

Human rights, climate change, and climate policies in Kenya

How climate variability and agrofuel expansion impact on the enjoyment of human rights in the Tana Delta



Research Report

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Acronyms

ACHPR	African Charter on Human and Peoples' Rights
ACTS	African Centre for Technology Studies
ALARMP	Aridlands Resource Management Project
ASALs	Arid and Semi-Arid Lands
BMZ	German Federal Ministry for Economic Cooperation and Development
CDM	Clean Development Mechanisms
CESCR	Committee on Economic, Social and Cultural Rights
DEG	Deutsche Investitions- und Entwicklungsgesellschaft
DMB	Drought Monthly Bulletin
EMCA	Environment Management and Coordination Act of 1999
ENSO	El Niño Southern Oscillation
ESIAS	Environmental and Social Impact Assessment Study
ETOs	Extra-Territorial State Obligations
FAO RtF Guidelines	Voluntary Guidelines to Support the Progressive Realization of the Right to Adequate Food in the Context of National Food Security
FGD	Focus Group Discussions
FSNS	Food Security and Nutrition Strategy
GC	General Comment
GCM	Global Climate Model
GHG	Greenhouse Gas
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH
GOK	Government of Kenya
GPID	Guiding Principles on Internal Displacement
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) GmbH (German Technical Cooperation)
HRC	UN Human Rights Council
HRIA	Human Rights Impact Assessment
HRL	Human Rights Law
ICCPR	International Covenant on Civil and Political Rights
ICESCR	International Covenant on Economic, Social and Cultural Rights
ICJ	International Commission of Jurists
IEL	International Environmental Law
ILO	International Labour Organisation
IOD	Indian Ocean Dipole
ITCZ	Inter-Tropical Convergence Zone
KACCAL	Kenya Adaptation to Climate Change in Arid and Semi-Arid Lands
KFRI	Kenya Forestry Research Institute
KFSSG	Kenyan Food Security Steering Group
LRS	Long Rain Season

MAM	March, April, May
MDNKAL	Ministry of State for the Development of Northern Kenya and Arid Lands
MEMR	Ministry of Environment and Mineral Resources
MSL	Mean Sea Level
NEAP	National Environment Action Plan
NEMA	National Environmental Management Authority of Kenya
NEP	National Environmental Policy
OHCHR	UN High Commissioner on Human Rights
OND	October, November, December
PISCES	Policy Innovation Systems for Clean Energy Security
RCM	Regional Climate Model
SREP	Scaling-up Renewable Energy Program
SRES	Special Report on Emission Scenarios
SRS	Short Rain Season
SUCAM	The Sugar Campaign for Change
TARDA	Tana and Athi River Development Authority
TDCC	Tana Delta District Commission
TDIP	Tana Delta Irrigation Project
TISP	Tana River Integrated Sugar Project
UDHR	Universal Declaration of Human Rights
UNCTAD	United Nations Conference on Trade and Development
UNDrip	UN Declaration on the Rights of Indigenous People
UNEP	United Nations Environmental Programme
UNFCCC	United Nations Framework Convention on Climate Change
VCM	Voluntary Carbon Markets
WHO	World Health Organisation

1 Introduction

This study is based on a research mission to the Tana Delta of a joint effort by COMCAD (Bielefeld University), FIAN Germany, Kenya Youth Foundation, and CEMIRIDE in August 2011. It shows how the negative impacts of climate change and climate policies threaten basic human rights of the local population, in particular of the six villages that were selected for documentation. For this purpose the study is divided into five main parts. Chapter 2 introduces the normative framework of the study and the methodological approach; chapter 3 describes the climatic and environmental conditions in Kenya; chapter 4 analyses the policy context related to climate change mitigation and adaptation; chapter 5 describes the context of the research area; and chapter 6 presents the human rights analysis.

Chapter 2 on normative framework and methodology distinguishes between two dimensions of climate change impacts – firstly, direct or first-order impacts, i.e. climate changes with their adverse repercussions on living conditions; secondly, indirect or second-order impacts due to climate change policies. The latter potentially comprise all types of adaptation and mitigation measures, such as planned relocation, forest protection and afforestation, investments in agrofuel plantations, and crop production for food-insecure third countries affected by climate change. For the purpose of this human rights impact assessment, emphasis was placed on the right to water, the right to food, and the right to housing, which are substantial rights that are likely to be affected by first- as well as second-order impacts. This does not mean that interrelated rights are not at stake, and they were considered where appropriate. Also, normative content of relevant sections of Kenya's new constitution are discussed. In the case of second-order impacts focus was placed on agrofuel production and two investments were selected, one for sugar cane and one for jatropha. Both are at an initial state of implementation, so that this is largely an ex-ante assessment.

Chapter 3 discusses the environmental and climate context of Kenya. It concludes that various effects of climate change can already be observed, in particular an increase in temperature, changing patterns of the rainy seasons, and an increase in extreme weather events. Higher temperature leads to higher evapotranspiration rates and perpetuates the melting of the glaciers. During dry years this might compensate for the lack of rainfall for some time. However, as soon as the volume of melt reduces or recedes, waterflow will decline considerably. The current decrease in rainfall and increased frequency of droughts seriously alter the groundwater recharge. Other environmental changes such as deforestation, particularly around the water towers, are also considered in the chapter. Higher rainfalls in deforested catchment areas might lead to increased surface run-off, which considerably increases the risk of floods and soil erosion. The impact of climate and environmental change on living conditions in the Tana Delta are discussed in chapter 5.1.

Chapter 4 broaches the issue of the political context, focusing on climate policies, agrofuel policies and land policies, especially with regard to the new constitution. Regarding climate change, it concludes that a coherent policy for Kenya is still in its infancy. The response strategy only published in 2010 sets first priorities, which include important measures such as developing drought-resistant crops and integrated water resource management, and the protection of Kenya's water towers, *inter alia* by means of reforestation. Pertaining to agrofuel policies it concludes that agrofuel production will involve development-based evictions that often lead to the deprivation of crucial livelihood assets and thus jeopardize human security of the affected people. Concerning land policies it states that it is too early to come to conclusions about the final result of land reforms. However, it seems that a new process of land adjudication under statutory law is targeted. This potentially leads to conflicts over resources accessed under customary law. Whether these can be solved in a non-violent manner respecting rights depends on the functioning of responsible conflict resolution mechanisms and courts.

Chapter 5 documents the Tana Delta case study, showing that the region is affected by environmental and climate change as well as by plans to boost agrofuel production. It concludes that agrofuel production in the Tana Delta is a priority project of the Kenyan government. The Tana Delta is expected to serve as a pilot area for realizing related promises such as reducing fossil fuel imports, diversifying the sugar industry, making some agricultural use of semi-arid lands, cultivating

carbon sinks, and so on. For the purpose of this study two large-scale agrarian investment projects were analyzed: the TISP irrigated sugar project of TARDA and Mumias Sugar Ltd., and the Bedford jatropha plantation. Both projects interfere with existing land and resource uses. Regarding the increased persistence and severity of droughts in the past two decades, both projects will have repercussions – most likely severe ones – for humans, wildlife, and vegetation that are already under stress. Increase of conflicts over resources is the likely result.

Chapter 6 provides a description of the human rights situation, giving in-depth information about the findings of the six focus groups that were selected along the lines of livelihood patterns. Based on the findings of the desk studies, focus group discussions, interviews with key informants and a validation process, this human rights impact assessment comes to the conclusion that the enjoyment of all three rights at stake is threatened or even violated. Enjoyment of the right to water is undermined by climatic conditions as well as human activities. Considered investment projects already contribute to further abuse of the right to water or are likely to do so in the future. The right to housing and related security of tenure is already severely abused and violated by one of the projects, and this threat will surely increase as projects proceed. The enjoyment of the right to food, like the right to water, is jeopardized by climate changes as well as development planning. Investment projects might improve the individual food situation of some, but will worsen that of others and thus threaten their right to food.

Responsibilities of the Kenyan government, the main duty bearer, and of the international community are summarized and final recommendations are given in the concluding chapter.

2 Normative Framework and Methodology

The aim of the study is to investigate the impact of climate change on the enjoyment of human rights in the Tana Delta, a wetland area and fallback region for pastoralists during droughts on the southern margins of northeast Kenya.

For the normative framework and methodology, this study distinguishes between two dimensions of climate change impacts – firstly direct or first-order impacts, i.e. climate changes with their adverse repercussions on living conditions, and secondly indirect or second-order impacts due to climate change policies. The latter potentially comprise all types of adaptation and mitigation measures such as planned relocation, forest protection and afforestation, investments in agrofuel plantations, and crop production for food-insecure third countries affected by climate change. For the purpose of this human rights impact assessment (HRIA), emphasis was placed on the right to water, the right to food, and the right to housing, which are substantial rights that are likely to be affected by first- as well as second-order impacts. All three rights are anchored in the International Covenant on Economic, Social and Cultural Rights (ICESCR), Art. 11(1) on the right to an adequate standard of living. This does not mean that interrelated rights are not at stake, and these were considered where appropriate.

Consideration of both the physical and the political dimensions of climate change represents an attempt to intensify some thoughts of the report of the UN High Commissioner on Human Rights (OHCHR) to the UN Human Rights Council (HRC) (OHCHR 2009). This was one of the first official documents that discussed the impact of climate change on the enjoyment of human rights and the respective responsibilities of states. The report focuses on a number of substantial human rights, in particular the right to life, the right to food, the right to water, the right to health, the right to housing, and the right to self-determination (*ibid.* 8-15). Moreover it identifies women, children and indigenous people as groups that are particularly susceptible to the adverse effects of climate change on their livelihoods due to their high degree of social vulnerability. It also has a short sub-chapter on the human rights implications of response measures, i.e. the second-order impacts examined in this study. Response measures mentioned include agrofuel production as a mitigation measure that competes for arable land, and REDD programmes for reforestation and protection of forests as carbon sinks that often reduce traditional access of indigenous people to forest resources. (OHCHR 2009: 22f.). Others moreover warn against the human rights impacts of Clean Development Mechanisms (CDM) (Orellana et al. 2010: 6). At least for REDD programmes, need to improve safeguards was mandated in 2010 (CIEL 2011: 4; AWG-LCA 2010: 11, 24f.).

The case of the Tana Delta was selected because it is affected by both first- and second-order impacts of climate change. The assessment of both dimensions faces some challenges. Firstly, local

environmental change is seldom due only to global warming, but also to other factors, which have to be taken into account when assessing first-order impacts. Secondly, the response measures at stake in the Tana Delta are agrofuel plantations that are still in their infancy. Thus the investigation into second-order impacts is largely an ex-ante assessment of would-be impacts. The advantage of nevertheless conducting an HRIA is to give early warning, to effect more profound environmental and social impact assessments, and to inform the affected (right holders) about their rights, as well as responsible entities (duty bearers) about their obligations (Walker 2009: 45-47).

2.1 Human Rights as Framework for Impact Assessments

The main feature of an HRIA is its reference to the norms of the international human rights system. The core normative body in this connection is the International Bill of Human Rights, which consists of the Universal Declaration of Human Rights (UDHR) and its two main covenants, the International Covenant on Civil and Political Rights (ICCPR) and the International Covenant on Economic, Social and Cultural Rights (ICESCR). These and additional conventions are internationally recognized and binding law based on the following principles (Walker 2009: 34f., Orellana et al. 2010: 11):

- Human rights are universal, i.e. they are inherited by every human being and do not discriminate along lines of ethnicity, religion, sex, or other societal characteristics.
- Human rights are inalienable and cannot be withdrawn, i.e. even if national legislation and policies exclude certain groups from the enjoyment of their human rights, they are still right holders.
- Human rights are indivisible and no right should be emphasized over another. Accordingly no human right should be realized at the expense of another human right and the rights of one group or person should not be realized at the expense of others.
- Human rights are interdependent and inter-related, i.e. ideally an HRIA would not focus on just one right, but would also consider related, underlying and deduced rights to reach comprehensive conclusions and recommendations.
- Human rights are individual rights primarily vis-à-vis the state on whose territory the rights holders live, independently of their citizenship. Thus the individual is the principal right bearer (with the exception of explicit group rights) and the state is the principal duty bearer.

Human rights law distinguishes three different types of state obligations - to *respect*, to *protect*, and to *fulfil* human rights. Non-compliance by a state with each type of obligation constitutes a human rights violation. An HRIA has to consider all three dimensions.

- To respect means that states have to refrain from violating human rights actively. Accordingly an HRIA has to consider state actions that constitute such directly and willingly pursued violation of human rights, for example discriminatory legislation targeting certain groups of a population.
- If non-state actors also violate human rights, this is called human rights abuse. In such cases the state has the obligation to protect those affected against such abuses as well as against violations by other states.
- The obligation to fulfil requires the state to develop policies and programmes that encourage the progressive realization of human rights, and to refrain from actions that undermine their realization.
- From this follows the principle of non-retrogressive measures and an obligation to conduct, i.e. efforts to comply with obligations. The latter must be distinguished from the obligation to results, i.e. that efforts in fact lead to an improvement of a human rights situation.
- As many states lack the capacity and means to effectively guarantee many of the substantial rights (e.g. right to housing, health, etc.), the international community has moreover a long-standing obligation to support efforts to realize the fulfilment of human rights.

Finally, extraterritorial state obligations (ETOs) have to be taken into account too (Windfuhr 2005). ETOs extend the responsibility of states to individuals outside their territory. The report of the OHCHR on climate change and human rights to the HRC already refers to ETOs and summarizes the additional obligations as follows (OHCHR 2009: 28):

- States have to refrain from interfering with the enjoyment of human rights in other countries.
- States have to take measures to prevent third party entities under their jurisdiction (e.g. transnational corporations) from abusing or interfering with human rights.
- They have to ensure that international agreements consider human rights and do not impact adversely upon them.

ETOs have been neglected for the last few decades, but have gained in importance with regard to the disturbances entailed in the processes of economic globalization, the global exploitation of resources, and transnational environmental challenges including climate change. The precise nature of ETOs still needs to be developed and awaits further acknowledgement. Principles on ETOs recently published by the International Commission of Jurists (ICJ 2011) represent a crucial step forward.

Binding human rights law (HRL) is interpreted and developed in the existing regional human rights systems, for instance for Africa, which have the great advantage of providing for human rights courts and thus for binding judgments. Moreover, UN treaty bodies like the Committee on Economic, Social and Cultural Rights (CESCR) provide legal guidance through general comments (GC) which specify the obligations that flow from human rights treaties. Additionally the human rights system has developed a body of non-binding, voluntary declarations, principles and guidelines known as soft law. Soft law seeks to provide orientation to states, international organizations and non-state actors on the operationalization of human rights policies. It is built upon HRL, so that states, even if they do not affirm a particular guideline or declaration, can nevertheless mostly be held responsible due to their membership of binding human rights treaties.

2.2 The Rights to Food, Water, and Housing in the Context of Climate Change

Global warming threatens enjoyment of the rights to food, water, and housing because it has repercussions on the hydrology of a region. As a consequence precipitation patterns change, weather conditions suffer high variability, and extreme weather events increase. This impacts on livelihood conditions in several ways. Scarcity of precipitation over extended periods leads to reduced water availability in terms of surface water levels, but also of groundwater levels, directly jeopardizing the right to water. It might also lead to more intensive rains during shorter periods, which increases the risk of floods that displace people and thus interfere with their enjoyment of the right to housing. Changing weather conditions, moreover, challenge food production. Both increased aridity and floods potentially perpetuate desertification and soil degradation. The decline in rainfalls, drifting seasons and soil degradation are likely to lead to declining yields, and floods can equally destroy land plots and thus the expected harvest. The same impacts also hamper livestock keeping and thus the production of milk and meat alike. Consequently enjoyment of the right to food is directly threatened too (e.g. Bals et al 2008: 84-99). For the purpose of this study those types of impacts are labelled direct or first-order impacts. They can, however, also be related to other environmental changes, which equally have to be considered for analysis.

Climate mitigation and adaptation policies likewise have potentials to threaten the rights to water, food, and housing. This is mainly due to the land-use changes involved. Afforestation, agrofuel production, but also food production for export into food-insecure countries require land that is more often than not already used for other purposes and by other people, who may or may not have legal entitlements to that land. The alienation of land for this type of climate policy might thus impact negatively on the livelihoods of the people who use that land for their food requirements or housing. Moreover, large-scale agriculture, particularly in arid zones, usually requires irrigation, and accordingly might increase the pressure on already declining water resources for an even larger part of the population. All this together jeopardizes enjoyment of the right to water, food and housing, because it is likely to involve evictions and deprivation of crucial livelihood resources. However, such investments also have positive potentials by increasing job opportunities and possibilities for contract

farming, which generates new sources of income and thus increases ability to buy food and to satisfy other basic needs. Realization of those opportunities again depends largely on the conditions of employment and contract farming. If they have an exploitative character, they equally lead to human rights abuses.

