 'crowd' has low interest and low influence and so there is little need to get engaged with them.

To get a pointed distinction for the feasibility study, we extended the two-range-scale to a three-range scale (low-medium-high) in both matrices. This means that only the four corner quadrants of the grids were clearly categorized, with a broad middle. We would like to point out that differentiation needs could be intensified during the main phase by reduction to a two-scale-range.

² In Namibia a Conservancy is an institution for community based natural resource management (CBNRM). In 1996 an amendment was made to the Nature Conservation Ordinance of 1975, which devolved rights to communities over natural resources, which includes wildlife, and established rights for communities to set up tourism enterprises. These rights were to be exercised through conservancies. They are self-governing, democratic entities, run by their members, with fixed boundaries that are agreed with adjacent conservancies, communities or land owners (MET 2018, NACSO 2018).

3.3 Step 3: Development of a communication plan

Once a better understanding of who the stakeholders are is reached, a communication plan can be developed. This plan gives a structured approach to communications and ensures that all the key stakeholders are consulted on their areas of interest. It is important to consider multiple channels for communication, such as meetings, newsletters, policy briefs, emails, teleconferences, videos etc. The communication plan should answer the questions: who takes part? What is the topic of interest? How will the person be involved? When will this take place? (Kennon et al. 2013).

4 Results and discussion

This section introduces the stakeholder groups and describes which of the stakeholders are key players or context setters according to the attributes ‘interest’ and ‘influence’. We will also show who is affected by or effecting DTPs and we will take special topics into consideration that were important to the stakeholders. According to these categorizations, indications for the communication plan are derived that are linking the project to certain Namibian institutions.

A total of 121 stakeholders from 42 institutions were identified. They were subdivided into eleven main stakeholder groups ranging from scientific institutions to civil society (Tab. 1). As, compared to the main project phase, the media’s role is relatively small during the feasibility study, thus all media institutions were treated as a unity “the media”. Altogether we examined 38 stakeholder institutions.

Tab. 1: Stakeholder groups

Farmer	<ul style="list-style-type: none"> ▶ Communal Farmers ▶ Freehold Farmers
Farmer Interest Group	<ul style="list-style-type: none"> ▶ NECFU – Namibian Emerging Commercial Farmers Union ▶ NAU – Namibia Agricultural Union ▶ NNFU – Namibian National Farmers Union
Non-Farmer Interest Group	<ul style="list-style-type: none"> ▶ Agricultural Trade Forum ▶ Meat Board of Namibia
NGO	<ul style="list-style-type: none"> ▶ CCF – Cheetah Conservation Fund Namibia ▶ IRDNC – Integrated Rural Development and Nature Conservation ▶ NACSO – Namibian Association of Community Based Natural Resource Management ▶ NNF – Namibian Nature Fund ▶ WWF – World Wildlife Fund
Development Cooperation	<ul style="list-style-type: none"> ▶ GIZ – Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH
Politics/Policy	<ul style="list-style-type: none"> ▶ UNCCD – UN Convention to Combat Desertification, Land Degradation Neutrality Studies ▶ German Embassy ▶ MAWF – Ministry for Agriculture, Water and Forestry ▶ MET – Ministry of Environment and Tourism ▶ MLR – Ministry of Land Reform ▶ TAs – Traditional Authorities
Private Sector	<ul style="list-style-type: none"> ▶ Agribank of Namibia ▶ Meatco – Meat Cooperation ▶ Kara Nawa Environmental Solution ▶ Agriconsult
Science	<ul style="list-style-type: none"> ▶ National Archives of Namibia ▶ NBRI – National Botanical Research Institute ▶ NUST – Namibian University of Science and Technology ▶ UNAM – University of Namibia ▶ SASSCAL – Southern African Science Service Centre for Climate Change and Adaptive Land Management
Connected Project	<ul style="list-style-type: none"> ▶ LLL – Limpopo Living Landscapes, South Africa ▶ ORYCS– Options for Sustainable Land Use Adaptions in Savanna Systems ▶ SFB-TRR 228 – Future Rural Africa ▶ OPTIMASS – Options for Sustainable Geo-Biosphere Feedback Management in Savanna Systems under Regional and Global Change
Education	<ul style="list-style-type: none"> ▶ AASD – Agri Advisory Services Division ▶ AGRA ProVision, Agri-Ecological Services, Omaruru Rangeland Management ▶ Botanic Society ▶ EduVentures ▶ FSP – Farmers Support Project ▶ Meatco Foundation
Media	<ul style="list-style-type: none"> ▶ Africa Online ▶ Agriforum ▶ iDeal-x ▶ Republikein <p>All institutions are regarded as a unity for the feasibility study. Institution-wise examination should be self-evident.</p>

4.1 Affected and effecting

The feedback from the stakeholder workshop confirmed that desertification is a serious problem affecting many stakeholders in Namibia. It was mentioned that the rainfall pattern is extremely volatile in Namibia, and that communal land seemed to be very challenged by desertification. Forage³ scarcity due to lack of rain, desertification or bush encroachment, forces farmers to sell animals more frequently than before. Due to stakeholders perception problems might be reinforced by some traditional authorities with different connections to different political parties, ill-timed dismissal of management, no common rules regarding the use of water points and the new possibility of assigning land as property. Besides avoidance and management of DTPs, restoration is an equally important problem for stakeholders. Most stakeholders were interested in learning more about different ways of restoration and about the practical implementation of the principles of good rangeland management without losing sight of economic feasibility. The integration of restoration aspects would definitely strengthen the acceptance of the project in Namibia. It was stressed that the project's success strongly depends on the involvement of local community members. With this feedback in mind the research questions were adjusted and concretized.

