

Sustainability and resilience – Tackling consequences of climate and environmental changes

25th-26th April Stockholm Resilience Centre



Swedish
Research
Council

Stockholm Resilience Centre
Sustainability Science for Biosphere Stewardship



**Stockholm
University**

Table of contents

Table of contents.....	2
Executive summary	3
Aim.....	4
Seminar structure	4
Challenges to international research- the survey & report.....	6
The pre-workshop participant survey	6
Key messages from the ESPA policy brief report.....	7
Walk-shop outputs.....	9
Final working themes.....	11
The extensive list & finalised themes	11
The solutions posters	11
Ensuring equality/trust/respect/openness within the research team and process	12
Dealing with disparities in scientific resources/ Inequality of resources	13
Freedom and risks in research on politically sensitive issues	14
Knowledge exchange, actionability and feedback of research	15
.....	15
Achieving effective communication from start to finish	16
.....	16
Incentives post-it exercise	17
Evaluation	20
Appendices	21
The projects.....	21
The participants	21
Research project posters	24

Executive summary

The Sustainability & Resilience seminar in which all beneficiaries of the funding scheme “Sustainability and resilience – tackling consequences of climate and environmental changes” participated, focused on developing a joint understanding of and a set of tools for successful transnational and transdisciplinary research. 22 participants from northern based universities, 12 from southern based institutions (±five had to cancel their trips due to visa issues) and five participants from the funding agencies came together for one and a half days at the Stockholm Resilience Centre to reflect on the main challenges faced by international research partnerships. Participants had an opportunity to share their concerns and aspirations, and work on possible solutions for the challenges identified.

Through an iterative process that involved individual input (through a survey filled in by participants before their arrival), work in small groups (participants engaged in walk-shops and discussion groups) and plenary discussions inspired by the sharing of insights by a panel with numerous years of experience in the field, we collectively identified five themes/issues we wanted to engage with deeply. The list of identified themes consisted of 1) Knowledge exchange, actionability and feedback of research, 2) Ensuring equality/trust/respect/openness within the research team and process, 3) Dealing with disparities in scientific resources/ Inequality of resources, 4) Achieving effective communication from start to finish and 5) Freedom and risks in research on politically sensitive issues. Those groups then worked together for half a day to come up with a poster in which the challenge was explained, concrete issues related to the challenge were listed and action points to help different project roles were put forward. For example, effective and fair communication was identified as a challenge, internet speed and time differences were presented as concrete issues, and different types of communication with different partners were suggested as a possible solution.

Incentive structures in collaborative research were recognised as important for creating and sustaining equitable partnerships so participants carried out an individual exercise to express their own incentives, objectives and pressures in this context. Eight structures emerged, the most prominent being creating high quality scientific collaborations towards good science and the second creating impact with such scientific research. Funding actors were most concerned with the interculturality of international collaborations, working in intercultural groups, getting international experience and learning from other cultures. Sweden-based researchers were concerned with publications and generating high impact papers, but also the impacts, benefits and visibility of the research at multiple levels. Researchers based in the south were most concerned with the quality of the collaborations and the science produced.

The workshop was conceived to target particularly early career researchers, as the call explicitly required their participation, and for many of them it was the first time they took on the role of managing a research team. Yet, all participants, early career as well as more advanced researchers, informally reported at the end of the workshop that they learned from the process and from each other. Indeed, besides the work on ensuring that the partnerships will work, the workshop provided an opportunity to exchange on each of the scientific projects, which were presented through posters prepared in advance of the meeting.

Conclusively, many issues and barriers to equitable and meaningful collaboration were raised during the seminar that are rarely discussed explicitly. All parties (junior, senior, south, north, funders, administrators) can and have a responsibility to contribute to more fair and productive collaborations. The workshop identified a range of strategies and suggestions, which could be used, and participants reiterated the value of these discussions and the merits of further discussion and elaboration of these issues

Aim

How can we ensure that international collaborative research on sustainability and resilience is fair, productive and meaningful? The projects granted under the “Sustainability & Resilience” call represent a range of theoretical perspectives on sustainability and resilience. However, all projects will face practical challenges of achieving productive and equitable collaboration across distances, cultures and institutions. This starting seminar addressed the praxis of collaborative research by research teams that included partners from Sweden, low- and lower-middle-income countries. The seminar also allowed networking between projects and an opportunity to discuss with funding agencies.

The seminar offered a fantastic opportunity to share perspectives between researchers of different nationalities and disciplinary practices, and funding agencies. Learning from diverse experiences, we identified key challenges and tensions for collaborative international research, as well as practical strategies and tools to navigate them. The learnings will hopefully support young researchers in particular, navigating these complex questions for the first time, as well as experienced researchers who can gain new insights and advice.

The seminar was designed to address key questions and insecurities of participants, themed around the three following questions:

- How to develop and strengthen North-South research collaborations relevant for low income countries, as well as research collaboration with partners in lower-middle income countries.
- What challenges (structures, personal incentives and capacities) exist to achieving collaboration?
- Practically, how can collaborative research projects address these challenges and ensure impactful research and meaningful collaboration?

By responding to these questions, the seminar aimed to support fair and productive collaborations. Participants were able to express their needs as they arose from their own positions - for example, junior researchers with specific needs; researchers from low income countries with other needs. During the seminar we tried to collectively address these in groups.

Seminar structure

The below calendar summarises the activities carried out during the 1.5 day start-up seminar/workshop.

Sustainability and Resilience – Tackling Consequences of Climate and Environmental Changes: 25th-26th April 2019, Stockholm Resilience Centre

25th April Thurs Time	Details
8.30-9:00	Reception, Coffee, mingle and look at posters
9:00-9.15	Welcomes from Stockholm Resilience Centre and VR
9.15-9:30	Project introductions (projects 1-5) Names of those involved, <i>5 Key words</i>
9.30-10:15	Panel “Experiences of international collaboration”
10.15-10.45	Coffee and fruit (30 mins)
10.45-11:05	Presentation: Results of survey from RSVP form on challenges for international research and ESPA (Ecosystem Services for Poverty Alleviation) Report on equitable partnerships Plenary discussion on the topic
11.05-11:20	Plenary activity: Incentives in international collaborative research-survey of participants with post-its
11.20-11:30	Instructions for breakout into mini-walk-shop
11.30-12:30	Mini-walk-shop: What are the key issues in international collaborative research? (<i>first breakout</i>)
12.30-13:30	Lunch
13.30-13:45	Project introductions (projects 6-11)
13.45-14:15	Plenary discussion on themes that arose from the walk-shop, follow up and plan for next session
14.15-15:00	Breakout groups on solutions to the key issues (<i>second breakout</i>)
15:00-15:30	Coffee and Fika
15.15-15:30 (<i>during coffee break</i>)	Project introductions (Projects 12-16)
15.30-16.30	Presentation: Information by the funding organizations including Q&A
18.30-late	Dinner @Kvarnen
26th April Friday Time	Details
9:00-9:30	Coffee, fruit and mingle
9.30-9:45	Welcome back and plan for the day
9.45-10:00	Presentation: Incentives survey results feedback
10.00-10:10	Briefing for World café
10.10-:10:30	Breakout groups: World café group preparation of information (<i>third breakout</i>)
10.30-:11:15/30	World café – go!
11.15/30-12:15	Plenary activity: Plenary feedback from World café
12.15-12.45	Plenary activity: Closing reflections from Funders and a few participants
13:00	Lunch

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- Ownership/respect within team- Making sure that everyone has a stake in the project or feels that they own it, creating mutual respect in the team and giving credit where credit is due.
- Transparency/Openness- Creating a transparent open research process, where members are open to the differences and willing to share at all stages, in the methods, the data and publications. Playing fair.
- Different working standards/ethics- Different countries have different working ethics or work/life balances, there are different standards of commitments, of timeliness and cultures within the work
- How to effectively communicate when you are in different countries, how do you maintain this communication over time and share throughout the process

Coded responses	% People
Useful/actionable feedback	17.1
Equality between members	14.6
Cultural differences	12.2
Different institutional endowments	12.2
Ownership/respect within team	12.2
Transparency/Openness	12.2
Different working standards/ethics	9.8
Effective communication	9.8

Key messages from the ESPA policy brief report

ESPA was a major research programme from the UK that finished in 2018. It was 9 years long and was based on 125 different research partnerships between institutions in the global North and South. The ESPA policy brief “*Research for development impact: the role of equitable partnerships.*” summarises the key learnings from these projects in relation to collaborations from going through all the documents like proposals and reports, doing an online survey and key informant interviews with project members.

[See the ESPA policy brief @<https://www.espa.ac.uk/results/policy-practice-briefs/research-development-impact-role-equitable-partnerships>]

ESPA basically came out with four key messages when it comes to equitable relations in collaborations between the global north and south. And workshop participants captured most of them in the survey answers presented above.

Message 1. Building relationships is a long-term process

The first collaboration is not always the most effective one, but it helps lay the foundations for working together to make impacts in the future. The length of the partnership or collaboration is important for making an impact with the science, the project timeline should allow for relationship building rather than just jumping into

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proposal and project details. When we make more long-standing relationships that are not so linked to the specific proposal or requirements, we can better co-design and be contextually relevant.