In sum, both climate change and climate policies might lead to displacement and to the deprivation of resources that are core to enjoyment of the right to water, food, and housing. The content of the rights at stake described below and the accompanying soft laws help to match findings of violation or abuse of human rights against a set of established and acknowledged human rights standards. Apart from the general comments on the ICESCR, soft law such as the Voluntary Guidelines to Support the Progressive Realization of the Right to Adequate Food in the Context of National Food Security (FAO RtF Guidelines), the UN Declaration on the Rights of Indigenous People (UNDRIP), the Basic Principles and Guidelines on Development-Based Evictions (Kothari Guidelines), and the Guiding Principles on Internal Displacement (GPID) can be relevant with regard to climate change and planned relocation. Regarding second-order impacts of climate change, the Special Rapporteur for the Right to Food (De Schutter 2009) and international organizations concerned with agriculture (UNCTAD 2010) provided additional recommendations and principles for large-scale agricultural investments.

2.3 Normative Content of the Rights to Food, Water, and Housing

The rights to water, to food, and to housing are all three anchored in the ICESCR, Art. 11(1) on the right to an adequate standard of living. The normative content of those rights was interpreted by the CESCR in its respective general comments (GC) and can be summarized as follows:

The **right to adequate food**, according to GC 12 (para. 10-13) and the FAO's definition (FAO 2007: 6), comprises the four aspects of availability, accessibility, acceptability and safety. *Food availability* refers to possibilities of acquiring food, (a) by means of subsistence farming and other direct use of natural resources; or (b) by means of a functioning market system. This is important, because the term 'availability' is often narrowly interpreted quantitatively as mere food output per head. *Food accessibility* is broken down into economic and physical accessibility: (a) economic accessibility refers to the acquisition pattern through which food is procured (e.g. land in the case of subsistence farming) and affordability, i.e. the costs of buying food do not compromise the realization of other rights; (b) the term 'physical accessibility' emphasizes that food has to be accessible to everyone, including vulnerable individuals and marginalized groups. *Food acceptability* and *safety* refer to the cultural and biochemical edibility of food. GC 12 moreover emphasizes that the food system has to function in a way that secures the right to food for present as well as for future generations (GC 12, para. 7 and 9).

The **right to water** is not explicitly mentioned in ICESCR Art. 11, but is derived from it. In GC 15 the CESCR recognizes that the right to water is 'fundamental for life and health' and a 'prerequisite for the realization of other human rights' (GC 15, para. 1). It is common sense that water is indeed vital for realizing e.g. the right to food, because without water food can be neither grown nor prepared. The normative content of the right to water follows lines similar to those of the right to food. The following aspects are important for adequate realization: *availability*, *quality* (here comprising safety and acceptability of water), and *accessibility* (comprising safe and accessible water facilities, and affordability). Additionally non-discrimination and information accessibility are introduced as part of requirements of the right to water.

The **right to adequate housing** is primarily concerned with providing and setting standards for adequate shelter. In its GC 4, the CESCR addresses the normative content of this right, which comprises seven aspects (GC 4, para 8): legal security of tenure, availability of services, materials, facilities and infrastructure, accessibility, location, affordability, habitability, and cultural adequacy. For this study the first four proved to be particularly relevant. *Legal security of tenure* refers to different forms of tenure such as rental accommodation, cooperative housing, lease, owner-occupation, emergency housing and informal settlements. It does not therefore imply a general right to land, but legal protection against forced evictions and harassments, regardless of the type of tenure. *Availability of services, materials, facilities and infrastructure* links the right to housing to other essential rights, such as the right to health, the right to water, and the right to food, because it demands facilities which guarantee that housing is more than just a roof above one's head, such as safe drinking water and energy for cooking. *Accessibility* in this case focuses on support for

disadvantaged groups to achieve adequate shelter. Here the CESCR explicitly points to the need for access to land (as an entitlement) to improve the situation of landless and impoverished people. *Location* mainly addresses the issue of proximity of settlements to crucial services and sources of income or subsistence.

The second comment on the right to housing, GC 7, deals with the issue of *forced evictions*, which it denounces as a gross violation of human rights. ‘Forced eviction’ is defined as the ‘permanent or temporary removal against their will of individuals, families and/or communities from the homes and/or land which they occupy, without the provision of, and access to, appropriate forms of legal or other protection’ (GC 7, para 3). Forced evictions interfere not only with the right to housing, but also with many other rights of the ICESCR, and also with rights enshrined in the ICCPR, such as the right to life, the right to security of person, the right to non-interference with privacy, family and home and the right to the peaceful enjoyment of possessions (*ibid.* para 4).

Soft law concerned with displacement and evictions includes the GPID and the Kothari Guidelines. The GPID, which is mainly based on international humanitarian law, is concerned with man-made and sudden natural disaster, but scientific work to adapt it to the challenges of climate change is in progress (Zetter 2011). The Kothari Guidelines apply to more or less planned relocation for the purpose of development. In the course of climate change they become relevant with respect to relocation as a measure adapting to slow-onset changes, as well as to evictions for climate-policy-related investments. The Kothari Guidelines are based on GC 7, but refine and extend its provisions. Their content can be summarized as follows (Kothari 2007, Annex I, 13-27):

In the *decision phase* alternatives to resettlement have to be explored, authorities have the legal obligation to prove that relocation is unavoidable, reasonable time periods for public hearing, dissemination and review of information have to be guaranteed (e.g. including available information in the locally spoken language etc.). If a decision in favour of relocation is taken, local people and administrations have to be consulted and involved in further planning and implementation. In the *implementation phase* the whole process of leaving and moving has to comply with standards that guard against human rights violations, as well as against unreasonable disruptions of livelihoods. This includes *inter alia* that authorities are not allowed to use disproportionate force and violence against the people or to destroy possessions they left behind; that the timing must consider the calendar of peoples’ lives such as harvesting, exams, and elections whenever possible; and that the new settlements must conform to human rights standards. The latter aspect entails, for example, that the new location has to provide for the right to food, maybe by means of access to arable land or to income alternatives to buy food. For that to be achieved the guidelines advise that new settlements should be situated as close as possible to the original place of residence and sources of livelihood, that the new place should provide for security of tenure and environmental soundness, and that people enjoy freedom of movement to enable them to take care of their needs. These are necessary preconditions for the right to housing, to water, to food, and an adequate standard of living generally to be protected and fulfilled. All those *procedures* additionally involve political rights, in particular access to legal and technical advice, the right to make alternative proposals, and complaint mechanisms at local and national levels to claim rights if authorities do not comply with standards and violate human rights. The guidelines also emphasize special provisions for the situation of women and other vulnerable groups.

Indeed, displacement is very often related to land regulations that discriminate against the poor. Already GC 7 points to this underlying cause of ‘conflict over land rights’ produced by development projects (para 7). In current HRL this problem is addressed by the right to security of tenure (see above), but not by a ‘right to land’. The Special Rapporteur on the Right to Housing, Miloon Kothari, identified this as a normative gap and campaigned for a ‘right to land’ in the meaning of ‘adequate legal recognition of individual as well as collective land rights’ (Kothari 2007: 10). So far the legal document that most emphasizes guaranteed access to land is the ILO Convention 169, which states that ‘the rights of ownership and possession of the peoples concerned over the lands which they traditionally occupy shall be recognized’ (Art. 14(1)). It moreover acknowledges the spiritual dimension of such land (Art. 13(1)). Such rights are of particular importance in rural indigenous societies, where land tenure and access to natural resources are preconditions for realizing the rights to food, water, and housing. The document equally emphasizes the need for legal recognition and registration of those lands; the right to self-determination; procedural rights of indigenous people and the need for prior informed consent in cases where development programmes and investments seek to make use of their land and its resources; similar provisions in cases of planned evictions;

rights to restitution and compensation in cases where evictions cannot be avoided; and finally, a right that their natural environment is protected (FIAN 2011: 19f.). The ILO Convention 169 is legally binding for the states that ratified it.

On the regional level the African Charter on Human and Peoples' Rights (ACHPR) is, moreover, of great relevance. It confirms the political, economic and social rights of the two human rights covenants; it includes a section on the peoples' rights to dispose of their natural resources (Art. 21); and it even emphasizes the right of all peoples to a 'satisfactory environment favourable to their development' (Art. 24). The right of people over natural resources has been interpreted as a provision protecting the rights of indigenous people over their ancestral lands, and thus endorses crucial contents of ILO Convention 169. This became clear from the ruling of the African Commission on Human and Peoples' Rights in the case of the Endorois, an indigenous group that was evicted from its land by the Kenyan government for the sake of a natural reserve (Human Rights Watch 2010). The case was filed on behalf of the Endorois community by CEMIRIDE.

All these definitions and standards mentioned are crucial not only to first-order impacts, but also to second-order impacts of climate change. There are moreover two emerging soft law documents relevant mainly to second-order impacts. The Principles on Responsible Agriculture (UNCTAD 2010) consider food security, procedural issues of consultation, environmental and social impacts, and respect for 'land and resource rights', but do not make explicit references to existing HRL. The UN special rapporteur on the right to food, de Schutter (2009), on the other hand focuses on the right to food only, but draws extensively from HRL and from ILO Conventions concerned with agricultural workers, minimum wages, and safety and health requirements.

2.4 Synergies between Human Rights and Environmental Rights

HRL and international environmental law (IEL) offer scope for legal synergies, which are important also with regard to climate change. Important reference documents of IEL are the Stockholm Declaration on the Human Environment of 1972 and the Rio Declaration on Environment and Development of 1992. Both belong to international soft law and set out important principles that informed many binding multilateral environmental agreements, such as the conventions on biodiversity and on desertification, and last but not least the United Nations Framework Convention on Climate Change (UNFCCC). IEL principles include (Orellana et al. 2010: 10f.):

- The *polluter pays* principle that addresses negative transborder effects on the environment due to the exploitation of resources in a state.
- The paradigm of *sustainable development*, i.e. a call to maintain natural resources and to avoid certain types of pollution, as well as to promote economic and social conditions that are supportive to environmental protection.
- The principle of *common but differentiated responsibilities*, which seeks to reconcile environmental protection obligations with the right to development of developing nations, which inter alia includes financial and technical transfers to help developing states to meet their challenges and obligations.
- The *right to a healthy environment* and the right to development for present and future generations, which inter alia led to the requirement of environmental impact assessments for large-scale investments.
- The *precautionary principle*, which seeks action on environmental protection before full scientific certainty on a particular issue exists.
- And finally IEL introduced *procedural rights* by requiring public information, participation and remedies in environmental matters.

In sum, IEL supports the claim of HRL for healthy living conditions and equally relates it to procedural requirements. Conversely, HRL treaty bodies recognize the intrinsic link between environment and the realization of many substantial human rights (OHCHR 2009: 7). Thus the CESCR makes reference to environmental conditions in its general comments on the right to water (GC 15), the right to health (GC 14), the right to food (GC 12) and the right to housing (GC 4) (Orellana et al 2010: 20ff.). IEL has a stronger emphasis on intergenerational equity and justice than the HRL (OCHCR 2009: 29), which in the case of man-made climate change emphasizes the responsibility of the present generation to mitigate climate change for the sake of future humans.

UNFCCC and its Kyoto Protocol incorporate important IEL principles such as the precautionary principle and the principle of common but differentiated responsibilities. However, there is not yet any proper affirmation of human rights by that treaty. Efforts pointing to this shortcoming are the HRC Resolution 10/4 (2009), the OHCHR report (2009), and the statement of the CESCR on the world food crisis (2008). Progress was made at the COP-16 in Cancun 2010. The concluding document of the Ad Hoc Working Group on Long-Term Cooperative Action includes a reference to the HRC Resolution 10/4 (AWG-LCA Outcome, preamble, para. 7) and recognizes the need to 'respect' human rights in all climate change-related actions (AWG-LCA Outcome, para. 8) as well as the need for participation of stakeholders and vulnerable groups (*ibid.* Para. 7, 12). Wording is still weak by comparison with HRL, because 'to respect' does not include protection and fulfilment, and a 'need for' is not 'a right to participation', as is the case with procedural rights in HRL. More promising are new developments regarding the safeguards for REDD (CIEL 2011).

2.5 Obligations of Kenya and the Other Members of the International Community

Kenya is party to the ICESCR and to the ICCPR and thus obligated to conform to its contents as defined in the general comments. Kenya is moreover party to the ACHPR. In addition to international and regional HRL, Kenya is *inter alia* party to the UNFCCC and its Kyoto Protocol, and endorsed the Stockholm as well as the Rio Declaration. It can thus be held responsible for meeting the principles of IEL. Like most African countries, Kenya is not a party to the ILO Convention 169 and abstained from acclamation in the case of UNDRIP. For a long time national legislation in Kenya, in particular legislation on land, did indeed work against the fulfilment of crucial social and economic rights. In August 2010, however, Kenya adopted a new constitution which in many aspects acts as a role model on how to integrate human rights into a constitution. This strengthens the meaning of human rights in national legislation.

The new constitution provides for a Bill of Rights which is meant to serve as a framework for the social, economic and cultural policies of Kenya and to seek social justice and fulfilment of all the rights. The right bearer in most cases is '*each individual*' (Art. 19; own emphasis), which classifies them as universal human rights independent of citizenship. Moreover, Art. 21 states that 'it is a fundamental duty of the State and every State organ to observe, respect, protect, promote and fulfil the rights and fundamental freedoms in the Bill of Rights [...] to achieve progressive realization [...] to address the needs of vulnerable groups [...] and [...] to fulfil its international obligations.' For the first time ever in Kenya, economic and social rights are thus firmly entrenched in the constitution under Art. 43, *inter alia* also the rights considered in this study, i.e. the right to housing, the right to food, and the right to water (Art. 43(1)). The new constitution thus embraces the provisions of the ICESCR and also those of the ICCPR. The constitution does not yet always fully meet the provisions of HRL, IEL, and its respective soft law, but it nevertheless binds the government to comply with those instruments. It does so by stating that the general rules of international law and any treaty or convention ratified by Kenya shall form part of the law of Kenya to which all persons and state organs at all levels are bound (Art. 2(1-2) and 2(5-6)).

The ILO Convention 169 and UNDRIP are a different case. As they have not been ratified or endorsed by Kenya, the provisions of the new constitution do not include them directly. The constitution does partly compensate for this by including 'ancestral lands' as part of the new category of community land (Art. 63(d)(ii)), and like the national Draft Eviction and Resettlement Guidelines suggests that 'provisions may be made for compensation to be paid to occupants in good faith [...] who may not hold title to the land' (Art. 40(4); Ministry of Lands 2011: 17). Yet the wording is cautious and thus it might be difficult for those without a legal title over land to defeat attempts at disappropriation or obtain adequate compensation. (Willy 2010: 3). Kenya's ratification of the ACHPR, however, binds it to the provisions of Art. 21(2) on compensating dispossession of natural resources adequately. The Endoroi case proved that even before the new constitution was enacted.

The new constitution also provides for environmental provisions. According to chapter V part II (Land and Environment), which is concerned with the protection and exploitation of environmental resources, the state shall 'ensure sustainable exploitation, utilization, management and conservation of the environment and natural resources, and ensure the equitable sharing of the accruing benefits' (Art. 69(1)(a)). The State is obliged to 'eliminate processes and activities that are likely to endanger the environment (Art. 69(1)(g)). It also explicitly seeks to 'protect and enhance intellectual property

in, and indigenous knowledge of, biodiversity and the genetic resources of the communities' (Art. 69(1)(c)). The constitution underscores many provisions of IEL and the ACHPR.

Alongside Kenya, the international community too bears responsibilities, which undisputedly include supporting Kenya in its efforts toward progressive realization of human rights and ensuring that international agreements do not impact adversely upon them. The IEL, in particular the principle of common but differentiated responsibilities and the polluter pays principle, supports the obligation to facilitate safeguards for human rights that are affected by man-made climate and environmental change. IEL moreover requires sustainable development and procedural rights in environmental matters, which should be held to apply to international environmental programmes too. Third states should not only refrain from violations of the human rights of the Kenyan people, but also prevent human rights abuses by companies and other entities under their jurisdiction.

