



Collaborative Research Centre TRR 228
Future Rural Africa: Future-making and social-ecological transformation
Project Summaries Second Funding Phase (2022-2025)



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Please visit our website for updated information on our team members.

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International Partners of the Collaborative Research Center

Academic Partners

KENYA



1 **University of Nairobi**
Kenya



2 **Kenyatta University**
Kenya

NAMIBIA



3 **University of Namibia**
Namibia

TANZANIA



4 **Dar es Salaam University**
Tanzania



5 **Mzumbe University**
Tanzania

ZAMBIA



6 **University of Zambia**
Zambia

Additional Partner Institutions

7 **University of the Free State**
South Africa

8 **Stellenbosch University**
South Africa

9 **University of Cape Town (UCT)**
South Africa

10 **Saint Augustine University**
Tanzania

11 **Africa Rice Center**
Tanzania

12 **Kilombero Agricultural Research Center**
Tanzania

13 **United States International University**
Kenya

14 **Kenya Medical Research Institute**
Kenya

15 **Kenya Agricultural and Livestock Research Organization**
Kenya

16 **National Museums of Kenya**
Kenya

17 **British Institute in Eastern Africa**
Kenya

18 **University of Botswana**
Botswana

19 **Jaramogi Oginga Odinga University of Science and Technology (JOOUST)**
Kenya

20 **University of Johannesburg**
South Africa

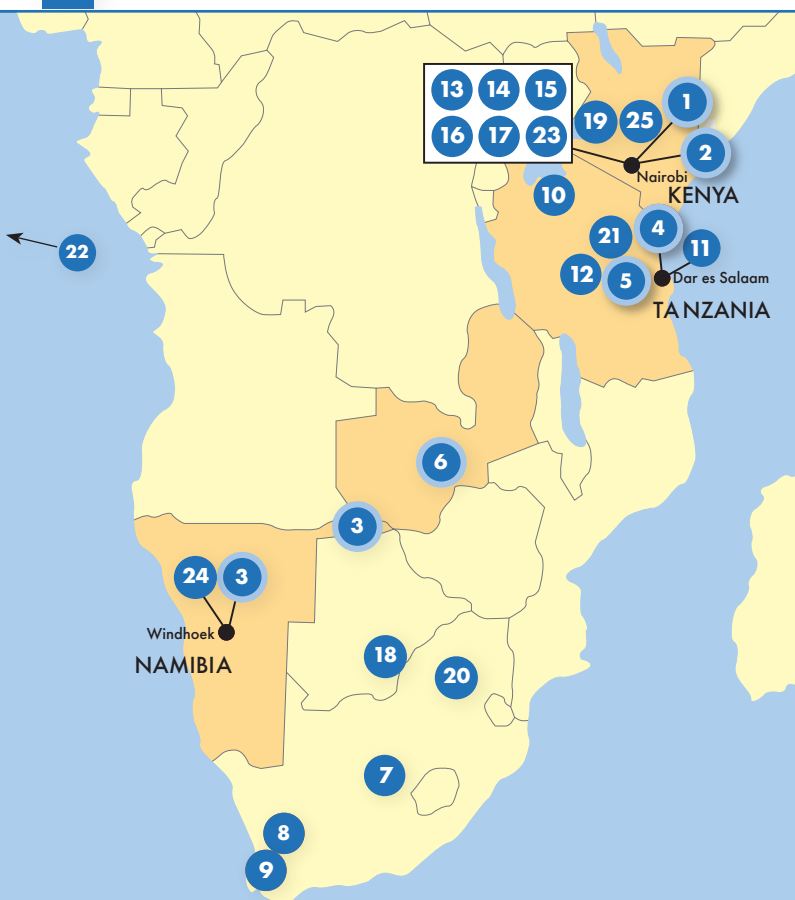
21 **Sokoine University of Agriculture**
Tanzania

22 **University of California Santa Barbara**
USA

22 **ILRI - International Livestock Research Institute**
Kenya

24 **Namibia University of Science and Technology (NUST)**
Namibia

25 **Center for Training and Integrated Research in ASAL Development CETRAD**
Kenya



ABOUT THE CRC

Partners

Reliable and lively partnerships will be essential for the planned program and cooperative research activities. The CRC will strengthen and expand the existing networks with institutions and individuals in Africa. To facilitate participation of African research partners in CRC events and scientific cooperation, the CRC applied for funding of travel expenses and daily allowances of partners and guests, especially from Africa.

The following examples explain the role of guests from partner institutes in selected major joint re-search activities:

- In A01 Namibian scientists of UNAM will contribute to the central field experiment. For that purpose, they will have to travel between Windhoek and Katima Mulilo on multiple occasions.
- In A04, partners from Kenya and Namibia will conduct field surveys that directly contribute to the scientific program of the project. The Kenyan counterparts Helen Hoka Osiolo and Kennedy Mkutu will continue to contribute to certain work packages of various projects by conducting own research and supervising local junior scientists in areas of securitization and conflict. While Helen Hoka Osiolo works closely with project C02, Kennedy Mkutu collaborates with project C02 as well as B03.
- In B05 additional empirical research will be led by local partners, designed around specific research questions that supplement and support the research of the whole project. This includes high-level interviews with various stakeholders, participatory observations and scientific papers. Additional research in the SAGCOT area is led by scientists from Sokoine University, while research in the LAPSET corridor, and KAZA region, is conducted by partners from Strathmore University and the University of Johannesburg respectively.

A number of collaborations with African universities and research institutions have already been established through MoUs or are in preparation. Through a regular exchange and invitation program, some African partners have been fully integrated in the joint programme. A major obstacle faced by faculty members of African universities is their heavy work load in teaching. The University of Bonn will therefore continue provide funds for African counterparts that will be used for temporal replacements, allowing them to devote their full time to the cooperation.





Collaborative Research Centre TRR 228 Future Rural Africa: Future-making and social-ecological transformation

Summary of the CRC 'Future Rural Africa'

The Collaborative Research Center (CRC) takes current large-scale land-use change in Africa as its starting point. Focussing on the two seemingly opposite, yet often mutually constitutive processes of intensification and conservation, it investigates their impact on social-ecological transformation (SET) in the context of three major growth corridors in eastern and southern Africa. While SET is commonly understood in relation to past processes, this CRC takes a different perspective: It conceptualizes SET as an expression of 'future-making'. Resonating with current debates in the interdisciplinary field of future studies, this means that potential futures and the different ideas of how they can be realized are seen to have a decisive impact on current land-use dynamics, especially through diverse processes and politics of anticipation. 'Future-making' refers to physical changes as well as social practices that link the present to the future in various ways. Whereas natural scientists

primarily study how a 'future of probabilities' is anticipated in different forms of calculation, measurements and models, the social scientists also take into account how a 'future of possibilities' takes shape in visions and imaginations. Together, the subprojects of the CRC will therefore be able to analyse how such different approaches to the future inform practices of large-scale land-use change, and how they relate to each other. While SET is not confined to rural areas alone, it is here where its impact is most significant and immediate, though often with uncertain outcomes. Special emphasis will be put on surprises and unintended side-effects of future-making, which play a key role in characterizing rural Africa today.

The CRC is structured in three project groups, each organized around a bridging concept that addresses specific aspects of SET and future-making (see figure 1).

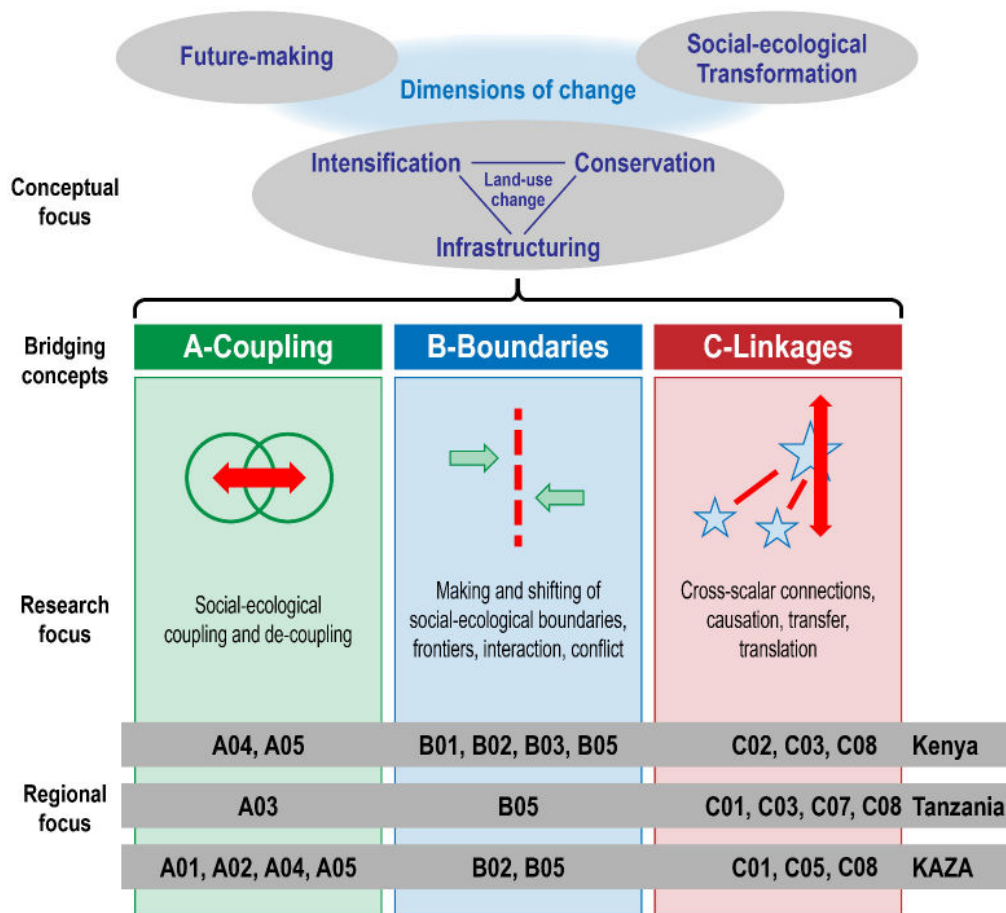


Figure 1: The conceptual focus of the CRC and its project groups

Project group A ('coupling') studies the articulation between social and ecological subsystems, B ('boundaries') looks at the shifting zones of interaction and confrontation, and C ('linkages') explores cross-scalar drivers, connections and causations.

Empirical research focusses on development hubs in the Kenyan Rift Valley (KRV), the Southern Agricultural Growth Corridor of Tanzania (SAGCOT), and the Kavango Zambezi Transfrontier Conservation Area (KAZA). The CRC builds upon profound research experience from the applicants and African partners, amplifies the unique combination of expertise at the universities of Bonn and Cologne, fosters partnerships with scholars and scientific institutions in Africa, and aims at making Bonn-Cologne one of the leading centres of innovative research in the emerging field of futures studies and social ecology in Africa.

Conceptual Framework

Envisioning the future: The title "Future Rural Africa" does not mean that the CRC aims at foretelling the future. Instead, the research program will examine the processes and practices that reflect the future in the present or, in other words, that "fold" the future into the present, and that influence contemporary decisions and thereby prepare the ground for processes that shape future conditions. Future-making refers to the ways of how ideas, expectations and imaginations of the future inform action in the present.

Problem setting: The future of rural Africa is open – for transformation, surprise, hope, fear, speculation and contestation. This is the point of departure for the CRC's conceptual framework and theoretical perspectives. These changes happen amidst controversial visions of the prospects of the continent. On the one hand, optimistic outlooks on "Africa rising" are featured by international development banks, foreign donor organizations as well as African governments themselves. On the other hand, critical voices are skeptical whether current developments are sustainable and beneficial, and they warn of a "new scramble for Africa". Amidst these controversies, the future is explicitly addressed as the bone of contention. And yet the question arises whose future the different voices are referring to, who produces the various visions of the future, and how these alternative visions are put

into practice. The future is not simply emerging from the past, but it is manufactured in an interplay of numerous actors, interests, and institutional settings linked across manifold scales.

Processes: Making sense of the complex situation requires a closer look at the processes and drivers of change. Two dominant types of land-use change can be discerned, i.e., intensification of agricultural production on large and medium-sized farms, and conservation of natural resources in national parks, community-managed conservancies and game reserves. Both processes are currently gaining ground in a highly dynamic way. They both respond to global regulatory regimes and incentive structures, leading to a transformation of nature and social ecologies. As a consequence, both avenues of land-use change converge in massive transformations of local livelihoods, including the marginalization, dispossession and even eviction of local populations, with an impact on land ownership, labor, food security, health, and social structure. What makes these processes problematic for many people is not so much change as such, but its unpredictability.

Why rural Africa? The CRC views the rural not in a dualistic way as the opposite of the urban, but as a socio-spatial entity that is intertwined with 'the urban' and 'the world' through various connections, like commodity chains, agro-food systems, migration regimes, communication networks, or other global flows in the context of globalization. Boundaries between the rural and the urban are progressively blurred, with urban residential settlements mushrooming in rural areas, multi-local households, new technologies like mobile phones and digital cash transfers, etc.

The CRC is organized around three bridging concepts, i.e., coupling, boundaries and linkages (see figure 2). They are salient for the CRC's research design and constitute the bases for the three project groups A, B, and C. They refer to underlying dimensions that intersect the processes of future-making and socioecological transformation. The purpose of the bridging concepts is to facilitate integration between different disciplinary and regional research foci.

An important aspect in conceiving the future is the question whether the future is uncertain and open, or whether it is, at least partly, predetermined. We suggest distinguishing between futures of probabilities and futures of possibilities. The future may thus



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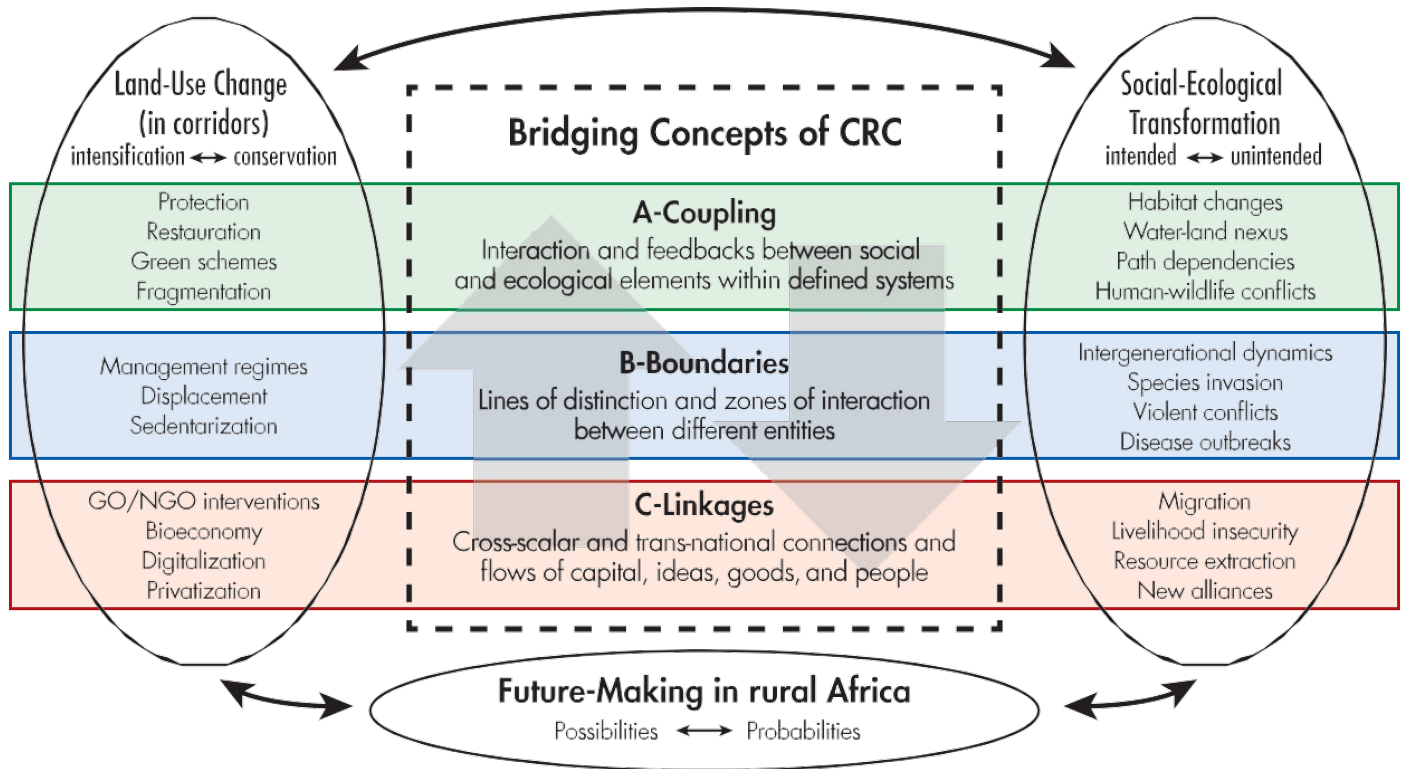


Figure 2: Bridging concepts of the CRC

be understood either as the outcome of predictable processes that can be planned, calculated, measured, modelled, and managed in the present, or in terms of imaginations, visions, aspirations and political discourses that have an influence on decision making and future-oriented practices. At the same time, plans, calculations and models are developed in an attempt to control what is ultimately a future that is not fully predictable. Future-making in rural Africa is framed by controversial discourses about modernity, development paradigms, and Westernization, which are embedded in specific human/nature-relations. Scientific perspectives on these relations differ greatly between the CRC's participating disciplines.