Message 2. Money affects power relations among partners

Institutions in the north usually are in charge of the budget and manage it, so this effects power dynamics from the start. Core funding can be super limited in southern institutions so then they can be dependent on this external funding. To address these power asymmetries face-to-face meetings are great, traveling to each other's institutions, making sure there is budget for this from the start. Skype can only do so much.

Message 3. Different incentive structures matter

Collaborations are never about just the research project, there is always contextual incentives structures present around them. For example northern partners can be under a lot of pressure to publish in high impact journals and to demonstrate impact of the research. Researchers in other areas of the world might not have the same pressures, thus tensions can develop when northern partners are chasing their collaborators for information for reporting or papers while the collaborator deals with different requirements in their own intuitions.

Message 4. Successful partnerships are built on mutual trust

Many of the ESPA researchers attributed the success of the partnership to how good their personal relationships were with the partner, ranging for purely professional to proper friendship. Lack of trust was what often lead to less successful collaborations. Trust is a bit elusive though, its normally built at the interpersonal level. Again it comes back to meeting face to face and not always in formal meetings. On the formal side of things creating a written MoU can help all partners feel confident that their voices and interests are heard. it can promote trust through transparency and accountability.

Funders can play an important role in promoting equity in partnerships, at different stages

1. @Call for proposal stage

- *articulate and address challenges*: Encourage applicants to be honest about existing challenges and to be articulate about how they might address them in the proposal
- *ensure calls reach "the south"*: Make sure the calls are advertised through channels that reach southern institutions, even if northerners are the lead applicants
- *stepwise application process*: Funders could consider an application process where shortlisted proposals can be adapted on the basis of the feedback, so at this point funders can help applicants reflect on the equity dimension and even have equity indicators

2. @Reviewing proposal stage

- *representative review board*: Ensure the review board is balanced between north and south
- *assessment of partnerships*: Prioritise project proposals that include an assessment of the partnership from an equity perspective and that have given serious thought to it
- *time for building partnerships*: Consider the projects that demonstrate awareness of the time needed to build a proper partnership at the start of the project

3. @Project implementation

- *written partnership agreements*: Making sure projects have written agreements that include ways to deal with disputes and dimensions of equity, and that these agreements are living documents

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- *reflection on partnership*: Encourage and support teams to carve out time throughout a project's life to check the health of the partnership, reflect on lessons learned, and change course if needed.

Walk-shop outputs

The first break out activity in the workshop consisted of a walk-shop where we aimed to address the questions:

- “What are the most pressing/intractable issues for international collaborative research?”
- “What topics should we spend time discussing throughout the rest of this workshop?”

We asked groups to discuss how what they had heard in the morning related to their own personal experience/concerns as a means to create topics/themes of most relevance to discuss on through the rest of the workshop. We wanted to make sure the initial eight themes were not missing anything.

Participants came back from their walk-shops and collected their answers on post-its which were again clustered on a large paper in the lunch room- seven loose clusters developed.



1. Funder related

- Diversified funding schemes e.g. Swedish research links. National/International researchers – NGO collaboration opportunities
- Sandpit model as a possible solution in building longer lasting teams (<https://epsrc.ukri.org/funding/applicationprocess/routes/network/ideas/whatisasandpit/>)
- Trade-off between bottom-up proposal process vs. investing/building call and teams
- How to ensure collaborating partner is part of the planning, PRISMA does not include this
- Planning grants to ensure equal partnerships and capacity building

2. Publication

- Authorship positions
- Standards and processes for deciding co-authorship
- Encouraging partners in the south to lead publications as an incentive

3. The role of Southern Institutions

- Southern researchers leading a proposal and finding the northern collaborators

- The role of southern institutions in facilitating staff in connecting

4. Ethics, respect, equality

- Power relation asymmetry
- Improving capacity of all partners, research project aims at different levels
- Communication and sharing/processing of data, common standard of research
- Creating more situations of trust
- How do we best account for people's skills and knowledges to create great project outputs.
- Research ethics, how to ensure that the research is ethically acceptable in different countries.
- Educate and engage on ethical issues and research practise, mutual respect and transparency
- Building trust and respect and funders role in it
- How to build up trust in the group? As trust is critical for a good collaboration
- Consideration of stakeholder goals
- Usefulness of research output

5. Freedom in research

- Re-use/analysis of existing data
- Freedom in research might differ between countries
- Awareness of political sensitivities and challenge in reporting research- change the language to be able to say things
- Government influence and data safety-academic freedom

6. Communication and beyond

- How to deal with over-expectations in projects? What does x% commitment mean? People may expect you to work 50% but the contract is 20%.
- Project implementation- come up with and stick to a timeline throughout the project
- Systems of communication- how best, when, about what?
- How do we find good ways of communicating?
- Creating a communication/feedback system to ensure openness and confirm/reveal true feelings of partners

7. Admin issues

- Labour law restrictions in academic employment e.g. the 2 year limit in Sweden
- Early career researchers-> complexity and uncertainty in employment and involvement
- Everyday challenges with administrative rules
- Institutional arrangements- researchers as individuals and part of institutions
- Young principal investigators-> insecurities and challenges
- Payments-> Guiding principles for financial transfers? How much overhead? Delays in transfers.

Miscellaneous

- When to deal with a failing collaboration, when to give up?

Final working themes

From the previous exercise in the walk-shop and the collection of clustered post-its, a plenary discussion reviewed an extensive list of themes and selected five themes for further discussion in break outs (* starred in the list below). Each breakout group defined the issue and discussed approaches to deal with it.

The extensive list & finalised themes

- 1. Knowledge exchange, actionability and feedback of research***
- 2. Ensuring equality within the research team and process/ Building respect, trust and openness***
3. Understanding and working in different cultures/ Considering working standards, ethics and commitments/ Dealing with research ethics across different research cultures and contexts
- 4. Dealing with disparities in scientific resources/ Inequality of resources***
- 5. Achieving effective communication from start to finish/ Feedback, decisions, keeping updated***
7. Administrative issues
- 8. Freedom and risks in research on politically sensitive issues***
9. What can funders do to facilitate fair, collaborative research
10. What can southern institutions do to encourage and facilitate their staff to build good collaborative partnerships
11. Publications, ghost/gift authorship, trail going cold, exploitation, how appropriate are standard guidelines?

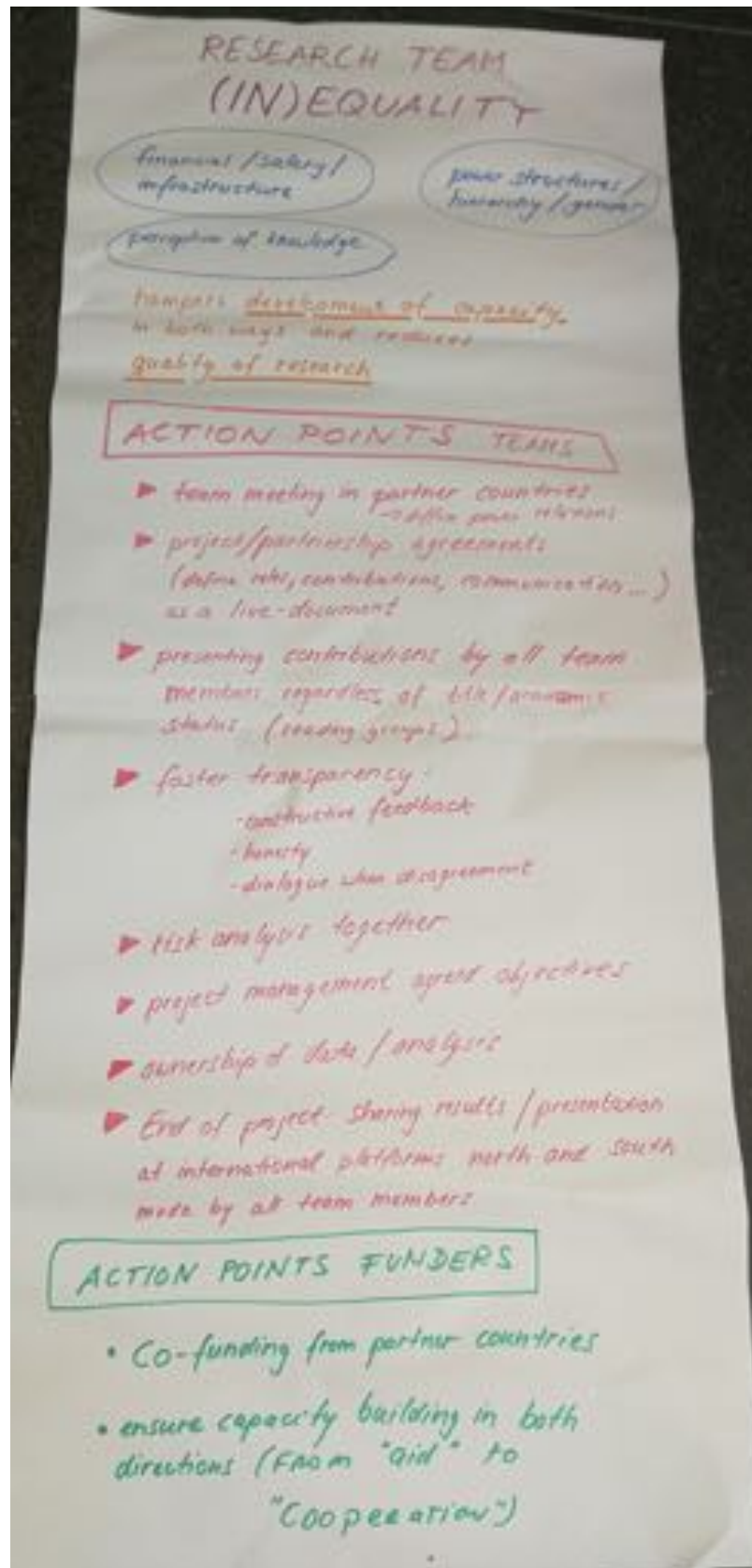
The solutions posters

Each theme group produced a poster as a means to feedback to participants on the solutions to the issues discussed at the end of day 1 before fika. On Friday morning theme groups were asked to create the posters as such:

- Title
- Summary of issue
- Analysis of why it is an issue
- Actions points i.e. who should do what

The five posters are presented as pictures below

Ensuring equality/trust/respect/openness within the research team and process



Dealing with disparities in scientific resources/ Inequality of resources

INEQUALITY OF RESOURCES AND WHAT CAN SOUTHERN INSTITUTIONS DO? (TO FOSTER PRODUCTIVE COLLABORATIONS)

ISSUES

- RESOURCES E.G. INTERNET, JOURNALS, EQUIPMENT, STATISTICAL PACKAGES FOR ANALYSIS - R
- RESEARCH PROJECTS NOT LINKED TO NEEDED INFRASTRUCTURE
- LACK OF CAPACITY OF SOUTHERN INSTITUTIONS TO IMPLEMENT RESEARCH IN TOTALITY
- LACK OF RESEARCHERS/ STUDENTS IN SPECIALIST DISCIPLINES
- RESEARCH PROJECTS LINKED TO INFRASTRUCTURE INVESTMENT.
- S. INSTITUTIONS TO ENSURE N. PARTNERS HARMONISE & AVOID DUPLICATION
- STRATEGICALLY USE O/HEADS TO STRENGTHEN S. INSTITUTIONS.

SOLUTIONS

- S. INSTITUTIONS TO HAVE GUIDELINES OR PROTOCOL FOR ENGAGEMENT
E.G. - STORAGE & ACCESS TO DATA
- COMPENSATION FOR STAFF TIME
- CONSIDERATION OF SUSTAINABILITY OF:
 - CAPACITY
 - KNOWLEDGE
 - TOOLS
 - IDEAS FOR FUTURE RES & CURRICULA
 - STAKEHOLDER ENGAGEMENT.

Freedom and risks in research on politically sensitive issues



Knowledge exchange, actionability and feedback of research

KNOWLEDGE EXCHANGE, ACTIONABILITY & FEEDBACK OF RESULTS.

ISSUES	SOLUTIONS	ACTION POINTS
DIFFERENTIAL INTERESTS AMONG STAKEHOLDERS AND RESEARCHERS	<ul style="list-style-type: none"> IDENTIFICATION AND PRIORITIZATION OF INTERESTS & NEEDS IDENTIFY THE DIFFERENT LEVELS OF STAKEHOLDERS 	<ul style="list-style-type: none"> TAILOR OUTPUTS TO THOSE NEEDS. <ul style="list-style-type: none"> RESEARCHERS STAKEHOLDERS DIFFERENTIAL DELIVERY OF RESULTS
DISSEMINATION METHODOLOGIES.	TAILOR MAKE DELIVERY METHODS	<ul style="list-style-type: none"> FIGURE OUT FROM THE VERY BEGINNING ON FEEDBACKING.
INVOLVEMENT & PARTICIPATION OF RESEARCH SUBJECTS IN THE DESIGN OF PROJECT	CREATE OPPORTUNITIES FOR INVOLVEMENT & PARTICIPATION	<ul style="list-style-type: none"> ACTUALIZE IT. <ul style="list-style-type: none"> RESEARCHERS STAKEHOLDERS
FRAGMENTATION OF KNOWLEDGE/RESOURCES RESEARCHERS.	BUILD TRUST, RESPECT & TRANSPARENCY OF DECISIONS.	<ul style="list-style-type: none"> INVEST IN SOCIAL/SOFT SKILLS Exchange visits. Guest professorships Informal engagements <ul style="list-style-type: none"> RESEARCHERS FUNDERS INSTITUTIONS/UNIVERSITIES

Achieving effective communication from start to finish

Title: Fair and effective communication in international collaborative research

Challenges

- Human/soft issues
 - offenses
 - Misunderstands
 - Conflicts
 - Deviation
- Intersectionality
 - gender
 - culture
 - social class
 - factors: relations
- Technical
 - Language
 - Internet speed
 - Time differences
 - Channels of communication
 - Effective

Solutions

- Prepare and share agenda collaboratively
- Thinking together in groups is person
- COMMUNICATION EVOLVES... TALK ABOUT THE ISSUES TO ADDRESS THEM
- Agreement on the best way of communicating
- Agree at the beginning
- Feedback is very important. no human decision
- Awareness of other disciplinary languages
- Consider different channels for different topics
- COMMON CALENDAR
- Meeting Minutes
- OPENESS. DISCUSS OPENING CONTEXTS PROBLEMS
- Let people know when you are not able to communicate
- Revisit and evaluate communication modes ≠ stages
- STRUCTURE OF BODY LANGUAGE + FACIAL EXPRESSIONS
- Monthly meetings online conference and yearly meetings face to face
- Use online collab platforms?
e.g. Slack, WhatsApp, ... etc

Incentives post-it exercise



The first plenary activity that took place was an individual survey via post-its of different actors' incentive structures with regards international collaborative research. 8 clusters of incentives, pressures and objectives in international collaborative research were identified, the most prominent being creating high quality scientific collaborations towards good science and the second creating impact with such scientific research. Funding actors were most concerned with the interculturality of international collaborations, working in intercultural groups, getting international experience and learning from other cultures. Sweden-based researchers were concerned with publications and generating high impact papers, but also the impacts, benefits and visibility of the research. Researchers based in the south were most concerned with the quality of the collaborations and the science produced.

We asked participants *"What are the incentives/pressures/objectives that drive/motivate you in collaborative research?"*

Participant-types each used a different colour

- Researchers based in Sweden (RSW) = yellow
- Researchers based in the "global south" (RGS) = green
- Funders (F) = pink

These post-its were then clustered in the lobby on a large paper and we ended up with the eight main clusters.

1. Impact

This cluster was largely populated by yellow post-its from Sweden-based researchers concerned over the impact of their science. Some examples:

- Building relationships with local stakeholders, organizations, and policy makers (RSW)

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- Demonstrate policy relevance and impact (RSW)
- Promote visibility and research work beyond local context to the global platform (F)
- Strategy for research cooperation from the government (RGS)
- Broader analyses (RSW)
- Increase quality and applicability of research results (RSW)
- Increase visibility of our work- publishing/analysing data (F)
- Conduct research that is relevant for key challenges, that is meaningful (RSW)
- Show impact already at short-term (F)
- Benefit of project outcome should be gender balanced (F)
- The need for knowledge to prevent illness and its consequences for the individual and society (RSW)

2. Publications

Only eight post-its formed this cluster and were from Sweden-based researchers, bar one pink post-it. Some examples:

- Relevant research projects that can generate publications and funding (RSW)
- To disseminate knowledge through international spaces e.g. journals (F)
- Write high impact research publications (RSW)
- Publishing (RSW)
- 5-10 publications, 2-3 high impact (RSW)
- Publish in high impact journals (RSW)

3. Fun & Friendship

Four post-its in this cluster about connecting within research teams on an informal level

- More fun (RGS)
- Have more fun (RSW)
- Enjoy international collaborations and friendships, contribute to resolving unequal international opportunities and capacity (RSW)
- Making long-lasting friendships from all over the world and learning from them (RSW)

4. Scientific collaboration & good science

One of the main clusters with quite a number (± 20) and mix of post-its largely about the quality of the research collaboration itself and making good science from it. Some examples:

- Long-term collaboration as an objective (RSW)
 - Understand/learn more about the new context and the new vast literature in the new topic (RSW)
 - Good collaborations promote good quality research (RGS)
 - Stated objectives from VR committee for development research to promote equitable research collaboration (RGS)
 - Multidisciplinarity is a big motivation, learning from each other and combining forces (RSW)
 - Incentives are high impact research and network building. Pressures are publications and an objective is career development (F)
 - Contribute to knowledge development both disciplinary and interdisciplinary and make development complexities seen and understood (RSW)
 - An incentive is to examine issues in more depth, take advantage of sharing analytical skills, different frameworks, and research capacities (F)
- Many disciplines are need to answer important questions (RGS)

Sustainability and Resilience – Tackling Consequences of Climate and Environmental Changes: 25th-26th April 2019, Stockholm Resilience Centre

- Main research questions in the field related to other countries where local knowledge and contacts to stakeholders is needed (RSW)

5. Personal Development

- The human condition (RSW)
- To share experiences with others and raise own standard (F)
- To be able to learn from other disciplines (RSW)

6. Interculturality

Mainly funders and then two Sweden-based researchers contributed to this cluster about working and researching with diverse teams, in different places and cultures.

