

Programme title: Rebuilding resilience of coastal populations and aquatic resources: habitats, biodiversity and sustainable use options (RESCOPAR).

WU Graduate School(s): WIAS, CERES, PE&RC, WIMEK

Proposed partners: Mulawarman University, Samarinda, East Kalimantan, Indonesia,
Can Tho University, Mekong Delta, Viet Nam,
Network of Aquaculture Centres in Asia-Pacific (NACA).

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Globally, aquatic food production is shifting from fisheries to aquaculture. Unfortunately, open water mariculture - in this study focussing on shrimp culture in mangroves - often starts with insufficient knowledge of the trade-offs between natural resources and the culture based production to the detriment of livelihoods and coastal biodiversity. The shift in production systems leads to competing and often exclusive claims on aquatic resources that could threaten the long-term resource base and alternative resource use options. An unsustainable cycle of culture and abandonment of shrimp-ponds within a decade, a.o. the result of infectious diseases, affects the resilience of coastal socio-ecological systems. The program will contribute to increased resilience of coastal populations and aquatic resources to changes and natural disasters.

Key challenges of RESCOPAR are (1) the identification of ecologically sustainable culture practices, and (2) the development of adequate management tools and information base to support decision making in coastal management, balancing the interests between poverty reduction and the sustainable use of aquatic resources. The ultimate aim of the program is to develop scenarios, evaluated in a participatory way, to investigate the sustainability of development directions in aquatic resource use. The scenarios will be based on a multidisciplinary analysis of the interactions between global trade in shrimp, local livelihoods, mariculture practices and the coastal mangrove environment. The activities are defined in four interdisciplinary research themes, and will be carried out through 8 interdisciplinary sandwich PhD-projects and 1 post-doc position (indicated between brackets are the associated chair-groups to each theme):

1. Spatial arrangements and temporal changes of human activities in coastal ecosystems: analysing and visualising impacts on the mangrove-coastal aquatic ecosystem; GRS/FCF, FCF/GRS. (Geo-Information Science and Remote Sensing, Aquaculture and Fisheries)
2. Spatial interactions and resilience of shrimp pond – mangrove forest ecosystems: observing, experimenting and modelling on mariculture systems; QVE/FCF, QVE/VIR, FCF/AEW (Aquaculture and Fisheries, Aquatic Ecology and Water

Quality, Quantitative Veterinary Epidemiology, Laboratory of Virology)

3. Trade-offs and feedbacks in resource use patterns, institutions and livelihoods: analysing the socio-economic context; FCF/RDS, RDS/FCF. (Aquacultures and Fisheries, Rural Development Sociology).
4. Governance arrangements facilitating change in aquatic natural resource use: analysing potential interventions at policy level; ENP/LAW, LAW/ENP. (Law and Governance, Environmental Policy, Aquaculture and Fisheries)

The PhD projects of themes 1 and 2 both contribute to an understanding of the spatial dynamics of aquatic resource use patterns that depend on and interact with the mangrove forest. Quantitative and spatially explicit ecological information of these studies is contextualized by themes 3 and 4. Given local perceptions and livelihood patterns the proposed management tools and interventions (theme 1 and 2) are assessed on their relevance and necessity through participatory means (theme 3 and 4). These confrontations of natural sciences and social sciences contribute to the overall INREF objective to produce results that make a difference for end users. The RESCOPAR activities will be carried out in East Kalimantan, Indonesia, and in the Mekong Delta, Vietnam. The selected sites have several specific characteristics – social, ecological, extensive vs. intensive developments in shrimp culture - that make for useful comparisons. The interdisciplinary substance of the themes is ensured by focussing on space as a neutral framework of integration. The process of trans-disciplinary reflection between studies and themes is ensured through annual regional and local workshops. To reach effective responses, governments at different levels, civil society organisations and market partners will be associated to the program's activities.