Research questions: Based on the experiences from phase I, our analyses of current trends of socio-economic dynamics, political shifts and ecological changes we formulated a set of overarching lead questions for phase II, which add up to the questions of the previous phase.

1. How are processes of conservation, intensification, and infrastructuring related to each other, and what is their role for future-making and social-ecological transformation?
2. What is the impact of uncertainties, disturbances, and unpredictable events on conservation, intensification, and infrastructure practices as well as on social-ecological systems?
3. How does future-making combine visions of the future with possibilities and probabilities, and how is this influenced by the positionality of the respective agents?
4. Which implications do our observations of future-making have for a critical understanding of "development"?

Regional Focus: Study Sites

Under the prevailing conditions in large parts of sub-Saharan Africa (SSA), growth corridors play an important role as drivers of spatial change, especially with regard to agricultural intensification, but also relating to the expansion of conservation areas. Similar to infrastructure projects in the 1960s and 1970s, when many African countries invested in highways, the construction of growth corridors today is supposed to foster better integration among places within the corridors, connect them to global markets, and create economic growth. In contrast to earlier infrastructure projects, a strong emphasis is now put on the involvement of the private sector and the development of value chains along the corridors to enhance productivity and economic change. Conservation efforts have also become part of large-scale development corridors through the establishment of trans-boundary parks that amalgamate existing national parks, private conservation areas and land used for community-based conservation efforts. Overall, such newly established development corridors can be regarded as “hot spots” of current land-use change in African savannas, and their related intensification and conservation processes will thus form the empirical focus of the CRC.

Corridor approaches, and more specifically development or growth corridors, have already been applied in spatial planning for decades. More recently, the concept has been reinvigorated in attempts to initiate new spatial developments by connecting African peripheries to regional growth poles. The key idea of the approach is to reduce transport cost and time by using transport corridors as a means to develop the region around them into zones of enhanced economic activity. This is meant to be achieved by improving road and railway connections, and by attracting investments.

So far, none of the recently planned or newly established corridors is fully functional, but nevertheless the corridors already unfold a remarkable transformative power in their respective regions while they are still under construction or even while they are more or less in a planning stage. While the implementation of development corridors is welcomed primarily by international business and development banks, the concept earns critique from various sides. From an economic point of view, the projects inevitably involve high costs and risks. They require long-term finance, thereby creating and enhancing economic dependencies. If construction is carried out primarily by foreign companies and labor, as in the case of many Chinese mega-projects, infrastructure expansion has only limited income-generating effects. Another point of critique concerns the social impact, since infrastructure developments for the support of extractive economies are usually not for the benefit of local populations. In addition, ecologists warn of the expected environmental costs of ongoing corridor expansions.

The three study sites selected as examples for the CRC’s inception phase all have a connection to growth corridors, but in different ways. In particular, we will concentrate on three different examples:





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1. The Kenyan Rift Valley (KRV) in relation to the “Lamu Port – South Sudan – Ethiopia” (LAPS-SET) corridor
2. The Southern Agricultural Growth Corridor of Tanzania (SAGCOT)
3. The Kavango-Zambezi Transfrontier Conservation Area (KAZA) in southern Africa within the Walvis Bay-Ndola-Lu-bumbashi Development Corridor (WBN- LDC).

While the KRV and LAPSSET are examples of fragmented intensification with historically and economically diverse processes of transformation, SAGCOT is characterized by a state driven commercialization and intensification of agriculture through public-private partnerships. In contrast, KAZA is the largest conservation project in Africa, integrating five national approaches to land-use rights and governance. While being located within the savanna biome with comparable biophysical conditions and similar agricultural land-use strategies, the drivers, underlying concepts and spatial representations of future-making are in principal highly divergent, involving “intensification” (SAGCOT), conservation (KAZA-WBNLDC) and exploitation (KRV-LAPSSET).

The Kenyan Rift Valley (KRV) is an exceptional region to exemplify the spatial heterogeneity, the socio-economic challenges, as well as the opportunities for Kenya and in a bigger perspective for many (east) African countries. Its importance is first of all based on its sheer size and spatial configuration: Spanning from the northwest to the south of Kenya, the Rift Valley accounts for 23% of the Kenyan land mass. The ambitious Kenya Vision 2030 aims to improve the prosperity of all Kenyans whilst building a just and cohesive society by developing flagship projects to induce economic growth and social transformation. Since 2013, the KRV has been strongly shaped by one of the most important flagship projects of this agenda. LAPSSET intersects especially with the central and northern parts of the Rift Valley and is discussed as being a transformative game changer for the region.

KRV and LAPSSET (figure 3) are examples of fragmented intensification with historically and economically diverse processes of transformation. With the future vision of exploiting geothermal (and wind) energy as well as fresh water resources for establishing a cut-flower and export-oriented field vegetable industry in the KRV, investments in infrastructure (i.e. road constructions linking Narok in the south to Chemolingot in the north) provide access to national and international markets, and foster investments in other infrastructure measures along the corridor, but also attract investors, developing the value chain for agricultural products. Such developments provide a strong pull for labor in-migration, intensified crop agriculture and the sedentarization of pastoralists.



ABOUT THE CRC

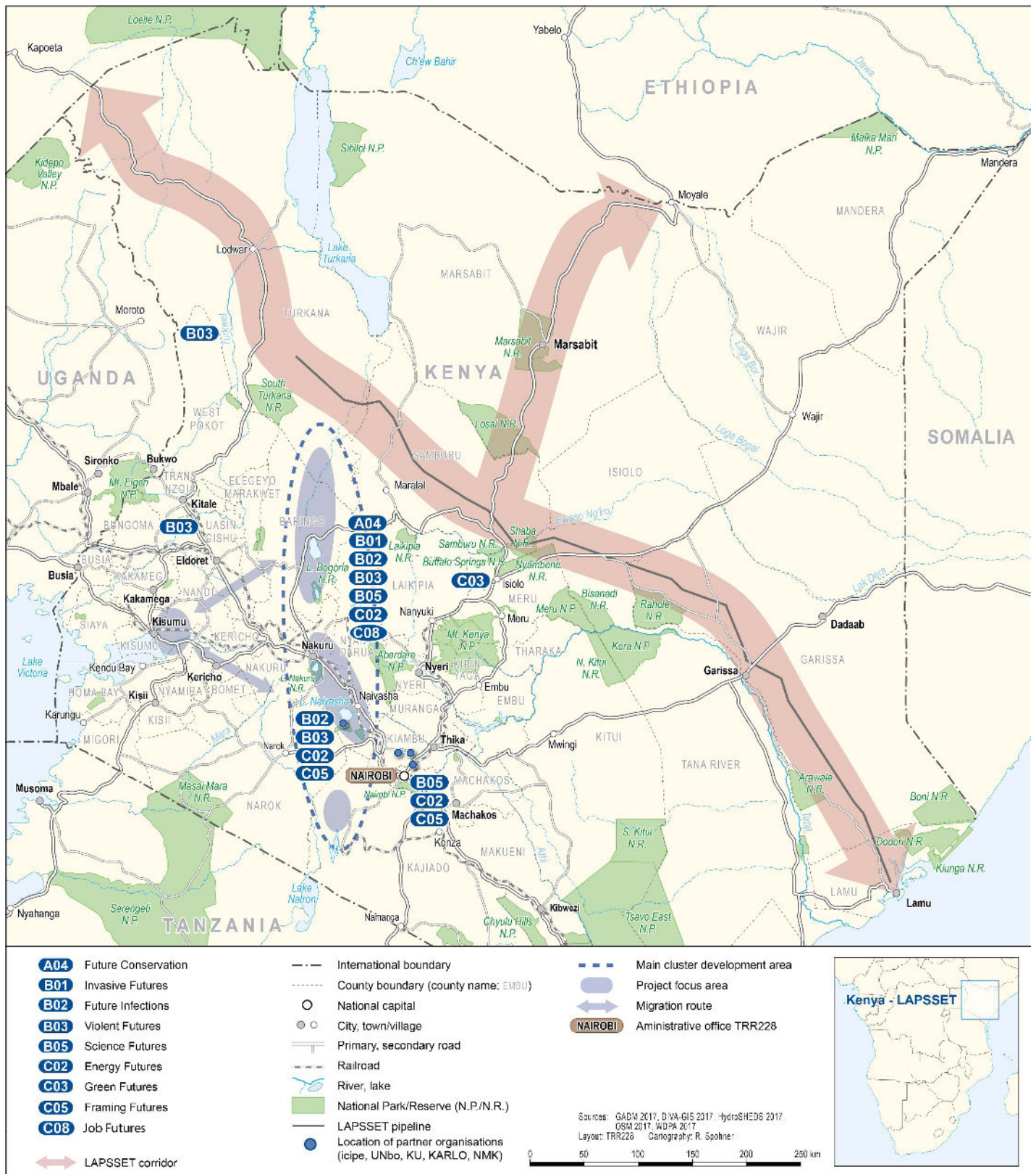


Figure 3: KRV and LAPSSET Corridor with indication of CRC study sites





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The **SAGCOT** corridor (see figure 4) is characterized by a state-driven commercialization and intensification of agriculture through public-private partnerships. Since national food insecurity and poverty remain the main challenges for the agricultural sector, a transition from a land-extensive and low-input subsistence agriculture to high-input and market-oriented production has been suggested by development institutes. Thus, in 2009, the national resolve 'Kilimo Kwanza' (Swahili for 'agriculture first') provided a set of strategies and policy interventions with a focus on the commercialization and modernization of agriculture through public-private partnerships. SAGCOT was designed to actively foster an integration of local production into commercial inter-regional and international value chains and as a result transform the

SAGCOT area into a highly commercialized agricultural growth region. The Tanzanian government, together with private investors, now aims at exploiting the favorable availability of natural resources (land, soil, water) in the Rufiji Basin (mainly lowland rice in the Kilombero Cluster, and potatoes, field vegetables and dairy products in the Ilemi Cluster) for large-scale mechanized production to satisfy a growing national demand, but partially also targeting the international market. Year-round crop production entails an expansion of cultivated land area but also investments in (irrigation) infrastructure, increased size of production units, and the provision of links to national and international markets.

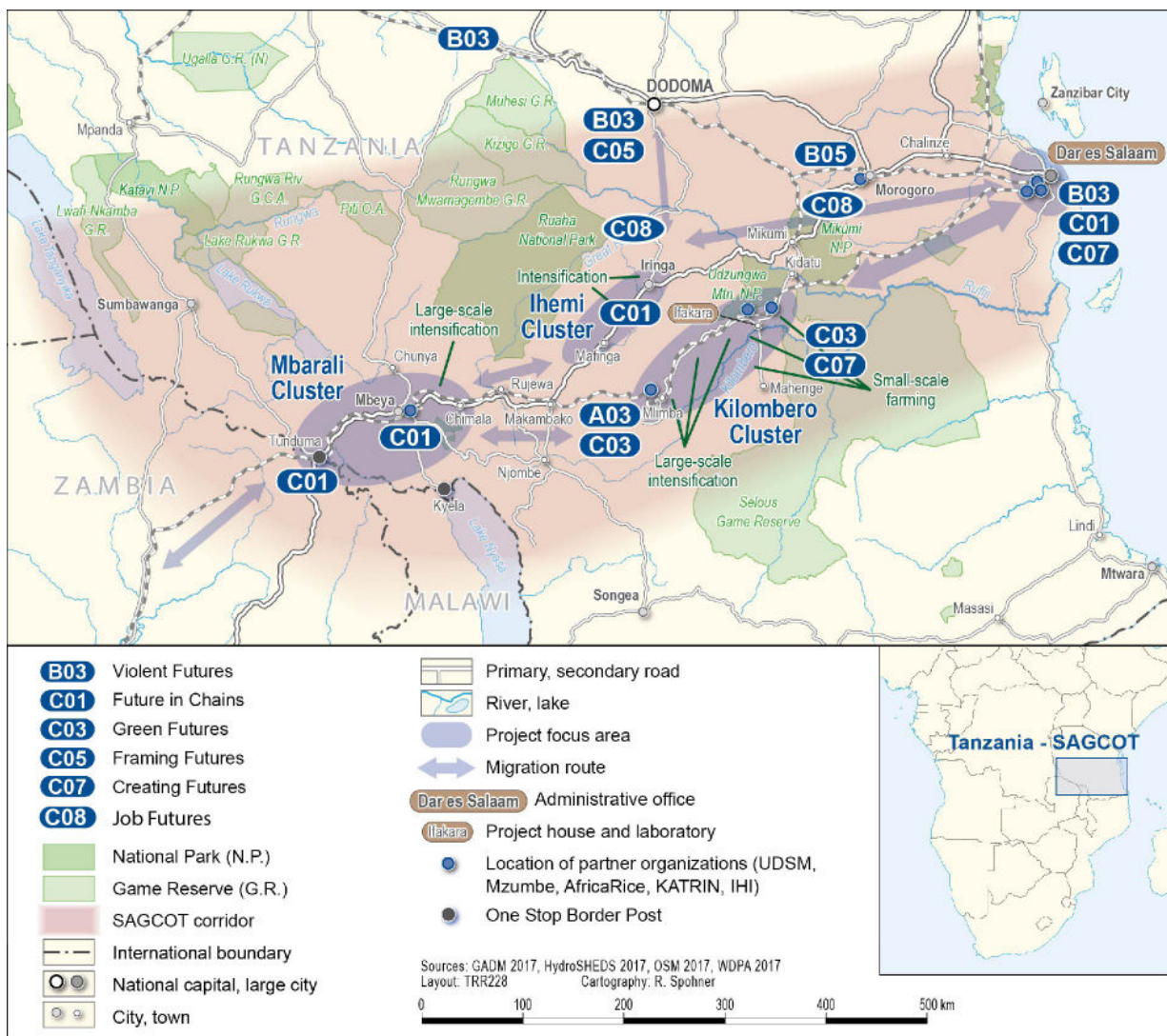


Figure 4: SAGCOT in Tanzania with indication of CRC research sites

ABOUT THE CRC

Founded in 2003 by contractual agreements between the governments of Namibia, Botswana, Zimbabwe, Zambia and Angola, the **KAZA Transboundary Area** (see figure 5) comprises more than 20 national parks, 85 forest reserves, 22 communal conservancies, 11 game sanctuaries, and 103 wildlife management areas. In total, around 371,000 km² are under conservation management while 149,000 km² are under agricultural use. KAZA thus is the largest conservation project in Africa, integrating five national approaches to land-use rights and governance. The signatory countries aim at a large transnational protection zone for wildlife and vegetation. This leads to population concentrations on the fringes, namely along the Walvis Bay-

Ndola-Lubumbashi Development Corridor (WBNLDC). The corridor passes through KAZA linking the Namibian Port of Walvis Bay with Zambia, the southern DRC and Zimbabwe. Having started as a mere transport route, it recently expanded its scope to include a broader perspective for economic development. In this narrow corridor, a growing number of land users, but also organizations catering for tourists, are establishing a livelihood on increasingly restricted space. The resulting demand for food but also the concentration of agriculture entails intensification strategies that are rather similar to those occurring in SAGCOT. However, in KAZA they may partially be considered non-planned side effects of a future vision of conservation.

