The Future Okavango
Meeting of subproject representatives
at Pevestorf / Germany
09.09.-10.09. 2010

Minutes

From left to right: Jörg Overmann, Alexander Gröngröft, Susanne Pfeifer, Ernst-August Nuppenau, Jan Wehberg, Lars Landschreiber, Sven Kralisch, Stephanie Domptail, Manfred Finckh, Annette Eschenbach, Christian Knoblauch, Michael Pröpper, Thomas Falk, Martin Gruber, Sebastian Mader, Peter Krause, Thomas Hurek, Bernd Hayo, Michael Kirk, Michael Schnegg

Thursday Sept. 9th 2010

Start 13.45
Participants: Jörg Overmann (JO), Alexander Gröngröft (AG), Susanne Pfeifer (SP), Ernst-August Nuppenau (EAN), Jan Wehberg (JW), Lars Landschreiber (LL), Sven Kralisch (SK), Stephanie Domptail (SD), Manfred Finckh (MF), Annette Eschenbach (AE), Christian Knoblauch (CK), Michael Pröpper (MP), Thomas Falk (TF), Martin Gruber (MG), Sebastian Mader (SM), Peter Krause (PK), Thomas Hurek (TH), Bernd Hayo (BH), Michael Kirk (MK), Michael Schnegg (MS), Norbert Jürgens (NJ)

Agenda/Timetable

13.30	Opening: Welcoming words by Norbert/Alex also on logistics
13.45	Short discussion of the agenda
14.00	Input talk by Alex and Michael: Where are we now? Looking back at what we have done so far and trying to envisage what needs to be achieved with the workshop. Presentation of materials to visualize cooperation needs and gaps.
14.30-14.45	Open discussion on workshop goals and ways to get there
15.30	Coffee break
16.00-17.30	*Contribution to the valuation of ESS:* a) Concepts and plans of the social and economic sciences (e.g. SES) b) Quantifying ESS: Methodology and data requirements of the economic valuation group (Giessen) Group Discussion

Opening words by Alex Groengroeft

Introductory statement by Norbert Jürgens on his future role in TFO in regards to his involvement in at least 2 other large projects in Southern Africa
- RSSC (NJ gives a short overview report)
- SPACES (NJ gives a short overview report)

→ Alex + Michael will do the project coordination, Norbert will remain involved but not actively

Short report by Ernst-August Nuppenau on his encounter with Jon Barnes, who was strongly involved in the EPSMO-TDA process.

Presentation by AG + MP: Where are we now? Looking back at what we have done so far and trying to envisage what needs to be achieved with the workshop. Presentation of materials to visualize research needs on ESS/ESF, cooperation needs and gaps (see additional PDF Materials)

The presentation was interrupted and followed by discussions on our perpective on ESS/ESF:

- Which ES functions are automatically belonging to ES services – have to be integrated for the economic valuation of services? Functions as subsets of services?
- Are ESS only end-products? E.g. ‚the benefits of nature to households, communities and economics' and 'components of nature, directly enjoyed consumed or used to yield human well-being' (Boyd & Banzhaf 2006). Other approaches?
- ESS to be considered depend on end product we are looking at. We must together define the ESS that are important and then identify the related functions. Alex pleads for an agreement which ESS are really necessary - for a valuation process between economists and the rest.
- What will be the role of the stakeholders in the definition process?

- ESS are scale dependent. We should work in relation to a certain territory, assess the ESS that exist there, understand and meassure the prodctivity under different landuse options and try to find optimizations.

Presentations of the social sciences

SP 04 Ecological economy: Stephanie Domptail
(for slides see additional PDF material)

Contents of subsequent discussion:
- Emphasized is the need to consider not only food, wood, as services. Others might be important as wildlife, soil fertility, nutrient cycling….
- Need to find representative sites to analyze ESS processes.
- Need to look at potential landuse options, those that will happen and potentially increase in the future
- ‚important' LU options should be those that influence other players options in the whole catchment
- Stakeholder involvement very important
- Experimental farms have to be contacted (though quality of existing data might be weak)

SP7 Institutional and governance economy: Michael Kirk
(for slides see additional PDF material)

Raises the question under which socio-economic conditions ESS management can be realized efficiently. Suggestion:
- Conceptual framework developed by Elinor Ostrom, Science 2009.

Why do people decide to use land in a certain way (preferences/constraints..? cooperation/conflict...?):
- SP07 = institutional perspective
- SP7 + 8 micro-economic perspective

Contents of subsequent discussion:
On site choice: Not especially focus on sites with existing conflicts, rather again on representative *typical* sites

SP6 Social and cultural anthropology: Michael Schnegg

Three points at the core of the project:
1.) Cultural perception phenomena – perception is something cultural:
   o What do people perceive in different LU forms? Food, but probably not CO_2…
   o What other values might be discovered, e.g. a protecting ghost?
   o Anthropological methods will be applied to assess cultural perceptions and valuations

2.) Which of the services are being used and how do they contribute to livelihoods?