- Be part of the global brainstorming /testing of issues affecting environment and human beings (F)
- Work in research with an intercultural group (F)
- An incentive is to travel and work outside Sweden (RSW)
- Incentive is to have diverse groups for multi-directional research however a pressure is publishing, major problems in deciding authorship sequences (F)
- I can get international experience from this type of collaboration (F)
- Personal interests and curiosity to learn more about other cultures/subjects (RSW)

7. Funding

- To ensure salary for myself (RSW)
- Demands/requirements from funding agency (RSW)
- To access funds for own research (F)
- To make sure I have a salary and show impact (RSW)
- Need to get funding, participate in numerous projects and build CV, assume managing responsibilities (RSW)
- Land further research grants (RSW)
- Collaborative funding, more money pooled -> more research (RGS)
- Better research can be funded! More relevant research for development on a global level and for the SDGs (Partnership 17) (RGS)
- Different institutional arrangements e.g. financing research, who makes decisions, disempowers non-funders (F)
- Objective is funding for new ideas that are developed by southern researchers, that can be done in collaborative research. As well as getting new ideas from Northern researchers. Training of staff and students and exposure to latest- developing local skills (F)
- The admin and finance logistics and bureaucracy is a major challenge (RSW)

8. Professional development

Only pink (F) and yellow (RSW) in this cluster of 10 post-its

- Incentives are building relationships for the future and learning about new cultures (RSW)
- Enhance the attractiveness of the researcher and institutions for professional growth and development (F)
- Professional development (merits, publications, network) (RSW)
- Raise analytical capacity of practitioner teams (F)

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- Incentives are learning new ideas and technologies, transfer of technologies, training and students (F)
- Pressures are building trust or lack of it. Having respect for each other especially researchers based in LMICs. Also power structures in the collaborative projects (F)
- Incentives are career fulfilment and knowledge sharing. Pressures are achieving milestones in terms of publications. Objectives are to show the progress within the institute and more future collaborators (F)
- Building capacity (F)
- Advancement of science (RSW)
- Building relationships for the future and learning about new cultures (RSW)
- Capacity development both in the north and south (RSW)
- Personal drive, prove myself as researcher (RSW)

Evaluation

We received 20 feedback or evaluation forms (representing just over half the participants) on the workshop where people rated the different sessions that took place from **1-not useful -----> 4-very useful**

Panel “Experiences of international collaboration”: 50% of participants felt this was very useful, 40% responded with 3/4 and the rest with 2/4. One participant suggested it could have been made better with a microphone.

Presentation: Results of survey from RSVP form and ESPA brief: 50% of participants again felt this presentation was very useful and then rest gave it a 3/4.

Mini-walk-shop: What are the key issues in international collaborative research?: 70% of participants enjoyed this worked shop rating it 4/4 while the rest rated it 3/4.

Breakout groups on solutions to the key issues: 85% rated this session as very useful while the remaining 15% gave it a 3/4.

World café: 50% felt it was very useful and the other half scored it 3/4.

Breaks & Dinner: 80% fully enjoyed the breaks/fikas and the workshop dinner and the remainder rated them 3/4.

Organization & administration: All but one participant (3/4) felt the organization of the workshop was 4/4.

Some participant’s commented on the workshop saying that it was really great/super, well organized, inspiring with very vibrant and energetic working groups. Another participant felt the role of NGO’s and other stakeholders in research projects was lacking. One reflected that the Stockholm Resilience Centre venue was not ideal with the people passing by all the time which disturbed many of the presenters. Someone felt the World Café was too unorganized without a focus but the time to talk informally was also good. Another stated that in the end they really enjoyed the World Café very much. One participant felt they got tangible recommendations/methods that could be used to increase the quality of their project. Others felt the workshop style enabled participation and fruitful engagement.

Appendices

The projects

1. Characterization of environmental pollution in Bangladesh by novel non-target mass spectrometry 'exposomic' analysis
2. Forum theatre to enhance joint agency in Kenya and Mozambique: towards relational understandings of climate change
3. Health impact of pesticide exposure in relation to climate change among populations in low- and middle-income countries
4. Identifying, exploring, and preserving diversity of beneficial arthropods for sustainable tomato production
5. Impacts of recent El-Niño Southern Oscillation (ENSO) on the Water-Food-Energy Nexus in South Asia
6. Institutional networks and self-organized adaptation: Tracing the democratic architectures of climate response
7. Market driven afforestation – trajectories in social resilience and environmental sustainability under land-use intensification
8. Navigating the complexity of small-scale fishery interventions: An intersection of agent-based modeling and participatory empirical research
9. Quantifying the trade-offs between ecosystem service provision and water management in rice systems
10. Resilience in Urban Sudan (RUS): An Interdisciplinary Spatial and Temporal Study of Social Cohesion and Resilience to tackle the consequences of Climate and Environmental Change in Urban Khartoum.
11. Sustaining fish and fishworkers? Human rights for migrant Burmese fishworkers in the EU-initiated sustainable fisheries reform in Thailand
12. The practice of resilience in mountain landscapes: exploring risk and landscape investments in rural Nepal
13. Towards sustainable maize production in East Africa: Cropping system resilience under climate change
14. Transformational climate-smart options for sustainable agriculture and resilience on smallholder farms in areas with coarse-textured soils
15. Wastewater treatment in small communities in Bolivia: Sustainable technologies and resilient planning

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Research project posters

Institutional networks and self-organized adaptation:
Tracing the democratic architectures of climate response

Research focus:

Assisting vulnerable populations confront global climate change is a defining challenge of the present era. This project develops the concept of self-organized adaptation to explore how democratic political systems—comprised of multiple actors, institutions, and forms of state support—shape local responses to climate risk and change. We ask:

What is the role of democratic politics in enabling vulnerable groups to confront climate challenges – and what characteristics of a democratic political system generate more effective and equitable state support?



Methods

We develop a mixed methods approach in **India** and **Nepal** with:

- *Intensive qualitative enquiry*: detailed, context rich analysis of how households engage with state actors to confront climate challenges
- *High frequency survey data collection*: to assess how households confront climate risk and challenges as events unfold in real time
- *Mapping of institutional networks*: to capture the processes, relationships, and networks through which citizen action galvanizes different kinds of state responses

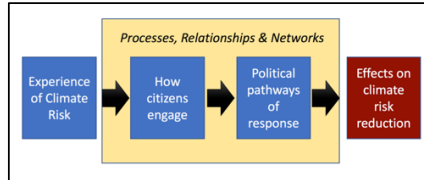


Figure 3: Political rally of a farmer's group demanding state support following major crop losses after an unseasonable hail storm, Kangra Himachal Pradesh

"...We aim to move beyond the domain of structured intervention to focus on the political conditions that enable more organic, ongoing, self-organized processes of adaptation on the ground."

Harry W. Fischer, Swedish University of Agricultural Sciences
Dil Khatri, Southasia Institute of Advanced Studies, Nepal
Forrest Fleischman, University of Minnesota, USA
Ashwini Chhatre, Indian School of Business, India

Figure 1: Our analytical strategy



Analytical strategy

We focus our attention on four key elements of enquiry:

- *Experiences of climate risk*: We aim to map the multiple climate and non-climate risks that different households face
- *Patterns of citizen engagement*: We will study how households engage with different state actors, institutions, and government programs to confront climate challenges
- *Political pathways of response*: We will explore how different networks of political interaction unfold and, in turn, influences state responses to climate challenges
- *Effects on climate risk reduction*: We will assess the recursive effects of different bundles of state support on households' exposure to climate risk and threats

Figure 4-5: Changing cropping patterns linked to warming temperatures, Takoli, Himachal Pradesh

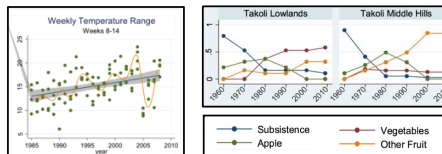
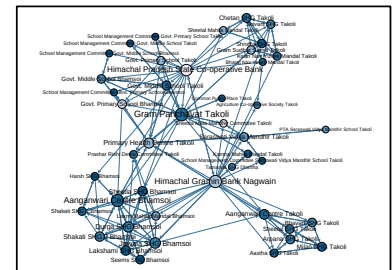


Figure 2: Local institutional network from pilot study, Takoli India



Figures 6-8: Declining precipitation, and state support for local irrigation, Kangra Himachal Pradesh





Swedish University of Agricultural Sciences

Productive sands

Case of Manicaland, Zimbabwe



Libère Nkurunziza¹, Ngonidzashe Chirinda², George Nyamadzawo³, Alvin Smucker⁴, Abraham Joel¹, Stanley Karanja² and Ingrid Öborn¹



¹Swedish University of Agricultural Sciences (SLU), Sweden
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³Bindura University, Zimbabwe

⁴Michigan State University, USA



Problem

- An average of 25 % of all land area in Southern Africa is sandy soils. They are a major cause of rural poverty under semi-arid and arid conditions.
- These soils do not hold rainwater and applied nutrients long enough to adequately support plant development.
- To avoid water and nutrient losses, farmer would need frequent irrigation and fertilization to supplement water and nutrients lost, thus increasing production costs.
- These higher inputs into low producing sandy soils are beyond the economic options for smallholder farmers besides that the losses of nutrients can cause environmental problems.