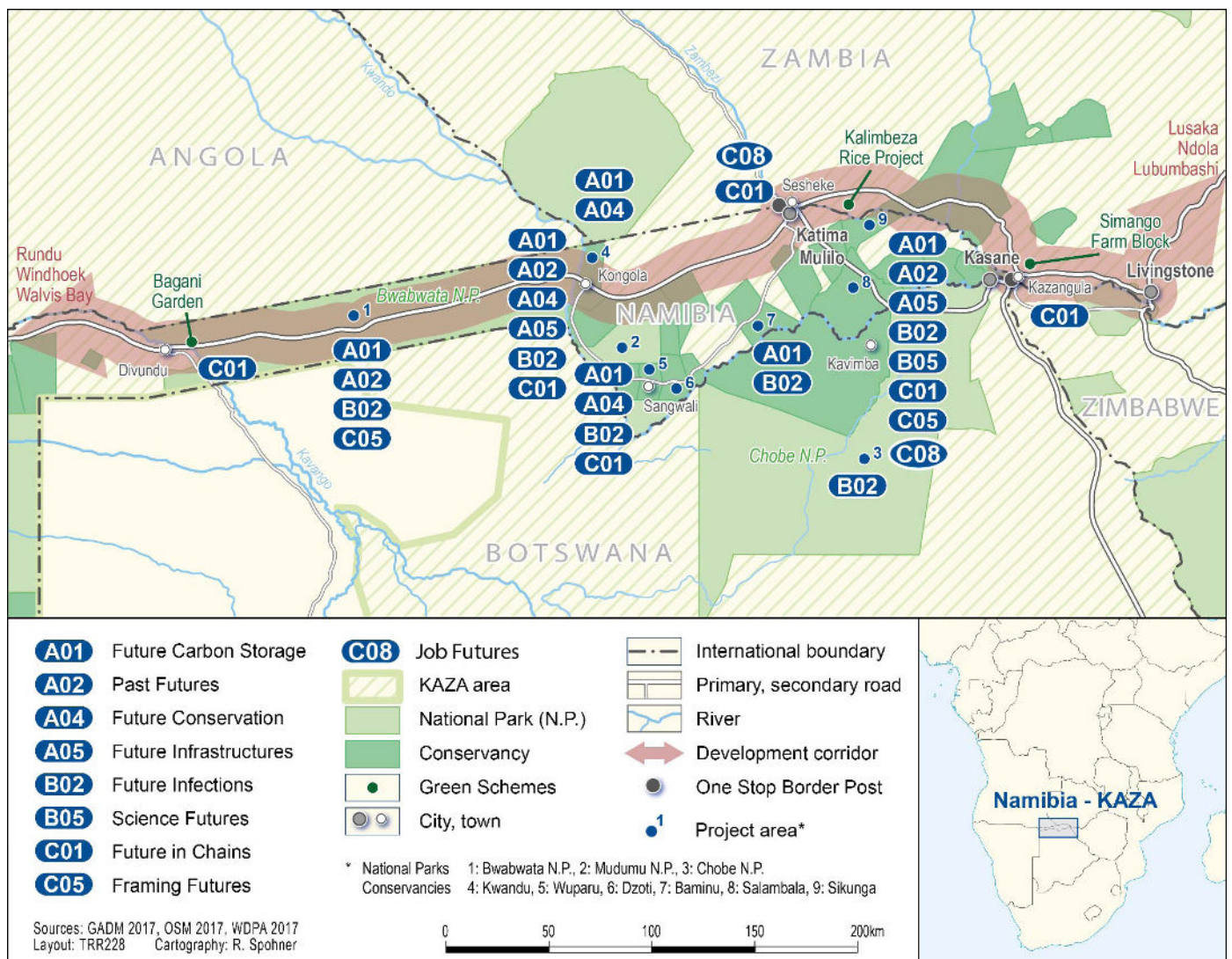
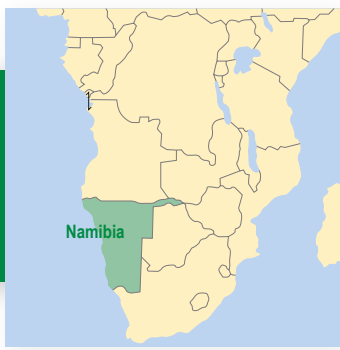


Figure 5: KAZA Transnational Frontier Park, the WBNLDC, and CRC research sites



A01 FUTURE CARBON STORAGE

Synergies and trade-offs of carbon storage along pathways of land transformation

Problem Statement

We investigate social-ecological coupling mechanisms involved in three ongoing transformation pathways: conservation, agricultural intensification, and restoration. Potential impacts of these transformations are investigated both on the socio-economic and bio-physical level as they are expected to concurrently change e.g. rural welfare, carbon sequestration, and other ecosystem services.

Relation to the CRC

The project scopes the possible range of outcomes and identifies probable future development pathways. Our research integrates across soil, vegetation, and social sciences in collaboration with other CRC projects.

Vision

Improve our understanding of how heterogeneous patterns of rural wealth interact with the natural resource base, and to what extent environment constrains future development possibilities.



Mosaic landscape with intensification gradients (KAZA region)

Key Questions

How is rural farm-household wealth related to soil and vegetation quality and carbon storage under consideration of interactions with wildlife?

Hypothesis H1: Lack of bargaining power among poor and marginalized rural population groups during historical settlement processes partially explains current correlations between inherent (permanent) soil properties and rural wealth.

Hypothesis H2: At the farm scale, the spatial modulation of soil and vegetation characteristics via a future-oriented farm management depends on wealth and investment constraints.

Hypothesis H3: At the village and regional scale (and beyond), external factors such as economic shocks, policies and non-agricultural income flows shape rural households' future-making, and thus their interactions with soils, vegetation, and wildlife.

Work Plan & Methods

Work Package	Research Focus	Methods	Sites of Research
WP1	Characterize and quantify the relationship between wealth and natural resource endowment	Analysis of CRC household survey data Soil and vegetation analysis	KAZA-TFCA
WP2	Assess spatial modulation of management on natural resource endowment of fields	Interviews among rural residents	KAZA-TFCA
WP3	Quantify the impact of external factors on rural households' future-making	Vegetation and soil analysis Analysis of existing data sets from remote sensing Analysis of data on wildlife densities Econometric impact evaluation Camera trapping Dung and spoor counts	KAZA-TFCA



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Project Summary

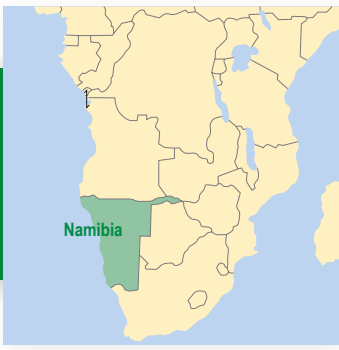
This interdisciplinary project continues to view the future-making in rural Africa through a carbon lens, focusing on two conflicting visions: wildlife conservation and agricultural intensification.

During Phase I, we have used space-for-time substitutions and combined biophysical and socio-economic data at different scales to analyse effects of conservation and intensification on (1) carbon-stock dynamics in soil and vegetation and carbon-related ecosystem services, (2) the composition of farm-household income, including detailed environmental sources. At the local scale of ecological observation plots we were able to show that carbon losses in the vegetation due to increased densities of large herbivores can be offset by carbon gains in soils. Surprisingly, soil carbon stocks under agriculture were not smaller than under conservation. This phenomenon may be driven by two aspects of farmers' future-making: a future-oriented soil fertility management, and a preferential selection of fertile land for agriculture. The implications for respective social-ecological coupling will be further explored in Phase II. At the regional scale, we found that Community-Based Natural Resource Management (CBNRM), although positively

affecting the presence of large herbivores, also led to net losses in carbon-dense woodland cover in the region. We assume that the heterogeneous impacts of CBNRM are driven by tourism opportunities. In sub-regions with relevant wildlife presence, wildlife conservation has synergistic effects on woodland cover, while in regions without opportunities for tourism, agriculture-dominated livelihood strategies have detrimental effects on vegetation cover and corresponding carbon storage.

In Phase II, we will address three hypotheses, keeping carbon as the common currency within our project. We aim to understand how (1) historical settlement processes have co-determined current land-access and land-use patterns, as well as related rural wealth dynamics and variations in soil and vegetation quality. At the farm scale, we plan to study how (2) farmers actively shape their future by spatially modulating land management to improve soil and vegetation quality in the vicinity of their farms. At the regional scale and beyond, we will finally analyse (3) to what extent external shocks (e.g. COVID-19 pandemic) and spatio-temporal variations in policy regimes affect biophysical and socio-economic outcomes.





A02 PAST FUTURES

Micro-histories of rural development in southern Tanzania

Problem Statement

Past Futures investigates the history of ‘future-making’ in KAZA, considering the history of rural development and the history of political schemes devised for the administration and control of the KAZA region. These histories have been deeply contested within KAZA, as rival external actors have sought to impose their own visions of the future upon the peoples of KAZA alongside challenges to the sovereignty of the region from movements of both colonization and secessionism. The project adopts a methodology that mixes archival research with the collection of oral histories, with a strongly critical approach being taken toward both.

Relation to the CRC

Historical studies of KAZA provide an important foundation and background to the wider work of the CRC in this region, providing important context and continuity. The focus on ‘future-making’ also places Past Futures at the very heart of the concerns of the CRC, complementing and enhancing the work of projects in other disciplines, including Anthropology and Geography. This is made effective by the combination of political ecology and political economy approaches in the work of Past Futures, enabled through extensive archival research, and the collection of oral histories within the KAZA region.

Vision

A02 explores the histories of future-making in the borderlands of the KAZA region to understand the processes of development and political change in this rural landscape.

Key Questions

In order to tell the turbulent story of KAZA, and to understand how notions of ‘future-making’ may have been represented in past development initiatives, the project seeks to answer the following questions by looking at both the economic history of development and the political history of ‘future-making’:

1. In how far is development in KAZA defined by local demands, or shaped by external supply? To what extent have local communities here got the development they wanted? And to what extent have they appropriated this development?
2. Have the benefits of development allowed people to make better futures? Who have been the beneficiaries of rural development interventions, and of the exercises in political ‘future-making’ in KAZA?

Work Plan & Methods

Work Package	Research Focus	Methods	Sites of Research
WP1: Micro Histories	Oral histories of development interventions, both economic and political	Archival research Interviews with prominent community members (elders)	KAZA, Archives in South Africa, Namibia, Botswana, Zimbabwe, Zambia, Germany, Portugal, USA and the UK
WP2: Visionary Archives	Reconstructing the history of government policy toward development interventions and ‘future-making’	Archival research	Archives in South Africa, Namibia, Botswana, Zimbabwe, Zambia, Germany, Portugal, USA and the UK
WP 3: Future Making	Synthesis of how government intentions relate to local experience	Interviews with (former) government officials	KAZA
WP4: Sub-projects with international research partners	Bring together three Sub-Projects investigating cross cutting issues in a specific country location	Archival research and oral histories	KAZA, Archives in South Africa, Namibia, Botswana, Zimbabwe, Zambia, Germany, Portugal, USA and the UK



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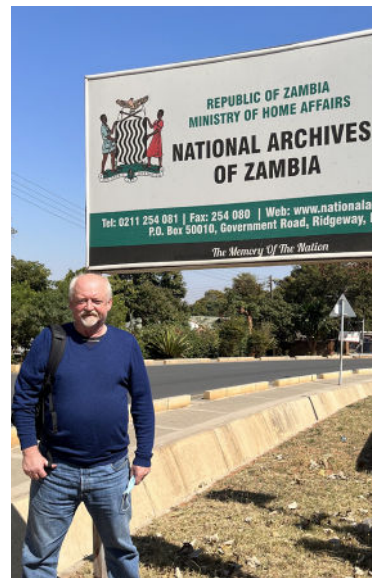
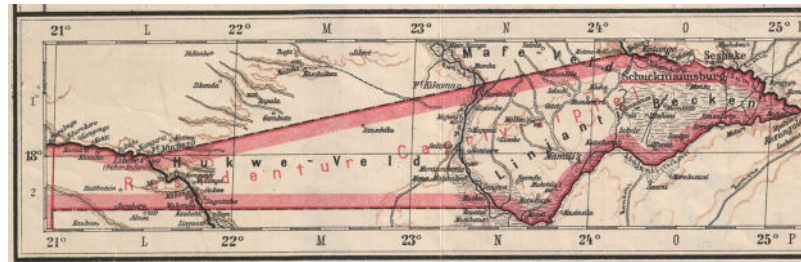
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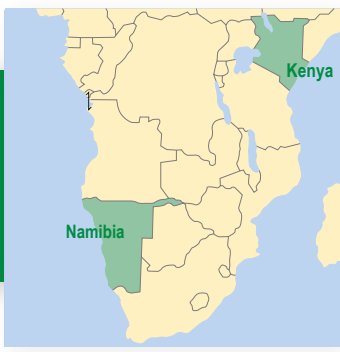
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Project Summary

Rural development programmes have been a prominent feature in the political economy of the region of the Kavanago-Zambezi Transfrontier Conservation Area (KAZA) since the 1950s, although their character, extent, and aims have varied enormously. Through their policies for development, colonial and then post-colonial governments in this region sought to redefine patterns of land use, dictate the functioning of local social ecologies, and drive local thinking about future-making. The region has also been subject to ambitious political schemes to possess or redefine its sovereignty – involving secessionism, empire-building and radical schemes of ‘future-making’. Past Futures will consider what impact the history of past political and economic development interventions now has upon the reception of and engagement with current initiatives in the KAZA region, which now binds five countries together in a shared scheme for land management and conservation development. Past, present, and future are linked through community experience of these past interventions: to know what future the rural communities of KAZA imagine for themselves today, we must understand how their historical experience of past development has shaped their expectations. The project will draw upon case studies from Angola, Namibia, Botswana, Zambia and Zimbabwe, covering the period from 1945 to the present.





A04 FUTURE CONSERVATION

Towards an African Eden? Shifting bio-cultural frontiers and the (re)coupling of social-ecological relations in the conservation areas

Problem Statement

Social-ecological transformation in southern and eastern Africa is increasingly shaped by different forms of conservation: national parks, transboundary conservation areas, community-based conservation and conservation on freehold farmland. This project focuses on the coupling of social, cultural and material dynamics in social-ecological systems under various regimes of conservation from the perspective of political ecology, neo-materialist as well as multi-species approaches.

Relation to the CRC

Project A04 is the only project that directly focusses on the political ecology of various conservation measures as major trajectories of future-making in rural Africa. A04 aims to contribute relevant data on social-ecological coupling for all other projects engaged in research in the southern African KAZA area and the Kenyan Baringo area.

Our project is strongly linked to the ERC Rewilding (www.rewilding.de) that is conducting research on a variety of multispecies assemblages in the KAZA TFCA in southern Africa.

Vision

We want to explore different manifestations of conservation and how conservation landscapes were designed and planned, as well as to understand what visions for the future are being formulated. We are particularly interested in ways that take the critique of existing approaches to conservation seriously and that explore new strategies of human and more than human coexistence.

Key Questions

1. How and to what degree do households incur costs and benefits from conservation? How are such costs/benefits distributed within households and across communities?
2. In what way do incomes from conservation spur rural inequality? To what extent are they an option for rural poor to diversify their livelihoods and gain more security?
3. How are projects of conservation co-produced between local power brokers, national elites, governmental officers, and international actors?
4. How is conservation linked to other processes, such as economic intensification, infrastructure development, rewilding, ecological invasions, or defaunation?
5. What role do specific multispecies assemblages play in the planning and implementation of conservation projects and what insights can we, as anthropologists, gain by using the multispecies approach in the conservation context?