Figure 2 gives a visual impression of affected and effecting stakeholders

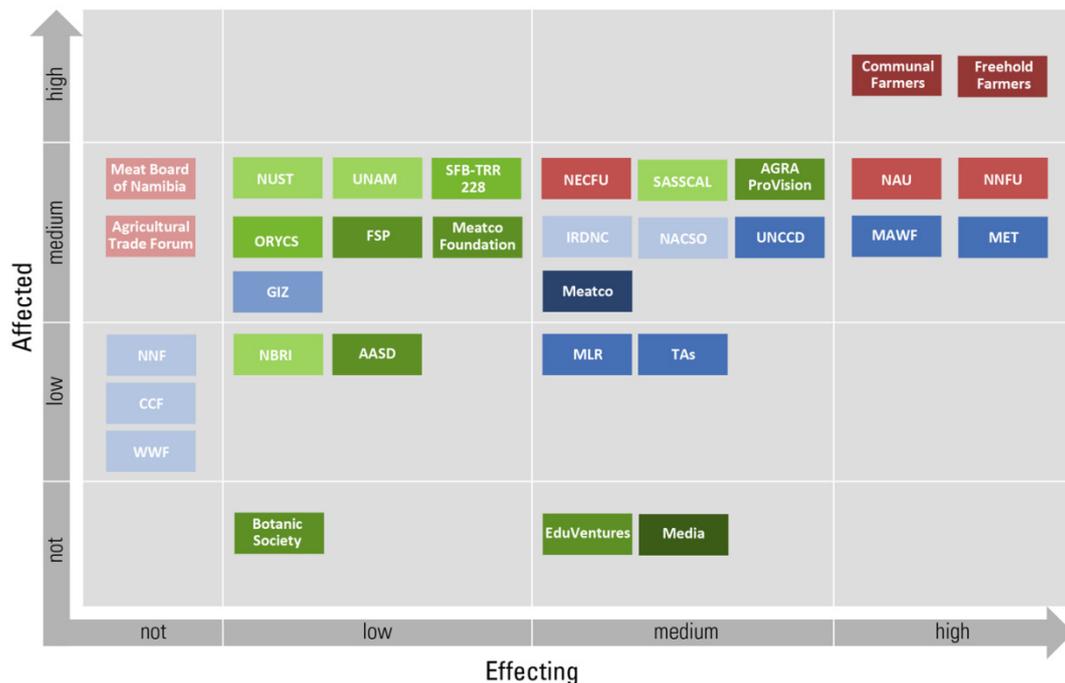


Fig. 2: Affected and effecting matrix for DTPs showing Namibian stakeholders (details on stakeholders see Tab.1). The placement within a square reflects the rating at the time of analysis and facilitates reading but does not reflect micro-rating reasons.

³ Edible parts of plants, other than separated grain, that can provide feed for grazing animals or that can be harvested for feeding.

In a subsequent step we asked who of these stakeholders will be affected by and effecting DTP's. We found out that Namibian cattle farmers will be mainly affected by DTPs since they use about 31.5 million hectares of Namibia's land (Reutter 2016; Mendelsohn et al. 2006), and effect DTPs depending on their management strategy. The farmers' unions as a mouthpiece and mediator for the agricultural community can thus effect and be affected by DTPs. The Namibian Ministry of Agriculture, Water and Forestry (MAWF) and the Ministry of Environment (MET) could effect DTPs with their correspondent strategies and implementations. The scientific institutions, such as the Namibian University of Science and Technology (NUST) and the University of Namibia (UNAM), have a low to medium effect on DTPs depending on the importance that is given to the topic within these institutions. Likewise, the effect of the media, traditional authorities and the Botanic Society depends on their outreach and the importance ascribed to the topic of DTPs; they could act as multipliers, even if they are not affected. Namibian institutions that deal with agricultural or livestock products, such as the meat board of Namibia, have no influence on DTPs, but can be indirectly affected. Neither affected nor effecting were the related projects: OPTI-MASS because it has been terminated and Living Landscapes Limpopo because it is located in South Africa. The National Archives of Namibia and the German Embassy were not included in the matrix, just like Agriconsult, Agribank and Kara Nawa Environmental Solution from the private sector.

4.2 Interest and Influence

In this section the stakeholder groups are discussed according to their influence on and interest for the project itself and listed in decreasing order from key players to crowd (Fig. 3). For pointed results in the feasibility study we used a three-range-scale and thus would only have a clear distinct characterization for the four corner quadrants. Though, with regard to the main project phase, institutions from the broad middle quadrants are expected to shift into one of the categories which we anticipated and are mentioning in the following description.

4.2.1 Key players

These are stakeholders with a high interest and high influence. Key players are the local farmers and their farmers unions who are the natural resource managers and their mouthpiece. New ideas and changes in land use need support and benevolent acceptance from these members of the civil society who are living and acting in the local environment, in a local social and ecological context and under local conditions. Farmer unions are knowledge exchange hubs when it comes to new ideas and techniques as well as an interface for farm managers and policy makers. NAU has the highest interest of all unions in the feasibility study. We expect that NNFU's interest level will rise during the main project phase. The Namibian Emerging Commercial Farmer's Union is a relatively young union with comparatively few members which

resulted in low levels of interest in and influence on the feasibility study. Five farmers on freehold and communal land invited the research team to implement study sites on their grazing areas. Most of these farmers already showed a special interest in social-ecological connections. Some reported that they have to sell animals more frequently than before due to forage scarcity or desertification, a situation which is contrary to cultural practices, especially on communal land. We were also told that people now have the right to register communal land as their personal property. This leads to privatization and enclosures which could be a social-ecological tipping point because pressure on remaining communal land might increase. The cooperation with these key players should be actively promoted e.g. by joint events with the farmers unions, joint field experiments with the farmers and regular updates (Reed 2016).

During the main phase, an expected key player on the policy level is the MET. Due to the ministries wide range of topics its interest in the feasibility study is medium. The MET implements the Namibian 2nd National Biodiversity Strategy and Action Plan (NBSAP) (MET 2014), with projects holding a substantial link to DTPs. One project is dealing with resource mobilization for biodiversity conservation and addresses topics like the preservation of biodiversity and ESS. These projects are partly supported by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), who has agreed to cooperate during the main project phase. Joint meetings already started during the feasibility study and their number will be increased by presentations during strategic meetings on the NBSAP.

NamTip entertains important links to scientific institutions in Namibia as it aims at mutual scientific knowledge production and lasting knowledge growth. The Southern African Science Service Centre for Climate Change and Adaptive Land Management (SASSCAL) could be a key player for the project. SASSCAL is a joint initiative of Angola, Botswana, Namibia, South Africa, Zambia, and Germany in response to the challenges of global change. An intensive co-operation is pursued and desired by both sides to complement capacity development and research. However, these contacts need to be actively fostered since they are not yet stable long-term relations.

Two stakeholders, AGRA ProVision and EduVentures were not included in the interest-and-influence-matrix, because they had already agreed to a close cooperation and therefore have become part of the consortium. AGRA ProVision, an advisory institution for the farming sector, has agreed to a close cooperation. One of their staff members is part of the consortium and supports trainings for farmers, knowledge exchange and logistical matters. This stakeholder has multiple interests e.g. rangeland management in the face of drought. He can positively influence the project's success due to his good connections with the farming community and the ministries. Another staff member could become a close cooperation partner in remote sensing for biomass valuations.

EduVentures focusses on young learners from schools, providing a mobile classroom and field trips to the research sites. By educating the future generation and by pupils subsequently passing on their newly acquired knowledge at home EduVentures can

support the acceptance of the project and the implementation of the results within the relevant communities.

4.2.2 Context setters

Context setters' interest is medium, while their influence is high. For this project, Namibia's universities, the Namibian University for Science and Technology (NUST) and the University of Namibia (UNAM) are important context setters. Therefore, individual representatives of these institutions are partners in the project consortium. However, further cooperations are envisaged with the social and the natural sciences, with the faculties of Human Sciences, of Natural Resources and with the faculties of Spatial Sciences and of Management Sciences, as well as with the Centre for Open and Lifelong Learning at NUST and with the faculties of Agriculture and Natural Resources, of Economic and Management Science, with the faculties of Humanities and Social Science, and with the faculties of Law and of Science at UNAM. Staff members can support the project as multipliers by offering research related master theses. However, on an administrative level the cooperation needs to be strengthened.