2.6 Methodological Approach of the Case Study

In summer 2011, between the end of July and the beginning of August, COMCAD, FIAN Germany, KYF and CEMIRIDE undertook a research mission to the Tana Delta to investigate current and potential impacts of climate change on human rights, as well as human rights violations in the context of agrofuel expansion. The team was accompanied by a Ghanaian land expert to enhance regional exchange. The HRIA on hand is the result of this fact-finding mission with the aim of assessing the repercussions of those first- and second order impacts of climate change on the enjoyment of the human rights to water, food, and housing.

Firstly pre-studies on Kenya and the focus area were conducted, covering the issues of environmental and climate change, vulnerable groups affected by first- and second-order impacts, and relevant state policies such as climate change, agrofuel, and land policies. Based on a pre-selection of planned agrofuel investments, a review of available environmental impact assessments was also performed. This screening phase confirmed that the rights to water, to food, and to housing are very likely to be severely threatened by the first- and second-order dimensions of climate change.

In a next step a semi-structured interview guide was developed to inform interviews with experts and key informants, as well as the focus group discussions (FGD) with affected people. The guide covered general questions on living conditions of communities, the observed climatic and environmental challenges and their impact on households and livelihoods. It also addressed questions on the investments covering labour and contract farming issues and, as this is an *ex-ante* assessment, included hopes and fears of the communities, and finally also looked at questions of displacement due to natural disasters and development-based evictions alike. Scope was reduced in the field as the most relevant topics turned out to be access to water, change in farming patterns, grazing land for livestock, and forced displacement due to investments. This might be called the scoping phase and confirmed the importance of indicators such as the distance needed to access water for household and livestock use, quality and cost of water and food, conflicts over resources, security of tenure, remuneration for casual labour, etc. The team could not get hold of contracts that investors offer to involve communities in the projects, however, which would have deepened knowledge about intended labour and contracting conditions.

Interviews with experts and key informants were held in Kenya before, during, and after the field visit to the Tana Delta. Interviewees included representatives from civil society, human rights agents, UN Organizations, researchers working in the delta, government officials, and the company representatives. In the latter two cases, the team met the Commissioner of Tana Delta District and his agricultural officer on arrival in the delta, and later that week a meeting with so-called developers was held. This meeting was attended by further officials in charge of local development, local NGOs, and the local representative of one of the investors, namely of Bedford. Finally, the representative of the constituency in the national parliament was also interviewed.

The focus groups with villagers were selected along livelihood patterns, which partly correspond to ethnic patterns. Thus the project aimed to ensure that the impacts of climate change and the climate policy of agrofuel production were covered for all dominant forms of livelihood in the delta, i.e. farming, pastoralism, fishing, hunting and gathering, and mixed livelihoods. The procedure practised was to start with mixed groups and then to split into male and female groups. Moreover, an executive summary of the mission and its findings were translated into Kiswahili and thus returned to

the focus groups for feedback and verification. Insights of the verification report were worked into this study as appropriate.

Compromises had to be made with regard to an ideal HRIA, as the team was not able to speak to government officials and agencies beyond the district level, or to all investors with plans for agrofuels in the delta, in particular not to TARDA. Efforts have been made to compensate for these shortcomings by further research after returning from Kenya and by considering TARDA's comments on the study given at a media breakfast. Further investigations into the case should also extend to pastoralists from northeast Kenya who migrate to the delta during droughts, as well as to the situation of casual labourers (presumably women and labour migrants) on the existing plantations.

3 Environmental and Climate Context

3.1 Kenya's Climatology and Environmental Conditions

Kenya forms part of the Greater Horn of Africa and shares borders with Somalia, Ethiopia, Sudan, Uganda and Tanzania. It has a coastline of about 400 km with the Indian Ocean and hosts the highest mountain in Africa. Accordingly elevations within Kenya vary from 0 m at the coast to more than 5,000 m at the peaks of Mount Kenya. Due to the equator, which divides the country into two almost equal parts, Kenya's rainfall regime is closely linked to the inter-tropical convergence zone (ITCZ), which allows for two rainy seasons per year. The long rains with more intense rainfall span the period from March to May (MAM) with their peak in April, and the short rains span the period from mid-October to the end of December (OND) with their peak in November (e.g. Schmucker/Wisner 2008: 198). The rainy seasons alternate with seasons of dry spells. Most regions of Kenya are hot and dry. Regionally the pattern of the seasons and the intensity of rainfall can however vary, and with them humidity and vegetation cover. Kenya shares this bimodal pattern of rainfall with the other countries of East Africa, with the long rains (MAM) accounting for more than 70% of annual rainfall and the short rains (OND) contributing less than 20%. (DFID 2009: 25, Regional).

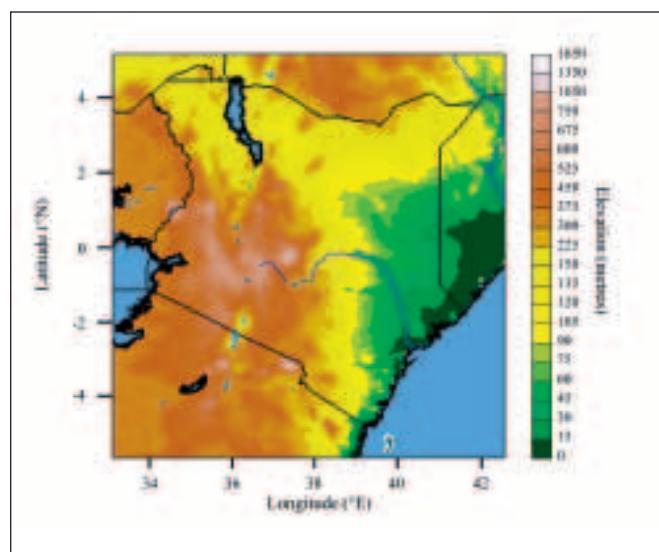


Fig. 1: Topographical map (elevation above sea level)
Source: Rourke 2011: 29.

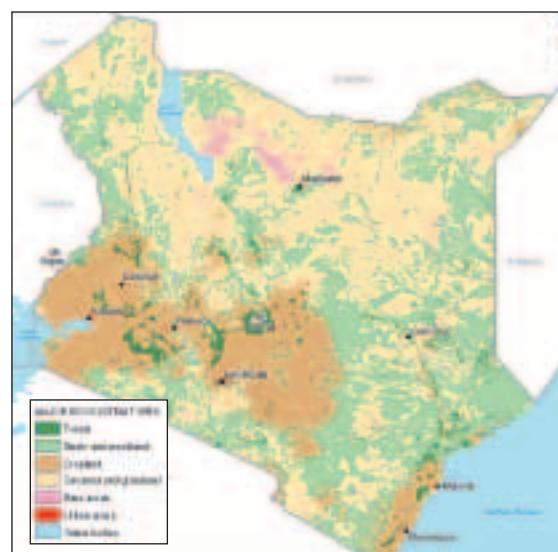
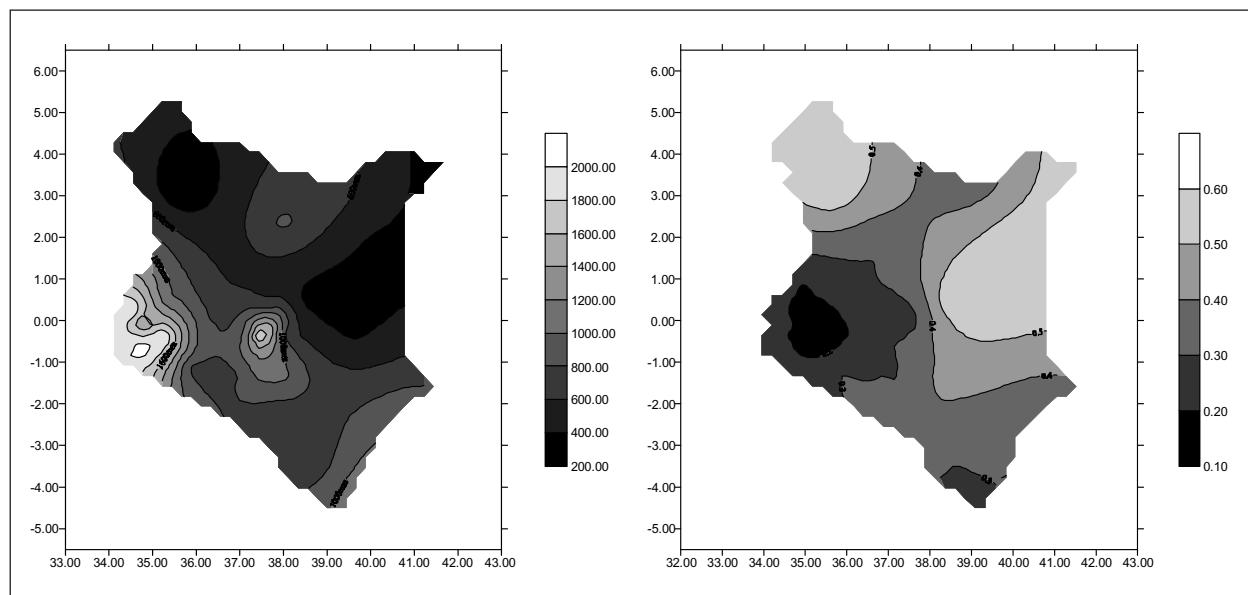


Fig. 2: Major ecosystem types (1995-2000);
Source: Harding / Devisscher 2009: 3;
based on FAO Africover.

The mean annual rainfall over Kenya is estimated at 621 mm or about 360,000 million cubic metres, but the rain is not spread equally across the country (NEMA 2009b: 50). It varies greatly due to the high variability in altitudes (Fig. 1) The western part of Kenya at elevations above 500m and adjacent to Lake Victoria receives considerably more rainfall during the rainy seasons than other parts of Kenya, as well as rainfall outside the seasons. In contrast, the northeast, and particularly the northwest at an average elevation below 200m display the lowest degrees of precipitation (Rourke 2011: 86). The scarcity of rainfall in the northern part of the country is moreover exaggerated by its

unreliability. The dark areas in the left chart of Fig. 3 show the poor amount of rainfall (between 200 and 400 mm) that most of the northern half of Kenya receives, whereas the light areas in the right chart (coefficient of variation of annual rainfall) demonstrate the high standard deviation from the mean, i.e. the high degree of variability of the rainfall over the region. By contrast, rainfall is very reliable in the west of the southern part of the country.



*Fig. 3: Distribution of mean annual rainfall and the coefficient of variation of annual rainfall in Kenya
Source: NEMA (2009: 50).*

These spatial and rainfall patterns of Kenya inform the climatic zones of the country and are mirrored in the vegetation cover. The National Environmental Management Authority of Kenya (NEMA) distinguishes a total of seven agro-climatic zones according to rainfall patterns (Fig. 4), which largely correspond to the vegetation zones and areas of high agricultural activity shown in Fig. 2. Mean annual rainfalls between areas range from 2,700 mm in humid zones to below 300 mm in very arid zones (NEMA 2005: 4; see Table 1). Of those agro-climatic areas, zones 1 to 4 cover 16% of the total land mass, whereas zones 5 to 7, the arid and semi-arid zones, comprise the remaining 84%. The fertile and high-potential zones support about 80% of the population and show an average population density of 230 persons per sq km. The remaining 20% of the 38.6 million Kenyans live in the arid and semi-arid lands (ASALs) with an average density of 3 persons per sq km. (NEMA 2005: 5-7; Census 2009: 2).

Table 1: Agro-climatic zones of Kenya

Zone	Climatic Zone	Mean Annual Rainfall	% of Total Land Area
1	Humid	1,400 – 2,700	3
2	Sub-humid	1,000 – 1,600	4
3	Semi-humid	800 – 1,400	5
4	Medium to semi-arid	600 – 700	5
5	Semi-arid	500 – 600	15
6	Arid	300 – 550	22
7	Very arid	< 300	46

Source: NEMA 2005: 4.

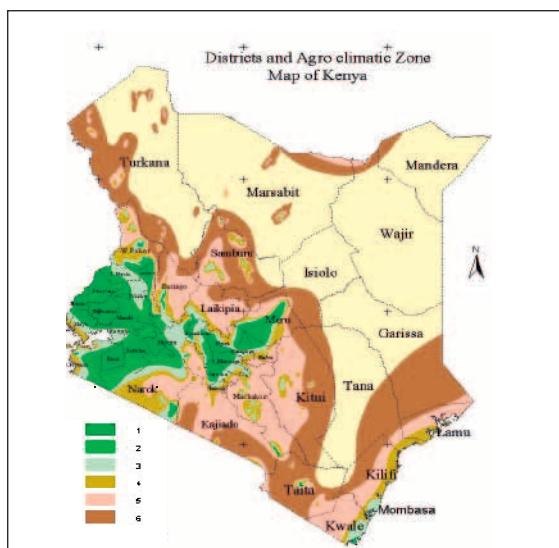


Fig. 4: Seven agro-climatic zones (see table 2); Source. NEMA 2005: 4 (modified).

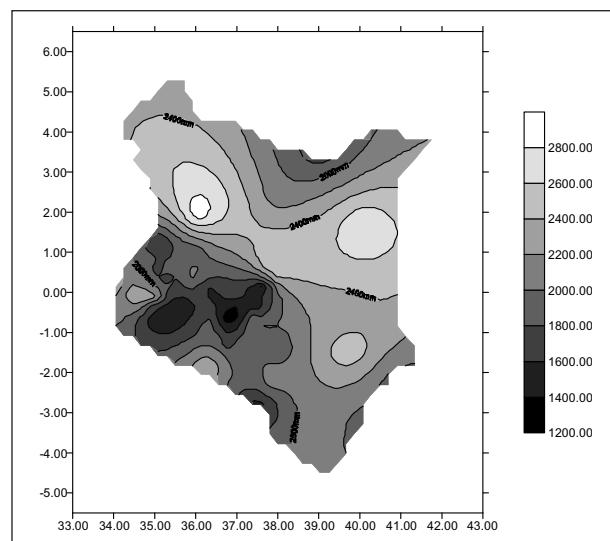


Fig. 5: Mean annual potential evapotranspiration; Source: NEMA 2009: 53.

Table 2: Characteristics of the main drainage basins of Kenya

Drainage basin	Area 1: Lake Victoria	Area 2: Rift Valley	Area 3: Athi River	Area 4: Tana River	Area 5: Ewaso Nyiro	
Area (sq km)	49,210	126,910	69,930	132,090	204,610	
Mean annual rainfall (mm)	1000	600	650	520	400	
Mean annual runoff (mm)	270	120	200	170	80	
Climate	Humid to sub-humid	Arid to semi-arid	Semi-arid	Semi-humid (headlands), semi-arid to arid	Arid to semi arid	
Water towers	1, 2, 3 1. Mount Elgon 2. Cherangani Hills 3. Mau Forest 4. Aberdare Range 5. Mount Kenya	1, 2, 3	4, 5	4, 5	4, 5	

Sources: NEMA 2009b: 49 and UNEP 2009: 6, (modified).

Water availability does not, however, rely on rain only, but also on surface and groundwater resources. Based on estimates of 1992, the annual freshwater potential effectively available for use is about 20,000 million cubic metres, of which 85% is surface water and 15% is groundwater (NEMA 2009: 50). As regards surface water, Kenya is divided into five drainage areas (Table 2) representing the spatial extension of water systems. The smallest area of 49,210 sq km adjacent to Lake Victoria displays the highest mean annual rainfall, whereas the largest area of 204,610 sq km, assigned to the Ewaso Nyiro River system, shows the lowest. Groundwater is also unevenly distributed in terms of quality, quantity and depth of the groundwater table (NEMA 2009: 54). The central rift valley and the area around Lake Victoria have high groundwater storage capacities as well as a high groundwater quality. The coastal strip also has reasonable groundwater capacities, but the water is saline and of low quality. Also in the eastern and north-eastern parts, where the water table is much

lower, groundwater is saline and below WHO drinking water standards. Groundwater capacity is lowest in the north-western and central eastern parts of the country. Depending on the type of soil, capacities for annual groundwater recharge in the ASALs is as low as 5% (NEMA 2009: 54).