Work Plan & Methods

Work Package	Research Focus	Methods	Sites of Research
WP1: Changing Rural Livelihoods	Impact of conservation measures on local livelihoods	Ethnographic methods (i.e. participatory observation, interviews, and others) Baseline Survey of household structures, demographics, economic strategies, labor allocation, and wealth distribution	KAZA Lake Baringo area, Kenya
WP2: Conflict, Governance, and Institutional Dynamics	Emergence of new conservation institutions and governance structures, and related transformation processes	Ethnographic methods Baseline Survey	KAZA Lake Baringo Area
WP3: Knowledge and Practices	Multispecies assemblages and changing human and more-than-human relations	Ethnographic methods	KAZA Lake Baringo Area
WP4: Rewilding	Two main objectives: In KAZA: Looking at the dynamics of rewilding of wildlife species. In Kenya: Assessing the effects of former defaunation processes as well as the impacts of ecological invasions at Lake Baringo.	Ethnographic methods Baseline Survey	KAZA Lake Baringo Area
WP5: Emergent Vulnerabilities and Uncertainties	Multispecies relations: elephant assemblages Conservation of elephants Trophy Hunting	Ethnographic methods Baseline Survey	KAZA Lake Baringo Area



WP6: The elephant assemblage	Contestations of conservation measures and competing livelihood or economic activities.	Ethnographic methods	KAZA
WP7: The cattle assemblage	Multispecies relations: cattle assemblage, Wildlife and biodiversity, conservation and the role of cattle, Pastoralism and conservation	Ethnographic methods	KAZA, Lake Baringo Area
WP8: The tree assemblage	Multispecies relations: tree assemblages Rosewood and sandalwood trade and commodification	Ethnographic methods	KAZA, Lake Baringo Area

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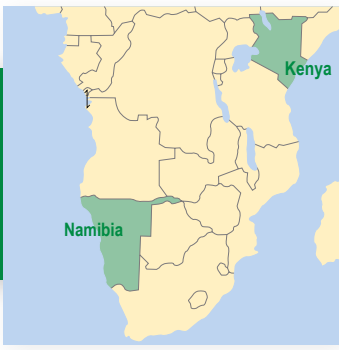
Dr. Peter Wangai, Kenyatta University, Kenya

Project Summary

Project A04 continues its work on practices of large-scale conservation in southern and eastern Africa. It will pursue research in both prior field sites (Namibia's Zambezi Region and Kenya's Baringo County) and widen its efforts in the KAZA transboundary conservation area including conservation areas in south-western Zambia. While the Namibian Zambezi Region is characterized by a declining significance of subsistence agriculture, increasing relevance of social transfers, continued significance of migrant labour, and a rapidly growing tourism sector, south-western Zambia's population is highly dependent on agriculture, extractive resource exploitation (e.g. timber harvesting), and labour migration. In both settings, traditional authorities wield significant influence and conflict and cooperation between them, the government, and numerous NGOs shape environmental governance. In eastern Africa the project will concentrate on a large wetland conservation area, Lake Baringo and its savannah hinterlands (after successfully working on highland adjoining forest areas in the Lake Baringo catchment

in the first phase). In contrast to the well-established conservation conditions of the KAZA conservation area, the situation in the Baringo region is highly fragmented. Lake Baringo itself has maintained a sizeable population of aquatic fauna, and the Lake Baringo wetland is of crucial significance for fishermen, and also for pastoralists and agro-pastoralists living along the lake and in its hinterlands, and eco-tourists visiting the lush savannah wetlands.





A05 FUTURE ROADS

Road mediated trade-offs between conservation and development

Problem Statement

Infrastructure, and road investments in particular, can play a game-changing role in affecting rural livelihoods and thus the future of people and landscapes. Road-construction measures change the socioeconomic conditions in the surrounding areas. As a result, and by affecting the costs and conditions of access to rural areas, roads are major drivers of change in rural livelihoods and land use, and thus determine intensification and conservation outcomes of social-ecological system dynamics in Africa and worldwide. They constitute key elements of future-making at societal scale and represent both constraints and opportunities for future-making at the individual level.

Relation to the CRC

A05 has strong links to the bridging concept of coupling, as roads leverage interaction and feedback relationships between humans and ecosystems. We will analyse remote-sensing and LULC data and household data together with Z02 and Z03. In addition, we will assess road impacts on biodiversity (A01 and B01), soil properties (A01), land use change (A03), as well as mosquito communities and virus transmissions (B02). A05 will exchange data on road infrastructure (C02) and soil moisture patterns (B01) thus contributing to shape common hypotheses and analyses. Furthermore, we will analyse the impact of roads on rural development and the decision-making processes leading to these investments together with C01 and C03.

Vision

Assess the impacts of road development on rural communities, biodiversity, ecosystem services and the trade-offs between them.

Key Questions

1. What are the political and economic drivers of road investments in selected rural areas in Kenya and Namibia?
2. What are the impacts of road investment and deterioration of trade-offs between rural household welfare, land-use change, biodiversity, and selected ecosystems across selected local contexts?

Work Plan & Methods

Work Package	Research Focus	Methods	Sites of Research
WP1: Analysis of road network development	Development of the road network	Analysis of satellite images to extract roads and their development through time	Lake Baringo area/Kenya Namibia
WP2: Analysis of land-use change	Land-use change	Classification of satellite images to extract land-use and land-cover data	Lake Baringo area/Kenya Namibia
WP 3: Evaluation of road-development impacts on socio-economic outcomes	Impact of road infrastructure investments on rural communities and their livelihoods	Analysis of household asset and income data from CRC household survey Stakeholder and focus-group interviews Spatial statistical analyses Treatment-effect analysis	Lake Baringo area/Kenya Namibia
WP 4: Evaluation of road-development impacts on biodiversity and ecosystem services	Evaluation of impacts that roads have on biodiversity and selected, soil-related ecosystem services	Analyses of decadal changes in road network and land use (from WPs 1 and 2) Evaluation and modelling of ecosystem services	Lake Baringo area/Kenya Namibia
WP5: Participatory trade-off analysis and validation	Engagement of stakeholders to understand the consequences of past future-making and inform current future-making processes	Stakeholder interviews	Lake Baringo Area/Kenya Zambezi Region/Namibia



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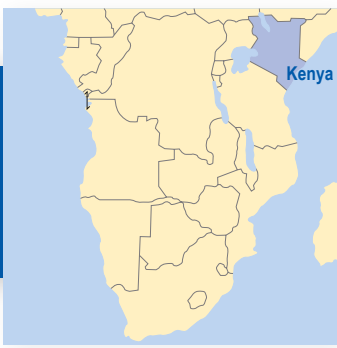
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Project Summary

Infrastructuring, particularly in enduring forms such as road construction, is often promoted as a core strategy for rural development. However, the universality of this view is being increasingly contested by different scholars that find only very limited or even undesired impacts including changing land use, biodiversity loss, and reduced ecosystem services. Since roads are often planned in top-down processes, visions and aspirations of local communities are often not considered or only to a very limited extent. In this research project, we want to assess the political and economic drivers of road investments as well as the impacts of road development on land-use changes, biodiversity, ecosystem services, and rural livelihoods in Kenya and Namibia. We plan to make use of the data collected during the first phase of the CRC and derive complementary spatially explicit indicators from remote sensing and other secondary data sources. Remote-sensing data will be used to generate time series of road development (WP1) starting in the 1960s using the CORONA, ARGON, and LANYARD archive. For this purpose, a new analysis workflow will be developed. Since the 2000s, high-resolution satellite data are available and more advanced analysis and fusion with available geodata enables better detection of road data, including detailed information about road types, road quality, traffic densities, formal and informal settlements, and travel time. We will combine different remote-sensing

data sources to evaluate the impact of road development on land-use change over time in WP2. Socioeconomic impacts will be evaluated in WP3 based on data collected during the first and second phase of the CRC. In WP4, we will combine these data with biodiversity and soil data collected during the first phase to assess road impacts on species richness, soil properties, soil moisture, and ecosystem services. In WP 5, local stakeholder involvement will be organized during the whole project, facilitating the coproduction of knowledge and the integration of results through a participatory trade-off analysis. Overall our research project is designed to improve the understanding of spatially explicit impacts of road development on rural communities, biodiversity, ecosystem services, and the trade-offs between those as well as the contextual factors that shape such trade-offs. A strong integration of different disciplines and collaboration with other projects from the first and the second phases of the CRC supports the inter- and transdisciplinary character of the project.





B01 INVASIVE FUTURES

The social ecology of rangelands in changing savanna environments

Problem Statement

Traditional rangeland management systems in Kenya generally, and in the Baringo basin specifically, have been exposed to considerable external pressure as well as system-immanent drivers for change such as rangeland degradation and changing aspirations of the land users. Undesired spread of alien plant invasion impacts on current and future rangeland uses accelerating social-ecological transitions in the rangelands. Closely linked to the undesired spread of alien plant species, is the invasion by emerging vector-borne human and animal diseases while a number of other (mainly woody) unpalatable species is negatively affecting livestock mobility. Plant invasion (and the related spread of other harmful organisms) becomes thus a key element in future-making that will affect economic mobility and accelerate social-ecological transitions in future rangelands.

Relation to the CRC

The integrated agro-economic project on invasive futures is linked to several CRC projects – such as “Future roads” (B05) which will together study the effects of progressing infrastructure developments around Lake Baringo on the spread dynamics of invasive plants and the effects of invasive spread dynamics as push - pull factors for system shift. A GIS-based analysis of soil-moisture maps and road constructions will provide input to the model for explaining current and projecting future invasive-species distribution. Together with project on “Future Infections” (B02) the project will use the invasive-spread mapping to target studies on vector populations for of arboviral spread and the emerging risks. Invasion-related arboviral infections may constitute an additional push force that can accelerate land-use changes.

Key Questions

1. Which attributes and management practices favour enhanced invasion of alien plant species?
2. How does invasion affect the productivity of crop- and rangelands (forage availability and quality, crop yields)?
3. Which economic constraints, risks and opportunities affect aspirations and future-related behaviour (economic mobility)?
4. Which feedback processes and patterns of transformation emerge and how do poverty traps constitute barriers for future-making capacities (future rangelands)?

Work Plan & Methods

Work Package	Research Focus	Methods	Sites of Research
WP 1: Biophysical attributes associated with invasive spread	Assessment of Parthenium and Prosopis invasion in relation to soil fertility and water availability	Analysis of digital elevation models Monitoring of wells Remote sensing soil moisture assessments Field surveys Geostatistical modelling Isotopic analysis of topsoil organic matter Mass-spectrometric analysis of stable isotopes	Lake Baringo area (Kenya) Bonn (Germany)
WP 2: Aspirations and risk perception	Role of aspirations for households' future-oriented investments	Economic survey with 530 households in the Njemps Flats, Lake Baringo area Analysis of fast-moving ecological threats (locusts and fall armyworm)	Lake Baringo Area (Kenya)
WP 3: Land-use change and agronomic practices	Establishing a typology of production systems and identifying drivers of change for predictive modelling of likely future trends	Farm surveys (including soil and vegetation sampling) Diachronic survey analysis	Lake Baringo Area (Kenya)
WP 4: System shifts under invasion	Impact of perception of ecological shocks on the intention to engage in future-making activities related to land use	Behavioural-economics experiments	Lake Baringo Area (Kenya)

Vision

Develop an integrated social-ecological model, projecting future land-use changes and social transformations under alien plant species invasion.



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Project Summary

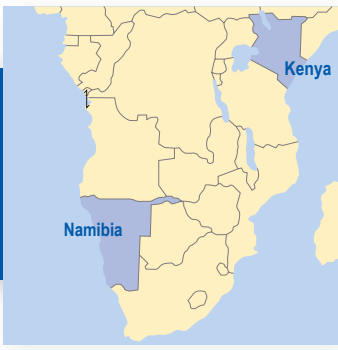
The stewardship of rangelands in Africa is undermined by overstocking and land degradation, entailing the potential collapse of the existing social-ecological rangeland system. One key factor of rangeland degradation and key driver of their conversion to other land uses is the spread of alien invasive plant species that affect both the environment and pastoral livelihoods. Invasion has been observed to massively accelerate in recent years, with land management, conditions of water availability, and soil fertility shaping the observed spread dynamics. In addition, factors such as policies (Act to sedentarize nomadic pastoralists, Land Act), physical insecurity and violent conflicts, as well as infrastructure developments (road construction, geothermal development and associated “infrastructuring”) are likely to drive system shifts, which, in turn, may accelerate invasive spread dynamics.

The seasonal availability and quality of pasture are increasingly restricted by the expansion of crop agriculture and the establishment of wildlife conservancies. Further, rainfall variability drives seasonal and inter-annual variability in the availability and quality of forage. In addition, the undesired spread of the exotic invasive plants *Parthenium hysterophorus*, *Opuntia* spp. and *Prosopis juliflora* is negatively affecting (agro-) pastoral livelihoods in the Kenyan Rift Valley. Alien plant invasion thus impacts current and future land uses, accelerating social-ecological transitions in future crop- and rangelands.



Rangeland invasion in the Njemps Flats:
Prosopis juliflora (upper), *Opuntia* spp (lower)





B02 FUTURE INFECTIONS

Linking social-ecological transformations and arbovirus prevalence

Problem Statement

Conservation, agricultural intensification, and infrastructural development are land-use changes happening across rural parts of eastern and southern Africa. Against the backdrop of climate change, these changes are at the expense of pastoralism and small-scale agriculture. In the Kenyan Rift valley (KRV), these practices are complemented by the creation of community-managed conservancies, while in southern Africa transboundary conservation areas such as the Kavango Zambezi Transfrontier Conservation Area (KAZA) park have been established. These land use changes are meant to improve livelihoods through tourism, employment creation and transportation. However, conservation is associated with increased human-livestock-wildlife interactions and the emergence of arboviral diseases. Other land use changes such as agricultural intensification and major infrastructural development can facilitate the spread of invasive plants which may further influence distribution patterns of arboviruses and their vectors. We therefore intend to use a One health approach to evaluate the effect of these landscape changes on arboviral disease.

Vision

Improve understanding of the impact of large-scale land-use changes like conservation, agricultural intensification, and road development on facilitating the introduction and spread of vector-borne pathogens into a new environment.

Relation to the CRC

B02 embraces the CRC concept of bridging boundaries by improving our understanding of how shifting bio-cultural boundaries may facilitate the introduction of vector-borne pathogens into a new environment. The focus is on large-scale land use changes such as conservation, agricultural intensification, and road development that present significant socio-ecological changes. Together with climate change these changes may have unintended side-effects on human and animal health. Emphasis will be on vector abundance/diversity and prevalence of vector-borne zoonotic diseases, and how the creation of conservancies, the accidental introduction and spread of invasive plants (resulting from agricultural intensification), and the construction of roads favour disease emergence. The focus will be on high-risk communities in the KAZA and KRV regions especially pastoral communities and how the resulting ecological and behavioural changes impact rural livelihoods. This work will be in collaboration with CRC projects A01, A02, A04, A05, B01, and C07.

Work Plan & Methods

Work Package	Research Focus	Methods	Sites of Research
WP 1: Arboviral disease risk perception and coping strategies	Disease risk perception and coping behaviour/strategies within populations of pastoralists/agro-pastoralists	Semi-structured interviews Questionnaires	Kenyan Rift Valley KAZA
WP 2: Effect of land-use changes on vector abundance/diversity, prevalence of arboviruses and vector-borne diseases	Assess the effect of large-scale land-use changes on infectious diseases	Soil and rangeland quality analysis Analysis of wildlife diversity and density Analysis of arbovirus infection rates in mosquitoes, small mammals and cattle across different land-use types Assess the impact of climate change on the dynamics of vectors and arthropod-borne infections	Kenyan Rift Valley KAZA
WP 3: Ecological changes, biological invasion, and the effect on vectorial capacity components	Impact of invasive plants on the oviposition behaviours and life-history traits of arboviral disease vectors.	Morphological and competence assessment of mosquitos in relation to invasive plant litter	Kenyan Rift Valley KAZA



Key Questions

1. How do pastoralists and agro-pastoralists perceive the growing risk of zoonotic arboviral diseases and is this linked to socio-ecological transformations?
2. How do major land use and biodiversity changes influence arboviral disease emergence and risk?
3. Do invasive plants influence life history traits of disease vectors and subsequently their competence?

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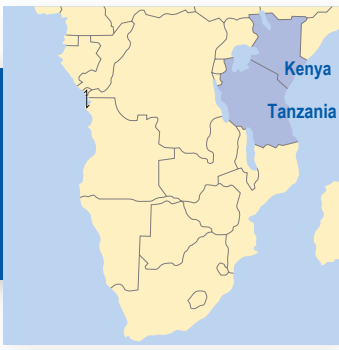
Dr. John Mfunne, Dr. Erdwin Muradzikwa, University of Namibia, Windhoek, Namibia

Project Summary

Conservation, agricultural intensification, and infrastructural development are land-use changes happening across rural parts of eastern and southern Africa. Against the backdrop of climate change, these competing and sometimes overlapping changes happen at the expense of traditional pastoralism and small-scale agriculture. Creating a balance among these processes of future-making involves identifying lines of distinction and zones of interaction between the different entities (boundaries). Thus, improving our understanding of the resulting ecological and social or behavioral changes remains key to uncovering this seemingly complex situation. Conservation of wildlife in national parks and game reserves is designed to boost the tourism sector of African countries, thereby contributing to massive capital flow. These practices are currently being complemented by the creation of community-managed conservancies, which have drastically increased in numbers in the last two decades. Community conservancies often happen on traditional rangelands affecting pastoralism. Additionally, wildlife corridors and dispersal areas are being put under

conservation in order to provide connectivity between larger protected areas. Such corridors and dispersal areas provide space for migrating large ungulates but at the same time increase human-wildlife interactions. A sharp increase in wildlife and game on privately owned farms in southern Africa also raises contact rates among wildlife, livestock, and humans. While joint land use of conserved areas may have long-term economic benefits for both pastoralism and conservation, we are dealing with a high level of uncertainty here as this setup may unintentionally facilitate spillover infections from wildlife reservoirs to livestock or humans, thus presenting an additional health challenge to humans and their livestock. The presence of a great variety of infectious pathogens detected in the first funding phase may be responsible for high levels of uncertainties in shaping the future. This calls for more detailed analyses of risks and perceptions of arboviral diseases by different communities in KAZA and KRV, key among them pastoralists, using a holistic One Health approach. We will investigate in greater detail how land-use changes will affect the prevalence and impact of vector-borne diseases in the KAZA and KRV regions of Africa.