As further science service institutions, the National Archives of Namibia and the National Botanical Research Institute (NBRI) will be context setters. Their support is needed for gathering specific data, such as historical data and for the identification of plant specimen. Here, contacts still need to be established.

During the workshop, one stakeholder's concern was the overlapping with other research projects. To avoid this, knowledge exchange with other projects such as ORYCS and the SFB TRR228 "Future Rural Africa" will be facilitated. Contacts from completed projects, such as OPTIMASS, CuveWaters and Limpopo Living Landscapes will be maintained which is ensured by the composition of the project team and their former involvements in these projects as well their subsequent networks of contacts.

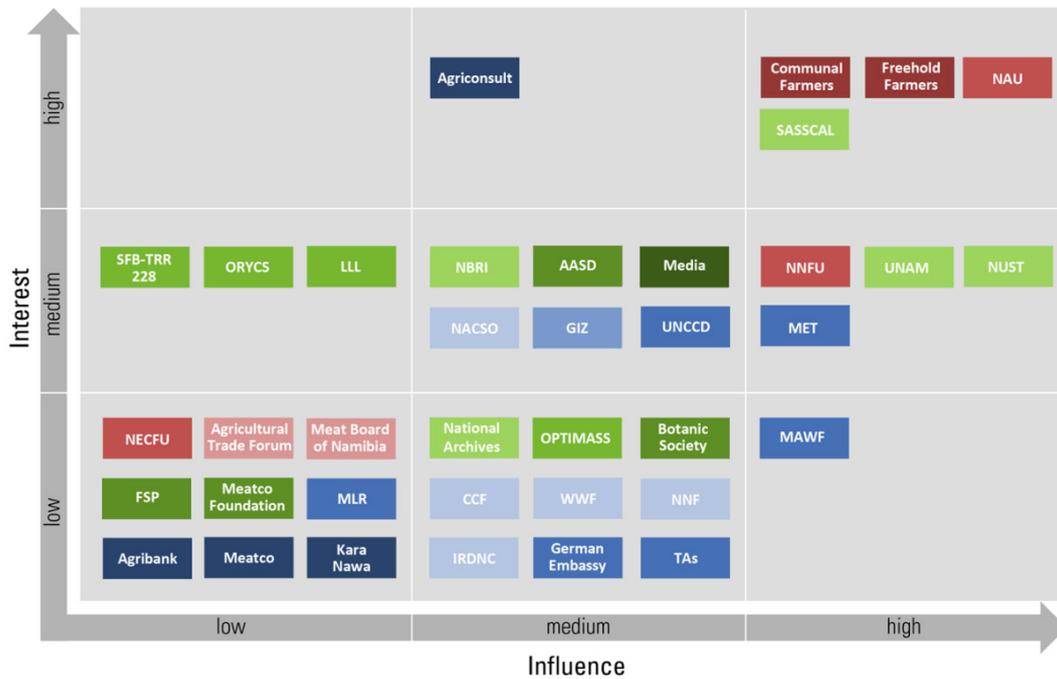


Fig. 3: Interest-influence matrix, a visual presentation of the Namibian stakeholders (Legend see Tab.1). The placement within a square reflects the rating at the time of analysis and facilitates reading but does not reflect micro-rating reasons.

Other context setters for the project are found on the *political level* because here, Namibian ministries can regulate natural resource management by means of legislation. The MAWF can exert influence on natural resource managers with regulating directives. The government officials of the MAWF are potential cooperation partners especially when it comes to supporting the Namibian Rangeland Management Policy and Strategy (NRMPS) (MAWF 2012). An important stakeholder feedback was that the NMPRS determines the principles of sound rangeland management which therefore do not need to be tested experimentally. Nevertheless according to this stakeholder feedback, there is a gap between knowledge and implementation.

The educational sector will play an important role for the main phase of the research project, especially regarding capacity development and dissemination. In this sector we have found six stakeholder institutions. Up to now they only have low to medium interest in the feasibility study, because their institutions are dealing with a wide range of topics. However, their influence might be medium to high because they shape the future by legislation or by influencing the views and opinions of (future) decision makers. Thus it is important for the project's success to keep track of context setters. They need to be monitored and actively managed in the communication plan.

Some of these context setters only have medium interest because their institution covers a wide range of topics. However, their influence is high because they shape the future by legislation or by influencing the views and opinions of (future) decision makers. Thus it is important for the project's success to keep track of context setters.

They need to be monitored and specifically taken into consideration in the communication plan.

4.2.3 Subjects and crowd

Subjects and crowd have low influence on the research project. During the feasibility study their roles could not be defined as clearly as those of key players and context setters. As subjects have a high interest in the ongoing research they might be able to provide valuable information and might also potentially be willing to cooperate to a certain extent. Their role as well as the role of the crowd with low interest in the research project could change during the project's main phase since their awareness, interest or influence may grow.

Traditional authorities, institutions from the education group like Agri Advisory Services Division (AASD), Farmers Support Project (FSP) and Meatco Foundation could become context setters during the main phase when capacity development and dissemination become more important. The Botanic Society might also give valuable information to interested individuals and thus act as a multiplier.

NGOs like the Integrated Rural Development and Nature Conservation (IRDNC), the Namibian Association of Community Based Natural Resource Management Support Organisations (NACSO) and the World Wildlife Fund (WWF) also seemed to be interested to cooperate as the research project covers one of their many topics, such as establishing / promoting sustainable food systems to conserve nature. Furthermore interest groups like the Agricultural Trade Forum and the Meat Board of Namibia as well as stakeholders from the private sector like Agribank of Namibia, Meatco, Agriconsult and Kara Nawa Environmental Solutions have also shown interest in the project's topic.

The media are currently categorized as subjects, but could also become context setters, if they support public relations as multipliers. In Namibia, an expert from the journal Agriforum will be approached to improve the public relations competences of the local project members. The GIZ program on the promotion of vocational education and training could become a subject as it was suggested for cooperation in the field of capacity development in which the Namibian Ministry of Education (MoEAC) is also involved. Other valuable insights might also be provided by the Ministry of Land Reform (MLR) and the UNCCD bureau in Namibia.

4.3 Communication plan

Having identified and categorized the stakeholders according to their institutions, a communication plan was developed. In general, key stakeholders should be frequently consulted, context setters should be regularly consulted and others only need to be informed.

The main phase of the project will start in 2019. We are planning to start with two stakeholder workshops to give an important kick-off signal. One workshop will be held in Windhoek for stakeholders located in this area focusing on the levels of science, politics and educational cooperation, the other workshop will take place at the project area in Okakarara with a focus on farming, NGOs and Conservancies. Identified key players and context setters should all participate. Reports of the workshops will be distributed to the participants.

There will be quarterly meetings or telephone conferences throughout the project duration with the farmer unions, conservancies, the farm managers and traditional authorities, and also with GIZ and Agriforum. All stakeholders will be invited to obtain first insights into the research in 2020 and 2021 on NamTip Day. Relevant stakeholders will be kept updated on planned trainings and school visits. The Namibian ministries, MAWF and MET, will receive a policy brief in the fourth quarter of 2021 as a contribution to the NRMPS and 2nd National Biodiversity Strategy and Action Plan. As SASSCAL is important for dissemination they will also receive first insights in 2020 and will be involved via emails and during meetings in accordance with the concept of result dissemination in southern Africa. The plan can be viewed in appendix 1.