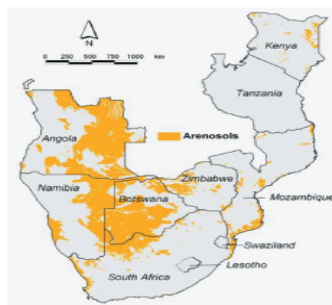
Part of the project team at Kick-off workshop

Objectives

- This project is designed to test and implement climate-smart agriculture (CSA) options that will transform sandy soils into more stable and sustainable production systems.
- The project aims at evaluating the socio-economic and environmental impacts of the CSA as a way to reverse the cause of rural poverty in the semi-arid regions of Zimbabwe, and similar areas.
- The project aims also at capacity building. We are recruiting a PhD student and several Minor Field Studies and MSC projects will be part of the project.

Methods

On-farm experiments aimed at evaluating the different CSA options will be conducted on sandy soils in Manicaland, Zimbabwe. Biophysical, socio-economic, and environmental parameters collected through this project will be fundamental for identifying best-fit CSA options to support advances in cultivation of food crops and their impacts on the farm, local, and regional economies.



Southern Africa with sandy soils in yellow



Maize on sandy



Installation of subsurface water retention membrane



Water hole for supplementation

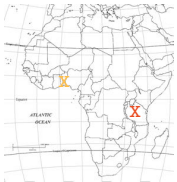


Tied contours



Preserving diversity of beneficial arthropods for sustainable tomato production

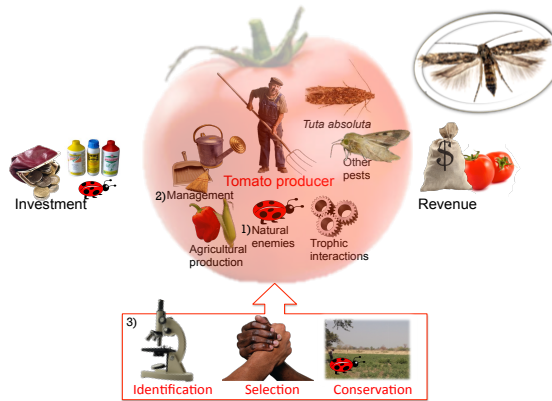
WHERE?



BENIN
IITA Biodiversity Centre
National Research Institute
TANZANIA
World Vegetable Centre

OBJECTIVES

- Select native Biological Control Agents (BCA) that express pest suppression capacity for the main pest caterpillars (Lepidoptera), in tomato production
- Strengthen our knowledge on functional capacity among native beneficial arthropods
- Train students in research methods, especially biological control and resilient farming
- Reduce insecticide use and losses due to pests



Tomato production system with project involvement 1) Which natural enemies contribute to pest suppression? 2) Does farmers management practices affect the natural enemy guild? 3) Which species do we select to conserve?

THEORY

Resilient production with augmentation and conservation biological control will reduce pests, intoxications, and pesticide residue levels

We hypothesize that a knowledge-based combination of omnivorous predators and parasitoids will boost resilience

Development of a sustainable production system based on native species already established in the area reduces risk of negative non-target effects



Tomato production with tomatoes infested by several caterpillars; *Tuta absoluta*, *Helicoverpa armigera* and *Spodoptera littoralis*

Which part of the biodiversity can we use?

METHOD

Collection of arthropods in tomato fields, grown with different management methods - **Is abundance related to propping, insecticide application, pest guild?**

Identification of parasitoids emerging from caterpillars (focus on the invasive tomato leafminer *Tuta absoluta*) - **who parasitize the pests?**

Molecular identification of predatory gut content - **who eats the pests?**



Biodiversity Centre at IITA, collection of arthropods and examples of natural enemies (predators and parasitoids) capable affecting pest population levels



Quantifying the trade-offs between ecosystem service provision and water management in rice systems

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I. Introduction and scope

Rice – a staple food for three billion people – consumes more water than any other crop, leading to unsustainable water withdrawals. Water saving irrigation (WSI) has thus been advocated instead of continuous flooding. However, WSI does not guarantee high yields and greenhouse decomposition of soil organic carbon (SOC) and loss of nutrients, reducing fertility. Moreover, the lack of flooding impairs the multi-functionality of rice systems. With this project, we will address this trade-off between water savings, rice productivity and provision of ecosystem services (ES). By budgeting the water cost of SOC provision, and by considering the advantages of water-aided multi-functionality, we will approach the issue of rice sustainability in a more holistic way.

II. Work rationale



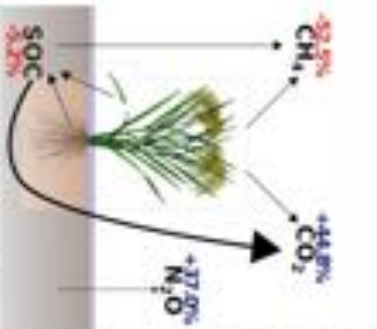
We are investigating the synergistic relations among hydrology (water consumption), soil fertility (SOC and nutrients), and rice yields from local to global scales. We hypothesize that trade-offs occur such that sustainable use of water resources cannot be easily exercised with sustainably yields and multi-functionality of rice systems (and thus societal well-being) and soil fertility (ecological sustainability).

III. Focus from local to global scale

Focus on Tanzania and Vietnam (two field campaigns completed)
 Global scale meta-analysis and modeling



V. Results



Results of the global meta-analysis
 (Liu et al., in review)
 WSI was found to reduce emissions of methane by 52.9%, but increased those of carbon dioxide and nitrous oxide by 44.8% and 37.9%, respectively when compared to continuous flood irrigation. This results in a net positive effect on 100 year CO₂ equivalent emissions, which reduced 18.6%. However, increased nitrous oxide emissions, which led to increased carbon dioxide emissions also resulted in a loss of SOC over time compared to continual flooding. This result, but significant, loss of SOC seen in short term studies may, over time begin to impact upon yield sustainability.

Results of the Tanzanian fieldwork
 Tanzania is currently experiencing rapid industrialization of its agricultural production. This is particularly so in the Kilimanjaro Valley, often termed the 'country's breadbasket'. Fieldwork was conducted to investigate the effect of various intensities of agricultural production, comparing industrial agriculture to one-herd or no-herd small holder farming. The most intensive practices were found to result in increased SOC compared to several conventional and smallholder production



Selected publications
 Chen, I., Tumbo, M., and R. Lindborg (2018). Wetland agricultural practices affect soil carbon, nitrogen and phosphorus in Kilimanjaro, Tanzania. *Soil Use and Management*, 34(1), 115-126.
 Chen, I., Tumbo, M., Vico, G., Lyon, S., Lindborg, R., Tumbo, M., et al. (2018). The effect of water saving irrigation on soil carbon, nitrogen and phosphorus in Kilimanjaro, Tanzania. *Soil Use and Management*, 34(1), 115-126.
 Chen, I., et al. (2018). Impact of water saving irrigation on soil carbon, nitrogen and phosphorus in Kilimanjaro, Tanzania. *Soil Use and Management*, 34(1), 115-126.

Acknowledgements: Vinnova/AgriSolve, Formas, Sida (grant 2015-06313)



Towards sustainable maize production in East Africa: Cropping system resilience under climate change



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³ Cornell University, USA

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LUNDS
UNIVERSITET



Ensuring that yield gaps are reduced and that yields are resilient to climate change is critical to ensure food security for a growing global population. **We will assess whether major yield gaps of maize in East Africa can be closed with push-pull cropping systems and if this approach is resilient to climate change and variability.**

Push pull:

The push-pull technology is a cropping system developed by *icipe* and partners that reduces pest damage by cereal stemborer moths by providing repellent stimuli (push), combined with attractive stimuli (pull).

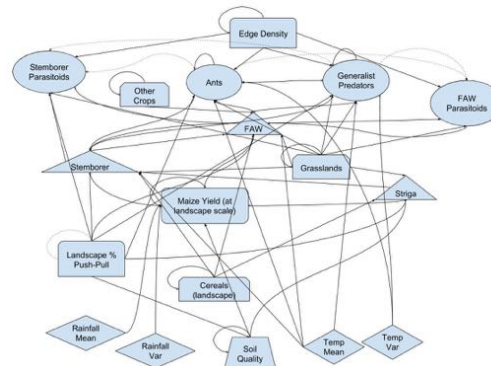
Push-pull has the following additional benefits:

- it controls *Striga* spp., parasitic weeds that can reduce maize yields.
- it improves soil P and organic matter content, in addition to conserving soil moisture.
- both trap and inter- crops are valuable fodder for cattle.
- It reduces damage by the invasive fall armyworm *Spodoptera frugiperda*



We will:

- 1) Use monitoring data to analyse how push-pull cropping systems contributes to maize production level and stability across land-use and climate gradients.
- 2) Study pest control level and food-web structure and explore whether push-pull increases food-web redundancy and resilience in different land-use and climate contexts.
- 3) Synthesize findings with a model for maize yield formation, predicting where in the region push-pull will contribute to closing yield gaps now and in the longer term.