B03 VIOLENT FUTURES?

Contestations along the frontier

Problem Statement

Large-scale planning schemes are usually accompanied by contested, future-oriented claim-making that, often enough, escalates into violent clashes or leads to new formations of organized violence (e.g. privatization, militarisation). The project aims to investigate such interplays between future-oriented claim making and organized violence. In the current phase we will turn the concept of frontiers into an analytical tool for undertaking systematic and comparative empirical research of development corridors in Kenya and Tanzania.

Relation to the CRC

Large-scale planning schemes initiate frontiers which emerge as fluid boundaries between different forms of land-use. Such frontiers are sites of contestations and violent conflicts, where contradicting imaginations of the future collide. Social-ecological transformation thus goes hand in hand with a re-arrangement of organized violence. The project highlights the unintended consequences of a certain vision (frontier habitus) that planners and entrepreneurs have of developing a supposedly 'empty space'.

Vision

Apply the concept of frontiers to analyze the relations between future-making and dynamics of violence in East Africa.

Key Questions

1. How can an understanding of violent dynamics in frontier constellations contribute to developing measures for mitigating their most destructive effects?
2. What analytical advantages can be gained from applying our frontier concept to regions where the socioeconomic context differs from the cases studied in the previous phase?

Work Plan & Methods

Work Package	Research Focus	Methods	Sites of Research
WP1: How to mitigate violence in frontier constellations?	Entry points for mitigating and transforming violence.	Qualitative interviews with representatives of the government, communities, NGOs, and private companies. Analysis of various databases and the interactive map of violent incidents generated in phase 1.	Desk research; Kenyan Rift Valley (KRV), LAPSET
WP 2: The frontier of Narok	The changing social orders through the lenses of organized violence	Qualitative Interviews, Analysis of archival reports, media and secondary literature	Samburu County/Kenya
Explorative Work Package (ExWP): The Frontier of the Central Corridor in Tanzania	Institutions governing access to land	Qualitative Interviews, Analyses of media reports, Analyses of secondary literature	Tanzania Central Corridor (Dar es Salam Great Lakes Region), SAGCOT
WP 4: Synthesis and model development	Conceptual and analytical synthesis of WPs in a peer-reviewed journal article	Field visits and working sessions in Bonn by PI, Kenyan academic counterpart, one PhD researcher, and two Master students	Germany, Kenya, Tanzania



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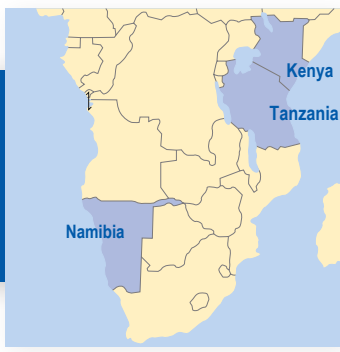
Project Summary

BO3 applies the concept of frontiers – shifting socio-spatial boundaries, defined by an expansive social order that is pushing into new terrain – to analyze the relations between future-making and dynamics of violence in East Africa. To this end, phase 1 conducted qualitative empirical research on large-scale infrastructure and conservation projects in pastoral rangelands – namely, the Lamu Port, South Sudan, and Ethiopia Transport (LAPSSET) corridor in Northern Kenya. Our findings served to further develop and refine our heuristic concept of frontiers.

In the current phase we will turn that concept into an analytical tool for undertaking systematic and comparative empirical research of development corridors in Kenya and Tanzania. We want to look into three additional case studies, each of which addresses a new aspect: Work Package 1 asks how an understanding of violent dynamics in frontier constellations can contribute to developing measures for mitigating their most destructive effects. It builds upon and further expands our field research in the Kenyan Northern Rift Valley where the LAPSSET corridor is planned. Work Package 2 investigates what analytical advantages can be gained from applying our frontier concept to regions where the socioeconomic context differs from the cases studied in the previous phase. In Narok County, located in the southern Kenyan Rift Valley, the planned

standard-gauge railway (SGR) project cuts through a region which is no longer a purely pastoralist region but has already faced substantial socioeconomic changes. Work Package 3 investigates the changing social orders through the lenses of organized violence within Samburu county in Northern Kenya. This work package will examine to what extent in a frontier constellations do organized violence change. An additional Explorative Work Package (ExWP) studies the Central Corridor in Tanzania and will concentrate on variations in future-making practices. The Central Corridor cuts through pastoral rangelands like the LAPSSET corridor. However, the positioning of the state in Tanzania is characterized by a much stronger assertiveness than in Kenya. This is why the way developmental visions are projected and implemented differs. Hence, we hypothesize that the social transformations and the dynamics of violence will also be different than in the LAPSSET corridor. Due to the political situation in Tanzania, the ExWP has a rather testing character and is not located at the core of the 2nd phase of BO3. Towards the end of phase 2, Work Package 4 will synthesize our findings from work packages 1, 2 and 3 as well as the ExWP. By investigating the interrelations between future-making practices at frontiers and violence, we intend to stimulate discussions also relevant to other project partners within the CRC about boundary-making as one of the CRC's bridging concepts.





B05 SCIENCE FUTURES

Between “intensification” and “conservation” discourses on African rural development

Problem Statement

The state of knowledge and knowledge systems shaping decisions regarding the futures of rural Africa is characterized by fragmentations, contestations, and hierarchies. Scientific and non-scientific modes of knowledge creation, transfer and use influence the impact of economic “intensification” discourses, and that of the more ecologically, sustainability-oriented “conservation” discourses. In growth corridors, these discourses are embedded in both spatial-planning-related knowledge systems and agricultural knowledge systems influencing internal development dynamics, negotiations and contestation processes of rural futures. In order to guarantee that knowledge benefits – rather than hinder – local livelihoods, detailed investigations into the political ecology of these knowledge systems, their related discourses and how they influence the futures of rural Africa is needed.

Relation to the CRC

Negotiations and contestations involving multiple visions, interests and power struggles are shaping the futures of rural Africa. An analysis of the political economy and ecology of knowledge systems focusing on scientific and non-scientific knowledge production, transfer, and use allows to confront the epistemological dynamics at the center of future-making. With reference to spatial-planning-related knowledge systems and agricultural scientific knowledge systems, Science Futures puts the spotlight on the epistemic struggles (and possibly breakthroughs) of future-making in rural Africa.

Key Questions

Main question: how scientifically informed discourses, science-to-policy interfaces, and scientific/non-scientific knowledge systems contribute to future-making in rural Sub-Saharan Africa?

Work Plan & Methods

Work Package	Research Focus	Methods	Sites of Research
WP 1 “Territorial/corridor-focused Knowledge Systems”	Science-to-policy-interfaces	Scientometric analysis and content analysis, Collection and analysis of research funding sources, Discourse analysis of the genesis of the three (plus one) corridors, Informant interviews with stakeholders (researchers, administration, NGOs, private sector, consultancies), Participatory observation, Quantitative survey of local household members	SAGCOT Tanzania, LAPSET Kenya
WP 2 “Agricultural Knowledge Systems”	Agricultural knowledge systems (scientific & non-scientific)	Scientometric analysis and content analysis, Collection and analysis of research funding sources, Discourse analysis of the genesis of the three (plus one) corridors, Informant interviews with stakeholders (researchers, administration, NGOs, private sector, consultancies), Participatory observation, Quantitative survey of local household members	Primarily SAGCOT Tanzania, KAZA region. LAPSET, Kenya for additional insights.

Vision

To recognize the role that scientific and non-scientific knowledge systems play in the imagination and pursuit of rural futures in Africa, by considering the political economy and ecology of knowledge production, transfer and use, while actively pursuing epistemological breakthroughs crucial to sustainable development benefitting local populations.



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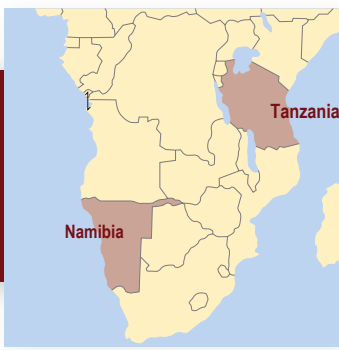
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Project Summary

The project “Science Futures” proposes to study the role of science in the design of and decisions about the futures of rural Africa, using the examples of development corridors in general and agricultural production technology therein. It recognizes that scientific and non-scientific modes of knowledge creation, transfer and use play a crucial role in imagining particular futures and in taking active steps towards their realization. Within the studied, largely remote rural spaces which the corridors link to broader national developments in the fields of agriculture, energy or tourism, science-enabled discourses of economic “intensification” through high-level use of resources such as land, water, external inputs and capital assets versus “conservation” and more ecological sustainability-oriented management practices shape societal negotiation processes aiming at diverse “rural futures”. Intensification and conservation discourses may both use scientific and non-scientific knowledge, so both kinds are taken into account while focusing on science. The empirical focus lies on territorially defined models of development (i.e. corridors) and the role of (a) spatial-planning-related knowledge systems in the genesis and current position of the corridor approach in Sub-Saharan Africa, as well as (b) agri-

cultural scientific knowledge systems that shape the internal development dynamics and future-oriented contestation processes. Conceptually the project is inspired by Science and Technology Studies and Innovation System research, as well as discussions in the Sociology of Knowledge linked with Political Economy approaches. Methodologies include qualitative, ethnographic research and systematic quantitative (scientometric) analysis of scientific knowledge produced in the two topical areas, as well as a discourse and network analysis on genesis and actual shaping of the corridors through local policy-making. The project will conduct comparative research in and on all three CRC focus regions in Kenya, Tanzania, and Namibia in order to detect generalizable patterns of the role of science for spatial planning and agriculture in these different corridor/regional development concepts. They bear very different constellations of intensification versus conservation, strength of national science systems, role of agriculture versus other sectors, and involvement of private sector and external/international experts. In perspective, the assessment of the knowledge systems which determine how the pursued development models unfold lays the foundation for a knowledge communication, transfer, and diffusion strategy to be developed as part of the CRC’s third phase.





CO1 FUTURE IN CHAINS

Socio-economic impacts of growth corridors

Problem Statement

Growth corridors are gaining attention as spatial tools for future development in Africa. Today, multi-stakeholder initiatives leverage corridors to integrate rural areas into global value chains under the promise of socio-economic development. Critics argue, however, that growth corridors intensify social conflicts, external dependencies, and the uneven distribution of wealth.

Importantly, contemporary growth corridors are not only multi-scalar by nature but they also create new cross-border regions between African states and the rest of the world. The question how such border regions are included in the negotiation, implementation, and contestation of corridors is central to the project.

Relation to the CRC

Through participation of international donors and investors, growth corridor projects provide apt illustrations of cross-scalar linkages in future making. Multi-stakeholder governance increases in complexity as local businesses and foreign firms contribute different visions of the future which may entail both imperatives of intensification (e.g. commercial farming) and conservation (e.g. conservation measures). This project provides explanations for socio-ecological transformations resulting from the integration of rural areas into global value chains.

Vision

Explain socio-ecological transformation in cross-border growth corridors, and assess long-term developments and adaptive capacities connected to emerging (inter-)national value chains.

Key Questions

1. How do cross-border growth corridors affect the territorial configuration of value chains?
2. How do these territorial configurations impact the evolution of existing and emerging value chains?
3. To what extent can local value-chain actors appropriate growth-corridor dynamics and turn these into desirable futures?

Work Plan & Methods

Work Package	Research Focus	Methods	Research Area
WP1: Territoriality	Understanding the bounded and unbounded territorial setting of both corridor nodes in relation to corridors and value chains	Multi-temporal satellite-imagery-based and thematic mapping of both research regions Multi-temporal value-chain mapping expert interviews, secondary data	SAGCOT Tanzania, WBNLDC (KAZA)
WP2: Path creation	Contextualizing and historicizing the effects of corridor development for border regions Deriving possible and probable regional pathways in relation to corridor development	Qualitative expert interviews Joint regional stakeholder workshops Joint household Survey Analysis of CRC survey data	SAGCOT Tanzania, WBNLDC (KAZA)
WP3: Agency & Power	Understanding agency and power within corridor nodes Understanding agency and power of corridor nodes relative to (inter-)national planning processes Explain spatial and social uneven accumulation processes within and beyond corridor nodes	Qualitative expert interviews Joint Business, young entrepreneur and alumni survey Stakeholder workshops in both border regions Focus-group discussions	SAGCOT Tanzania, WBNLDC (KAZA)
WP 4: Conceptual synthesis & transfer	Conceptual synthesis of relational and evolutionary approaches Theory transfer to contribute to CRC theory-building	Joint reading groups with other projects Conceptual workshops with local partners and within the CRC Discussions with other scholars (e.g. Nugent on border regions)	SAGCOT Tanzania, WBNLDC (KAZA)



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Project Summary

In the first phase of our project we identified spatial structures, characteristics, and dynamics of infrastructuring through the establishment of growth corridors including intended (e.g. economic growth) and unintended impacts on local businesses and livelihoods (e.g. household insecurities, polarization, and exclusion). We could explain corridor dynamics and their unintended impacts through the examination of (1) underlying visions, and (2) the governance of the corridors. Infrastructuring processes through growth corridor policies provide powerful mechanisms of future-making: by emptying the future from alternative perspectives and claiming space, as for example effected by powerful lead firms of agricultural value chains at SAGCOT or by conservationist policies of the state and NGOs in KAZA, alternative futures tend to be ignored. This explains why and how large parts of the rural population and their visions remain excluded. Indeed, corridor -making occurs rather selectively and often does not reflect the realities of the agrarian population in the rural hinterlands.

Our results indicated that in particular rural-urban and cross-border relations play a special role in value-chain and corridor activities. This observed uneven spatial manifestation and evolution of the unintended economic dynamism requires a deeper understanding of the territorial and temporal developmental effects of the growth corridors. To this end, we expand our conceptual framework and empirical focus on corridor and value-chain analysis by adding a relational perspective on cross-border territory and regional path creation.



Interviews with emergent soybean farmers reveal their hopes and aspirations with regard to agricultural intensification (©Tups, 2022).



New feeder roads provide the infrastructure to link remote farming regions with global networks of production and trade (©Tups, 2022).





CO2 ENERGY FUTURES

Infrastructures and governance for renewable energies

Problem Statement

What dynamics of future-making are associated with the planning and implementation of large-scale renewable energy projects in previously marginalized dryland areas? Focusing on visions, epistemic mobilities and strategic planning practices related to geothermal development and Kenya's energy policy, this project explores the risks and opportunities, land-use changes and governance of infrastructures at the interface of global and local dynamics.

Relation to the CRC

By focusing on the different visions of the future associated with large-scale infrastructures, this project will contribute to our understanding of cross-scalar linkages and drivers in land-use change and social-ecological transformations.

Vision

Overall, the project will broaden the so far still scarce academic knowledge on infrastructures and governance for renewable, especially geothermal, energy in the Global South.



Key Questions

1. What visions of the future are associated with geothermal development and its direct-use applications? With what rationales and time horizons?
2. How do institutional contexts at various scales encourage and facilitate – or interfere with – such visions and the resulting policies? Which actors are involved as drivers and/or knowledge providers?
3. What are the ideas and approaches to finance and implement geothermal visions and infrastructures? What (international) networks, power relations, epistemologies, and socioeconomic conditions constitute the community of practice of (Kenyan) geothermal experts, and in what ways do they drive the development of “geothermal futures” in Kenya?
4. How and by whom are direct-use applications and the related infrastructures planned, implemented, and financed? Where does the knowledge applied in these processes originate, and by whom and how was it produced and transferred to the Kenyan Rift Valley?
5. What are the anticipated and observed impacts of geothermal development, its direct-use applications and associated rural electrification on local livelihoods, land-use changes, and social-ecological transformation?
6. How does anticipation, planning, and implementation of geothermal development, its direct-use applications and associated rural electrification create or reinforce conflicts over land and over potential benefits?