In summary, farmers unions and farmers are highly relevant key players, as is SASSCAL, provided that the communication there will be intensified since SASSCAL has not yet established stable long-term relations. Namibian universities could become key players if the cooperation with them can be improved on an institutional respectively faculty level. MET, incl. GIZ can become key players if a continued interest is sustained via established contacts. The MAWF might stay a context setter due to a medium interest and a wide range of topical duties. However, contacts here should still be strengthened since this ministry is an essential stakeholder because of its political competence. Apart from the group interaction enabled during in the stakeholder workshops, researchers should also individually stay in touch with the established contacts within these institutions via email and telephone in order to stay informed about changes in discussions and positions.

5 Conclusion

By methodologically structuring the stakeholder analysis into three steps and by analyzing effect and affectedness as well as the level of interest and influence of stakeholders, a more precise way of grouping and selecting stakeholders has been investigated despite the limited time and funds of a feasibility study. We highly value the active involvement of the stakeholders and the joint learning which took place for example during workshops or field trips, thus guaranteeing the success of this feasibility study.

Our approach to the stakeholder analysis entails an integration of the stakeholders from the very beginning of the project, namely at an early stage of the feasibility study. Even though the analysis anticipates possible developments of the stakeholders during the main phase of the project, these anticipations have to be re-examined just like the interest-and-influence-matrix with its characterization of “medium”-attributed stakeholders.

Established long-term contacts proved to be extremely valuable for the analysis and strengthened the interest of stakeholders in the research topic. In order to fortify and consolidate these networks, working groups on DTPs should be linked to existing structures within these institutions. During the main phase of this project the selection of the most important stakeholders should take place through personal communication, research-related workshops and special topical events.

We have found that farmers and their unions are key players of the research project as they are both affected by and effecting DTPs and are also highly interested in the project itself and influential with regard to the capacity development and dissemination of the results. On the political level the topically correspondent Namibian ministries are at least context setters if not potential key players as their legislation and strategy plans effect land usage and biodiversity and their positive influence is a prerequisite for the successful realization of the research. Scientific institutions, affectedness is low or medium, depending on the importance of research topics, such as desertification. There is only medium interest when the institutions themselves are dealing with a wide coverage of topics, but influence can be sustainable and should thus be classified as high. Generally, NGOs only have a medium influence on the project's success but since regional NGOs are more affected by DTPs and they are showing considerable interest. Institutions connected with farming are affected indirectly (trading) respectively are low to medium affected by and effecting DTPs (education). They have either no influence on the research project (trading) or a low to medium, rather indirect influence, depending to what extent they accept the research. Interest and influence of the educational group is generally expected to grow during the main phase, especially as institutions connected with farming are by some means or other affected by DTPs.

The above mentioned cooperations address the current and future generation of resource users as well as political decision makers, planners, researchers and educators. Thus stakeholder participation in NamTip should find ways that lead from knowledge about the rangeland management needed for governing the case specific problem set to the implementation of these principles, e.g. by the farmers. Bridging this gap can be possible via suitable knowledge exchange and mutual knowledge production. Possible tools for this common experience are joint experiments and trainings carried out and edited by farmers and scientists.

The stakeholder research within this feasibility study might be limited by its methods because over time it causes the determination of an individual stakeholder attribute to be relative (Nastran 2013).

Therefore, stakeholder integration should be an iterative process during the main phase of the project: the stakeholder analysis and the concluding stakeholder management should be amended as the project progresses (Reed 2016). As the individual's positions, interests and influence may change with the progression of a project, the attribution of stakeholders may change accordingly during the project's main phase (Grimble and Wellard 1997; Reed 2016). Thus, when planning the participation of the stakeholders and choosing the appropriate strategy and collaboration method, the project team needs to readjust their focus from time to time. This means the analysis should continue and could become more detailed throughout the main phase of the project. This would ensure the identification of social-ecological interfaces, knowledge integration, as well as capacity development for and dissemination of new shared action knowledge.

During the main phase of this project the methodologically more profound selection of the most important stakeholders will be put into practice through personal communication, research-related workshops and special topical events. Further points can then be considered in more detail, such as the differentiations between stakeholders and shareholders, practice partners and multipliers.

It is important to realize that, like in most cases generally, society is interfaced and interlinked on different levels and at different times, thus decisions of individuals are not solely based on objective facts but depend on individual and collective knowledge as well as on experiences with natural laws and then again on social roles and connections, values and traditions (Stoll-Kleemann & Welp 2006). From an SES research point of view it is especially important to investigate relationships between stakeholders since the individuals' opinions, options and choices depend on their social status, role and relationships. Understanding how different individual decisions under varied social and ecological conditions add up to society's dealing with the environment will help to identify more detailed paths for capacity development and dissemination. It is essential to identify further possibilities for cooperation and joint action, which in turn will deepen the local societal understanding of ecological processes. Joint knowledge production and exchange between researchers, politicians

and all levels of society are crucial for a sustainable real-world success of a research project.

This stakeholder analysis and integration showed that stakeholder dialogues should be a reflexive and iterative process and that the content and the rules should be part of open discussions from the very beginning of this process (Stoll-Kleemann & Welp 2006).

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7 References

- Achterkamp, Marjolein C./Janita F. J. Vos (2007): Critically identifying stakeholders. *Systems Research and Behavioral Science* 24, 1, 3–14
- Asner, Gregory P./Andrew J. Elmore/Lydia P. Olander/Roberta E. Martin/A. Thomas Harris (2004): Grazing Systems, Ecosystem Responses, and Global Change. *Annual Review of Environment and Resources* 29, 1, 261–299
- Billgren, Charlotte/Hans Holmén (2008): Approaching reality. Comparing stakeholder analysis and cultural theory in the context of natural resource management. *Land Use Policy* 25, 4, 550–562
- Bischofberger, Jenny/Nicola Schuldt-Baumgart/Julia Röhrig/Oliver Schulz/Melanie Neugart (2018): Knowledge exchange between research and practice. In: Liehr, Stefan/Johanna Kramm/Alexander Jokisch/Katharina Müller (Hg.): *Integrated Water Resources Management in Water-scarce Regions*. London, 225–234
- BMBF – Bundesministerium für Bildung und Forschung (2015): Richtlinien zur Förderung von Forschungs- und Entwicklungsvorhaben zum Thema Kippunkte, Dynamik und Wechselwirkungen von sozialen und ökologischen Systemen (BioTip). Bekanntmachung. <https://www.bmbf.de/foerderungen/bekanntmachung-1083.html> (16.08.2018)
- Chevalier, Jacques M./Daniel J. Buckles (2008): *A Guide to Collaborative Inquiry and Social Engagement*. Ottawa
- Franz, Hans-Werner (2018): Beteiligung erleichtern. Methoden und Werkzeuge für ergebnisorientierte Kommunikation. In: Franz, Hans-Werner/Kaletka, Christoph (Hg.): *Soziale Innovationen lokal gestalten*. Wiesbaden, 269–287
- Freeman, R. Edward (2010): *Strategic management. A Stakeholder Approach*. Illustrated Reprint. Cambridge, UK
- Grimble, Robin/Kate Wellard (1997): Stakeholder methodologies in natural resource management. A review of principles, contexts, experiences and opportunities. *Agricultural Systems* 55, 2, 173–193
- Hage, Maria/Pieter Leroy/Arthur C. Petersen (2010): Stakeholder participation in environmental knowledge production. *Futures* 42, 3, 254–264
- Hummel, Diana/Thomas Jahn/Florian Keil/Stefan Liehr/Immanuel Stieß (2017): Social Ecology as Critical, Transdisciplinary Science – Conceptualizing, Analyzing and Shaping Societal Relations to Nature. *Sustainability* 9, 7, 1050
- Huntington, Henry P./Patricia K. Brown-Schwalenberg/Kathryn Frost/Maria Fernandez-Gimenez/David W. Norton/Daniel H. Rosenberg (2003): Observations on the Workshop as a Means of Improving Communication Between Holders of Traditional and Scientific Knowledge. *Environmental management* 30
- Jahn, Thomas/Matthias Bergmann/Florian Keil (2012): Transdisciplinarity. Between mainstreaming and marginalization. *Ecological Economics* 79, 1–10
- Jepsen, Anna Lund/Pernille Eskerod (2009): Stakeholder analysis in projects. Challenges in using current guidelines in the real world. *International Journal of Project Management* 27, 4, 335–343