3.) What distinguishes different SES/communities in their success to use resources sustainably in the long run? SP will search for SES/communities that are more successful.

SP06 Methodology/design: Three teams will work with comparable methodology at three different country-sites.

Contents of subsequent discussion:
Detrimental landuse as an information problem – the role of knowledge exchange has to be emphasized.

SP10 Stakeholder involvement and capacity building: Thomas Falk
(for slides see additional PDF material)

- o SP10 does not follow an own research agenda but offers a support and an interface to stakeholders
- o Emphasises the fact that our research must have a relevance for policy

Suggested core methods:
1.) To create a *platform* to facilitate continuous communication. This means close cooperation with stakeholders who will do the implementation themselves once they are convinced of the scientific outcomes
2.) Involvement of *Paraecologists* in to the research and dissemination process in local communities
3.) Participatory *Filmmaking*: To expose issues that are important/interesting for stakeholders, e.g. conflicting perceptions

SP10 plans to organize a joint meeting with OKACOM
Questions that need to be addressed:
- What do WE want to know from stakeholders?
- What do we need to discuss about transdisciplinarity? **Communication neccessary**

Contents of subsequent discussion:

- Norbert: What about implementing and application of results, who does it? In relation to what LU do we want to work? Argues that we could at an early stage use experiments with stakeholders to assess alternative landuse options (e.g. green schemes, energy plants etc.) to achieve an early involvement.
- Importance of a full stakeholder analysis and database is emphasized
- Importance to analyze the gaps between us and other research projects

Friday Sept. 10th 2010

08.30	*Contribution to the valuation of ESS:* c) Methodological concepts of the natural sciences: i) Landscape structure: remote sensing & ground truthing ii) Landscape hydrology: How to delineate hydrological response units iii) Microorganisms, soils and vegetation: from point information to areas of concern Group Discussion
10.30	Coffee break
11.00-12.00	Final discussion/protocol: The research road ahead: What has been achieved? Agreements for research?
12.00-12.30	*Logistics 1:* Reexamination of the criteria for the choice of research sites
12.30-13.00	Lunch
13.00-15.00	*Logistics 2:* • Kick-Off trip • Launch of project • Planning of research capacity/timetable/roadmap – online calendar • Car-usage • Future meetings • Next Reports / interim evaluation • Logo • Webpage • Address-Database e.g. Stakeholder
15:00	Closing of workshop and departure

Presentations of the natural sciences

SP 04 Soil Science: Annette Eschenbach
(for slides see additional PDF material)

Planned is the investigation of different sites within core sites, e.g. the comparison of pristine vs used. Pristine is conceptualized not as and ideal stage but as a basic status of process-balance

Plans in cooperation with African partners (e.g. from ORI Botswana, Universidade Agostinho Neto for Angola):
- Soil water availability and groundwater recharge.
- Soil-plants interactions in cooperation with botany
- Interactions with LU. Not all LU can be covered BUT: a starting point could be the extremes (pristine, intensive) as well as something in between (future plans: irrigation, etc).
- LU and soil carbon pools and sequestration
- Nutrient cycling, degrees of availability of nutrients? leaching?
- Comparison of different LU intensities at different sites

Problem/challenge:
Up-scaling and interpolation within the sites. 1-2 ha intensively within 100 km² (used as reference object for type LUa and reference object for the type LUb).
Data requirements: Remote sensing, GIS, LU: economic and other social sciences data
Further exchange necessary

Contents of subsequent discussion:

- Ernst-August: Necessity to compare actual and potential sites? => Depending on cooperation and availability of data.
- Debate about the necessity of the analysis of pristine systems instead of systems that are politically feasible and wanted by stakeholders? => Pristine should not be understood as ideal. It is needed to understand the changing impact of landuse on the ecosystem. May be used as a basis for restoration strategy

- Norbert: Emphasizes the importance of recognizing landuse changes early and taking them into account instead of re-analysing long time existing systems
- Michael K.: Necessity to reassess the farming system approach?

SP 03 Microbiology: Jörg Overmann
(for slides see additional PDF material)

- Main variable of analysis: LU
- Modeling wants to reach predictions about the status of soil processes under changes of LU
- Microbiology needs LU data and highly representative sites
- Like soils sciences pristines as references will be used
- Highly complex circular system of nutrient cycling, N-regulation etc.
- Microbiology has focused on core aspects that seem to play a key role.

Shared tasks.
1. Ammonification and nitrification: pollution of water with ammonium
2. Denitrification and N fixation.