Work Plan & Methods

Work Package	Research Focus	Methods
WP1: Geothermal development and related socioecological transformation in the Kenyan Rift Valley	Geothermal project developments and their institutional contexts at various scales; local and regional impacts, esp. land-use change, conflicts and benefits	Follow-up interviews with GDC and government actors, investors and foreign donors
WP 2: Energy policy in Kenya and the role of geothermal development	Visions, strategies, plans; regional developments within and beyond Kenya; integration into Kenya Vision 2030 & LAPSET; financial support & institutions	Interviews with experts and stakeholders in both national and international contexts (policy makers, experts, consultants, financiers, civil society)
WP 3: Geothermal expert networks	Practices, work relations, and aspirations; knowledge generation and epistemic mobilities; politics and practices of planning and implementing of geothermal infrastructure and direct-use facilities	Interviews with geothermal experts at academic and educational institutions and with recipients of expert knowledge transfers to neighbouring countries; Participant observation in the community of (Kenyan) geothermal experts



WP 4: International linkages in Kenyan energy sector	Capital/finance institutions; international mobility of knowledge, visions & ideas. direct-use facilities	Interviews with experts and stakeholders in both national and international contexts; Follow-up interviews with geothermal development cooperation and government actors, investors and foreign donors
WP 5: Integration: Geothermal and energy futures in Kenya and beyond	Integrate research findings, relate them to relevant literatures	

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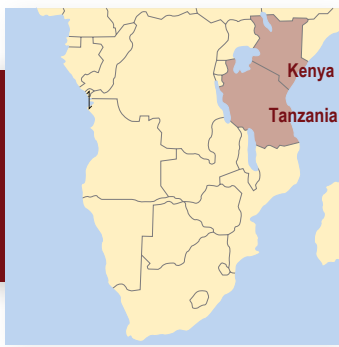
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Project Summary

This project explores visions, epistemic mobilities and strategic planning practices related to Kenya's energy policy by focusing on the development and governance of geothermal infrastructures. The Kenyan energy sector has developed very dynamically in recent years with a shift from hydro and diesel to geothermal and wind energy, and great progress in electrification, thereby making Kenya a renewable energy pioneer in Sub-Saharan Africa. Based on the findings of the first project phase, we assume that relevant impulses and policies of future-making originate in transnational institutional contexts and knowledge communities. Important actors include government representatives, policy specialists, technology experts, and consultants of various geographical and institutional backgrounds who interact and cooperate in framing and envisioning geothermal development in Kenya and elsewhere. The project explores the

linkages between technologies, institutions, and these actors, the governance and dynamics of Kenya's energy sector, and its embeddedness in the wider East African Region. We focus on the transnationally operating communities of practice and explore their knowledge resources and practices, on the geothermal visions and plans produced by them, and on how institutional contexts at various scales encourage and facilitate – or interfere with – these visions, plans, and resulting policies and implementation. Conceptually, the project focuses on the geographies and temporalities involved in future making, strategic (energy) planning, and the cross-scale dynamics in technology and policy development and transfer. Furthermore, the project not only explores how geothermal futures and infrastructures are envisioned, planned, and implemented, but also how geothermal development and infrastructures contribute to socioecological transformations and land-use changes in the Kenyan Rift Valley.





C03 GREEN FUTURES

Ecological growth and the politics of land-use change

Problem Statement

'Green' concepts of development are becoming increasingly influential in the Global South. They envision to harmonize ecology ('green') and economy ('growth'). Critics, however, see them as neoliberal variants of environmental governance that foreclose alternative approaches of development.

Relation to the CRC

Project C03 contributes to key questions of the CRC by investigating dams and hydrodevelopment schemes as examples of future-making through infrastructure. Furthermore, the project addresses the ambiguity between long-term vision and the quotidian experience of uncertainty.

Key Question

How do travelling models and local arenas of hydro-development influence future-making and social-ecological transformation in Kenya and Tanzania?

Vision

The project scrutinizes the ambiguity of large irrigation infrastructures as promising solutions to anticipated future problems and at the same time as creators of new uncertainties for local populations. It views hydro-development schemes in Kenya and Tanzania as arenas of future-making, where different actors struggle for control over the appropriation and allocation of resources.

Work Plan & Methods

Work Package	Research Focus	Methods	Sites of Research
WP1: Global models of hydro-development and their transfer to Africa	"global models of hydrodevelopment"	Desk study in contact with specialized institutes (international water management institute, future dams consortium, Bonn water alliance)	Bonn Manchester Kenya Tanzania
WP2: National hydro-politics in Kenya and Tanzania	institutional framework and dominant drivers of water-related	document analysis: study of national development policies and agencies & interplay between national and international actors; expert interviews participant observation at workshops and training sessions of development agencies	Kenya Tanzania
WP 3: Arenas	formation of arenas around particular dam sites	document the setting and history of the selected dam sites	Selected dam construction sites in Kenya and Tanzania
WP 4: Actors	persons and institutions involved in the processes of planning hydro-development schemes	secondary source analysis, archive studies, expert interviews, focus-group discussions, participant observation, and mapping of social networks	Kenya Tanzania
WP: 5 Struggles	Decision-making processes; power plays and negotiations; claims and identity	key informant interviews, focus-group discussions application of contestation theory (wiener 2014)	Kenya Tanzania
WP 6 Conceptual synthesis	relate the findings of project C03 to the overarching interest in future-making practices	joined kick-off workshop stakeholder workshop with Centre for Training and Intergrated Research in ASAL Development (CETRAD)	Kenya



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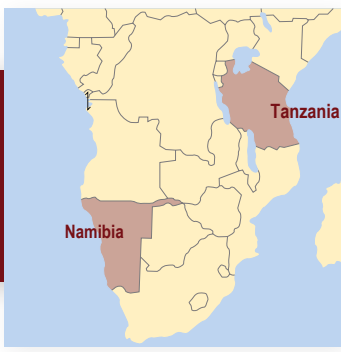
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Project Summary

Project C03 focusses on concepts of “green futures” and their role in the politics of land-use change. It approaches these concepts as “travelling models” of development to explore how they are translated into national and regional contexts, and how the translation is influenced by specific actors, visions, and technologies. In the first funding phase the empirical studies in Kenya, Tanzania, and Namibia focused on “Green Growth” as a travelling model that seeks to harmonize environmental and economic goals. In the second phase, project C03 will be joined by Kenyan ethnologist Eric Kioko as a new PI, and shift its empirical focus to an infrastructure oriented model of green futures based on the construction of dams and hydro-development schemes. Large irrigation infrastructures generally play an ambiguous role in future-making, because they are on the one hand justified as promising solutions to the anticipated future problems of climate change and population growth, but on the other hand they create new uncertainties for local populations, especially when they do not mate-

rialize as originally planned. Project C03 aims to scrutinize this ambiguity by approaching hydro-development schemes in Kenya and Tanzania as arenas of future-making, where different actors struggle for control over the appropriation and allocation of resources. Research design takes a longitudinal approach to capture the different stages through which large-scale infrastructure projects usually go before they become operational, from initial ideas and preparatory measures to concrete construction works. Empirical research will focus on projects that are still in planning or under construction, i.e. the Crocodile Jaws dam in Laikipia, Kenya, and medium-sized irrigation schemes in the Kilombero Valley, Tanzania. Methods include document analysis, multi-sited ethnography, expert interviews, participant observation, and focus group discussions with members of the local communities. C03 can build upon strong collaborative ties with scientific partners in the region, who will participate actively in empirical field work, theory-oriented reflection, and publications.





C05 FRAMING FUTURES

Temporal frames of reference in land conversions

Problem Statement

When cooperating in changing land use and other future-making practices, people employ sometimes conflicting temporal frames of reference (TFR). TFRs employed in future-making, often involving notions of ‘age’ and ‘generation’, are largely implicit and have to be made explicit through research. Local expectations and aspirations rely on TFRs that originate in Africa but also on those imported and created in processes of linkage across scales.

Relation to the CRC

By bridging southern Africa and eastern Africa in the second phase, project C05 joins forces with other projects that aim at pursuing qualitative comparisons across regions. The project explicitly turns reflectively to address the work of the CRC at large. Most projects in the CRC have an implicit or explicit bias towards space and locality in their investigations of future-making. The particular orientation of C05 in the second phase can be instrumental in generating debate within the CRC as to how this bias can be best redressed by building on research focused on sociocentric temporal framings.

Vision

Understand how concepts of age and generation shape temporal frames of reference in future-making and compare temporal frames of reference used by different CRC projects.

Key Questions

1. How are long-standing sociocentric frames relating to age and generation currently being mobilized in processes of future-making?
2. How do individual actors and social groups position themselves with respect to concepts of generation, and for what purposes?
3. How do intergenerational relationships affect planning for the future, and how is the future imagined from different generational positions?

Work Plan & Methods

Work Package	Research Focus	Methods	Sites of Research
WP1: “Generation” as a cultural resource in future-making in cross-regional comparison	“Generation” as a temporal frame for future-making. Cross regional comparison	Ethnographic comparison of regions Workshop on “generation” as root metaphor for future-making in collaboration with other CRC projects	KAZA Eastern Africa
WP2: An East African case study of age and age-set institutions	The role of age, age set and generation set systems in future-making	(Micro-)Ethnography analysis of interviews, informal conversation, and communications on social media Workshop on the dynamics of intergenerational relations in rural Africa	Tanzania
WP 3: Sociocentric frames of temporal reference and the implications for research on “Future Rural Africa”	Concepts and practices relating to , ‘generation’ and ‘age’ in Africa local concepts and practices and dominant, globalized discourses on age and generation	Two workshops on the reconceptualization of research on the future through vernacular African forms of conceptualizing temporality	Germany



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Project Summary

Generational conflict is a major concern for Africans and one that features prominently in African media. "Respect for the elders" is often invoked as the core value of African sociality, of vernacular ethics, and of African philosophies such as ubuntu. Moreover, generational conflict is a hallmark of the African experience with modernity and future-making. While Africa is demographically characterized by "the young", it is often "the old" who continue to claim that they have prepared the ground for the future of the nation, underpinning their claims with their participation in liberation and independence movements. The question "who makes the future?" is thereby intimately tied to the ways in which "generations" and "age/elderdom" are framed. Project C05 continues research on the framing of the future and its implications for land use and the distribution of land by attending specifically to the conceptualization of generation and age in African social practice. While "future generations" are instrumentalized globally for imagining the future, the African case studies provided in this project are instances of "theory from the south" (Comaroff and Comaroff 2012) in that African contexts rely on a particularly rich spectrum of vernacular ideas and practices relating to generation and age and are characterized by particularly pronounced intergenerational debates and conflicts that are likely to foreshadow future debates about future-making elsewhere. In this second phase, research in project C05 will cover both southern Africa and East Africa in order to investigate the role of social institutions related to "generation" and "age" regarding how agents position themselves in future-making and under changing conditions for their land-use practices. The project stimulates a move from largely geocentric framings of future-making to sociocentric framings. Based on comparative research and on dialogue with African counterparts the project seeks to reflectively enhance the way in which research on the future has been conceptualized by the CRC and by the social sciences more generally.

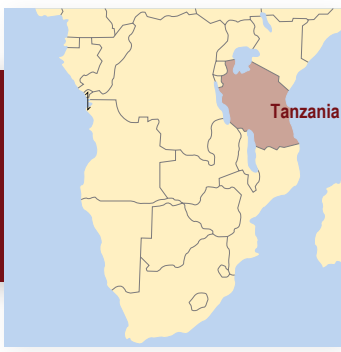


A temporal frame of reference made explicit at a shebeen in the KAZA region



Converting land use towards intensified agriculture (Chobe Enclave, Botswana)





C07 CREATING HEALTH FUTURES

Welfare-policy planning in Tanzania from the 1960s to the 1980s

Problem Statement

The sub-project C07 addresses the history of health policy as a central planning and infrastructuring feature of welfare policy in Tanzania and investigates how health-policy planning became an important tool for future-making in the newly independent country from 1961 to the 1980s. The development of communal health services in connection with the Ujamaa program, the still-strong influence of earlier colonial social policy concepts, and the new transnational developments will be analysed congruently for the first time providing a basis for the understanding of rural developments in later periods in Tanzania.

Relation to the CRC

The CRC looks at practices and processes that deal with visions of future in Africa and identifies the thematic fields of climate change and health as core elements. Sub-project C 07 on past health planning will therefore bring in a necessary historical perspective to the CRC in general, as e.g. the creating of health futures in the early decades of independent East Africa promoted interventions that had a strong impact on further ecological developments. With regards to the role of experts in future planning, the project will closely cooperate with projects C03 on ecological infrastructure in Tanzania and C02 on experts in infrastructure planning in Kenya. All three projects, C02, C03 and C07, work with the notion of travelling concepts.

Vision

Understand the role of public-health policy planning under changing concepts of social welfare and political legitimisation as it relates to “future-making”.

Key Questions

1. How was the Tanzanian health system being planned; how did government and TANU argue?
2. In what ways were the plans bound back to the Ujamaa model? Were the two first five-year plans implemented?
3. What problems and challenges arose, including in connection with the relocations through the Ujamaa programme?
4. How did the country’s postcolonial elites and representatives of development agencies from abroad collaborate in efforts to control specific diseases?
5. Did the fight against certain diseases bring together otherwise antagonistic actors?

Work Plan & Methods

Work Package	Research Focus	Methods	Sites of Research
WP1	Health care within the Ujamaa Programme	Archival analysis Interviews Examination of printed/ published sources	Dar es Salaam, National Archive and University Library, Dodoma, archive Kilombero Valley, interviews and local archives
WP2	External, transnational influences on health policy in Tanzania	Archival analysis Interviews Examination of printed/ published sources	Dar es Salaam, University Library London and Oxford, various archives, Geneva WHO archives
WP3	Responses to external influences by Tanzanian actors	Archival analysis Interviews Examination of printed/ published sources	Dar es Salaam, National Archive and University Library Dodoma, archive Kilombero Valley, interviews and local archives/materials



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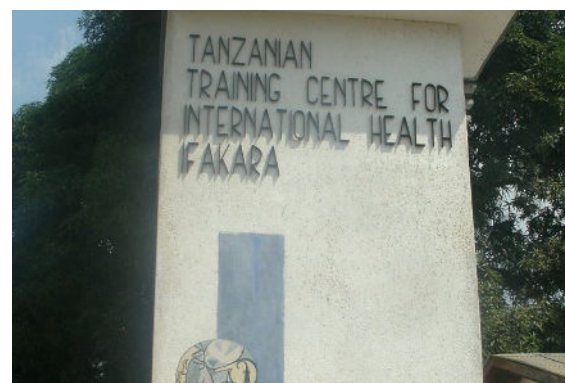
Dr. Musa Sadock, University of Dar es Salaam, Tanzania

Project Summary

The sub-project C07 will address the history of health policy as a central planning and infrastructuring feature of welfare policy in Tanzania and will investigate how health-policy planning became an important tool for future-making in the newly independent country from 1961 onwards. It will concentrate on health-policy planning and the creating of health infrastructures in Tanzania after independence from 1961 to the 1980s, as other costly aspects of welfare policy such as pro-poor or pro-old-age policies were not yet considered feasible in the newly independent state of Tanzania.

Many of the new African governments were confronted with considerable challenges in the field of health. When the colonial authorities left there were too few trained African doctors – in Tanganjika only 18 – not enough hospitals and a very limited number of African people with experience in health policy. The period from the 1960s to the 1980s became a phase of intensive planning and future-making. Tanzania used various western welfare models, but also socialist/communist forms of health policy, drawing on experiences from the Soviet Union and the People's Republic of China. However, Tanzanian politicians also had to rely on the infrastructures that had been implemented by the colonial administrations. Experts from the British administration remained rather powerful in the independent state, even if a strong nationalization policy was introduced. Additionally, in Tanzania, the development of health services was strongly connected with the land-use change and the collectivization approach of the Ujamaa programme which was initiated by the country's first president Julius Nyerere and enforced in the 1970s. The introduction of health centres was seen as an important tool to accompany the broad land-use change, to help the rural population and likewise to make the Ujamaa programme more attractive for peasants.

The sub-project will examine public-health-policy planning as a means to create a better future for the rural population and investigate the impact of various international models and the influence of transnational actors. It will also study how these new approaches were further developed by Tanzanian health politicians and doctors on the ground. A geographical focus will be the regional development in the Kilombero District, and particularly its health centre in Ifakara. Ifakara lies in the SAGCOT corridor, and the sub-project will thus contribute to the understanding of the history of rural and agricultural planning in one of the key areas of the CRC. The project generally highlights the connection between future planning, (changing) concepts of social welfare, and political legitimation.