This low capacity for storing groundwater is due not only to the low rainfalls over the ASALs, but also to the high evaporation rates there. Evaporation is a function of several meteorological controls, namely net radiation of the sun, water vapour content of the air, temperature and wind speed that interact with each other (NEMA 2009b: 52). High temperatures are, nevertheless, a relatively reliable indicator for high evaporation. Therefore it is not surprising that observed high values of evaporation coincide with the dry and hot areas of Kenya. Indeed, the evaporation rates over Kenya seem to be even more indicative of the agro-climatic zones than the drainage basins. The annual evaporation potentials over Kenya in Fig. 5 mirror the agro-climatic zones of the country in Fig. 4 exactly. Locally the evaporation effect due to temperature can, however, be exaggerated or mitigated by the other meteorological controls mentioned.

Rainfall and evaporation patterns in Kenya are additionally affected by local land use changes. In particular the high degree of deforestation is a threat to water resources, resilience of soils and rainfall patterns. UNEP guesses that over the last 100 years, Kenya has lost all but 1.7% of its forests (UNEP 2001). It is also assumed that 70% of its mangroves have been lost since pre-agricultural times (UNEP 2009: 115). The deforestation rate was extreme during the first half of the 1970s (16-18% annually) and ranged around 6% during most of the 1980s. Since the 1990s the forest annual exchange rate, according to FAO, ranges between -0.35 and -0.31% (GFRA 2010: 229). The FAO definition of forests includes agroforestry inventories. This is why UNEP comes to different results, and assumes that Kenya lost as much as 5% of its remaining forest cover between 1990 and 2005 (UNEP 2009: 123). Today's total forest cover is 6% of the total land area, of which less than one third are primary forests (GFRA 2010: 224, 250). In the 1960s cover of primary forest was still 12% (GOK/MEMR 2010: 10). Most of the existing forests are located around the five water towers of Kenya (see graph in table 2, p. 18), where they serve as critical water catchments that help to filter rainwater and to recharge groundwater levels (UNEP 2009: 4). Those forests are crucial due to their capacity to store water and to prevent erosion of soils and siltation of water reservoirs and rivers. They are thus also crucial to sustaining the country's hydropower stations located in those areas. Plant transpiration moreover informs cloud formation and wind patterns, and thus local precipitation (NEMA 2009: 53). However, the same zones are also characterized by high agricultural activity, and forests are under permanent threat.

3.2 Weather Extremes

Weather extremes in Kenya are a common feature of the country's climate. Looking back as far as the end of the 1920s Kenya seems to have suffered at least one major flood and one major drought each decade (Charania 2005: 11f.). These weather anomalies are due to the El Niño Southern Oscillation (ENSO) and the Indian Ocean Dipole (IOD) phenomena. The IOD was only discovered at the end of the 20th century and is related to surface sea temperature anomalies of the Indian Ocean and accordingly changing winds. Its relationship with ENSO is still disputed, but it seems that they often coincide with each other (Rourke 2011: 41-44). For example, positive IOD and warm ENSO events occurred together in 1982 and 1994, and in 1997/98 they led to one of the most severe floods that Kenya ever experienced (in terms of rainfall even worse than that of 1961; World Bank 2006: 169).

Both phenomena have two possible manifestations. The IOD has a negative and a positive mode. Its temperature anomalies appear, if at all, in June and peak in October. For the equatorial-west Indian Ocean the positive mode is associated with increased evaporation over the sea, inland winds and increased rainfall during the short rainy season, whereas Australia on the eastern side of the Indian Ocean lacks precipitation. The negative mode is associated with cool sea surface temperature of the equatorial-west Indian Ocean and a reduction of rainfall, because the winds transport the moisture of the East African land mass towards the sea (Zablone/Ogallo 2009; Hastenrath 1993 and 2000; Mapande/Reason 2005).

ENSO is a global phenomenon. It has a warm episode (El Niño) and a cool episode (La Niña). For the north of equatorial East Africa, in particular Ethiopia, El Niño is associated with droughts from July to September. For the south of equatorial East Africa it is by contrast generally associated with rainfall far above normal and subsequent floods during the short rains (OND). During La Niña the

opposite occurs, i.e. abnormally wet conditions during July to September for the south of equatorial East Africa, and rainfalls below normal during OND for the north of the region (Rourke 2011: 37). Generally, the warm phase is associated with enhanced evaporation over East Africa and with an increased surface sea temperature of the Indian Ocean. The high surface temperature and associated winds can, however, also lead to the opposite effect and suppress the rainfalls over the continent. This is due to the subtle balance and the multi-causal factors (ITCZ, IOD, and ENSO) that determine East African climate (Schreck/Semazzi 2004: 681f.). As the equator splits Kenya in two parts, the country's climatology is particularly challenging. Though difficult to predict, its impacts can be quite severe. According to a satellite-derived assessment of short rain anomalies during the wet events of 1982, 1994 and 1997, rainfall reached above-normal levels of up to 4 mm/day, which amounts to an additional 360 mm for the short rains. In contrast, during the dry events of 1988, 1998 and 2000, rainfall was up to 1.2 mm/day below normal, which amounts to 144 mm less precipitation for the OND period. (Washington/Semazzi 2007: 20).

Such weather anomalies are mainly responsible for the natural disasters that affect Kenya and other East African countries, namely floods and droughts as well as associated epidemics. From 1980 to 2011, according to EM-DAT (June 2011), Kenya suffered 10 droughts, 30 epidemics and 34 floods (total of 74 disasters). Thus the country ranks second after Ethiopia regarding droughts and floods, and second after Uganda regarding epidemics. Most of the deaths (83%) are due to epidemics, which are a frequent consequence of preceding floods or droughts. Droughts account for most of the affected people (80%), representing a total of more than 185 million persons affected since 1980 (floods: 24 million people). Two of the most severe droughts occurred in western and central Kenya in 1999 and 2002, both of which are said to have been brought on by La Niña (Rourke 2011: 33). Also the droughts of 1983/4 and 1992 are associated with the ENSO phenomenon (AEA 2008: 22). The worst droughts in northern and eastern Kenya were presumably that of 2005/6 and the current one. The worst floods Kenya experienced were in 1961 and in 1997/98, the latter also being an ENSO-related phenomenon.

3.3 Climate Change

3.3.1 Observed Changes in Climate Conditions

It is the increase in weather anomalies that is regarded as the most obvious manifestation of global climate change in Kenya. Looking back over the past three decades, most of the disasters took place this century (53 events out of 74) and in the 1990s (18 out of 74), whereas the 1980s saw only two disasters (EM-DAT 2011). On average Kenya has a drought every two years, but drought events have significantly increased during the last 20 years. Indeed, including 2011 Kenya has experienced serious droughts in five consecutive years (GOK/MEMR 2010: 10). It is obvious that disaster in Kenya is related to the country's peculiar climate conditions and that these conditions show greater variability than before.

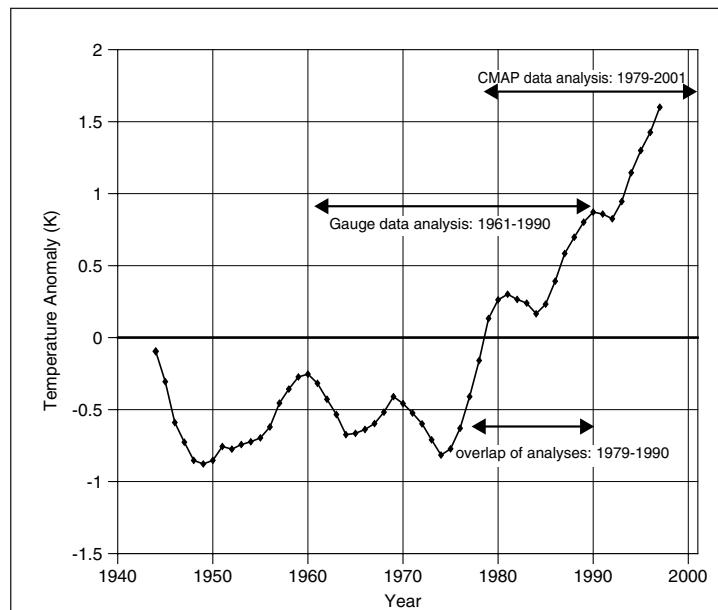


Fig. 6: Annual surface temperature averages over East Africa, 1960 to 2000; Source: Schreck / Semazzi (2004: 683), based on a combination of two data sets; Global Climatic Research Unit (CRU).

deviation from the long-term temperature average (baseline) from the 1940s to the beginning of this century. Since the 1960s, the minimum temperature in Kenya has generally risen by 0.7 – 2.0 °C

A second indicator for the impact of global warming is the observable temperature increase. According to IPCC (2001), overall Africa has warmed by an average of 0.7 °C over the past century (King'uyu et al. 2000). The surface temperature averages over East Africa show a clear warming tendency as of the end of the 1970s. Fig. 6 shows the

and the maximum temperature by 0.2 – 1.3 °C, depending on the region and the season (GOK/MEMR 2010: 9).

Thirdly, the glaciers of Mount Kenya and other ranges are melting fast; smaller glaciers have even disappeared already. For example, only 11 of the 18 glaciers of Mount Kenya still exist and the ice cover at the summit has been reduced by two thirds (UNEP 2009: 16). The retreat of glaciers in East Africa started already in the 1880s, but seems to have accelerated since the 1970s. This is due to decreased cloudiness and precipitation related to changes over the equatorial Indian Ocean, and to an increase in radiation. For example, Mount Kenya Lewis Glacier shrank from 0.60 sq km in 1890 to 0.26 sq km in 1982 and its terminus elevation rose from 4,465 m to about 4,600 m. Its maximum ice flow velocity also dropped from 15 m to 3 m annually, and if melting proceeds at such speed, it is likely that the glacier will disappear within just ten years. (Vod et al. 2008: 76).

One of the most often mentioned impacts of climate change, sea level rise, seems to be absent so far, however. A recent study (Mahongo 2009) on mean sea level (MSL) of the Indian Ocean produced surprising results. For the southern coast of Africa, sea level seems to rise; yet for the northern part the level seems to decline. This result is based on observation data of the existing stations measuring MSL along the coast: Lamu (B) and Mombasa in Kenya, and stations in Tanzania close to the Kenyan border at Tanga, Zanzibar and Dar-Es-Salam. The decline shows similar rates for Lamu B and Zanzibar stations (-3.62 to -3.64 mm per year), a very high rate for Dar-Es-Salaam (-11.44 mm per year) and a very low declining rate of -0.58 mm per year for Tanga. Only Mombasa shows a slightly rising trend (see Table 3). The declining trend seems to be confirmed by the results of satellite altimetry (Bindoff et al. 2007), which shows corresponding changes in the contour map of the Tanzanian coast for 1993-2003. However, the satellite altimetry for the period of 1955-2003 shows a rising trend. Therefore the trends are likely to reflect decadal fluctuations due to ENSO episodes. (Mahongo 2009: 153f.) However, if a long-term rising trend for sea level elevation emerges after the current declining trend, it is assumed that just 30 cm would be enough to submerge about 17% of Mombasa or 4,600 ha of land area (GOK 2010: 10).

Table 3: Span of data and MSL trends for WIO stations

Station	Country	Location of the Station	Span of Data	Years of Data	Gap (yrs)	Trend (mm/yr)
Mombasa*	Kenya	04 04 S 39 39 E	1932-2001	23	47	+ 0.83
Lamu	Kenya	02 16 S 40 54 E	1989-1989	1	-	-
Lamu B	Kenya	02 16 S 04 54 E	1995-2003	9	-	-3.62
Zanzibar*	Tanzania	06 09 S 39 11 E	1984-2004	21	-	- 3.64
Tanga	Tanzania	05 04 S 39 06 E	1962-1996	5	-	-0.58
Dar es Salaam	Tanzania	06 49 S 39 17 E	1986-1990	5	-	-11.44

Source: Mahongo 2009: 153f.; Original source of data: PSMSL Monthly Revised Local Reference (RLR) and PSMSL Monthly Metric Data (both at <http://www.pol.ac.uk/psmsl>)

3.3.2 Climate Change Projections

To project climate change is still a very difficult undertaking and various tools are available. There are global climate change models (GCM), regional climate models (RCM), and trend-based models. All involve many uncertainties, for example the development of societal variables that cannot be foreseen. The IPCC therefore introduced four different scenarios of societal development (SRES) to consider different pathways in its GCM projections. The four basic scenarios are A1: a world of rapid economic growth and rapid introduction of new and more efficient technology; A2: a very heterogeneous world with an emphasis on family values and local traditions; B1: a world of ‘dematerialization’ and introduction of clean technologies; B2: a world with an emphasis on local solutions to economic and environmental sustainability. A2 is the worst case scenario with an ever growing CO₂-emission rate, while B1 is the best case scenario, and mixed scenarios have been developed in the meantime.

Yet the models themselves have their shortcomings. For example, global climate models, which usually have a resolution of 200x200 km, are not very precise with regard to smaller spatial units.

Downscaling by RCMs, which usually offers a resolution of 20x20km, is generally more suitable for mirroring conditions in highly complex landscapes and climatic conditions such as in Kenya. Also, trend-based models display spatial units much better than GCMs, but rely on the extrapolation of historical data and are thus not suitable for describing non-linear processes. Fig. 7 below on rainfall scenarios for Kenya serves to exemplify advantages and disadvantages of the global and the trend-based model. The trend-based model (right) is much better for displaying the spatial differences in precipitation, which largely depend on the topographical characteristics of Kenya. However, the two graphs also differ in the amount of expected changes in rainfall. The deviation from the baseline is much higher in the trend-based model that indicates a spatially differentiated decrease in precipitation between 10% and 70% for most of the country. The GCM (left), in contrast, indicates a more modest decline in rainfall between 1% and 7% for the northern, north-eastern, south-eastern and south-western parts of the country, but an increase of 1% for the mountainous regions of the west towards the centre of the country. Finally, GCMs as well as RCMs should not be confused with predictions. Rather, they are simulations built upon many assumptions and their results depend strongly on their programming. Multi-model approaches are used to validate results of climate models, i.e. the more models confirm a projection, the higher the likelihood of that projection is ranked.

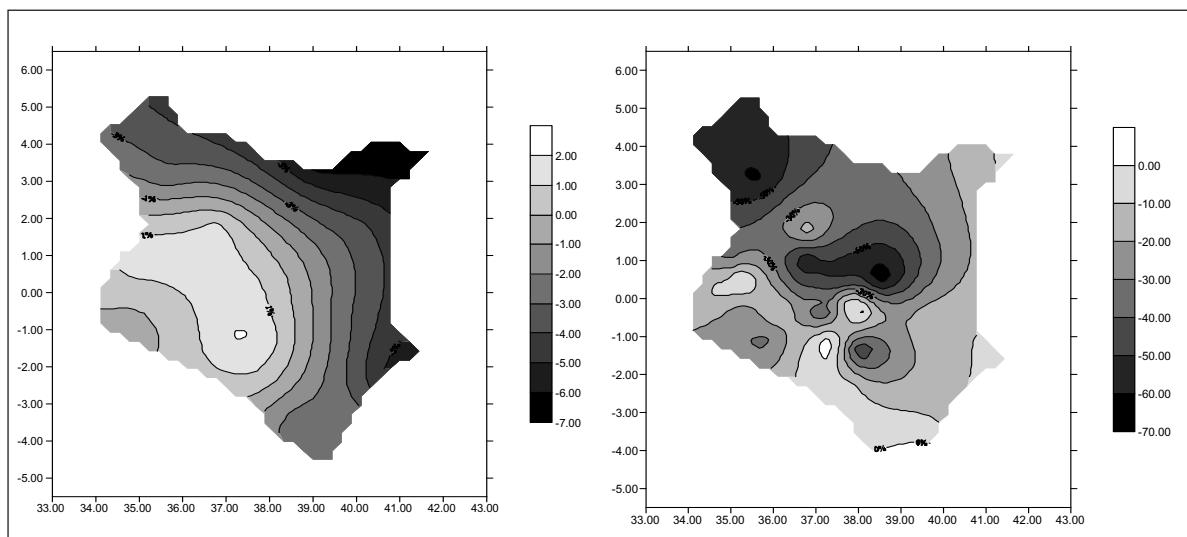


Fig. 7: Left: GCM-based annual rainfall scenarios for 2030; Right: Trend-based annual rainfall scenarios for 2030; Both expressed as percent increment of the annual rainfall above/below the 1990 baseline values; NEMA (2009: 52).