- Joubert, Dave F./G. N. Smit/Michael Timm Hoffman (2013): The influence of rainfall, competition and predation on seed production, germination and establishment of an encroaching Acacia in an arid Namibian savanna. *Journal of Arid Environments* 91, 7–13
- Kachali, Rhoda Nthena (2007): Stakeholder Interactions in Wetlands: Implications for Social Ecological System Sustainability. A Case of Likanga Swamps, Zambia. Master Thesis. Lund, Sweden
- Kassahun, Amaha/H. A. Snyman/G. N. Smit (2008): Impact of rangeland degradation on the pastoral production systems, livelihoods and perceptions of the Somali pastoralists in Eastern Ethiopia. *Journal of Arid Environments* 72, 7, 1265–1281
- Kéfi, Sonia/Milena Holmgren/Marten Scheffer/Francisco Pugnaire (2016): When can positive interactions cause alternative stable states in ecosystems? *Functional Ecology* 30, 1, 88–97
- Kennon, Nicole/Peter Howden/Meredeth Hartley (2013): Who really matters? A stakeholder analysis too. http://www.csu.edu.au/__data/assets/pdf_file/0018/109602/EFS_Journal_vol_5_no_2_02_Kennon_et_al.pdf (09.08.2018)
- Klerk, J. N. de (2004): Bush encroachment in Namibia. Report on phase 1 of the Bush Encroachment Research, Monitoring, and Management Project. Windhoek, Namibia
- Liehr, Stefan/Julia Roehrig/Marion Mehring/Thomas Kluge (2017): How the Social-Ecological Systems Concept Can Guide Transdisciplinary Research and Implementation. Addressing Water Challenges in Central Northern Namibia. *Sustainability* 9, 7, 1109
- Linstädter, Anja/Diego A. Menestrey Schwieger/Dave F. Joubert/Jenny Bischofberger/Michael Bollig/Kristijan Čanak/Gunnar Dressler/Corris Kaapehi/Bertus Kruger/Stefan Liehr/Meed Mbidzo/Birgit Müller/Clara W. Nesongano/Jan C. Ruppert/Alexandra Sandhage-Hofmann/Katja Tielbörger/Cornelis van der Waal (in prep. 2018): Understanding ecological tipping points from social-ecological perspective: the example of desertification tipping points.
- Lopez, Thankvaro Thyl de (2001): Stakeholder Management for Conservation Projects. A Case Study of Ream National Park, Cambodia 1. *Environmental management* 28, 1, 47–60
- Mendelsohn, John M./Selma El Obeid/Nico de Klerk/Piers Vigne (2006): Farming Systems in Namibia. RAISON (Research & Information Services of Namibia), Windhoek, Namibia
- MEA – Millenium Ecosystem Assessment (2005): Ecosystems and Human Well-Being. Desertification Synthesis. Millennium Ecosystem Assessment. Washington, DC
- MAWF – Ministry of Agriculture, Water and Forestry (2012): National Rangeland Management Policy & Strategy. Restoring Namibia's Rangelands
- MET – Ministry of Environment and Tourism (2014): Namibia's 2nd National Biodiversity Strategy and Action Plan 2013–2022
- MET – Ministry of Environment and Tourism (2018): Conservancies. <http://www.met.gov.na/services/conservancies/193/> (01.08.2018)
- Namibian Association of CBNRM Support Organisations (NASCO) (2018): Registered Communal Conservancies. <http://www.nasco.org.na/conservancies> (01.08.2018)

- Nastran, Mojca (2014): Stakeholder analysis in a protected natural park. Case study from Slovenia. *Journal of Environmental Planning and Management* 57, 1359–1380
- Phelps, Leanne/Jed Kaplan (2017): Land use for animal production in global change studies. Defining and characterizing a framework. *Global Change Biology* 23, 11
- Prävälje, Remus (2016): Drylands extent and environmental issues. A global approach. *Earth-Science Reviews* 161, 259–278
- Rastogi, Archi/Ruchi Badola/Syed Ainul Hussain/Gordon M. Hickey (2010): Assessing the utility of stakeholder analysis to Protected Areas management. The case of Corbett National Park, India. *Biological Conservation* 143, 12, 2956–2964
- Reed, Mark S. (2008): Stakeholder Participation for Environmental Management. A Literature Review. *Biological Conservation* 141, 10, 2417–2431
- Reed, Mark S. (2016): *The research impact handbook*. St Johns Well/Kinnoir/Huntly/Aberdeenshire, UK
- Reed, Mark S./Anil Graves/Norman Dandy/Helena Posthumus/Klaus Hubacek/Joe Morris/Christina Prell/Claire H. Quinn/Lindsay C. Stringer (2009): Who's in and why? A typology of stakeholder analysis methods for natural resource management. *Journal of environmental management* 90, 5, 1933–1949
- Reid, Robin/Maria Fernandez-Gimenez/Kathleen Galvin (2014): Dynamics and Resilience of Rangelands and Pastoral Peoples Around the Globe. *Annual Review of Environment and Resources* 39, 217–242
- Renaud, Fabrice G./Jörn Birkmann/Marion Damm/Gilberto C. Gallopín (2010): Understanding multiple thresholds of coupled social–ecological systems exposed to natural hazards as external shocks. *Natural Hazards* 55, 3, 749–763
- Reutter, Christian (2016): *The perspective of societal stakeholders – An assessment of Namibian livestock farmers' perceptions of ecosystem services and -benefits*. Bachelorarbeit. Göttingen: Georg-August University/Geowissenschaften und Geographie
- Reynolds, James F./D. Mark Stafford Smith/Eric F. Lambin/B. L. Turner/Michael Mortimore/Simon P. J. Batterbury/Thomas E. Downing/Hadi Dowlatabadi/Roberto J. Fernández/Jeffrey E. Herrick/Elisabeth Huber-Sannwald/Hong Jiang/Rik Leemans/Tim Lynam/Fernando T. Maestre/Miguel Ayarza/Brian Walker (2007): Global desertification. Building a science for dryland development. *Science* 316, 847–851
- Schramm, Engelbert (2012): *Stakeholder-Involvement zur Bewältigung von Biodiversitätskonflikten. Ein Leitfaden*. BiK-F Knowledge Flow Paper Nr. 15. Frankfurt am Main
- SASSCAL – Southern Africa Science Service Centre for Climate Change and Adaptive Land Management (2018): *SASSCAL WeatherNet*
<http://www.sasscalweathernet.org/index.php?MIsoCode=NA> (16.08.2018)
- Stoll-Kleemann, Susanne/Martin Welp (2006): Linking Case Studies to the Integrative Theory of Reflexive Dialogues. In: Stoll-Kleemann, Susanne/Martin Welp (Hg.): *Stakeholder Dialogues in Natural Resources Management*. Environmental Science and Engineering. Berlin/Heidelberg, 347–371