Impacts of recent El-Niño Southern Oscillation (ENSO) on the Water-Food-Energy Nexus in South Asia



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Introduction

- In India, around 80% of the annual rainfall is contributed by Indian Summer Monsoon Rainfall (ISMR).
- ISMR is strongly influenced by ENSO and most of the historical droughts were associated with El-Niño years.
- Surface water infrastructures such as reservoirs mainly depend on runoff from ISMR.
- ENSO affects food, energy and water security of the region.
- Assessment of the impact of El-Niño on the complex water-food-energy nexus is important to water supply, irrigation and hydropower generation in India.

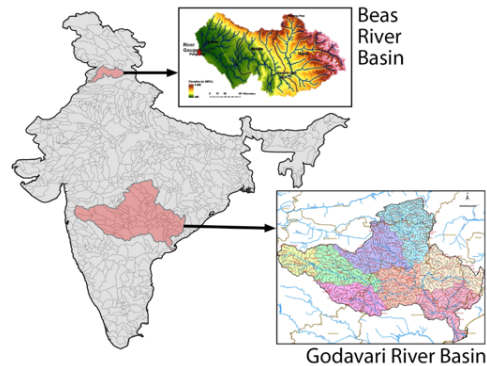
Goal

Contribute to advancing our current understanding of the impacts of the latest El-Niño on the water-energy-food nexus in low and middle-income countries and increase the preparedness and resilience to future events.

Research Questions

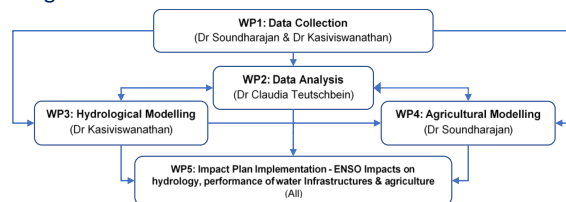
- How did the most recent El-Niño event during 2015-16 affected the regions hydro-climate and overall water balance?
- How did El-Niño impacts water resources availability for food, energy and water supply?
- What were the temporal/spatial patterns of agro-productivity effects during the recent El-Niño?
- Were the existing policies for reservoir operations adequate during the recent El-Niño event?
- Can the effectiveness of the systems can be improved during the future El-Niño events?

Case Studies



Methodology

- WP1: Data collection including field surveys to create an inventory of multi-sectoral data from different sources
- WP2: Hydro-climatic data analyses to identify and characterize ENSO-caused drought condition
- WP3: Hydrological modelling to assess the performance of reservoir systems during El-Niño events
- WP4: Crop production modelling to assess agricultural productivity during El-Niño events
- WP5: Impact plan implementation - ENSO Impacts on hydrology, performance of water Infrastructures & agriculture



Start-up seminar of “Sustainability and resilience – Tackling consequences of climate and environmental changes” – Swedish Research Council, Stockholm, 25-26 April 2019



Pesticide exposure and health effects in relation to climate change among populations in low- and middle-income countries

Pesticides are applied extensively in many low- and middle-income countries (LMICs) and the use is increasing due to climate change. The extent of pesticide exposure and associated health effects among populations in LMICs is not established. The aim of this project is to evaluate how climate change and intensified use of pesticides affect pesticide exposure and health in humans, including susceptible groups. We will create a new international research collaboration bringing together studies of pesticide exposure and health outcomes in populations from LMICs around the world affected by climate change. The populations include mother-child pairs from Bangladesh and Costa Rica, children from South Africa and agricultural workers from Uganda, El Salvador and Nicaragua. We will use the expertise in biomarker analyses at Occupational and Environmental Medicine (OEM) in Lund to monitor pesticide exposure in the populations. Exposure will be analyzed in relation to health effects relevant to pesticide exposure (e.g. respiratory effect, neurodevelopment and chronic kidney disease) by research groups responsible for the individual study populations. Negative health effects in relation to pesticide exposure will highlight the importance of controlling pesticide usage in LMICs and to increase the emphasis on more sustainable means to adapt to climate change.

Project organisation

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Study design

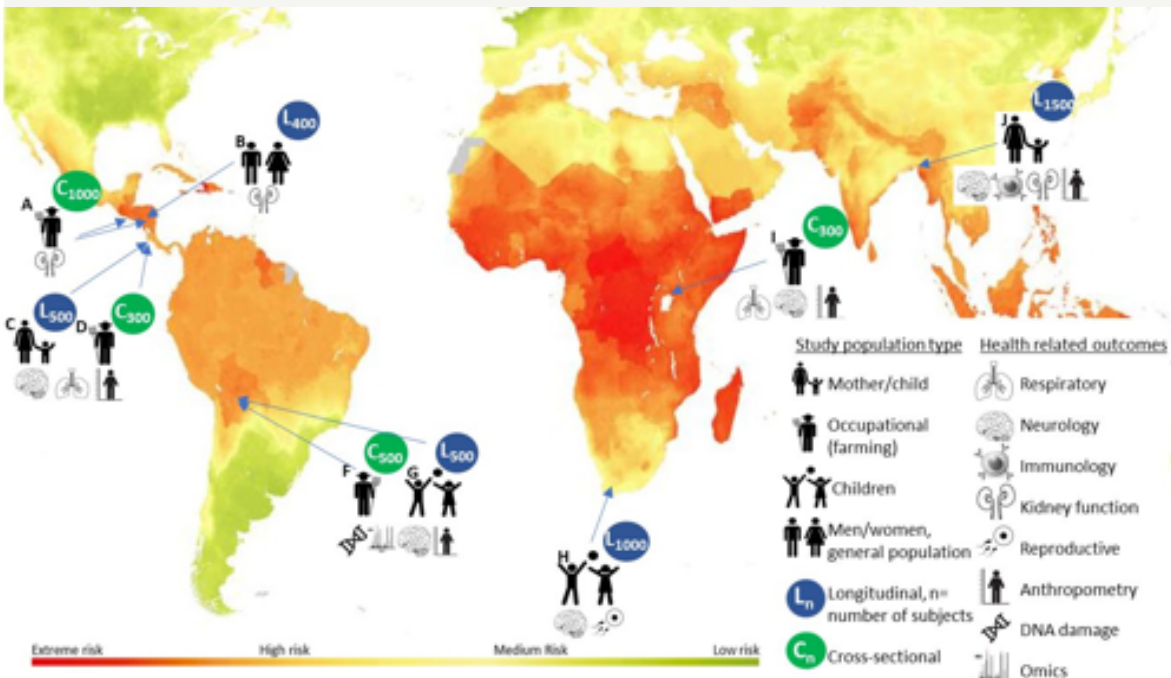
Occupational and Environmental Medicine (OEM), Lund
PI: Associate Prof Christian Lindh

- Project management
- Pesticide biomarker analyses
- Genetic analyses
- Technical advice



Participating research groups

- Recruitment
 - Sampling
 - Outcomes
- Biostatistics: exposure vs outcomes



Overview of study populations in relation to 2017 Climate Change Vulnerability Index (www.maplecroft.com)

Forum theatre to enhance joint agency in Kenya and Mozambique: *towards relational understandings of climate change*

Research questions:

- (1) How is **climate change** embedded in the many challenges that coastal communities face?
- (2) How can **agency** be re-thought in social-ecological terms so as to enhance adaptive capacities?
- (3) How can **relational understandings** of agency be incorporated in governance?



Participants : María Mancilla García, Tilman Hertz, Liz Drury O'Neill, Tim Daw, Salomao Bandeira, Marlino Mubai, Halimu Shauri, Caroline Abunge, Nyawira Muthiga



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Abstract: This project investigates through forum theatre the factors perpetuating inequalities and unsustainable exploitation of coastal resources and in which ways climate change is intertwined with those. Additionally, as an action-research project, it seeks to enhance a relational conception of social-ecological agency in selected coastal communities in Kenya and Mozambique. It explores which relations and daily practices, among the many that actors are embedded in, can be conceived of as tools to enhance joint agency for climate change adaptation.



Methods: Forum Theatre, Metaphorical thinking, Focus Groups, Net-Map
Cases: Coastal Communities in Mozambique and Kenya
Main concepts: Distributed agency, Relationality, Assemblages