- Products will be predictive models which will be only achievable when the site choice is successful (pristine/use - combination). Relatively few sites wil be possible and only main land use forms

- Long-term goal: Microbiology attempts to make suggestions for the intensification of agricultural productivity using microorganisms

Contents of subsequent discussion:

- Domptail: What happens if we focus only on very dominant landuse types that are hardly changeable through small management changes?
- **Communication required:** Who collects the landuse related yield/productivity data that everybody needs? All involved SPs (03 [Ibo], 05, 06, 07, 08) have to get together to develop a tool and to negotiate the fair sharing of data collection time and costs.
- Overmann: Ideal of a model for the prediction of nutrient potentials and nutrient discharge
- **Group consensus:** Typical Kavango LU sites need to be identified. Representativity of core sites is extremely important

SP 03 Botany: Manfred Finkh

- Botanists will do a minimum of 4 sites eventually more if it makes sense.
- Namibia will be done by the NBRI/MAWF group around Ben Strohbach
- Botswana will be done by the ORI group around Mike Murray Hudson.

Task 1: Botanists want to do vegetation maps outside of core sites in Angola – done by the Hamburg group. Vegetation maps also done in Namibia by NBRI.

Task 2: „Carbon stock in vegetation" will be assessed rather in the Delta. One core aspect are woody species (ORI) which should be contained in the site.

Task 3: „BD and LU management". Existing Observatories (Mutompo) might be used and similar Observatory could be established in Botswana and Angola. Classical procedure: Coverage and plant functional types. Identification of important key species. Use of SES

concept. Characterised by certain ecological characteristics. How do different systems differ? Ex: Jatropha, mixed farming system…,

Task 4: „Transpiration and flooding tolerance of representative woody species". Brazilian colleagues. Connection of swamp systems and LU and impact on water quality and soil water balance. Data collection mainly in Botswana (?)

Task 5: „Landuse management and forage provision": Botswana woodlands as as animal fodder under climate change? Delta could have good examples for fodder Ecosystem Services. Grass yields and animal yields should be measurable on our site. Task not only in Botswana ?

Task 6: „Timber provision of woodlands". Sustainability of timber uses. Timber as an exemplary ESS. So far only guaranteed for Namibia (de Cauwer)?

An important task will be *task 8* on the „succession pathways and restoration potential". Task will assess the ecological sustainability of slash and burn systems: In Angola + Bots.

Contents of subsequent discussion:

- Domptail: Forest is not a landuse option but a mixture of woody species, fields and animals and will be managed as a whole or as a system

- Several comments: Selectivity of the SP05 proposal should be balanced. Some tasks e.g. 2, 5, 6 are highly relevant fort he whole catchment   and must be done in cooperation with other group partners (Carbon, Fodder, Timber). **Multilateral communication and meeting required**

SP 09.2 GIS modelling: Jan Wehberg
(for slides see additional PDF material)

Task 1: Collection of geodata for all SP – all sorts of data. To be put in a database (...AIDIS)

Task 4. Decision support system (DSS) that people can work with, something that is used by the users.

- Assistance with the site choice. Data analysis to find dominant landuse types/intensities

- High precision images of the research regions

Contents of subsequent discussion:

- SP09.2 Böhner group needs to link up with SP02 Flügel and SP09.1 Hill to identify data collection needs, flows and interfaces. **Bilateral communication required**
- Spatial analysis is needed very soon.
- SP09.2 should also assess data provided generated by OKACOM
- SP will be responsible for the cartographic realisation of results into spatial images

SP 09.1 Remote sensing: Sebastian Mader

SP will work in 3 regional and thematic core areas:

- Upper Cubango
- Northwest Namibia: Timber losses through clearing
- Botswana: => movements of cattle and wildlife (Hypothesis: buffalo fence is obstructive)

- SP can depict LU change: One needs to know what type of change to expects to interpret data.
- Challenges for the estimation of functional types/problem of scales: Expensive arial images are needed but not budgeted any more

- Use *Modis* data to estimate coverage rates. Valuation of status of landscapes: Comparison of actual and potential vegetation indices. Products could be provided for the whole catchment.

