

Community based mangrove management in southwest Madagascar – a sustainable model for nature conservation with mangrove ecosystems? (770 words)

1 EXPLANATION OF THE IMPORTANCE & NECESSITY FOR RESEARCH, CONTEXT OF THE RESEARCH PROJECT

Mangroves are tropical, intertidal forests with plants and organisms highly adapted extreme habitat conditions like high salinity, strong winds, tidal currents, high temperatures and a permanently muddy anaerobic soil. This has led to a number of adaptations like aerial and salt-filtering roots and salt-excreting roots (Kathiresan, 2005, p. 101). A number of ecosystem services are provided, which directly relate to current challenges from climate change, as well as other planetary guardrails and the Sustainable Development Goals. To name just a few, mangroves are huge long-lasting carbon sinks for atmospheric carbon, offer nurseries for juvenile fish, as well as habitats for endemic species.

Only about 170,756km² (2000 (FAO, 2003)) of mangrove forests remain worldwide and numbers are shrinking extremely (-1.13% per year) (World Resources Institute, 2015). Most areas are situated in developing countries and humans overexploit their natural resources or convert forested land because of a growing population. Madagascar has the 3rd largest extent of mangroves in Africa (2,130km² (WWF, 2010)). The country places among the poorest (GDP per Capita 449.4 US\$, Germany 47,627 US\$ in 2014) (World Bank, 2014) and least developed countries (HDI 155 from 187) (UNDP, 2013).

Honko Mangrove Conservation & Education is a Belgian NGO, which was founded in 2008 and works with a holistic approach in south-west Madagascar¹. Together with the communities it restores and replants the mangroves, supports the development of alternative livelihoods (apiculture, fish farming, production & sale of reed woven products, eco-tourism², as well as PES scheme under Plan Vivo for carbon crediting as an alternative source of income) (Honko, 2012), and rises awareness about the ecosystem and educates about sustainable uses.

However, local taboos and traditional mind-sets restrict the work, as well as the constant reliance on funding and grants. Additionally, the region is under direct threat from climate change. Mangroves play an important role in coastal protection and their well-being does also affect the health of coral ecosystems, as they prevent sedimentation and further coral bleaching, a consequence of climate change. Rising temperatures, a shortening of the raining season and flash floods wipe out the harvest of people highly reliant on subsistence agriculture, which then turn to cut the mangroves for charcoal and income or overfish the already devastated fish stocks. A lack of mangroves decreases the water holding capacity of the soil, increases flash floods and droughts, which leads to a suffocation of remaining plants by sedimentation and dunes.

2 RESEARCH QUESTION(S)

Does the Honko project sustainably improve the resilience of the socio-ecosystem under the conditions of climate change?

- Which new challenges result from climate change? Which changes can already be observed?
- Which of the existing strategies do also address negative impacts of climate change?
- Is the project in line with the new Sustainable Development Goals?
- What are problems and insufficiencies in the work on-site today and under future climate change scenarios? How could this be improved?
- What do locals think about climate change and how it would impact their life? What actions are they planning to face the challenges?

¹ Scope: 5 villages close to Tulear, 1,2km² of intact mangrove forest

² Winner of World Responsible Tourism Awards 2015 in wildlife conservation (Responsible Travel, 2015)

3 METHODS THAT YOU INTEND TO APPLY

- System analysis (adaptation of Open Standards or MARISCO?).
- Literature research.
- Interviews with local stakeholders/ Staff of the reserve (to be extended): Mameho Honko VOI, Women's association, guides, teacher of education centre, maybe children of local school³
- Exploration of the different sub-projects Honko has started or is related to.

4 EXPECTED RESULTS

- A comprehensive model and understanding of the socio-ecosystem.
- Disclosure of weaknesses and problems within the strategies and actions of the NGO regarding climate change.
- Documentation of the understanding of the people local as an exemplary perspective from a developing country, about global connections and their role in climate change in relation to the SDGs.
- Proposals for improvement.

5 TIMELINE

When?	What?	How?
10./11.2015	Brief overview about the project and the sub-projects	Literature research (ongoing)
16.11.2015	Arrival on-site	
Till 06.12.2015	System analysis of the project and the surrounding socio-ecosystem	Adaptation of MARISCO (ongoing)
Till 20.12.2015	Identification and evaluation of threats due to climate change	Literature, informal interviews
Till 10.01.2016	Perception of people about climate change, their role in addressing it, future problems	Informal interviews
Till 31.01.2016	Exploration of possible improvement, research for alternative strategies by other local institutions and successful mangrove NGOs	Exchange with staff from Blue Ventures, other volunteers (brainstorming, best-practise guide – ongoing)
Till 07.02.2016	Collection of results, Clarification of last questions	
10.02.2016	Departure	
Till 19.02.2016	Writing of report	
20.02.2016	PDF Research report 5-8 pages upload on EMMA	

6 SOURCES

FAO, 2003. *STATUS AND TRENDS IN MANGROVE AREA EXTENT WORLDWIDE*. [Online] Available at: <http://www.fao.org/docrep/007/j1533e/j1533e02.htm> [Accessed 05. 11. 2015].

Honko, 2012. *Honko: The story so far and plans for the future*, Toliara: Honko Mangrove Conservation & Education.

Kathiresan, K., 2005. 3.2. Ecology and Environment of Mangrove Ecosystems. In: H. P. Corporation, Hrsg. *Biodiversity of Mangrove Ecosystems*. s.l.:Centre of Advanced Study in Marine Biology, Annamalai University, pp. 102 -115.

Responsible Travel, 2015. *2015 World Responsible Tourism Awards at WTM*. [Online] Available at: <http://www.responsibletravel.com/awards/winners/2015.htm> [Accessed 30. 10. 2015].

³ This will be explorative interviews questions during stay and work, without a formal interview situation and audio-recording, only the key facts and answers will be noted (lack of electricity, wet conditions in mangrove reserve unfavourable for electronic devises), because of expected language problems and on-site conditions.

UNDP, 2013. *Human Development Reports: Human development index (HDI)*. [Online] Available at: <http://hdr.undp.org/en/content/human-development-index-hdi-table> [Accessed 05. 11. 2015].

World Bank, 2014. *GDP per capita (current US\$)*. [Online] Available at: http://data.worldbank.org/indicator/NY.GDP.PCAP.CD?order=wbapi_data_value_2014+wbapi_data_value+wbapi_data_value-last&sort=asc [Accessed 05. 11. 2015].

World Resources Institute, 2015. *Satellite Data Reveals State of the World's Mangrove Forests*. [Online] Available at: <http://www.wri.org/blog/2015/02/satellite-data-reveals-state-world%E2%80%99s-mangrove-forests> [Accessed 05. 11. 2015].

WWF, 2010. *Restoring a unique ecosystem in the Southwest*. [Online] Available at: <http://wwf.panda.org/?unewsid=193033> [Accessed 30. 10. 2015].