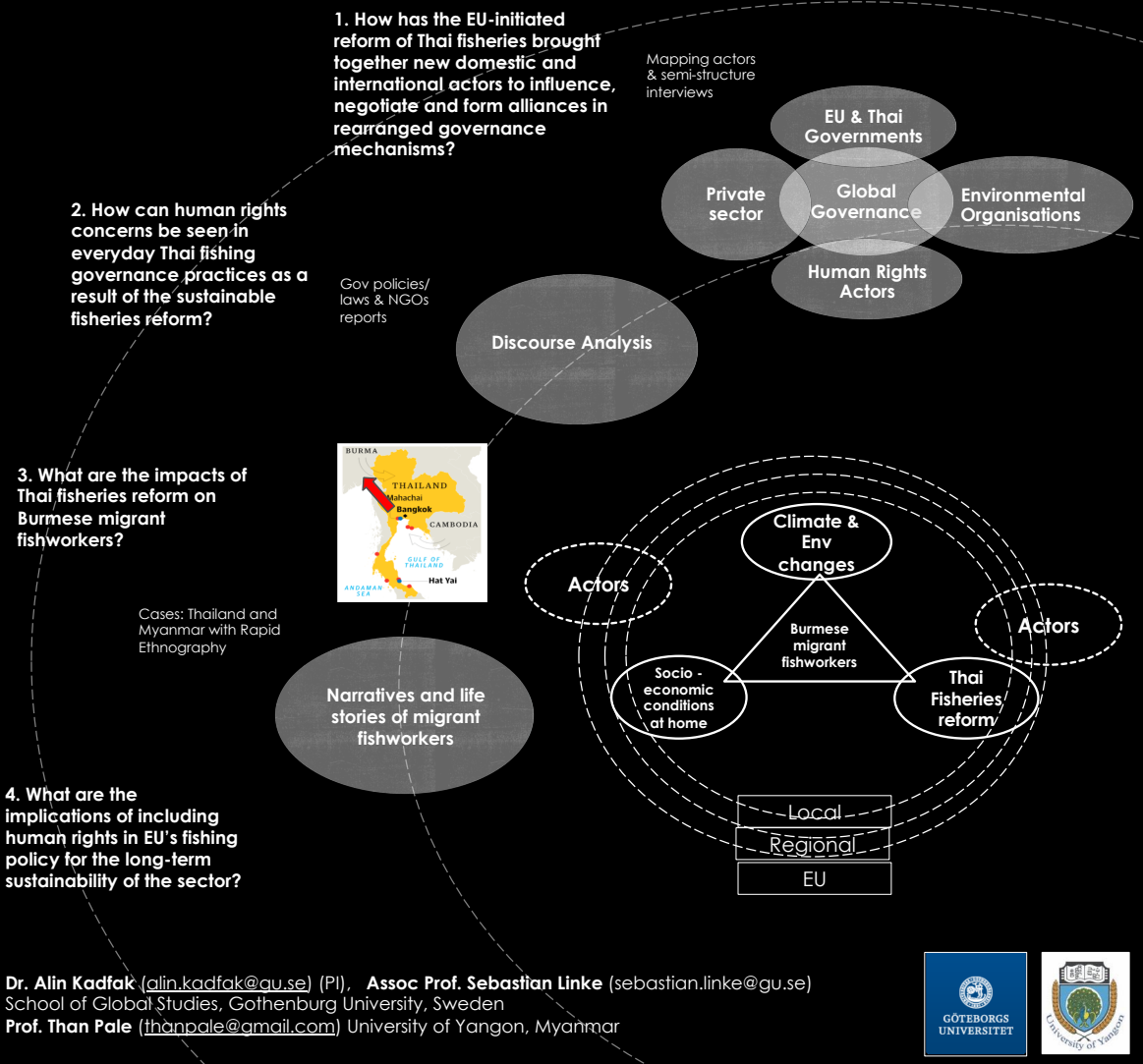
Sustaining fish and fishworkers? Human rights for migrant Burmese fishworkers in the EU-initiated sustainable fisheries reform in Thailand

This project examines the implications of including human rights in sustainable fishing policy as a global environmental governance mechanism. International media and NGO reports on the prevalence of modern 'slavery' in Thai fisheries have influenced the EU to for the first time mandate fishworker rights along with improved sustainable fishing practices in the present sustainable fisheries reform program in Thailand. EU's approach to sustainable fisheries is seen as driven by two forces of transformation in the world today: (1) the global overexploitation of marine seafood that causes significant threats to the long-term viability of the entire fishing sector, and (2) the evolution of rights-based legislation exemplified by attempts to reduce human rights violations in the fishing industry. Drawing on the research team's long-term engagement in fisheries governance, the project uses qualitative methods able to see across key stakeholder forums and everyday fishing activities in Thailand with a focus on the industry's Burmese migrant fishworkers. It probes how EU's global fisheries policy is implemented both via direct EU-Thai government negotiations, and by state and non-state actors in an array of new initiatives and activities. EU's standard mode of governance allows binding regulations on fishworker rights to be introduced in the global fishing industry. The standard, however, indicates and prioritises certain values and agendas in need of further exploration.



Photos by Nathan Bennett

Aim: To understand EU's fishing policy as a global governance mechanism that addresses both sustainability and human rights using Thailand's fisheries reform as empirical case.



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Resilience in Urban Sudan (RUS)

resilience, social cohesion and climate change in urban areas of Greater Khartoum

ABSTRACT

The main purpose of this research project is to contribute to scientific knowledge to tackle consequences of climate and environmental changes in urban areas of the Global South. The project will strengthen applied studies on urban sustainable development according to the Sustainable Development Goal 11, also known as the Urban SDG (USDG) (Kloppa & Petretta 2017). This project therefore aims to explore urban community resilience and the initiatives of social cohesion, that are participatory and inclusive and help mitigate climate change and adapt to increasingly challenging conditions in urban areas. In order to face environmental threats, at the roots of growing inequalities, there is a scholarly need to better understand the proactive or reactive acts of resilience that urban communities develop themselves. Dealing with the Sustainable Development Goal 10 and 13, this project also highlights the ways communities in a specific urban neighbourhood contribute to enhance a sustainable climate action and strengthen efforts to reduce inequalities. On the longer term, this project aims to contribute to urban sustainable development and planning through producing policy recommendations on how to increase and enhance social cohesion in fragmented neighbourhoods affected by increasing and repeated environmental challenges and migration influxes. In order to study the effects of climate change and environmental issues in urban areas, the research team will conduct an interdisciplinary Participatory Action Research (PAR) focused on the neighbourhood of Jabra in Greater Khartoum. The aim is to explore environmental challenges as well as the societal responses that are developed by the communities in Jabra. The project aims to (1) investigate the impact of environmental challenges on communities and (2) explore ways in which communities come together to identify shared challenges and devise climate action.



RESEARCH QUESTIONS

How can local community initiatives in Jabra be developed in order to contribute to improving sustainable livelihoods, enhancing social cohesion and building resilience towards climate change and its impact in urban areas ?

- How do newcomers and long-term residents in Jabra use public spaces in response to climate change, and how do these spaces contribute to social cohesion and resilience ?
- To what extent are memories of key environmental events present in specific groups and society at large, and how do these memories contribute to social cohesion and resilience?

Collaboration and participation

This interdisciplinary project will involve collaboration between researchers in Sweden and Sudan and combine environmental sciences, humanities and social sciences.

The project will involve primary stakeholders from the Jabra neighbourhood from the start in order to ensure a societal relevance and greater impact on the ground.

Local communities and stakeholders will be key in developing community climate action and the formulation of policy recommendations.

This study applies a bottom-up participatory approach (PAR) for sharing decisions and knowledge production. The research team believes that only a participatory approach is effective to strengthen capacity to enhance social, cultural and environmental sustainability in marginalised neighbourhoods, among diverse groups of people and in Sudan.



University of Khartoum



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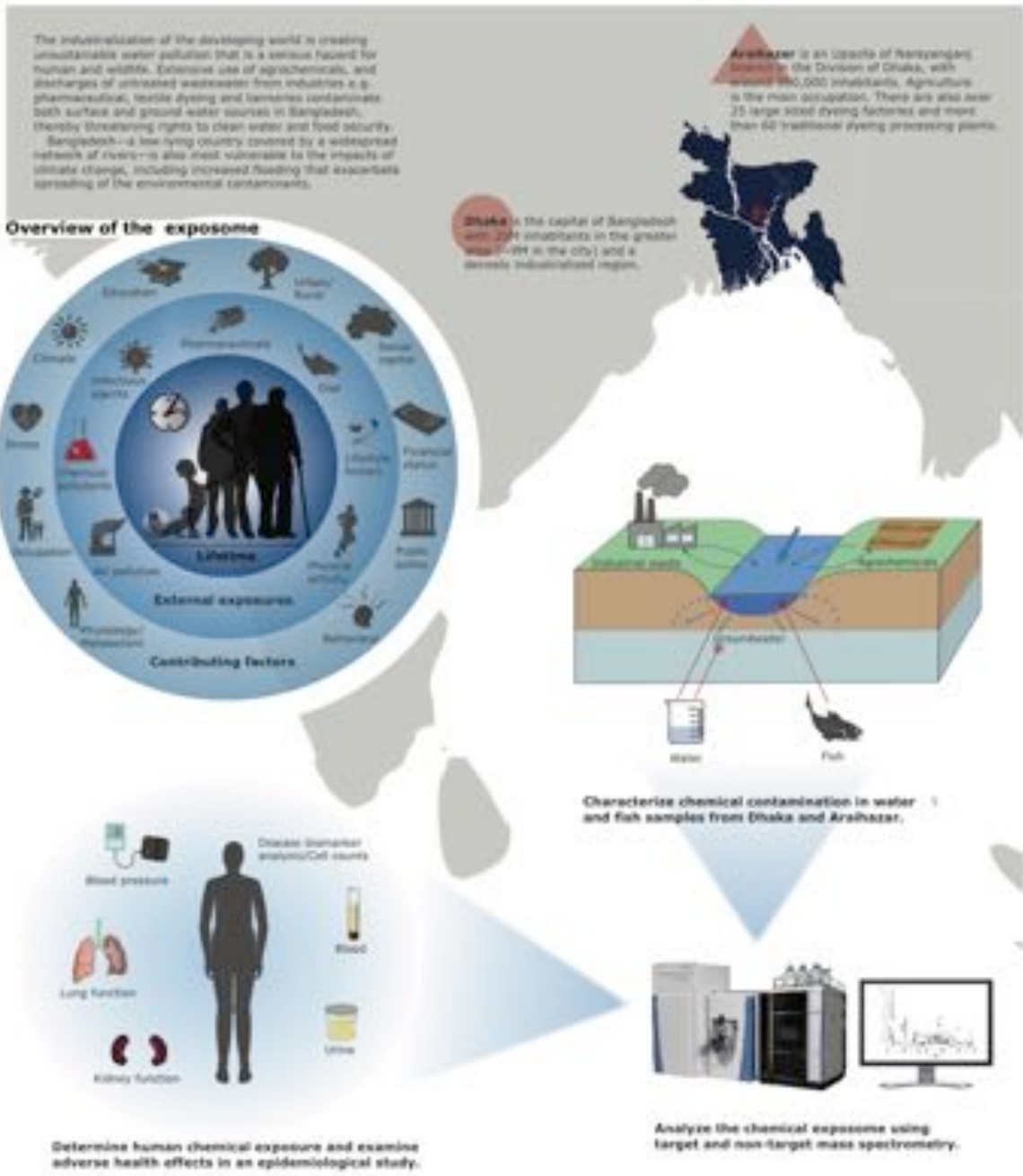
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The practice of resilience in mountain landscapes