- Link woody stock estimates and remote sensing data

- Assess wildlife movements and their obstruction through fences (Hyperspectral sensor from Cessna)

Contents of subsequent discussion:

- Norbert: Land-use change would be an importnat task for SP09. Change detection across historic time lines
- TFO / RSSC must consider the early acquisition of high resolution images
- Mader: High resolution images could maybe provided via image grants. BUT: 50-100 would be needed. Ikonos Szene 4-500€ 11km2
  Communication about images required

SP 02 Hydrology: Peter Krause

Delta is well known but Angola is not - 80% of water comes from Angolan Northern part of the catchment.
Objectives - Phase 1: Scale crossing assessment.
- How do the catchment processes work? Research and understanding of hydrological processes and system dynamics on different temporal and spatial scales: Need for time series of hydro-meteorological Data. SP02 wants to look back 50 years and look at projections of the future. Problem: Hydro-meteorological Time series do not exist for all parts of the basin. In Angola measurement stops after the beginning of the civil war (after 1975).
- Method: Research, analysis and modeling of smaller test areas, validation of system understanding and modelling with existing measurements (multi response validation).
- Intensive sensitivity and uncertainty analysis
- Upscaling of results and models with ‚*Process scaling'* = comparison of similar processes
- Overiew about the hydrological response units concept

Application - Phase 2:
- Use of models to answer questions of what-if? With LU and CC impact on ESF/S.
- Capacity development and decision support for water authorities and stakeholders.

Contents of subsequent discussion:

- Consider interaction between groundwater and river water

- Link to plant growth depending on water availability
- Temporal scales and aspects should be considered? Importance of floods for the functioning and structure of ecosystems is crucial but no one knows yet precisely how these are connected

→ SP 02 RIVER basin Information System: Sven Kralisch

- Will be an open source data base
- Not only for hydrological information but all sorts of data, e.g. using GIS data, stakeholder analyses etc.
- System may be fed from Hamburg. Can be transferred to other servers later on.

  Communication with SP09.2 and Hamburg Web Team necessary

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SP 01 Climate: Susanne Pfeiffer
- Only SP that is *down*-scaling. IPCC climate scenarios are being downscaled to regional models
- Validation of models: SP01 needs time series of real ground data from partners + BIOTA stations
- Szenario building. Confidence intervals will be calculated
- Process understanding: e.g. dependence of hydrologic flows from sea surface Temperatures

Contents of subsequent discussion:

- Interfaces between climate models and other models? **Communication necessary?**

- Only climate statistics? CC consequences for potential vegetation and crop growth and natural vegetation are important as well

- NJ: It should be no problem to rework old BIOTA weather stations and to use them in the reserach area e.g. Angola. **Communication necessary**

- Communiation of SP01 with other projects e.g. SP05 ? Climate changes are highly relevant information for prognoses e.g. on politically wanted land use systems. **Communication necessary**

- Nuppenau: Could as well be interesting for the calculation of production functions

Discussion of criteria for the choice of research sites

Presentation of status quo by Michael Pröpper
(for slides see additional PDF material)

• Population density
• LU
• Vegetation types
• Human settlements

- Main LU or potential new uses?
- Intensity of LU: How to measure it?
- Perceptions of lansusers to assess the borders of systems
- Presence of extension services/research farms for experimentation

- Logistics: Safety, access, transport etc...
- Languages
-

Contents of subsequent discussion/additional ideas:

- Water origins
- Sites of strong transformation - Angola
- Status of degradation: Sites should as well include places of low degradation.
- Importance of tourism
- Conservancies!
- Interlinkages between river and LU have to be integrated – challenging
- Work on both sides of the river in Nambia should be possible .
- Comparability pristine vs agricultural used status (for Microbiology and Soils)
- Area with clear boundaries for natural sciences
- Trespassing should be possible for social sciences
- Angola the most important
- Microbiology can do only three landuse types

- 4 Sites not absolutely necessary

Other logistics

Common online calendar is necessary.
- Hamburg will develop something and send the link/use the wesite

Participants contact database
- Necessary, will be an open access thing to be maintained by all participants. The same accounts for a stakeholder database. Will have to be developed with SP02, SP10 and Coordination/Hamburg Webteam.

TFO Glossary
- will be started by coordination and will be subsequently built up by all.

GLUES
- META Project that coordinates and collects output of all LAMA Projects => List of other LAMA projects will be made available by coordination.

Logo
- J. Overman has a graphic designer who will develop suggestions .

Webpage
- Thomas Hillmann/Gerhard Muche of the Hamburg team will be asked.

Permits:
- Collective or individual SP permits are crucial.

- Likewise: Export permits. When? Botswana/Namibia: until the beginning of next year

Cars usage:
- Norbert sees the option because of RSSC. We have to ask BMBF that cars have to be used flexibly between projects. TFO will be able to use 1 to 2 former BIOTA now RSSC cars.
- Hester needs to be asked about renting cars for Angola
- Buying additional cars will have to be considered

Future Meetings:
- Once per year in Africa? Request to TP: What about Status seminars..?
- Next meeting will be hosted by DSMZ *Braunschweig* – Jörg Overmann
- Project colloquia for PhD students should be organized

Publications: We need a strategic planning of publications!!!

Next interim evaluation in 18 months after project start = Feb./March 2012

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