However, to anticipate climate change these models are the tools on which scientists rely. A multi-model assessment for Africa with 10 GCMs, based on observation data from 1961-1990, projects global annual warming until 2100 of 0.2 °C per decade for the B1 scenario and 0.5 °C per decade for the A2 scenario. Warming is expected to be greatest over the semi-arid margins of the Sahara and central-southern Africa. A simulation with 20 GCMs based on the A1 scenario indicates an increase of 3-4 °C for 2080-2099 compared with 1980-1999 (Devisscher 2009: 25). A warmer future is expected for East Africa, regardless of which SRES scenario is used. Moreover, there is 88% agreement between models for short rain simulation that the whole region will experience a wetting. However, most GCMs assumedly tend to exaggerate this wetting (Washington/Semazzi 2007: 19f.). For equatorial Africa (e.g. Kenya) a 5-20% increase in rainfall from December to February and a 5-10% decrease from June to August are expected by 2050 (Devisscher 2009: 25). The Government of Kenya also seems to rely on these IPCC scenarios for its climate policy, which equally assumes less rain and prolonged droughts during long rainy seasons on the one hand, and more rain during the short rainy season and extension of short rains into February on the other hand (GOK/MEMR 2010: 9). Many researchers also expect more intense ENSO events due to climate change (Wara et al. 2005).

Regional modelling (RegCM3) with a 20x20 km resolution was also carried out for Kenya. It is based on an A2-SRES, the IPCC scenario for a very heterogeneous world with an emphasis on family values and local traditions. It agrees on the general warming, and projects a temperature increase

between 1-5 °C depending on the region of the country. The north-western districts (e.g. Turkana) are projected to warm up one degree more than the other districts for most of the annual cycle; the north-eastern districts, in particular around Wajir, by contrast, show 1-2 °C less warming than the neighbouring regions. As regards rainfall, however, the RCM contradicts the IPCC results – despite the fact that an IPCC global model was used to produce this regional model. It projects wetting of the long rains instead of the short rains. Most of the increase in rainfall during long rains is expected to be experienced over the highland districts and along the coast (Washington / Semazzi 2007: 25).

In addition to the uncertainties of climate modelling already mentioned, it has moreover to be taken into account that the current multi-year period of droughts might not be due exclusively to global warming, but may be a cyclical phenomenon that will be reversed in few years. Actually, the interaction between global warming and cyclical phenomena is not yet known well enough.

3.4 Conclusions on Climate and Environmental Change

The chapter on climate change in Kenya has shown that models do not come to consistent projections. However, it is difficult to base policy decisions on conflicting climate scenarios. It is thus reasonable to start with the observations that can be made already: there is an increase in temperature and evapotranspiration, there is the melting of the glaciers, and there is an increase in extreme weather events. Taking these observations and existing vegetation and land-use patterns into account, it can be concluded that:

- The increase in temperature already leads to increased evapotranspiration that will have different effects for the different agro-climate zones. In the semi-humid and humid regions, evaporation-induced increases in cloud cover, i.e. the moisture content of the air, is likely to moderate the increased (greenhouse-induced) evaporation power. In the arid and semi-arid regions, increased evaporation is, in contrast, likely to lead to accelerated drying, because the increase in humidity is not enough to contribute to significant saturation of the air and cloud building. ‘This therefore implies that the drier regions in Kenya may become drier and vice versa.’ (NEMA 2009b: 54)
- The increase in temperature already perpetuates the melting of the glaciers. Thus the river flows of the Tana and Nzoia River that rely on glaciers as an important source of water experience increased water support during the dry seasons as long as glaciers are melting. During dry years this might even compensate for the lack of rainfall for some time. However, as soon as the volume of melt reduces or recedes, waterflow will decline considerably (NEMA 2009b: 57).
- The current decrease in rainfall (reflected in the trend-based model) and increased frequency of droughts seriously alters the recharge of groundwater in terms of both the quantity of the recharge and the duration of the recharge season. The seasonally persistent decrease in rainfall – as projected at least for the northern and north-eastern regions and for the coast – is thus likely to result in declining groundwater recharge. The projected increase in precipitation during MAM, there and in other regions, will not necessarily compensate for that due to the general increase in the evapotranspiration rate. ‘Higher evaporation may mean that water deficits persist for longer periods and commence earlier, offsetting an increase in total effective rainfall.’ (NEMA 2009b: 54)
- The high level of deforestation, particularly around the water towers, decreases the capacity of catchments to store water. Higher rainfalls in those regions thus do not necessarily imply higher recharge of the catchments, but might lead to increased surface run-off, which considerably increases the risk of floods and soil erosion. Since the beginning of the millennium, deforestation rates have been partly mitigated by stricter controls against illegal logging and afforestation programmes (UNEP 2009a: 16f.). However, those efforts are still far from compensating annual deforestation, not to speak of the losses of the past decades.
- The past decades show an increase in extreme weather events, of floods as well as of droughts.

Though climate models are not consistent in their projections, with the exception of the temperature increase, climate change is obviously a preeminent phenomenon in Kenya, and its impact is exaggerated by the environmental degradation already in place.

4 Political Context

4.1 Climate Policies

Kenya has been playing quite an important role in the African climate change debate. The first major step to developing climate change policies for Africa was the Nairobi Declaration on Climate Change that was adopted in Kenya in 1990 during the Nairobi Conference of Global Warming and Climate Change. Another milestone was the Conference on Policy Options and Responses to Climate Change in Nairobi in 1994 (NCCRS, GOK 2010: 8). However, since the early 1990s, only a range of initiatives related to utilization of natural resources and environmentally friendly development in general have been started, examples being the National Environment Action Plan (NEAP) of 1994 and the Environment Management and Coordination Act of 1999 (EMCA) without references to climate change. As late as 2003, only the state organ directly confronted with the adverse impact of climate change, namely the Ministry of State for Development of Northern Kenya and Other Arid Lands, had started the Aridlands Resource Management Project (ALARMP) and the Kenya Adaptation to Climate Change in Arid and Semi-Arid Lands (KACCAL) project. In 2009 the latter developed an Indigenous Peoples Planning Framework to target the hunter and gatherer communities in the ASALs, i.e. the Watta and Boni (GOK/MDNKAL 2009). Amongst other things, the two projects seek to promote commercialization of dryland products and to manage conflicts among pastoralists and between them and other groups (GOK/OP 2003: Addendum).

It took until 2008 for a national policy, the Draft National Environmental Policy (NEP), to consider the challenge of climate change. Although this only treats climate change as one environmental sub-issue amongst others, it applies a cross-sectoral approach, which is essential when dealing with climate change. It acknowledges that many of the natural disasters in Kenya are related to climate change and states that the government will adopt both approaches – mitigation and adaptation – to combat climate change. NEP suggests the following measures, many of which focus on technology transfer and capacity building for sustainable development (GOK 2010: 22):

- Develop and implement a National Climate Change Strategy.
- Identify and raise awareness of opportunities for adaptation measures.
- Develop and implement (CDM) programmes and projects under the Kyoto Protocol's Clean Development Mechanism that encourage significant levels of investment.
- Develop integrated, improved early warning and response systems for climate and disaster risks with a clear strategy for dissemination of information to the grassroots.
- Build and strengthen research capacity on climate change and related environmental issues.

NEP moreover established the Climate Change Coordination Unit in the Prime Minister's office, the responsible body for facilitating and coordinating the development of coherent climate change policy (GOK 2010: 22). It took the GOK two more years to come up with its National Climate Change Response Strategy (NCCRS; GOK/MEMR 2010) of 2010, an inter-ministerial and multi-stakeholder effort produced under the leadership of the Ministry of Environment and Mineral Resources. This is to be implemented during the next 20 years at an average annual cost of KES 235.83 billion, approx. EUR 2.0 billion (Nesoba 2011). Amongst the future impacts of climate change the strategy mentions population displacement and migration from disaster-prone areas, exacerbating human/wildlife conflicts, negative impacts on the agricultural sector and its farming, forestry, livestock and fishery sub-sectors, repercussions on hydro-power generation, on tourism, and on infrastructure generally (GOK/MEMR 2010: 10f.). The NCCRS considers adaptation as well as mitigation options and its suggestions include the following policy interventions (GOK/MEMR 2010: 13-16):

Adaptation

- Support the agricultural sector by providing downscaled weather information and farm inputs; improve water harvesting by means of dams for irrigation, soil conservation techniques, research on and dissemination of drought-, salt-, and disease-tolerant crops.
- Secure water supply by protecting the water towers and water bodies; desilt riverbeds and dams; improve water efficiency; develop an integrated water resource management approach.

- Promote economic livelihood diversification amongst pastoralists and sensitize them on the importance of balancing stocking rates to avoid further degradation and overgrazing of grazing sites, particularly in the arid and semi-arid areas.
- Take climate migrants from urban areas into account in urban settlement planning.

Mitigation

- Forestry: Grow 7.6 billion trees during the next 20 years and encourage large-scale land owners (at least 50 acres) to do water harvesting for irrigated private forests. Moreover, agroforestry, in particular tree-based intercropping, should be promoted. The aim of increasing forest cover by 10% is even written into Kenya's new constitution.
- Energy: Enforce a green energy development programme which invests in various sources of renewable energy such as geothermal steam reserves, solar energy capture and wind power generation. The NCCRS also points to the 'ample potential to grow sugarcane, sweet sorghum, jatropha and other non-food crops suitable for producing biofuels'.
- Agriculture: Other recommendations with regard to agriculture include the use of biotechnologies to increase food production per unit area, and to use agricultural waste to produce biogas.
- Many of these interventions in agriculture are regarded as suitable for participating in carbon trading under the Kyoto Protocol's Clean Development Mechanism (CDM) and in Voluntary Carbon Markets (VCM), and appropriate capacity building for the private sector and investors should be performed.

Kenya's climate change strategy thus reflects ambitions of Vision 2030, the national development agenda, which aims to attract at least 5 CDM projects per year in the next five years and acknowledges the challenges of climate change for adaptation and mitigation. However, neither the NCCRS nor Vision 2030 concerns for climate change are yet reflected in all other relevant sectoral policies or discuss trade-offs between policy goals. In particular competition between food production and agofuel production for land and water resources is not reflected. Vision 2030 and its related National Development Plan moreover 'failed to attract budgetary allocation' (HBS 2010: 39). Also integration of Kenya's climate change strategy into the programmes of line ministries is mostly still lacking. An exception is the recently released draft of the Scaling-up Renewable Energy Program (SREP) of the Ministry of Energy (GOK/ME 2011), which has geothermal sources, wind and solar energy as its main focus. Thus the NCCRS recommends developing climate change legislation and a cross-sectoral approach similar to the NEP (GOK/MEMR 2010: 22).

The most concise document with regard to climate change and land use is the 'Second National Communication to UNFCCC' (KFRI 2010; not submitted), which was drafted by the Kenya Forestry Research Institute in July 2010, i.e. shortly after the climate change strategy was released. It discusses the impact of climate change on land use and recommends that a threefold approach to climate change be included in Kenya's environmental policies: the rehabilitation of forests as well as the promotion of sustainable forest management for climate amelioration and soil and water conservation; ex-situ conservation activities to safeguard endangered species by means of seed storage and botanical gardens in all agro-ecological zones; and efforts to take advantage of international carbon markets (KFRI 2010: 4f.). Moreover it details the impact of land use change such as deforestation and settlement schemes on greenhouse gas (GHG) emissions and outlines the potential of the agricultural sector (including forestry) for contributing to national emission targets under the Kyoto Protocol. Indeed, CO₂-emissions have increased in Kenya from around 5 tons in the middle of the 1990s to around 11 tons in 2007 (GOK/MEMR 2010: 14). Finally, the document is also illuminative with regard to Kenya's biofuel policies, which it recommends as a way forward to participate in the carbon market (KFRI 2010: 5).

Another document produced in the same year as the NEP, the Food Security and Nutrition Strategy (FSNS) of Kenya of 2008, also considers climate change, but does so more narrowly from an environmental management perspective. Its chapter on emergencies and related food and nutrition crises expresses its confidence that 'droughts and floods are predictable' and that 'they can be planned for with a view to reducing their adverse impact' (GOK/FSNS 2008: 31). Population growth seems to be regarded as the major threat to food security, which should be mitigated by agricultural

intensification, efficient use of productive resources, and diversification (GOK/FSNS 2008: 18). Moreover, the FSNS seeks to enhance food security through commercializing agriculture and transforming the sector into a ‘profitable commercially and internationally competitive activity’ (GOK/FSNS 2008: 23). In other words, a lopsided focus is put on raising food output by means mechanized large-scale agriculture, not taking into account other factors that leave people food-insecure. Neither trade-offs of such an approach with regard to food security nor the strategy to implement commercialization are discussed. In fact, such policies have led to the loss of dry season pastures for pastoralists (HBS 2010: 36).

4.2 Agrofuel Policies

Although a coherent climate change strategy is still in its infancy, the increase of national biofuel production has been a subject of discussion for quite a while. In 2006 the Ministry of Energy established the National Biofuels Committee to coordinate the activities of stakeholders in the agrofuel sector and to facilitate the development of sector strategies. By May 2008 a biodiesel strategy (2008-2012) had been developed and in August 2008 the Kenya Biodiesel Association was established. Agrodiesel regulations drafted by the Energy Regulatory Commission seem to be still underway. An agroethanol strategy was finalized in June 2009. Those efforts are to be followed by a comprehensive national agrofuel strategy, which comprises agrodiesel, ethanol, biogas, and 3rd/4th generation technologies, in 2011 (Pipal 2010). Although the release of such a policy has been announced by multiple sources, no such policy (or the other documents) is currently available to the broad public.

The Draft National Biofuel Policy is said to be based on the assumption that Kenya could produce 32 million litres of biodiesel annually per 50,000 ha under cultivation and that the nation’s dependency on imported petroleum products could be reduced by 25% (in volume) by 2030 (GAIN 2011: 2f.). This is a great incentive for decision-makers to focus on that option, as Kenya’s imports of petroleum products have grown from around 2,400 metric tons in 1996 to around 6,000 metric tons in 2011 (1 metric ton is around 1168 litres) (GAIN ibid). Indeed the aim of relying more strongly on indigenous energy resources had already been formulated in the Interim Poverty Reduction Strategy Paper 2002-2003. Agrofuel production is also seen as a viable approach to considerably reducing the use of fuel wood in the degraded arid and semi-arid areas. This would, moreover, improve health conditions of the population, because respiratory infections due to fumes in houses would decline (PISCES 2011b: 21).

Supported by international donors and other stakeholders, several activities already have been carried out or are underway to promote agrofuel production in Kenya. In 2008 German Technical Cooperation (GTZ; now GIZ) together with the Kenyan Ministry of Agriculture commissioned a study entitled *A Roadmap For Biofuels in Kenya*, which concludes that ‘Kenya could become the biofuel powerhouse of East Africa’ (Endelevu Energy/ESD 2008: 11). The document sets out Kenya’s potential for agrofuel production. The roadmap suggests that within five years Kenya could produce a 10% ethanol blend (E10) and 2% biodiesel (B2). To reach this target, 93m litres of ethanol and 32m litres of agrodiesel would be needed. As much as 58 million litres of ethanol could be produced by converting 15,000 ha (16.5% of suitable new land) and by diverting around 4 ha of current sugar cane plantations into full ethanol production, and another 34.6m litres could be derived from sweet sorghum planted on 24,700 ha (1% of suitable new land). It would be possible to produce 32m litres of agrodiesel by cultivating 50,000 ha of a combination of different oil seeds such as jatropha, castor, croton, sunflower and others (Endelevu Energy/ESD 2008: 11f.). Potentials for producing ethanol from molasses alone are guessed to be more than 400m litres (Compete 2008: 7).

According to the Director of Renewable Energy (Erick Akotsi, Ministry of Energy), the ‘crop of choice’ in GOK’s agrodiesel strategy is jatropha curcas, but also other crops such as croton and castor will be supported. In 2009 it was envisaged that the biofuel policy would be implemented on a fast track basis, which allows for a B5 blending ration by 2012 and a B10 blending ration by 2010. Also agroethanol is going to be developed on a fast-track basis, aiming at an E10 ration by December 2010, which requires production of 135,000 litres per day (Akotsi 2009).

In 2010 mapping and zoning of areas suitable for the different types of agrofuel crops was conducted in a joint effort by UNEP and the two non-governmental organizations mainly engaged in agrofuel policies, i.e. the African Centre for Technology Studies (ACTS) and the Policy Innovation Systems for Clean Energy Security (PISCES), which is a five-year research consortium funded by

DFID (ACTS/PSSES/UNEP 2010). Also other donors support Kenya in becoming what is often called a 'green economy'. The DEG Jatropha Support Programme, for example, is a public-private partnership funded by nine East African companies, the German Federal Ministry for Economic Cooperation and Development (BMZ) and the Deutsche Investitions- und Entwicklungsgesellschaft (DEG) to perform research into agronomy. It is managed by Pipal Ltd., which represents the private sector on the Kenyan Biofuels Policy Committee (Pipal 2010). The European Commission currently supports the expansion of jatropha farming by a Malindi agrofuel cluster on the coast, and also UNEP has an Access to Clean and Sustainable Energy Services programme that includes agrofuel production – most likely on a small-scale basis (GOK/ME 2011: 41).