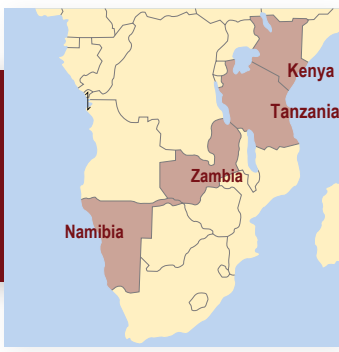


Ujamaa collective farming in the 1960s
(c/o United Republic of Tanzania.com)



Aerial view of an Ujamaa village in 1970s
(c/o Ujamaa villages Journal)





C08 JOB FUTURES

Agriculture, rural transformation and employment

Problem Statement

Poverty in rural Africa is much higher than in most other parts of the world. The majority of households in rural Africa are involved in smallholder farming as their main source of livelihood. However, income sources are often diversified. Beyond own farm production, many also work on other farms as agricultural laborers, have formal or informal employment in other sectors, or pursue self-employed business activities. The diversification of income and employment sources in rural Africa will likely further increase in the future with population growth, climate change, and structural transformation. Hence, analysing current and future employment trends and their drivers needs to be an important element of “future-making” research in rural Africa.

Relation to the CRC

C08 adds an important new component to the CRC, as this is the only project with an explicit focus on rural employment. Many of the issues analysed by other CRC projects – such as agricultural intensification (B05), environmental conservation (A04, C03), and infrastructure development (A05, C02) – will likely affect local employment trends, so close cooperation leads to synergies and better understanding of the broader development implications. In terms of data collection, C08 cooperates with Z03, implementing the household survey in Kenya, Tanzania, Namibia, and Zambia, and adding employment-relevant sections to the survey questionnaires.

Vision

Improved understanding of job futures under diverse conditions in rural Africa with a particular focus on linkages between agricultural transformation, infrastructuring, and equitable employment.

Key Questions

1. What income and employment sources do rural households and male and female individuals have, and how are these sources associated with economic and social welfare?
2. To what extent are employment patterns associated with the use of specific agricultural technologies and innovations?
3. What role do rural infrastructure and institutions play for employment?
4. How do labour conditions compare in relevant rural sectors?
5. What are conducive household-level and contextual conditions for sustainable job futures?

Work Plan & Methods

Work Package	Research Focus	Methods	Sites of Research
WP 1: Income and employment sources and associations with welfare	Farm and off-farm activities of farm households	Statistical analysis of survey data	Kenya, Tanzania, Namibia, Zambia
WP 2: Associations between agricultural production and employment	Impact of technological change on farm and off-farm employment	Statistical analysis of survey data	Kenya, Tanzania, Namibia, Zambia
WP 3: Role of infrastructure and institutions for employment	Multifaceted links between infrastructural and institutional context and employment	Regression models Semi-structured interviews with village officials and other key informants	Kenya, Tanzania, Namibia, Zambia
WP 4: Labour conditions in relevant rural sectors	Labour conditions and job satisfaction in rural context	Analysis of employer survey data and employees' own perceptions	Kenya, Tanzania, Namibia, Zambia
WP 5: Conducive conditions for sustainable job futures	Synthesize data and results for policy-relevant analysis of sustainable job futures	Household- and community-level regression models Policy Synthesis	Kenya, Tanzania, Namibia, Zambia



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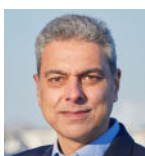
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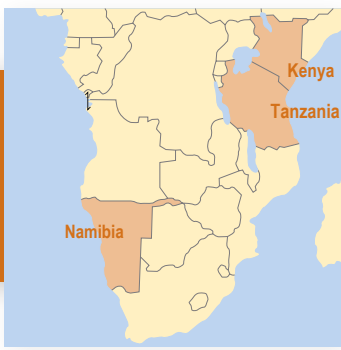
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Project Summary

Households in rural Africa typically have diversified income sources. Beyond own farm production, many also work on other farms as agricultural laborers, have formal or informal employment in other sectors, or pursue self-employed business activities. With rapidly rising population numbers, the diversification of income and employment sources will likely continue in the coming years and decades. Sufficient generation of decent employment in various rural sectors could contribute to sustainable structural transformation and development, whereas inadequate job availability could perpetuate poverty and natural resource degradation. Hence, studying employment trends and the factors that influence current and future job availability, accessibility, and quality needs to be an integral element of “future-making” research in rural Africa. CO8 collects and uses survey data from Kenya, Tanzania, Namibia, and Zambia, which can lead to important insights under diverse agroecological and socio-economic conditions. Household- and individual-level data as well as employer data are collected through structured personal interviews. Statistical models are developed and estimated to analyse people’s access to different types of employment, determinants of participation, labour conditions, and effects on income, food security, gender roles, and inequality. Employment trends and their drivers are analysed with panel data. Results contribute to a better understanding of how sustainable job futures in diverse contexts of rural Africa may look like.





Z01 CENTRAL ADMINISTRATIVE PROJECT

General Task

Establish management structures and provide a conducive environment fostering inter-disciplinary collaboration and cross-project and cross-site comparison.

Gender Equality and diversity:

Gender equality and diversity are targets at all stages of academic qualification in the CRC. Existing offers at both universities, such as MeTra or the Cornelia-Harte program, the Argelander program, and offers by graduate schools are complemented by:

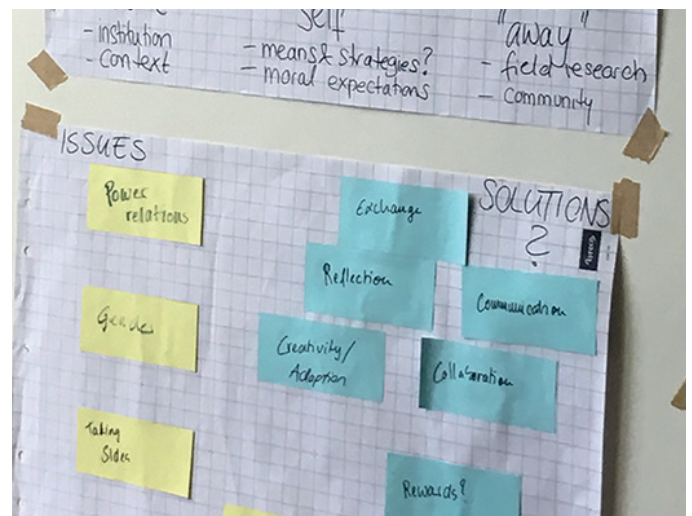
Additional Tasks

The CRC's public outreach consists of the presentation of the research activities and results via print and social media, internet presence, and public events such as workshops and kickoff events. Apart from media output, the CRC continues to organize a number of events, specifically aimed at presenting the research center to a wider public. In addition to kick-off symposia in Namibia and Kenya, the CRC, together with scientific partners, also organizes a number of stakeholder and scientific workshops, as well as training sessions on methods and data analysis.

Gender Balance and Diversity Funnel	Mentoring, training and coaching for (female) ECRs to support informed decision making and facilitate career development.
Female Career Circle	Peer-exchange groups on the compatibility of life and career planning across disciplines and status groups.
Young Parents Travel Support (field + CRC)	ECRs with children balancing career and personal life are supported at home and in field.
Childcare	Support during fieldwork and CRC events.
Sensitization and Diversity Workshops	Raise awareness on positionality and power structures to allow gender- and diversity sensitive research.

Guests

Reliable and lively partnerships continue to be essential for the planned programme and cooperative research activities. Z01 will facilitate guest communications and travel in line with the CRC's research agenda.



Project Specific Workshops

Z01 will continue to organize kick-off workshops, survey meetings, and meetings that foster interdisciplinarity, coherence and workflows within and between projects and regional groups.



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Project Summary

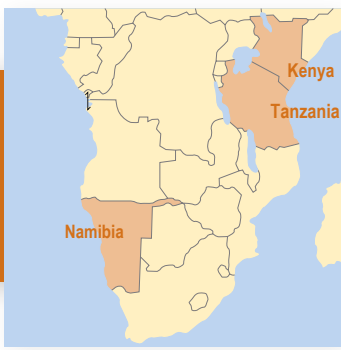
The CRC spokesperson Prof. Bollig, in close collaboration with the co-spokesperson Prof. Klagge, will be the project leader for the central administrative project Z01. He will give general directions concerning work flows and responsibilities, be responsible for the management of part of the funds, and have managerial oversight over the staff employed in the project.

The scientific coordinator of the CRC will oversee the allocation of funds applied for in this project. In collaboration with other members of the CRC, the coordination office will be responsible for the organization of workshops (kick-off, CRC retreats, conferences, summer schools), partner invitations, and related arrangements. Members of the office will act on behalf, or as representatives of, the executive board concerning logistical tasks and communication with service providers. Furthermore, the day-to-day managerial tasks within the CRC will be handled through the office (i.e. press releases, public relations, etc.). Kick-off workshops and training sessions on methods and data analysis are planned to present the research program and rationale to participating institutions, researchers, and other interested parties. To the CRC's own researchers these workshops shall provide an opportunity to present their research plans and discuss them with local counterparts to plan joint exercises and to identify aspects where syner-

gies can be achieved. Next to these, the CRC continues to conduct workshops and retreats to take place among all members, as well as PIs and PhDs respectively to allow for in depth discussions of ongoing research, preliminary results, the joint preparation of publications and conference contributions, etc.

Although both host Universities (Bonn and Cologne) do already have structures in place to allow for the training of early career researchers, the CRC seeks to add to these offers by providing thematically suited workshops and trainings (see also Z04, IRTG). The central project Z01 also has the responsibility to ensure tackling the challenges linked to increasing diversity in academia which include, but are not limited to, gender equality. A key aim of the CRC is to offer equal opportunities in this highly diverse research setting. To do so, (1) the strong patriarchal bias of both social and academic structures characterizing our research contexts in Sub-Saharan Africa will be taken into account. Moreover, (2) while hosting and collaborating with a large number of fellow academics from all over the world, it is of great significance for us to form research teams that see diversity as a distinct resource. (3) Finally, we wish to address the issue of gender equality on a more local level by specifically targeting the challenges in our German academic setting.





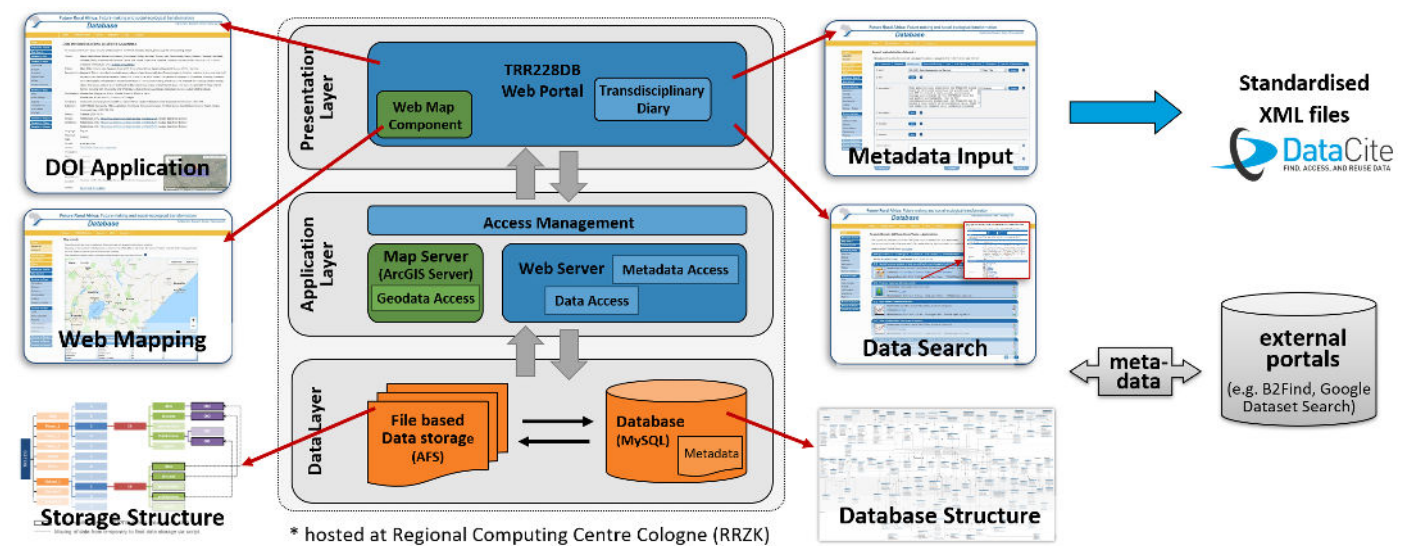
Z02 DATA MANAGEMENT AND SERVICES (INF)

Problem Statement

Research data management (RDM) consists of all processes and measures to ensure research data is well organized, documented, preserved, stored, backed up, accessible, available and re-usable. RDM infrastructures can improve collaboration between scientists and link research results, and is crucial for developing synergies in large, long-term interdisciplinary research projects. Metadata is important to find, re-use, and understand research data. Technical and social problems might occur and can lead to data loss. Thus, intensive training and support, as well as incentives need to be implemented.

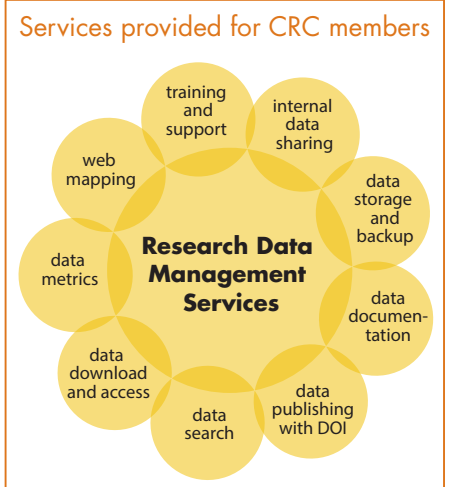
Relation to the CRC

NF (Z02) has a central role within the CRC to continue the provision of RDM data services for storage, documentation, (re-) use and exchange of all relevant project data (e.g. quantitative and qualitative interview data, survey results, maps and GIS data) within the framework of our established TRR228 database/data repository. Additionally, RDM training workshops will be offered to all project members as well as GIS and remote sensing support to serve selected projects.



Work Plan & Methods

- Survey of demands and needs of RDM and data services
- Maintenance and further development of the data repository
- Further development and update of the corresponding metadata system
- Maintenance and update of the DOI system
- Data management training and support for all CRC Members
- GIS and remote sensing support
- Data mining and harvesting of existing satellite archives from the 1960s onwards
- Pre-processing of satellite data
- Land-use and land-cover change analysis of remote sensing data from the 1960s onwards





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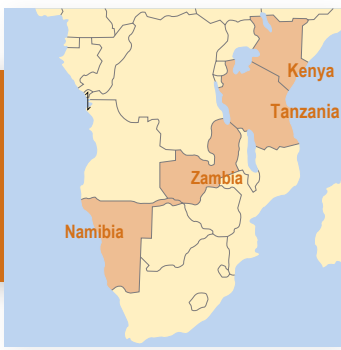
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Project Summary

Management and sustainable provision of research data have been recognized as central tasks in interdisciplinary research efforts. In the first funding phase, the service project Z02 (INF) has successfully established a sustainable in-house developed and implemented RDM infrastructure according to DFG and CRC demands. The TRR228 database/data repository is online accessible (www.trr228db.uni-koeln.de) and enables the secure, stable and multi-user operable long-term storage of all project data. Consequently, the focus of our project will be on further maintenance and development of the TRR228 database system according to project needs as well as demands from used standards and interfaces (e.g. ensuring interoperability of the established metadata schema and DOI system). Further major work packages are the continuous RDM training and support of all project members. Additionally, we will support several research projects with GIS and remote sensing data acquisition and analyses. For instance, land-use and land-cover change analyses from high-resolution satellite data from the 1960s onwards in close cooperation with research project A05.





Z03 COMBINED FARM/ HOUSEHOLD SURVEY

Problem Statement

Across the CRC's study areas, projects work on overarching research questions, such as:

- Under what conditions can conservation and agricultural intensification contribute to rural well-being poverty alleviation?
- What are the impacts of agricultural intensification and infrastructure on rural wealth and the environment?
- How are educational status/gender/age of individuals related to household decisions and related outcomes?
- How is migration linked to future-making processes?
- What role do shocks play in aspiration formation?

Answering these questions requires a systematic approach to longitudinal farm-household data collection.