UNEMG – United Nations Environment Management Group (Hg.) (2011): Global Drylands: A UN system-wide response. https://www.unep-wcmc.org/system/dataset_file_fields/files/000/000/091/original/Global-Drylands-FINAL-LR.pdf?1398440625 (01.08.2018)

Appendix 1:
Stakeholder communication plan February 2018

Stakeholder (Who?)	Information (What?)	Mode (How?)	Schedule (When?)
All	Project start	Email	Q 4 2018
Stakeholders located close to Windhoek (e.g. MAWF, MET, UNAM, NUST, GIZ)	Invitation to <i>Stakeholder Workshop</i> in Windhoek	Email	Q 4 2018
Stakeholders located in GWL (e.g. famers, CCF, Conservancies)	Invitation to Stakeholder Workshop in Okakarara	Email	Q 4 2018
All above	Introduce NamTips main-phase	Workshop	Q 4 2018
All above	Report from stakeholder workshops	Email	Q 4 2018
Farmers, herders and policy makers and implementors	Date and concept of <i>trainings for resource managers and decision-makers</i> respectively for feedback	Email	Q 3 2020
Farmers, herders and policy makers and implementors	Trainings on DTP	Training	Q 4 2021
Head of schools in GWL	Date and concept for school visits of <i>Ombombo</i>	Email and meeting	Q 2 2020
Primary school Okakarara	Test and evaluation of Ombombo's DTP modules	School visit	Q 3 2020
Schools in GWL	DTP theme's	School visits, incl excursions for young learners	Q 1 to 4 2021
All	First insights on DTP and knowledge exchange	<i>NamTip Day</i>	2020
All	Results on DTP	NamTip Day	2021
MAWF	Contribution on DTP to the Namibian National Rangeland Management Policy & Strategy	<i>Policy brief</i>	Q 4 2021
MET	Contribution on DTP to Namibia's 2nd National Biodiversity Strategy and Action Plan	Policy brief	Q 4 2021
SASSCAL	First insights on DTP	Meeting	2020

SASSCAL	Concept for <i>dissemination of results on DTP to southern Africa</i>	Emails and meetings	2021
NAU, NNFU, Conservancies, Hamakari, Traditional authority	Progress report	Meetings	Quarterly
GIZ	Concept and progress on “vocational education and training” and “biodiversity conservation”	Meetings	Q 1 2019, Q 3 2020, Q 4 2021
Agriforum	Public relations in Namibia	Telephone conferences	Quarterly

Appendix 2:
NamTip Stakeholder Workshop Documentation 2017

NamTip

1. Stakeholder Workshop Documentation

Date:

September 13th 2017

Place:

Kubata City Lodge
 151 Nelson Mandela Avenue
 Eros, Windhoek
 Namibia

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TIME	PROGRAM ITEM
08:30	1. Arrival & registration
09:00	2. Welcoming & Introductions
09:20	3. Program logic/ Purpose of workshop
09:30	4.1 Core Challenges and Nam-Tip Topic-Map
09:55	4.2 Relevance Test #1
10:30	<i>Parallel refreshment</i>
10:30	5. Relevance Test #2
11:30	6. Stakeholder Map
12:30	<i>NETWORKING break</i>
13:15	7. Plenary Feedback
13:45	8. 'Way Forward'
14:00	9. Closure

PROJECT INFO AND AIM OF THE WORKSHOP

NamTip is a pre-study for a research and development project on “Tipping points”. That is ecological thresholds, their feedbacks to society and vice versa. The project will focus on rangeland use in the Waterberg area and further east.

The aim is to determine the point at which ecosystems can reach a state where rangeland use would be unsustainable. The same will be done for related socio-economic tipping points.

The current phase is a feasibility study for a possible main project (see way forward). Therefore, the aim of the stakeholder workshop was to determine interested parties to setup a working group that will shape the projects’ activities, areas of operation and future.

The project is funded by the German Federal Ministry for Education and Research.

MORE PROJECT INFO

CORE CHALLENGE:

To understand and manage Desertification Tipping Points (DTPs) is the core challenge of the NamTip project

- The theory of ecological tipping points is well understood
- But it is challenging to identify and predict tipping points in the real world
- Crossing a tipping point is often a ‘ecological surprise’
- Poorly understood are ecological mechanisms “behind” tipping point behaviour, and feasible management interventions to prevent them

NamTip MAP (OF TOPICS)



This map represents the current structure of the possible main project, as it is suggested by the NamTip consortium..

NamTip MAP – RELEVANCE TEST

The Stakeholders were asked for an active-echo on the suggested map of topics. The topics were discussed, topics were added and the focus was re-directed. This will be shown in the following tables and such.