The above-mentioned SREP programme of the Ministry of Energy does not focus on agrofuels, but on electricity generation from renewable resources in general. Incentives for the sector are nevertheless included. For example, fossil thermal plants are the second most important source of electricity (34.3%) in Kenya after hydropower. Electricity generation out of biomass, e.g. sugar cane bagasse, can contribute to replacing or blending the fossil fuel in co-generation power stations. To support the rise of 'green energy', the Kenyan government plans, moreover, to set up a Green Energy Fund Facility to lend funds at concessional rates to renewable energy projects, including to the biomass-subsector (GOK/ME 2011: 3f., 17).

In sum, agrofuel is regarded by the Kenyan government and its supporters as a suitable approach for tackling several problems at once:

- Reduce the country's dependence on fuel imports and save more than USD 70m per year by substituting 12% of imports with locally produced agrofuels (assuming an average price of USD 90 per barrel) (Endelevu Energy/ESD 2008: 8).
- Reduce the national consumption of wood fuel and the widespread practice of charcoal burning. This would decrease deforestation and soil degradation, contribute to the reduction of CO₂-sequestration, and thus mitigate climate change (KFRI 2010: 5).
- Gain revenues from carbon trading by cultivating jatropha, because jatropha would be considered as tree cover under the CDM. Thus 100,000 ha of jatropha are expected to generate USD 46.2m annually (KES 3bn or 3,000 KES/ha) (KFRI 2010: 5).
- Jatropha would, moreover, work as a carbon sink and thus contribute to the nation's emission targets under the Kyoto Protocol (KFRI 2010: 5).
- Increase rural employment by 'thousands of new farm jobs and between 500-1,000 new non-farm jobs'. It is speculated that this might even contribute to the reduction of HIV, because fewer women would be forced into prostitution thanks to cash crop revenues (Endelevu Energy/ESD 2008: 8, 11).

Finally, ethanol production plays a crucial role for the future of the Kenyan sugar sector. The sugar cane industry is currently not competitive and will be less so when the safeguards under the COMESA free trade agreement come to an end at the end of 2011 (SUCAM 2008: 6). Also the prices of the European Union for imported sugar were expected to decrease in 2007 due to the EU Sugar Reforms under the EU Common Agricultural Policy (SUCAM 2008: 14). Thus ethanol is an attractive option for diversifying the revenue base of the Kenyan sugar industry and the outgrower farmers and millers depending on it (SUCAM 2008: 6, 44; GOK/MA 2008: 25). Ethanol production is not new to Kenya either. The first ethanol plant was set up in 1977, but ceased operation only two years later. In 1983 the country introduced programmes to blend ethanol with petrol to reduce its import bills, but those also collapsed ten years later (PISCES 2011b: 35; Compete 2008: 5). Today, apart from integrating the sugar sector into the energy sector, the Kenyan government is moreover keen to increase sugar production as such, because it currently imports about one third of the national sugar demand (HVA 2007: 10).

However, agrofuel policies also have many pitfalls. Many agrofuel plants such as castor and jatropha have a high potential for massive invasion into the environment beyond cultivated plots and for displacing the local species. Castor seeds, leaves, and stems are moreover poisonous for humans and livestock (Endelevu 2009: 81). Similar experience was gained with Mathenge (*Prosopis Juliflora*), once seeded by the FAO to improve soil degradation, which now causes infections to livestock that are scratched by the thorns when passing (Diwayu, Mobilizer). Generally, newer

biofuel crops such as castor, crambe and jatropha have not yet been tested sufficiently to know their impact on the environment and the agronomy (PISCES 2011b: 19).

Although many of those plants are supposed to be drought resistant, they often have to be irrigated to yield a reasonable output. In particular the claims made about the ‘wonder plant’ jatropha turned out to be unsubstantial. High yields on marginal soils, low water and nutrient requirements, and high resistance to pests and diseases have been falsified already (Jongschaap et al. 2007). Recent research from India shows that the plant can survive on 10-20 mm water per month during the leaf-shedding period, but that it needs 140 mm during other times, and 1410-1538 mm over the year if it is not to suffer water stress, and even more if luxurious yields are to result (Rao et al. 2010: 9). PISCES, a leading research consortium and consultant on agrofuels in Africa, only recently ascertained that ‘biofuel development companies are now often providing considerable fertilizer, insecticides, pesticides as well as full-scale irrigation from adjoining rivers, lakes and boreholes in arid and semi-arid areas’ (PISCES 2011b: 18). Particularly in arid and semi-arid areas increased water scarcity and decreased water quality is the likely result, thus jeopardizing water security. The ‘Jatropha Reality Check’, commissioned by the GTZ in 2009 even concludes:

‘that smallholders in Kenya should not pursue Jatropha as a monoculture or intercrop plantation crop at the present time. It simply makes no economic sense for farmers, especially those that are food insecure, to be investing in a crop that will fail to yield positive returns. Further investments in monoculture and intercrop plantations by smallholders should be delayed until more research leads to yields high enough to justify the investment. The only type of *Jatropha* plantation that we can recommend for smallholders at this time is the fence.’ (Endelevu Energy 2009: 78).

In the case of large-scale investments, the claim of reducing fossil fuel imports and contributing to the reduction of wood fuel use and charcoal burning, thus protecting forests and woodlands and improving Kenya’s CO₂-emissions, is not likely to come true either. Of eight large-scale projects in Kenya, more than half are designed for export and to satisfy external demand, in two cases explicitly that of China (PISCES 2011b: 35f.). But even if a plantation project is not immediately aimed at foreign markets, it is likely to export too, because the terms of trade of the world market are very likely to be better than those of the Kenyan national market. Only a moratorium on agrofuel exports would effectively prevent such a scenario.

Investors and developers barely take into account the impact of climate change on agrofuel production. In India the increasing unreliability of monsoon patterns, for example, led to the failure of expected production targets (PISCES 2011b: 16). Thus despite their better position for realizing their own interests by comparison with those of the local population, even the investors are not on the safe side. The same will be true for small-scale farmers.

In addition to the competition for water, the other obvious pitfall is the competition for suitable land. In Kenya most investments in agrofuels so far have been made in the few regions of ‘high potential’ land (PISCES 2011a: 13), thus competing with the current production of food and cash crops. But even if only ‘new land’ is set aside, as suggested by the ‘Roadmap’ (Endelevu Energy/ESD 2008: 12), this competes in Kenya with the need to expand food crops in the face of the prevalent dependency on food aid and a still growing population. And even if the focus is put on drought-resistant feedstock such as jatropha, plantations will still compete with pastoralist’s grazing areas in the semi-arid and arid lands and thus with national meat and milk production. Finally, forests also are a source of livelihood, in particular for hunter and gatherer communities (let alone wildlife). Thus the myth of ‘new land’ or ‘marginal lands’ that do not interfere with food security issues of such food-insecure countries as Kenya must be abandoned (Gaia Foundation et al. 2008).

Large-scale investments into agrofuels compete with small settlements scattered in rural areas, and thus have a high potential for causing displacement and interfering with housing security. This can happen in countries like Kenya, where security of tenure is very weak due to a tenure system that so far only respects individual land titles, but barely provides those to farmers and pastoralists. These persons mainly live on so-called trust and state land entrusted to county councils and the national government (see chapter 4.3.1). ‘Without registered land rights, smallholders are highly vulnerable to County Council decisions to lease out land to private investors’ (PISCES 2011a: 14).

4.3 Land Policies

As shown in chapter 2.1, only 16% of Kenya’s land surface is fertile to high-potential and can support rain-fed agriculture (NEMA 2005: 5). Around 80% of the population lives in these areas, some of which show population densities as high as 2000 per square kilometre, particularly in the

central highlands and in coastal regions (Syagga 2006: 8). Fertile land is a scarce resource in Kenya and thus the question of land tenure lies at the very heart of all investment, environmental management and human security in Kenya. To a large extent, colonial legacy, historical injustices, lack of political goodwill, and institutional failures among other aspects epitomize Kenya's land problem. These have largely been blamed for the duality in tenure systems (statutory and customary), leading to competing claims, lack of public participation, gender bias, primitive accumulation of wealth (land owning/grabbing attitudes), as well as fragmented smallholder peasant farming, largely attributed to Kenya's failing agriculture (Nzioki et al. 2009: 270). In line with its colonial land policies, post-colonial Kenya has a lively history of land grabs by political elites and of land reallocation by leaders to assure political allegiance along 'ethnic' lines. Indeed, land has been a major factor behind the incessant violent outbreaks during past elections.

Since the promulgation of the current constitution of Kenya, the ground has shifted with virtually all pieces of legislation undergoing reviews for consistency with the proposed devolved governance structure. Even though August 2015 is the legal deadline for the formulation of any pending laws, this process will depend greatly on political goodwill, especially in the face of turf wars to protect the status quo. Of particular interest on the issue of land tenure and human rights are the proposed Land Act, Community Land Act, and the Devolved Government Act. At the time of writing this report, efforts to reorganize the regulation of land tenure had so far produced a raft of draft Land, Community Land and Devolved Government Bills for consultations pending adoption.

The interim phase will, however, be a time when existing laws and established structures still inform e.g. administrative behaviour and certainly modes of political representation. Under the new dispensation, it is presupposed that the Ministry of Lands and the respective local authorities have the technical and requisite human resource capacities. It is further presumed that the officers driving these critical reforms are beyond reproach and act in good faith to promote public interest. This may not necessarily be the case though. Most such institutions are understaffed, are prone to corruption and in several cases serve vested interests.

4.3.1 Colonial Heritage and the Post-independence Administration of Land

Although the new constitution is in place and new land laws in the making, it is important to reflect on past handling and management of land for three reasons. First, past land regulations and politics are responsible for the land injustice, which still moulds today's land distribution, social relationships, and conflicts. Second, this is also the case for our study area and thus shapes current (in)security of tenure that is so crucial for local livelihoods. Actually, the majority of investment plans for agrofuels in the delta took root or were initiated before the new constitution was adopted. Only one EIA, that for Bedford Biofuels, was finalized shortly after that. Thirdly, this is a precondition for understanding the human rights situation, in particular for those who are not familiar with past land politics in Kenya.

Under colonial rule, land was categorized into 'scheduled areas' or so-called 'White Highlands' – high-potential land farmed by white settlers – on the one hand and 'non-scheduled areas', mostly low-potential and arid to semi-arid lands on the other that were left to the African population (Ominde 1968: 27f.). Therefore, traditional inhabitants were regarded as tenants of the Crown with only 'temporal rights' over land (UN-HABITAT 2002: 43f.). At the same time, the African population was divided into districts along 'ethnic' lines, and inter-district movement and trade was strictly controlled. By contrast, the settlers were provided with leaseholds (over 999 years) and freeholds over large tracts of land. This was accompanied by a reserves policy that set out land for the major tribes, the so-called Native Trust Land Areas, providing cheap labour for the European farms that were largely cash-crop oriented (Rutten/Owuor 2009: 308). Land tenure at the coast, where the Tana Delta is located, faced its own peculiar challenges. The immediate coast was inhabited by Omani Arabs, whose Sultan arranged a leasehold with the British colonizers in 1885 on the so called 10-mile strip, stretching over 1,900 km along the coast (Wayumba 2006: 7). A subsequent adjudication process, decreed by the Land Title Ordinance of 1908, converted the lease into freeholds of Arab landlords (Kranja 2010: 181). The remaining 'waste and unoccupied land' of the hinterlands automatically became government land. Indigenous Africans who traditionally occupied the land were excluded from the process (Njuki 2001).

It was only in 1954 that the 'Swynnerton Plan' introduced individualized tenure rights, permission to grow cash crops outside the white highlands, and access to credits for 'progressive' Africans to

promote the emergence of an African middle class with minimal impact on the great majority of the population (Collier / Lal 1986: 44f.; Ondiege 1996: 124). After independence, to a large extent, the new African elites promoted the interests of the white settlers and their patrons, as well as their own interests (Oucho 2007: 91; Ogot 1996: 64; UN-HABITAT 2002: 47). In the name of development, late-colonial and post-colonial land redistribution took place via repayment schemes (driven by the World Bank and the British Government), which strongly favoured mid-size farmers among the Kikuyu elite at the expense of small-scale farmers from other 'tribes'. Also the concept of labour pools in low-potential areas to sustain farming in high-potential areas was passed on in the first national development plans of post-independence Kenya (PISCES 2011a: 13). Similarly, Crown lands became government land while the native areas were converted to trust land. The Crown Lands Ordinance of 1915 was replaced by the Government Lands Act and the Native Lands Trust Ordinance of 1938 became the Trust Land Act (Ogolla/Mugabe 1996: 104). For the Coast Province, this meant remaining the province with the greatest share of government land, comprising nearly 50% of its land mass compared with roughly 20% government land nationwide (ILCA 1979:2; Ondiege 1996: 122).

Therefore the role of land administration and management of related resources cannot be denied and is outlined briefly here. Government land comprised natural forest as well as natural resources such as water bodies and any minerals and mineral oils within trust land areas (Constitution, rev. ed. 2008 (2001), sec. 115(1)). It was vested in the president with barely any notion of trusteeship, which made government land a kind of private ownership of the presidency and laid down the basis for the self-serving distributive politics of Kenyan presidents and their fealty fellows (CIEL 2006: 4). Trust land was administered by the county councils. County council members were often nominated by the minister, as was the case with council chairmen (Local Government Act Art. 39 and Art. 29(1)). County council officers, the clerks, were appointed by the Public Service Commission (Local Government Act 109(1)), and provincial commissioners were supervised by the Office of the President (UN-HABITAT 2002: 144). In sum, the central government had considerable control over local governments and enough leverage to ensure their compliance with its policies and politics, which were shaped along ethnic lines. The 'eating of land' by ethnic clans in power resulted in wealthy families, some owning as much as 90,000 ha (Syagga 2011: 16). Moreover, fees from licensing land and access to natural resources served as source of revenue for local authorities (Local Government Act, sec. 144(5)). Box 1 provides an impression of the far-reaching powers of control that authorities in Kenya enjoyed under post colonial laws.

Box 1: Power over land under Kenyan land laws before August 2010

Generally, the councils were advised to manage the land 'for the benefit of the persons ordinarily resident on that land ... under the African customary law ... vested in any tribe, group, family or individual' (Trust Land Act, Sec. 115(2)). They had the power to set apart areas of trust land for the 'use and occupation by a public body or authority; or for the ... extraction of minerals and mineral oils; or by any person or persons for a purpose which in the opinion of that county council is likely to benefit the persons ordinarily resident in that area or any other area of Trust land vested in that county council, either by reason of the use ... or by reason of the revenue to be derived from ...' (Trust Land Act, Sec. 117(1)). The old constitution, moreover, explicitly stated that in such cases 'any rights, interests or other benefits in respect of that land that were previously vested in a tribe, group, family or individual under African customary law shall be extinguished.' (Trust Land Act, Sec. 117(2)) and that the county council has the right to make grants or even to dispose of land to any person or authority for the use for which the land was set apart (Trust Land Act, Sec. 117(3)). For setting apart land the county council just had to *notify* the divisional land board and the residents of that land. If – which was rarely the case – the setting apart was not approved by the divisional land board, its decision could be repealed by a 3/4 majority of the county council (UN-HABITAT 2002: footnote 539; emphasis by author). The Local Government Act moreover stressed that local authorities can acquire land for a specific purpose, notwithstanding that the land is not immediately required for that purpose, and may use it in the meanwhile for any other purpose (Local Government Act, Sec. 144(1)). It could even sell or exchange any land it possesses which is not required anymore for the purpose it was originally acquired for (Local Government Act, Sec. 144(6)). Finally, trust land could also be set apart at any time by a written notice of the President to the county councils for his own or an alleged public purpose such as extracting minerals and mineral oils (Constitution, rev. ed. 2008 (2001), sec. 118). Certainly the President and the Commissioner of Lands could also set aside government land.