Exploring risk and landscape investments in rural Nepal



PEOPLE IN THE HIMALAYAN LANDSCAPES have long lived in contexts of chronic structural risks, generated by climate change, social structures as well as political and economic changes of the Nepalese society. One strategy to mitigate livelihood hazards has been to make large collective and individual labour investments in the landscape. This research will investigate such long term landscape investments, in order to understand how people's landscape use and economic and social structures are mutually constituted with very different outcomes for distinct social groups in the hierarchical society of rural Nepal. It does so in a situation where patterns of outmigration creates a situation of rural labour scarcity, which has relatively unknown consequences for land users and landscapes. The project will explore how smallholders cope with and adapt to environmental, economic and social changes, and how these processes affect the landscape they inhabit. It will also contribute to the growing body of socio-

political nuanced understandings of resilience and adaptive capacity.

THIS IS AN INTER-DISCIPLINARY RESEARCH PROJECT and we will combine ethnographic methodology with the analytical concepts of resilience (e.g. Brown, 2016), risk (Kantor & Pain, 2012; Wisner et al. 2004), adaptive capacity (e.g. Jones et al., 2010) and landscape capital (Blakie & Brookfield, 1987; Håkansson & Widgren, 2016), in order to understand smallholders' strategies and practices of livelihood security and landscape investments.

THE RESEARCH WILL COVER THREE CASE STUDY SITES, spanning from the High-Mountain, the Mid-Hills to the Chure regions of Nepal (see photos). These regions contrast in terms of biophysical conditions, social contexts, and migration dynamics, but all landscapes are intensively managed by poor smallholders.

Research questions and the combined methodology of the 'ES-walk', household and key informant interviews, network analysis and collaborative activities are presented in the table below. The ES-walk is a participatory ethnographic method we have developed to explore smallholders' active engagement with the landscape they inhabit.

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RESEARCH QUESTION	COLLECTING DATA ON	METHODS	RESULTS
1) How and why and where do Nepalese smallholders collect, and into what investments in the landscape, that contributing to landscape capital and with what effect?	<ul style="list-style-type: none"> Mapping of land use and livelihood keeping practices. Historical and current practices of investments in landscapes. Organization of labour over time. Patterns of labour migration and local labour dynamics. 	<ul style="list-style-type: none"> Open ended semi-structured individual and group interviews. EE-walk including several FRA tools (e.g. line list, ranking, mapping). Focus group discussions. Participant observations. 	<ul style="list-style-type: none"> Understanding of historical dynamics of land use and landscape capital. Understanding of socio-ecological units, flow of benefits from landscape to smallholder livelihoods. Analysis of dynamics and drivers of changes in labour.
2) How do these investments vary between different social categories and groups and how are they affected over time by the social changes of the communities and the broader socio-environment within which they live?	<ul style="list-style-type: none"> Social stratification in the villages. Changes in landscape investments, landscape units and land use practices. Disturbances and stressors affecting the FP (over 20 years). Responses to socio. changes and risks. Interventions by local and/or government, cooperative and organizations. 	<ul style="list-style-type: none"> Focus group discussions and in-depth interviews with smallholders from different social categories (e.g. Dalit, janajati, people from higher castes, men and women, different ages). FRA exercises, such as line list and ranking. Network analysis. Participant observations. 	<ul style="list-style-type: none"> Exploration of strategic landscape investments made by different social groups and the resulting limited farm actions. Exploration of major stress and social risks smallholders are facing. Understanding of smallholders' responses to risks and how that society differ. Understanding of external interventions and effects.
3) What do these investments tell us about the ability of households and groups to build livelihood security and what do these practices contribute to sustain landscape future?	<ul style="list-style-type: none"> Changing dynamics of flow of benefits from landscape to support local livelihoods. Mapping of responses to socio. and social risks. Ext. interventions and local responses. Drivers of change in mountain landscapes. 	<ul style="list-style-type: none"> Open ended semi-structured int. and group interviews. Focus group discussions on EE tools and landscape changes. Key informant interviews. Collaborative workshop and field walks. 	<ul style="list-style-type: none"> Understanding of the multiple role of landscape for livelihood security. Analysis of interventions addressing local risks. Exploring local understandings and technologies of governance and resilience.

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In the photo: Öjain, Saranya, Di, Adam and Kristina.





OctoPINTS

Octopus & People In Novel Transdisciplinary Simulations

Navigating the complexity of small-scale fishery interventions: An intersection of agent-based modeling and participatory empirical research



THE OctoPINTS PROJECT

This project aims to improve our understanding of fishery interventions, such as octopus closures, and why in some cases or situations they can be seen as successful and in others not. Earlier research has found factors like strong leadership, unity in the community or supportive legal frameworks can help people collaborate in managing their natural resources. But questions remain over how these factors interact over time for obtaining successful management. These questions are complicated to deal with because of the difficulties in identifying what data to collect, how to collect it, and the resources required to collect the necessary data at larger scales. As a result different methods need to be used to study how actors and factors interact over time especially in the context of environmental change.

The goal of this project is 1) to address this methodological gap through combining qualitative fieldwork and agent-based simulation models, and 2) to move towards a generalized understanding of how fishery interventions can have successful outcome over time, identifying what is success for whom, and possible trade-offs - in the case of octopus closures in the Western Indian Ocean (WIO).

Research Questions

1. How is the success of fishery management interventions defined by different groups in society?
2. How do fishers and fish workers perceive the closures? At different points in time? How does this influence their decisions?
3. How do the actors and factors interact to lead to successful outcomes and what are trade-offs between those outcomes in the short- and long-term?
4. How can interventions like the octopus closures help communities to deal with changes in the future e.g. a climate change event like bleaching?

METHODS

Through stakeholder workshops and fieldwork we will bring together local expertise to explore what successful outcomes mean for different groups in society e.g. fishermen, fishermen, exporters, fishery organizations, government actors, business, and academia (figure 1). The agent-based models will help us to study how decisions of actors in different groups of society affect successful outcomes differently (figure 2). The role of gender will be accounted for through all parts of the project.

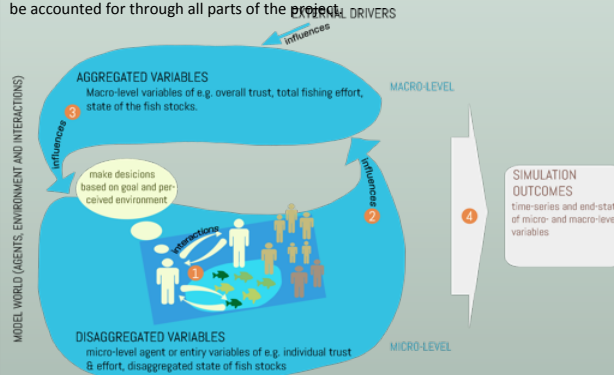


Figure 2. Conceptual model of an agent-based model. In a co-evolutionary process until the end of the simulation (1) Agents interact with other agents or resources. (2) Their action influence the macro-level. (3) The state of the macro-level variables influence the agents. (4) Outcome variables (e.g., those defined as successful) can be observed and measured e.g., healthy fish stocks, or distributional patterns such as income, asset, access or gender (in)equalities.

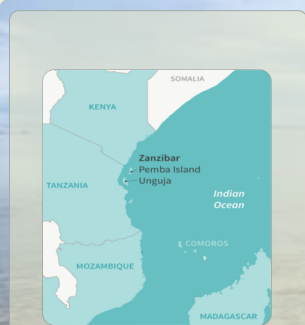


Figure 1. The case study area. The fieldwork will be performed in Zanzibar and enabled through our collaboration with Mwambao (NGO). The fieldwork will be participatory, support learning for all the participants, including researchers, collaborators and other actors involved.



Periodic Octopus Closures

- Tangible benefits in the short-term
- Presented as successful management intervention
- Spreading across the WIO since their initiation in 2004
- Today replicated as a management model >200 times
- Community management capacities can be built



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For more info contact any of us or visit octopints.wordpress.com

Photo by Adaoma Wosu