OBJECTIVE 1: Understand ecological and social drivers for DTPs

APPROACH 1: Experiments

General suggestions:

Suggestions from Stakeholders	Interpretation by NamTip	Suggested by
Diversity of stakeholders / projects already active → avoid overload	Try to identify overlaps with other projects to avoid double work and profit from each other (→ synergies)	
Communal rangelands: desertification is challenge (higher than in commercial lands), e.g. due to less land available, higher grazing pressure	Desertification seems to be a main or at least higher challenge in communal rangelands, therefore we may need to focus more on communal lands in the study site selection	MAWF 2
Commercial rangelands: Bush encroachment is main challenge	Not clear, what is the role of soil	MAWF 2

Suggestions for experiments:

Suggestions from Stakeholders	Interpretation by NamTip	Suggested by
Rainfall: modify amount and frequency, not just complete drought	Complete drought is not natural, therefore more diverse rainfall scenarios	AGRI 1
We need garden / pot experiments	Refers to seed bank	AGRI 1
Soil nutrient cycles (phosphorous etc.)	Will be done before, during and after experiments	NUST 2
Soil classification	We will not find the same soil types in communal and commercial areas! UNI BONN 1 & MAWF 2 agreed on potential collaboration: MAWF 2 could join field work, data exchange of soil profiles	MAWF 2
Drivers to consider: Wind → soil erosion Floods (?)	Stated in reference to pictures from Kunene region. Not clear if relevant in Waterberg region, and also very difficult to measure. Can we see signs of erosion in the field?	MET 1

After DTP: management after drought important → perennial vs. annual	Restoration measures that are undertaken after a drought determine which state is reached	AGRI 1
Bush clearing as additional treatment	We can't exclude bush encroachment for our experiments – could be drivers?	AGRI 1
Observation: bushes have eliminated perennials → also clearing bushes does not lead to a restoration to perennials	We need to include and compare restoration pathways Seed bank or soil properties important?	AGRI 1

Further comments from stakeholders:

- What is the DTP? → Definition!
(Working definition for the field:
amount of bare ground, percentage annual/perennial ...)
- How do we know, when the DTP is reached? → additional experiment in pre phase or at the end of the main phase: remove rainshelter, look whether land restores – if yes, we didn't reach the DTP

Interested stakeholders:

- UNAM 2; FARMER 1

Serious game:

No suggestions or comments. However the concept of the game was explained to several people and they seemed to like it.

Interested stakeholders:

- UNAM 3; NUST 2; AGRI 1

Explore engagement potential to approach 1 by stakeholders:

NAME	LEVEL OF ENGAGEMENT			CONTRIBUTION AREA			
	OBSERVER	ADVISOR	IMPLE-MENTER	RESEARCH	TRAINING / CAPACITY DEVELOPMENT	CASE STUDY / SITE	POLICY
NUST 2				X			
UNAM 3		X		X		X	
MAWF 2				X		X	
AGRI 1		X		X			
UNAM 2			X	X	?		
UNAM 2			X		X		
FARMER 1			X		X	X	

APPROACH 2: Space for time (Gradients)

Gradients of desertification and contrasting land-use systems:

Suggestions from stakeholders	Suggested by
Desertification: Deep sand soils. NB: Equilibrium between woody + herb.	MAWF 1
Use aerial photos old and new, for Approach 2+3	
Local Monitoring, photo points, links with “science”	NASCO 1 , NUST 1/ NASCO 2
Demonstration “eg cages”, for Approach 3	
Remote sensing, this would be a tipping point so that perhaps the woody plant cover can be estimated in relation to ground truthing of herbaceous plants	AGRI 1, UNAM 1
Identify vegetation growth stages with GIS & remote sensing to understand tipping points vulnerability	
UNDCCC Land degradation neutrality studies in Namibia	MET 2

Interested stakeholders- gradients of desertification:

- UNAM 2; NUST 2; UNAM 1; MAWF 2; FARMER 1 (on communal side); AGRI 1; MAWF 1

Interested stakeholders - contrasting land-use systems:

- UNAM 3; AGRI 1; FARMER 1 (on the communal side)

Explore engagement potential of stakeholders to approach 2:

NAME	LEVEL OF ENGAGEMENT			CONTRIBUTION AREA			
	OBSERVER	ADVISOR	IMPLE-MENTER	RESEARCH	TRAINING / CAPACITY DEVELOPM ENT	CASE STUDY / SITE	POLICY
MAWF 1	X	X		X			
FARMER 2	X	X	X				
UNAM 3				X		X	
UNAM 1	X		X	X		X	
NUST 2			X	X		X	
MAWF 2	X			X		X	
FARMER 1	X	X	X				

AGRI 1			X	X			
UNAM 2			X	X			
UNAM 2			X		X		
NAU 1	X					X	X

APPROACH 3: Retrospective analysis

Land users' experiences (Society):

Suggestions from Stakeholders	INTERPRETATION by NamTip	Suggested by	RELEVANCE FOR NamTip
Cattle herding: Did it improve grassland condition? Ask for IRDNC experience	Could a good rangeland management prevent or revers DTPs?	NASCO 2	UNI KOELN 1 (connect to WWF 1)
People have to sell animals more frequently due to fodder scarcity/ degradation → requirement to sell more female animals than desirable → contrary to cultural practices	Socio-economic context of DTPs	FARMER 2, FARMER 1	To be considered in interviews (→UNI KOELN 2); suitable scenario for agent-based modelling (→ UFZ 1)
Conduct local expert interviews during pre-phase!	Already planned	NUST 2	UNI KOELN 2
Policies/ land registration → makes communal grazing difficult → available communal land is reduced	People have now the right to register land as their personal property; this is done by many people → enclosures & privatization → could also be social-ecological tipping point: Pressure on remaining communal land increased?	FARMER 2, FARMER 1	Suitable scenario for agent-based modelling (→UFZ 1); enclosures also problematic in Kenya (→ KENYA 1)

Overgrazing around waterpoints → no common rules	Rotational system around waterpoints not feasible because herds should not be mixed up → DTPs around waterpoints more likely → Can we identify feasible management options for piospheres?	FARMER 2, FARMER 1	Question for model (→UFZ 1)
People burn grasses without consultation → creates degradation	Ill-timed management fires (too early in a dry season) might also trigger DTPs!	FARMER 2, FARMER 1	Very interesting feedback; maybe also of relevance for TipEx (→UNI KOELN 1, NUST 1/ NASCO 2 , UNAM 2); also suitable scenario for model? (→UFZ 1)
Followers from different Traditional Authorities connected to different political parties do not cooperate with each other to solve problems	Lack of cooperation or networking creates conflicts and might prevent adaptive management in the face of DTPs	FARMER 2, FARMER 1	Suitable scenario for agent-based modelling (→UFZ 1)
Tipping points: Consider animal perspective (herding of animals during various seasons)	Consider management effects on tipping point behaviour	UNAM 1	TipEx (→UNI KOELN 1, NUST 1/ NASCO 2 , UNAM 2), interviews (→UNI KOELN 2); model (→UFZ 1)

Tiping points in long term studies (Nature):

Suggestions from stakeholders	INTERPRETATION by NamTip	Suggested by	RELEVANCE NamTip
Long-term data from e.g. IRDNC on rangeland condition & management	Suitable dataset(s) to be added to existing database?!	NASCO 2	UNI TÜB 1
Photo points (monitoring) of about 10 years in Zambesi Region (conservancies); data on grasses, trees and also game	Suitable dataset(s) from NACSO to be added to existing database?! But data are still in a raw state (not yet pre-analysed)	NASCO 2	UNI TÜB 1; UNI KOELN 1 (maybe also for other projects)
Land use map from 1896 (Namibia)	Maybe not relevant for our approach	UNAM 3	ISOE 1
Rangeland field data from all over Namibia (to calibrate remote sensing applications); most data points from 2916, but some from 2017 (including GWCAL)	Only ca. 250 datapoints distributed over Namibia; not a good dataset; not a long-term study; but could be a good link to remote sensing	AGRI 1	UNI TÜB 1

Explore engagement potential of stakeholders:

NAME	LEVEL OF ENGAGEMENT			CONTRIBUTION AREA			
	OBSERVER	ADVISOR	IMPLEMENTER	RESEARCH	TRAINING / CAPACITY DEVELOPMENT	CASE STUDY / SITE	POLICY
FARMER 2	X	X	X		X	X	
UNAM 3			X	X		X	
UNAM 1	X		X	X	X	X	
FARMER 1			X		X	X	
NUST 2			X	X			
NAU 1	X					X	X

OBJECTIVE 2: Explore and communicate management interventions

Experimentally explore management interventions:

Suggestions from stakeholders:

- Bush encroachment interventions to sustainably restore rangelands and testing different techniques (MAWF 1);
Interpretation: interesting research topic
Engagement potential: lets stay in contact
- Sandveld fodder bank research (research station) (MAWF 1);
Interpretation long-term project on management interventions
Engagement potential: lets stay in contact

Modelling policy and management interventions:

- Comparing conservative and opportunistic stocking -> not just ecologically but also what is economically feasible – a computer model by OTPIMASS 1 in the project Optimass (AGRI 1);
Interpretation: look at that outcome and model

Capacity Development and Dissemination:

- National Rangeland Management Policy & Strategy (NMPRS) principles of good rangeland management – test how mindsets can be changed to start realization (NAU 2, NAU 1);
Interpretation: by the NMPRS the principles are set, so they do not need to be tested experimentally but find out how the farmer can step from knowledge to implementation (knowledge transfer, exchange and implementation); for ISOE 1
- Project success depends on involvement of local community members. Project objectives can have positive impacts on rangeland management (UNAM 3 - UNAM Neudamm);
Interpretation: Stress local stakeholder integration and local knowledge; for ISOE 1 and UNI KOELN 2
- Early warning indicators (AGRI 1);
Interpretation: A tool was developed for Namibia, it could be developed or adapted to the project

Interested stakeholders:

- FARMER 2; NUST 2; UNAM 3

Explore engagement potential of stakeholders for objective 2 and Capacity development & dissemination:

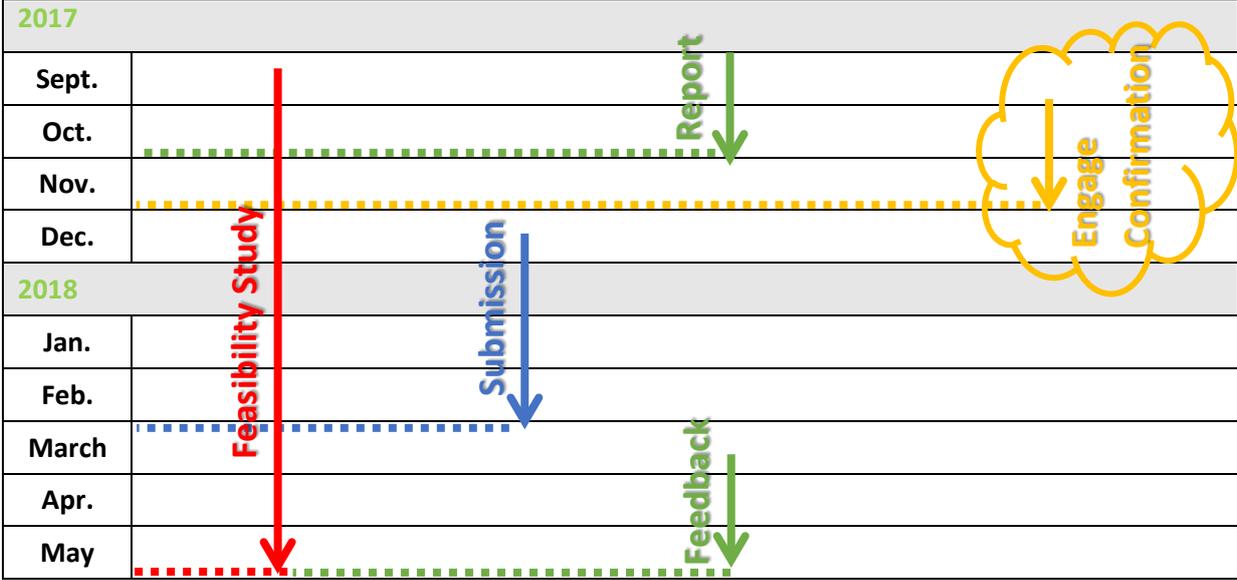
NAME	LEVEL OF ENGAGEMENT			CONTRIBUTION AREA			
	OBSERVER	ADVISOR	IMPLEMENTER	RESEARCH	TRAINING / CAPACITY DEVELOPMENT	CASE STUDY / SITE	POLICY
NAU 2			X			X	X
FARMER 1	X	X	X			X	
FARMER 2	X	X	X				
			X	X	X	X	
NUST 2			X	X	X	X	
NAU 1	X					X	X
AGRI 1		X		X			

The stakeholders were asked “Who’s missing”, whom should we further contact?

NAME	CONTACT
	(Heads NR working group WWF office- NUST 1/ NASCO 2 land degradation neutrality in Otjozonjupa region
	@met.gov.na
	ex officer agriculture Okakarara
	@wradac.org
	land degradation neutrality rangeland management?
UNDCC 1	UNDCCC land degradation neutrality studies (Namibia)

- IRDNC Windhoek (WWF office Windhoek) WWF 1 (via NASCO 1)

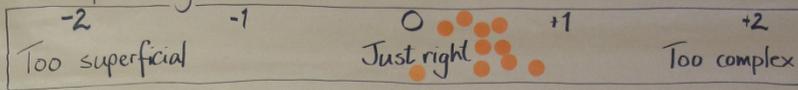
WAY FORWARD of this NamTip pre-study:



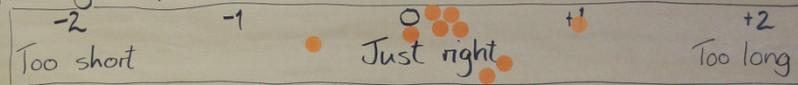
FEEDBACK

"We value your feedback!"

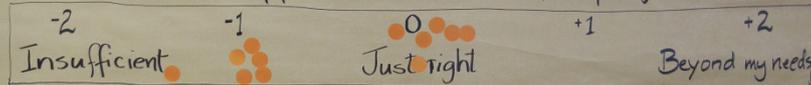
1 Complexity of the Stakeholder Workshop ...



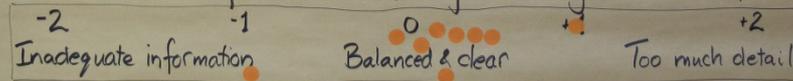
2 Length of the Workshop overall ...



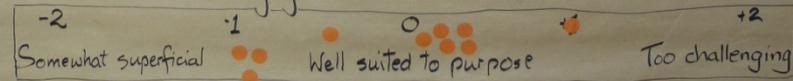
3 Stakeholder opportunities to 'shape' project concepts ...



4 How did you like ...
Presentation of DTP Challenges: Project Concept



Stakeholder Engagement Test



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