There were, however, attempts in post-independence times to increase the portion of land under statutory ownership, usually with the claimed aim of increasing agricultural productivity. Such land reforms, equally inherited from colonial rule, were conceptualized as a three-stage process. First

rights under customary tenure had to be ascertained – this is called adjudication and comes close to ownership. Second, all pieces of land found to belong to an individual or group in the adjudication process had to be aggregated, i.e. one consolidated piece of land was allocated equivalent to that of the several different pieces. And third, an entry of the rights over this consolidated land was made in the state-maintained land register and a certificate issued (Ogolla/Mugabe 1996: 99). This process mostly favoured farmers, in particular holders of larger pieces of land. Smallholders were compensated, but lost their land and thus their livelihood. They were often left landless afterwards.

The process of adjudication was accompanied by special regulations for registration of land to a group (under the Land (Group Representatives) Act). If a group was recorded as owner of land under the adjudication process, all persons registered for that group were subsequently entitled to become group members (UN-HABITAT 2002: 147). The aim of that policy in the early 1970s was to develop livestock keeping by so-called group ranches, large areas of semi-arid lands which were supposed to be jointly managed by groups of pastoralists. These ranches were an attempt to solve the problems of sharing land and water resources, controlling livestock numbers and over-grazing on the one hand, and of integrating pastoralists into the market economy on the other hand. To a certain extent this was supposed to counter-balance the process of land consolidation and adjudication of individual titles, which favoured the farmers, by providing a form of security of tenure to pastoralist groups too. (Ng'ethe 1993: 187-190) Saying that, it confirms at the same time that pastoralists were excluded from gaining access to individual titles.

Both forms of titling, however, alienated land from customary control. Customary tenure allows for overlapping user rights, or so called 'secondary' or 'derived' right holders (Wakhungu et al. 2008: 3). Thus conversion of customary tenure into some type of statutory title deed often led to the deprivation of others and/or to conflicts over the use of resources (Willy 2008: 47f.). The same can be said for the consolidation process, which often led to loss of control over valuable resources. Those who, at some point in time, lost their customary or legal access to their land often stayed landless. For them, the squatters, it was difficult to change their status again. Only 'persons who have occupied a piece of land continuously for twelve or more years without the consent or authority of the registered owner' could apply for registration as the legal owners (Ministry of Lands 2011: 21). This is a long period of time which protected the interests of absent owners.

In fact the administrative structures and procedures, including the adjudication process, gave considerable powers to the state, public officers, government agencies and county councils for compulsory acquisition and stockpiling of land in the name of development control. But it gave only little power to the constituency, and no power at all to minorities. With authorities left unaccountable to the public, land regulations were often either abused or not adhered to and this led to irregular and illegal allocation of land (Ministry of Lands 2009: 11-13, 19). County councils issued land without (true) consultation with the locals to companies and development authorities for a would-be economic development which did not take place, or after some construction activities never came into function. Often land was given away only to be used as security for a loan without any investment, use or development of the land taking place (Athman, interview 2011). Obtaining adequate compensation often involved many difficulties (see Box 2). For inhabitants of land who did not have proper title deeds, this power was frequently associated with evictions or the withdrawal of land and resources on which they depended.

Box 2: The challenge of adequate compensation under Kenyan law before August 2010

The fact that the Kenyan Government remained the ultimate owner of the land limited the right to compensation in many cases. For example, if the Government entered land licensed for lease, sale or occupation for any public purpose related to 'improving water flow' (e.g. maintenance of dams), compensation was usually limited to estates, trees, harvests, etc. on the land – not to the land itself (Government Lands Act, Art. 87). Compensation for investments in land were even denied completely in cases where leases were simply not renewed (Government Lands Act, Art. 71). In contrast, in the case of trust land those affected by alienation were entitled to 'prompt payment of full compensation' (Constitution, rev. ed. 2008 (2001), sec. 117(4) and 118(4)(b)). In practice, however, compensation faced considerable difficulties. At the provincial level compensation claims, for example, were assessed by the district commissioner in consultation with the Divisional Land Board, i.e. by those who set the land apart. Appeals against such assessment could be filed with the Provincial Agricultural Board, but were rarely successful; indeed no such case was known in 2002 (UN-HABITAT 2002: footnote 540).

In a nutshell, the old, not yet replaced administrative structures and corresponding land laws were one root cause of the violation of human rights in Kenya. They made evictions without serious consultation of the people affected and without proper compensation, and the exclusion of such people from vital livelihood resources, a legal act under Kenyan national law. From a human rights perspective, national law legitimized severe human rights violations, not to speak of the violations that occurred through not respecting even this law. Without security of tenure the rights to water, food, and housing were thus under permanent threat and the inhabitants of such land were still treated like tenants without many rights.

4.3.2 The New Land Policy

The journey to land reforms has come a long way since the National Land Policy Formulation Process began in the year 2004. It will be remembered that even prior to commencement of policy formulation, the government had initiated various measures aimed at resolving the land question through commissions such as the Committee on Land Clashes (1999), Commission of Inquiry into the Land Law System (2002), Commission of Inquiry into the Illegal/Irregular Allocation of Public Land (2004) and the Constitution of Kenya Review Commission (2000). These efforts bore fruit in the consolidation of the recommendations of the various commissions into the National Land Policy which was approved by Parliament in December 2009. The current constitution anchors the National Land Policy in the supreme law of Kenya, which will give great impetus to the realization of land reforms.

The most important innovations of the NLP include the re-categorization of land into public, community and private land; a policy to use land productively and sustainably, and to share benefits with the local population; and a call for inquiries into past and present land injustices (NLP 3.6). It moreover suggests more decentralized and participative modes of administering land (NLP Chapter 4) and emphasizes the rights of women, minorities, children and persons with disabilities to access and own land (NLP 39(h)). In addition, it creates the National Land Commission (NLC) and the institutional framework that will deliver reforms in the land sector at the community, county and national levels.

The NLP also calls for legislation on eviction and resettlement (NLP Sec. 175 and 200). In March 2011 a draft of such guidelines was published by the Ministry of Lands and is now awaiting presentation to and adoption by the cabinet as a sessional paper. The guidelines explicitly allude to international law, denounce the problem of land insecurity and squatters, and acknowledge international standards in their 'general principles'. Thus the draft explicitly calls forced evictions a human rights violation, stresses the obligation of government to prohibit forced evictions and protect against this, stresses the right to secure tenure, and emphasizes the right to housing and an adequate standard of living. In terms of legal language as a basis for specification and enforcement of guidelines, however, it still falls short of the proposal made by the Kenyan NGO Hajakami or of the Kothar Guidelines. It includes references to displacement due to natural disasters (GOK/Ministry of Lands 2011: Sec. 175 and 200), but does not yet reflect thoroughly the challenges of climate change.

The new constitutional framework for land tenure regulation is written along the lines of the NLP, i.e. makes the reform of land categorisation and administration a matter of superior law. In total, it bases future Kenyan land policy on seven principles (see Box 3).

Box 3: Principles of land policy and definition of land under the current constitution

The seven principles of land policy

(a) Equitable access to land; (b) security of land rights; (c) sustainable and productive management of land resources; (d) transparent and cost effective administration of land; (e) sound conservation and protection of ecologically sensitive areas; (f) elimination of gender discrimination in law, customs and practices related to land and property in land; and (g) encouragement of communities to settle land disputes through recognized local community initiatives consistent with this Constitution' (Art. 60).

The definition of land

'Land' is defined as including '(a) the surface of the earth and the subsurface rock; (b) any body of water on or under the surface, (c) marine waters in the territorial sea and exclusive economic zone; (d) natural resources completely contained on or under the surface; and the air space above the surface' (Art. 260).

To summarize, the innovative ideas enshrined in the current constitution include (Constitution 2010: Art. 62-68; Willy 2010):

- Government land and parts of trust land became public land, which is administered by the NLC. It includes all ‘unalienated government land’, land which is ‘lawfully held’ by state organs, and land over which ‘no individual or community ownership can be established’. The latter opens the door for a new process of adjudication and registration of public land as private or community land. All natural resources such as mineral oils, government forests and water bodies are, however, still vested in either government or county councils as strictly trustees of the population.
- Community Land is all land already lawfully registered in the name of group representatives; land transferred to a specific community by any process of law; land declared to be community land by an Act of Parliament; land lawfully held, managed or used by specific communities (e.g. community forests, grazing areas, shrines); and land lawfully held as trust land by the county governments which is not by definition land vested in the national government (Art. 63).
- Private land is land held by any person under leasehold tenure, and any other land declared private by an act of Parliament (Art. 64). Non-citizens are only entitled to leaseholds of a maximum of 99 years (previously 999 years). The constitution has introduced prescribed minimum and maximum acreages of private land holdings (Art. 68I(i)) and requires its productive use (Art. 60(1)I, Art. 66(2)). This is meant to solve the twin problems of idle private lands and discouraging land fragmentation due to the ever increasing number of smaller holdings.
- However, state organs still have the power to set aside public land and to disappropriate non-public land for the sake of public purposes. The important improvement is that such decisions are now subject to parliamentary approval. (Art. 62(4))
- New legislation is required to ensure that any ‘investments in property benefit local communities and their economies’ (Art. 66). Thus the new constitution again constrains the widespread practice of setting-apart public and the hitherto trust land for economic investments without seriously considering local impacts and would-be benefits.
- Women’s land rights are emphasized (Art. 68I(vi)). Registration of primary household land in the name of a male household head is compulsorily presumed to be registered jointly in the name of spouses (Willy 2010: 8).
- Local government is to be reformed to improve checks and balances, accountability, political representation and participation, and self-management of local communities (Art. 174). This is to be achieved by (a) establishing county assemblies with oversight powers (Art. 185), (b) prescribing membership of women and minorities in those assemblies (Art. 177), (c) limiting the terms of office (two) for county governors and their deputies (Art. 180), and (d) the possibility of removing them from office in cases of gross violation of Kenyan law (Art. 181).
- As explained in chapter 2.5, the constitution moreover regards any international treaty ratified by the Kenyan government as being Kenyan law. This bolsters any weaknesses that might be included regarding the formulation of human and people’s rights.
- Finally, the new constitution provides for easier access to justice by lowering formal requirements for and costs of filing cases as well as by broadening options for representation (Art. 48). This is important also regarding litigation for human rights, because it enables public interest litigation and litigation on behalf of others without the prerequisite proof of locus standi (Art. 22). Generally, formalities and fees have to be kept at a minimum to make courts accessible to ordinary people.

In sum, the new constitution, by virtue of its provisions and decreed institutional reforms, has a high potential for improving access to justice in matters of human, people’s and environmental rights enshrined in the constitution or in ratified regional and international treaties. With regard to land, the Environmental and Land Court Act has only recently been adopted. It will expedite litigation over

land and the upcoming adjudication process. However, the constitution is still in the highly political process of being enacted into national law and many institutional reforms still have to be implemented. Moreover, it is characterized by opposing cases. On the one hand it emphasizes security of tenure, on the other hand it highlights productive land use. This might be interpreted as security of tenure only for those who use land and its resources in an output oriented manner. To ensure that the constitution works in favour of those who previously suffered land injustice and insecurity of tenure, this reform process must be guided by a more non-partisan leadership. Government failure to hasten the establishment of the National Land Commission is quite suspect in this regard.

4.4 Conclusions on Policy Context

It has been shown that a coherent climate change policy for Kenya is still in its infancy. The response strategy only published in 2010 sets first priorities, which include important measures such as the development of drought-resistant crops and integrated water resource management, and the protection of Kenya's water towers, *inter alia* by means of reforestation. Further extensive afforestation aims are supported by a constitutional provision to reach a 'tree cover' rate of at least 10% (Art. 69(b)). Kenya has moreover very ambitious plans for increasing its green energy supply by investing in and providing incentive policies for renewable energy production. This comprises energy generation from solar radiation, wind, terrestrial heat, and biomass, the latter including agrofuel cultivation. Indeed, policy development on agrofuels started already in 2006. Agrofuel policies are promoted by GOK as an appropriate tool for mitigating climate change by reducing fuel wood use, reducing use of fossil fuel, and – in the case of jatropha – by use as a carbon sink. This is also related to economic interests such as reducing fuel import bills, taking part in carbon trade, diversifying the ailing Kenyan sugar industry, and increasing the national productivity of agriculture. The responsible representative of the Ministry of Energy labelled jatropha 'the crop of choice' of GOK in 2009. This is comprehensible given that jatropha can be grown on semi-arid soils, of which Kenya has plenty. Thus, at first glance, it does not seem to compete with agriculture for food and cash crops.

Analysis showed that the expected returns from the drafted win-win situations might not materialize in all cases. Reduction of fuel wood consumption (and related respiratory diseases) by means of agrofuel production depends on whether the agrofuel produced is used locally, i.e. in the rural areas, where the share of fuel wood is about 90%. If it mainly satisfies the demand of cities and industrialized centres, as is the case with hydropower, fuel wood use will remain high, even more so if it is exported. First reviews indicate that various investments are indeed designed directly for export, and those that are not might nevertheless export if this turns out to be more profitable. Thus, even the aim of partly substituting the imported fossil fuel might not be realized as expected.

The impact of agrofuels on water resources is alarming. Sugar cane for ethanol production is in any case a very water-intensive undertaking. But even the promises of drought-resistant jatropha have been falsified already if the crop is to bring about profitable yields. Irrigation will inevitably be needed and subtract from water required for other purposes, such as food crop production, livestock watering, human use, and preservation of valuable ecosystems that provide living space for humans, wildlife and vegetation alike. Moreover, both sugar cane and jatropha compete for land. Sugar cane needs arable land that is or could be used for food crop production. Semi-arid land, where jatropha is supposed to be grown, is often used as grazing grounds for livestock, and the crop thus competes with milk and meat production. Food-insecure Kenya should think twice about the impacts of large-scale agrofuel production as a source of green energy. A food aid-importing and drought-ridden country that boosts agrofuel production taunts all those who suffer hunger and malnutrition.

Under the conditions of the 2011 drought 3.75 million people countrywide are food-insecure and 2.5 million are in need of safe drinking water. UNHCR is expecting the number of refugees in the country to rise as high as 550,000 persons (OCHA 2011a: 2-3). The initial emergency response of GOK was reluctant, and it was the public and the media that first cried out about the 'Shame of Kenya' (The Standard, 28.07.2011). The private initiative 'Kenyans for Kenya' was soon followed by international humanitarian aid totalling over USD 600m in August 2011 (Saturday Nation, 06.08.2011; OCHA 2011a: 5). At the same time maize prices reached unbearable heights for poor people (see chapter 5.2.3). A policy that withdraws arable land and water for irrigation from food production, while depending on imported, highly priced, cereals and food aid from outside, conflicts head on with the food needs of Kenya. Yet neither agrofuel nor food security policies factor in the challenges of

climate change seriously. Narrowly food-output-oriented food security policies are thus susceptible to technical solutions, such as GMO, with even greater backlash for food-insecure small-holders. As recently as July 2011 a new law took effect that basically allows the production of genetically modified food (Voa News 04.07.2011).

In many cases agrofuel production will, moreover, involve development-based evictions that often lead to deprivation of crucial livelihood assets, and thus again jeopardize human security of the affected people. It has this in common with other large-scale agricultural investments, and also with other renewable energy resources. KenGen, for example, the operator of the geothermal energy power plant Okaria, is about to evict 600 Massai families. Despite resettlement schemes, this led to violent protests, involving accusations of corruption (The Standard, 23.02.2011; Daily Nation, 10.08.2011). Generally, large-scale land deals for agrofuels so far only show little aptness to consult and involve local communities thoroughly (Vermeulen/Cotula 2010: 909).

Evictions point to the next crucial policy at stake, the land policies. Kenya has a vivid past of evicting its population from the so-called 'ancestral lands' they occupy, more often than not under customary ownership without a title under statutory law. Evictions took place for genuine and, very often, alleged development purposes. It was in particular the power of the Presidency, the Ministry of Lands, and County Councils to set aside land without being accountable to the population, the parliament and specified performance targets that left the majority of Kenyans at the mercy of authorities. Compensation of the affected was often poor or non-existent if they were classified as squatters. Above all, authorities often failed to respect even the existing land laws, but were instead (and many still are) prone to corruption, self-enrichment, and clientelism. It was these long-standing land policies that made Kenyans vulnerable to all types of development strategies, natural resource exploitation, and even environmental protection by the GOK. It is no exaggeration to say that for the majority of Kenyans, security of tenure does not (yet) exist. Indeed, most of the existing land deals involved in agrofuel production in Kenya, also those in the Tana Delta, were made before the new constitution was adopted. It should be reviewed to what extent land injustice, challenged under the new constitution, is involved.