Relation to the CRC

Quantitative and interdisciplinary survey data is central to the data and research needs of the CRC and its long-term planning horizon present a unique opportunity for longitudinal research. Z03 contributes to the CRC's overarching goals by facilitating the collection of timely, high-quality quantitative data across space and time.

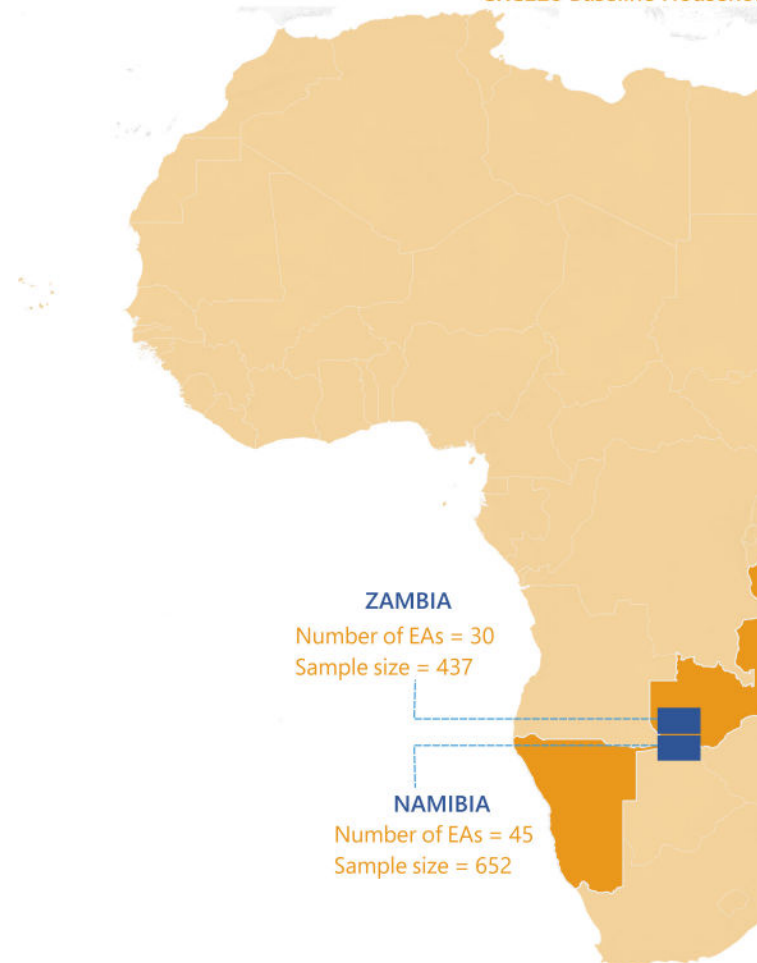
Beyond data collection, Z03 will provide data processing and delivery services. It counts with one postdoctoral researcher to coordinate questionnaire development, field campaigns, data collection, cleaning, and processing. In each country, two doctoral students from the projects using survey data (e.g., A01, A04, A05, B01, B02, B03, B04, C01, C02, C03) and a supervisor from a local partner will oversee the data collection in the field.

The project not only supports data collection, but also builds and maintains relationships with local authorities and research partners in order to guarantee efficient fieldwork and fruitful research collaboration.

Work Plan & Methods

- Semi-structured questionnaires cover village as well as household level characteristics to address both comparative and project-specific research questions
- Questionnaires consist of a general section, covering the same basic farm-household characteristics in all four study areas, and a set of study area specific sections
- Sample sizes, sampling strategies, and questionnaire sections (thematic areas) may differ across study areas and wave given project-specific requirements
- Several survey meetings are fostering the collaborative design of the survey, the collection, and subsequently the use of primary data
- The survey provides a basis for both region-specific research and cross-region comparisons using empirical research approaches and modelling.

CRC228 Baseline Household





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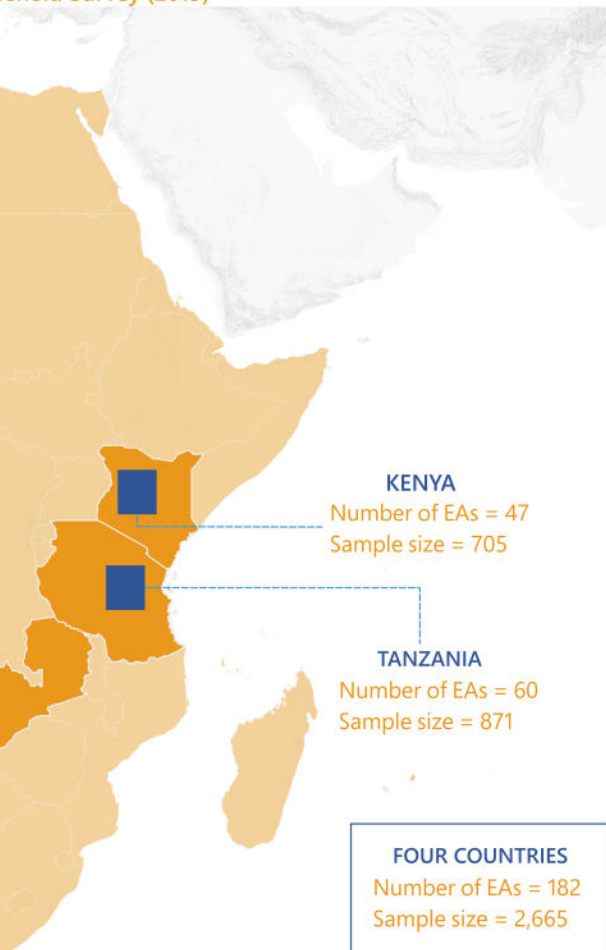


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Household Survey (2019)



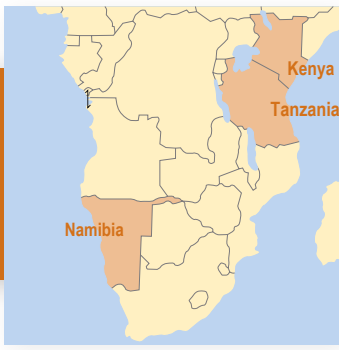
Project Summary

The Z03 project supports all other projects in the centralized management and implementation of longitudinal quantitative surveys in all the study regions. During Phase 1 of the CRC, Z03 successfully conducted baseline survey in collaboration with ten projects (A01, A03, A04, B01, B03, B04, C01, C02, C03, and C06) in Kenya, Tanzania, Zambia, and Namibia. The combined baseline survey included almost 2,665 households across 182 enumeration areas (EAs). The baseline data is currently being used by numerous CRC and affiliated researchers and made available via a central database.

In Phase 2 of the CRC, Z03 will continue to support projects in designing and implementing survey data collection and processing. Specifically, it will facilitate a second wave of the CRC's household survey in order to construct a panel dataset, which will allow all involved projects to better understand trends and underlying causal mechanisms and processes between variables of interest. These include, for example, the impacts of exogenous shocks (Covid-19, extreme weather events, locust infestation) or rural development interventions on food security, household-level aspirations and related sustainability outcomes.

Furthermore, Z03 will intensify collaboration and co-development of research activities conducted by local partners in all study areas. Building on the existing relationship, local partners will be systematically involved in questionnaire design, survey implementation, and data analysis.





Z04 INTEGRATED RESEARCH AND TRAINING GROUP (IRTG)

Integrative IRTG

The IRTG builds on existing PhD programmes at both partner universities but complements them with a training program that addresses the particular design and interests of the collaborative research center (CRC). The IRTG thus enhances the exchange and coherence within the interdisciplinary yet thematically focused CRC and provides opportunities for early career researchers (ECR) to strengthen disciplinary skills in the context of well established programmes.

Organization of the IRTG

“The IRTG was established during the first General Assembly of the CRC. It consists of a Chair and Deputy Chair, as well as three students, one from each project group, and a student representative who is part of the CRC executive board. The scientific coordinator of the CRC coordinates and assists in the organization of IRTG activities. The PIs coordinate the communication with and structural developments to BIGS-DR and a.r.t.e.s..”

Training Plan

Module 1:

Provide ECRs with training to enhance their theoretical knowledge and jointly explore the conceptual potential of Future Studies, particularly in relation to the thematic focus of the CRC. (Summer School 2018, Nairobi, Summers Schools 2022, Windhoek & Naivasha)

Module 2:

Train a new generation of scholars transcending disciplinary boundaries to understand, discuss, and handle diverse methodological approaches and respective formats of data generated across the social and natural sciences. (Summer School 2022, Naivasha; Summer School 2022, Windhoek)

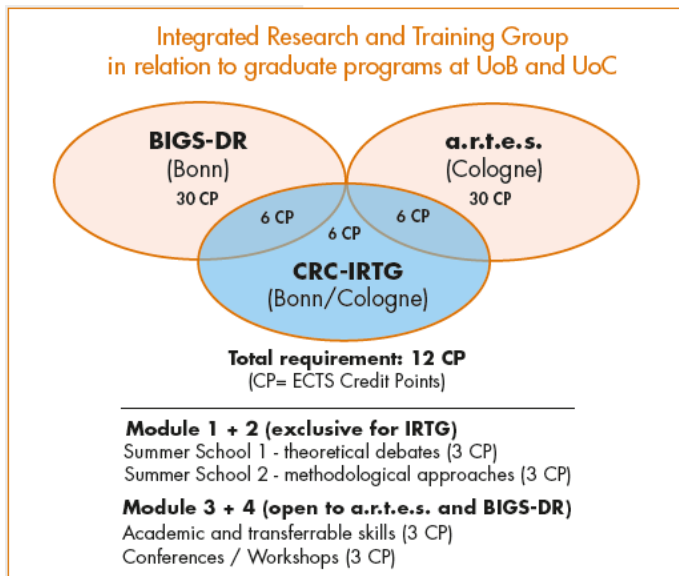
Module 3:

Module 3 of the IRTG is designed to encourage the participation of ECRs at external workshops and conferences as well as the organization and reflection of CRC-related lecture series, workshops, and reading groups.

This module is partly integrated into the programme of CRC summer schools, and in workshops, e.g. the workshop held in August 2019, co-organized by partners of the University of Namibia at its Katima Mulilo campus. Moreover, the ECRs of all projects are invited to present their findings at the monthly jour fixe meetings.

Module 4:

Provide general academic skills as well as transferable skills in report production, abstract writing, publishing strategies, communication with diverse audiences, time management, and budgeting, to enhance the ECRs’ employability across academic, industrial, public, and educational sectors. The goals of this module were addressed in all three summer schools conducted by the CRC in 2018, 2019, and 2020 respectively, particularly in the third one, with individual sessions dedicated to the training of academic skills and will continue to be addressed in future summer schools. Furthermore, two self organized ECR workshops were planned, one in 2018 and a second one in 2020, in order to target the contents of the fourth module. Unfortunately, due to the reinforced COVID-19 restrictions, the second workshop in 2020 had to be cancelled at short notice.





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Project Summary

The IRTG build on existing PhD programmes at both , but wishes to complement them with a training programme that addresses the particular design and contents of the CRC. he Bonn International Graduate School in Development Research (BIGS-DR) based at ZEF builds on a long tradition of graduate education in the context of development research, with many of its graduates focusing on the field of African Studies. the Theodor-Brinkmann-Graduate School (TBGS) of the Agricultural Faculty at the UoB provides a structured graduation context for PhDs working on topics related to agrarian questions in the Global South, particularly Africa. the a.r.t.e.s. graduate school serves as educational basis for all doctoral students of the Faculty of the Humanities, supported by the German Excellence Initiative (until 2019) as well as the German Academic Exchange Service (DAAD).

The Graduate School for Geosciences (GSGS) at the UoC offers a structured PhD programme for students in Geography. In all four schools, the interdisciplinarity and internationalization of academic research a decisive role, so that they form an ideal institutional background for the graduate training of the CRC. Nevertheless, to strengthen its cohesion and to deepen exchanges with PhD students in collaborating institutions in Africa it remains crucial for the CRC to create structures that facilitate and foster exchange and discussion among all the Early Career Researchers (ECR) involved in the project. For the IRTG, a number of modules amounting to 12 Credit Points (CP) have been developed in order to guarantee and encourage exchange between the CRC graduates, who will all be enrolled in either the BIGS-DR, TBGS (both UoB), a.r.t.e.s. or GSGS (both UoC). The modules designed and coordinated jointly by the PIs and postdocs of the CRC (1) provide ECRs with training to enhance their theoretical knowledge and jointly explore the conceptual potential of Future Studies, particularly in relation to the thematic focus of the CRC (Module 1), and (2) train a new generation of scholars transcending traditional disciplinary boundaries to understand, critically discuss, and handle diverse methodological approaches and respective formats of data generated across the divides between the social and natural sciences (Module 2). We also wish to acknowledge and encourage the participation of the ECRs at external workshops and conferences, as well as the organization and reflection of CRC-related lecture series, workshops, and reading weeks (Module 3). General academic skills as well as transferable skills shall be addressed within the existing structured doctoral programs. This way, the IRTG will enhance the exchange and coherence within the highly interdisciplinary yet thematically focused CRC, while at the same time providing opportunities to strengthen disciplinary skills in the context of well-established programs.





BOARD FOR GENDER EQUALITY AND DIVERSITY

Gender Equality

The implementation of diversity policies and gender mainstreaming are essential structural aims of the CRC-TRR 228 "Future Rural Africa" and the German Research Foundation. Consequently, the goals of the CRC-TRR 228 equal opportunity work are to achieve a gender balance in the research system and to make a scientific career compatible with family commitments. Together with gender equality institutions we want to implement the gender equality directive, to enable women and men to have equal opportunities with regard to their qualifications, to eliminate existing structural disadvantages for women within all university status groups, and to improve the conditions for balancing science, career, studies and family. We build our gender work on three core modules: (1) Female career, (2) Awareness, and (3) Family support.

Female Career

One part of our gender equality work focusses on promoting the career progression of female scientists of the CRC Future Rural Africa, not only by advancing their professional competencies, but also by strengthening self-awareness and supporting them in expanding their networks. Therefore, we initiate diverse seminars such as empowerment workshops, individual coaching and trainings addressing topics such as research presentation, communication, and resilience. Additionally, we provide financial support. In 2021, we introduced the "Future Rural Africa Female Research Grant", with the objective of increasing scientific output, networks and visibility of female researchers, especially in the Global South. Both Universities of Bonn and Cologne implement further gender equality schemes. The participation fees of workshops concerning gender equality can be covered by the fund of the board for gender equality, where required.

Recipients Female Researchers Grant 2022



Zainab Ramadhan

Remote learning during covid-19 pandemic; an exploration of girls' access to mobile digital phones, a case of Kwale County, Kenya



Dr. Alice Kosgei & Dr. Marther Ngigi

Assessment of role of youth farmers in adoption of climate-smart agriculture strategies for food security: a case of Machakos County)

Awareness

Another important part of our work focusses on raising awareness. This includes sensitisation work concerning gender equality as well as gender roles, gender diversity and intersectionality. The intersection of gender and race in particular plays an important role in the context of scientific North-South partnerships like the CRC, which is why we want to raise awareness for these dynamics.

Besides addressing the women working at the CRC, we also want to encourage male members to reflect on privileges and hierarchies as well. Therefore we conduct a wide variety of events for all genders.

Family Support

The third pillar of our equality work focusses on increasing the compatibility of work and family. This includes the organisation of childcare during events and business trips as well as the coordination of daycare. In order to ensure childcare during fieldwork or business trips, travel costs for children and accompanying persons can be subsidised. Furthermore, we funded two "kid's boxes" for the CRC, which are mobile parent-child rooms for the workplace. Moreover, the DFG has decided on additional support in case of family burden due to Covid 19 measures. Gender equality funds can now be used for relief from routine duties and project-based teaching. Scientific employees with family obligations and short-term coronavirus-related family burdens (e.g. cancelled and shortened childcare) can be funded to an appropriate extent.

Dual Career & Family Support (University of Cologne)

The CFS is the central point at the University of Cologne for information, counseling and services concerning the compatibility of family and career. The services include personal advice, child- and eldercare support, care funds as well as the education program "Fokus Vereinbarkeit".

"Kopf Frei" – Postdoc-Programme for Female Scientists with Family Obligations (University of Cologne)

The "Kopf Frei" Programme is meant to support female post-doctoral researchers and junior professors with family obligations by relieving them of routine teaching tasks.

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Office of Family Services (University of Bonn)

The Office of Family Services is a central body at the University of Bonn concerning the improvement of the compatibility of family and career. Together with the Gender Equality Office (University of Bonn), it offers several services, such as counselling, the coordination of childcare and financial support.



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