The new constitution changed the legal framework for Kenyans with regard to land policies, as well as with regard to their constitutionally guaranteed citizen and human rights. It is meant to overcome the pitfalls of the old Kenyan land law. Nevertheless, tenure regulations emphasize productive land use, which might be interpreted as favouring those who use land resources in an output-oriented manner and if so might disadvantage small-holders and subsistence farmers. It is too early to come to conclusions about the final result of land reforms, but the target seems to be a new process of land adjudication and issuing title deeds under statutory law. This potentially leads to conflicts over all kinds of resources accessed under customary law that in many cases can probably not be solved by traditional and alternative conflict resolution mechanisms. Accordingly it is likely that Kenya will face a surge of court cases that address past, present and future land injustice. It is therefore crucial that the new constitution also improved access to courts for people who do not have the financial means, knowledge, and grit to counter acts of injustice. It thus provides a legal basis with great potential for empowerment of vulnerable people.

Indeed, a solid foundation is set for the implementation of reforms in the land sector. Two things should be noted, however: firstly, that implementation of reforms is still some way off. Real reforms will depend on the speedy formulation of relevant laws and creation of the necessary institutions. Secondly, that the parties who worked to condemn the NLP and the provisions on land in the constitution are still vigilant and will seek to weaken the provisions during drafting of legislation or seek to interfere with the institutional framework in order to maintain the status quo.

Taking into consideration the insights of chapter 3, it can be concluded that since colonial times livelihoods of many Kenyans had been under pressure from two sides, climate capers and tenure regulations. Though relief of tenure insecurity is now within grasp, climate conditions are becoming worse.

5 The Case Study

The Tana Delta is affected by environmental and climate change as well as by plans to boost agrofuel production. The delta is an environmental protected area and local agrofuel production is thus a hotly debated issue in the Kenyan media and has even been covered by international

newspapers (e.g. The Standard, 22.06.2010, 12.08.010, 22.02.011, 29.07.011; The Star, 29.09.2010, 22.02.2011, 22.01.2011, 08.02.2011; The Guardian, 02.07.2011; Sudan Vision, 25.06.2010). The research mission team stayed in the delta for about one week, focusing its research on enjoyment of the rights to water, to housing, and to food, and to what extent this is impaired by those first- and second-order impacts of climate change.

Focus groups were selected along livelihood patterns and affectedness by planned investments, and interviews with stakeholders and key informants were conducted in Kenya before, during, and after the field trip to the Tana Delta. For further information on the methodological approach please see chapter 2.6. A description of the local environmental and socio-economic context precedes the presentation of the findings on the situation of human rights. This detects how environmental and climate change interact in the delta; gives information on the Tana Delta District's economy and livelihood conditions, and on the population's health and education status; outlines persistent tensions and conflicts in the delta; and finally provides details on the agrofuel investments at stake. The analysis is based on desk study as well as on information gathered during the stay in the delta and in Kenya.

5.1 Environmental and Climate Conditions of the Tana Delta

The Tana Delta extends from the Indian Ocean about 50 km land inwards to Garsen, covering approximately 1,300 sq km, and has a generally low gradient. It is naturally protected from the Indian Ocean by a 50 m high sand dune and mangroves along the coastline. Due to its proximity to the ocean, the groundwater of the delta and its surroundings is usually saline (TDDC 2008: 39, 40). The wetlands of the delta are rich ecosystems and consist of the river itself, cut-off meanders, oxbow lakes, marshes, natural pools, seasonal pans, and man-made impoundments (Terer et al. 2004: 4). From the delta stream upwards, a thin line of forest cover crosses the country along Tana River, remnants of a large tropical forest belt from the Congo to Kenya during the Pleistocene era. Both the river and the riverine forests can be detected in Fig. 1 and Fig. 2 (both p. 16) respectively. The wetlands of the delta and the riverine forests are maintained not so much by rain, but instead by the cyclical (long-term) and seasonal (short-term) floodings of the Tana River. The floods used to deposit a fertile layer of silt on the plain and oxbow lakes and influence the ecology of the riverine forest and the flood plains, and are crucial for the formation and distribution of wetlands. Also agriculture in the delta traditionally relies on this flooding scheme, because rainfall is usually too erratic to sustain agricultural activity on a reliable basis. Thus the wetlands are basic to the livelihoods of fishers, pastoralists and farmers alike. Moreover, both river and delta offer great biodiversity and form a habitat for many endangered species of fish, birds, mammals, monkeys, etc. (Devisscher 2009: 39f.). However, the delta is only a small part of the Tana River, which is the largest river in Kenya and one of the only two permanent rivers in the semi-arid and arid regions. The river rises from the south-western flanks of Mount Kenya, runs first east to Garissa and then south until it enters the delta at Garsen and runs into the Indian Ocean near Kipini, thereby covering a distance of 1,012 km and altitudes from 4,700 to 0 m above sea-level. Ecological conditions in the delta depend greatly on upstream conditions and activities that impact on the flooding scheme.

5.1.1 Upstream Effects on Tana Delta Hydrology

The upper catchment of the Tana drains its water from perennial rivers at the eastern and south-eastern flanks of the Aberdare Range, Mount Kenya and Nyambeni Hills. It is the crucial source for the river's water flow and covers around 95,000 sq km or approximately 17% of the country (Terer et al. 2004: 4; Pacini et al., 1998). The upper basin is humid to sub-humid and shows generally high precipitation rates. The areas of the upper basin above 1,800 m receive around 2000 mm rainfall per year, those at an elevation between 1,200 and 1,800 m receive 1,200 to 1,800 mm annually, and the area of the middle catchment between 1,000 and 700 m receives less than 700 mm (Jacobs et al. 2007: 24f). Mount Kenya alone provides for an estimated 40% of Kenya's fresh water needs, large parts of which are tributary to Tana River (UNEP 2009: 7, 15).

The lower Tana River basin stretches from Mbalambala to Kipini, passing through 625 km of semi-arid landscapes. This area of shrub and bush land with its highest point at 200m above sea level barely contributes to the river's water flow. Mean annual rainfall over Tana River District, through which most of the 625 km run, is around 400 mm (GOK/ MDNKAL 2005: 3). The right-bank seasonal rivers of the lower basin are dry for most of the year and thus do not contribute significantly to the water flow of the river. On the contrary, the river loses its water due to channel losses and high

evaporation (Maingi / Marsh 2002: 56). Thus the upper catchment is the Tana's main source of water. The annual rainfall over the whole Tana River drainage area, i.e. the average of the upper and lower basin, is around 700 mm (Agwata 2005: 15; Charania 2005: 10).

Due to the rainfall patterns there is also a sharp distinction between vegetation and agricultural use of the upper and lower Tana. The elevations between 1,200 m and 1,800 m with their intense rainfall are those used most intensively for agriculture, including coffee, maize, bananas, napier grass, and beans. This is also the most densely populated region (300-600 persons per sq km and more; Devisscher 2009: 40). Both agriculture and households up there already detract considerable amounts of the Tana's water resources and, at the same time, also pollute the river. The lower Tana only provides for little arable land that stretches from Mbalambala downstream on both sides along the river banks, as does the riverine forest. Depending on the depth of the water table, which drops off rapidly from the edge of the river, the riverine forest extends between 0.5 and 3.0 km on either side of the river (Maingi / Marsh 2002: 55-57). Behind the forest, the vegetation consists of shrub and bush land.

The amount of water the River Tana carries depends not only on upstream rainfalls, but is also strongly regulated by five water reservoirs for hydropower generation on the upper river (see Fig. 7). The five dams impact on the natural flooding scheme of the lower Tana (frequency and magnitude) – in particular the Masinga Dam (1981) and the Kiambere Dam (1988) with storage capacities of 1,560 million and 535 million cubic metres respectively (Maingi / Marsh 2002: 56). As a result of the dam management, the seasonal flooding of the Tana River has changed its patterns. Both annual falls and rises of the Tana have increased since the Masinga dam construction (comparing Garissa gauge data from 1941-1979 and 1982-1996) (Maingi / Marsh 2002: 70). Investigations on vegetation plots from Garissa to Bura revealed that plots at an elevation of less than 1.80 m above dry season river experience more frequent flooding (mean increase of 4.7%), whereas plots above this level experience significantly less flooding (mean decrease of 67.7%) than before. The average duration of the floodings has decreased by 87.6% for all vegetation plots (Maingi / Marsh 2002: 73ff.). Although such a study was not carried out for the delta, similar impacts were observed there. Thus the farmers in the focus groups claimed that it was in particular the decline of seasonal floods that caused the failure of agriculture in the delta.

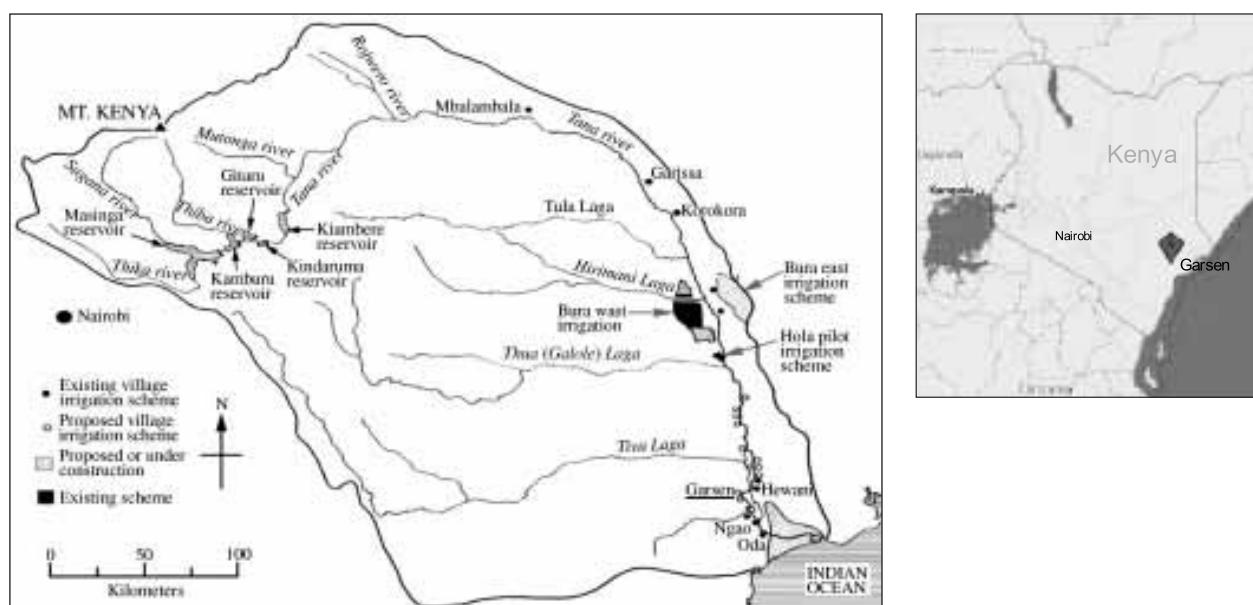


Fig. 7: Tana River catchment showing dams, tributary waters and the delta;
Source: Maingi / Marsh (2002: 51).

The serious decrease in flooding of the broad flood plains in terms of abundance and duration has serious backlashes on the delta's ecosystem and potential for agriculture, because the ecosystem is becoming unbalanced. For example, the perceived lack of regeneration of the riverine forests all along lower Tana is inter alia attributed to a dam-induced decrease in peak floods, because the lack of flooding impedes sufficient recharge of the water table (Maingi / Marsch 2002: 57). The related changes in water flow and siltation also affect the river estuary, and sediment input into the Indian

Ocean has been reduced by 50% due to the existing reservoirs (Devisscher 2009: 41; Cairo 2001). Moreover, during droughts the Tana River represents the only safety buffer for nomadic pastoralists from Kenya's north and northeast. Dry season pasture and watering points are thereby limited to the area adjacent to the river (Devisscher 2009: 40, IUCN 2005). A study by Emerton (1994) calculated that with consideration given to commercial and subsistence livestock breeding, agriculture and fisheries as well as forest and mangrove utilization, water supply and (now forbidden) hunting activities, the costs of flood loss and ecosystem degradation in the floodplains due to the dam construction reach up to USD 27m (USD of 1994).

In addition to the water reservoirs and the unsustainable exploitation of the river due to an over-allocation of abstraction licences, the poor rain and high evaporation during the past droughts also contribute to the currently low levels of the river (ABF 2010: 27). All these factors can also be assumed to impact on the level of groundwater in the delta and its adjacent drylands. The aquifers are usually fed by the floodings of the delta and to some extent by the seasonal rivers (*lagas*) that fill during the rainy seasons (ABF 2010: 30). Persistent drought places strains on both sources of recharge, however, in addition to the man-made decline in floods. Both factors impede significant recharge of water tables. This also has repercussions on traditional methods of water harvesting. During dry seasons the *lagas* usually maintain some subsurface flows in the empty riverbeds, which pastoralists access by digging shallow holes in the sandy river bed (HVA 2007: 28). Persistent droughts make also this source of water unreliable.

This means that on the one hand more frequent droughts increase human vulnerability, while on the other hand at the same time human activities decrease resilience to droughts. Both contribute to reduced river flows and declining water tables. However, not enough is known about groundwater levels in the Tana Delta. As the TDDC development plan states, 'the challenge in the district is to collect hydrological data that can be used to guide harvesting of underground water' (TDDC 2008: 36). Also the EIA of the TISP project admits that 'very little is known of the sub-surface water resources' and that 'the only areas with promising groundwater resource are those close to the bank of the river Tana' at a depth between 3 and 15m (HVA 2007: 28). Providing assessments of and information on groundwater lies within the responsibility of the Ministry of Water (Mungatana, interview 08.08.2011).

Apart from droughts, the lower Tana and the delta are also affected by cyclical floods that are much more extensive and severe than the seasonal floodings. These are associated with the cyclical weather anomalies described in chapter 3.2 and can reach historic dimensions. Due to the low elevations of the lower Tana basin, such floods spread widely and can cover distances of 10 km in the delta. These floods periodically lead to short-term displacements of the population and destruction of the already poor infrastructure along the river. Also the 2011 short rains following the drought led to the displacement of nearly 1,200 households in the delta (OCHA 2011c). In the plain delta, moreover, as a common and lasting impact of such flooding, the river might change its course. For the population this has repercussions in terms of access to the river, the seasonal refilling of oxbow lakes, and access to groundwater and to arable land. So it might be that a village or small town (such as Garsen) close to the river suddenly finds itself some kilometres away from the new course. Since 1915 the course has changed significantly at least four times (Smalley 2011: 48; historical maps). Therefore, a few generations ago even the farmers of the Tana Delta were only semi-sedentary and used to move their villages to the new river banks (Pakia, 01.08.2011).

According to a World Bank study that compared the historic floods of 1961 (pre-dam) with those of 1997/98 (post-dam), the dams contribute positively to the management of severe floods (Arnold et al. 2006: 169). The dams' capacity to withhold water declined over the years, however, due to the high level of siltation related to deforestation and increased degradation of soils by run-off rain water (UNEP 2009: 74). From the delta's perspective, moreover, the dams could not prevent Garsen ceasing to be a riverine town any more. They might even have contributed to it, as siltation was regarded to be a major reason for the shift (UNIC 2008). Indeed, siltation increases the risk of shifting stream courses. It is worth discussing whether this mitigation of the impacts of historical floods counterbalances the costs of losing the seasonal floods that are so important for agriculture, or how dam management could cater to the ecological needs of the Tana Delta in its considerations. A set of smaller dams might be more appropriate for flood management.

5.1.2 Observed and Projected Changes of Rainfall and Temperature

The less the population of the delta can rely on the seasonal floodings, the more they become dependent on the erratic rainfalls. The rainy seasons in the delta span the period from mid-March to the end of June (long rains; LRS) and from mid-October to the end of December (short rains; SRS) (DMB Tana River 2011: 1). Rainfalls in the delta vary a lot locally due to its location close to the coast on the one hand, and to the semi-arid lands on the other. Currently the delta has no gauge stations that work on a regular basis, but it had so in the past and made monthly rainfall data available for Garsen from 1962-1967 and 1971-1985, and for Ngao from 1938-1942 and 1953-1978 (see Fig. 8). These historical data help to demonstrate the rain patterns in the delta. Current data on rainfall in recent years are only available for Garsen on a very irregular basis from the governmental Drought Monthly Bulletin (DMB Tana River 2008-2010).

Table 4: Historical rainfall data and mean rainfall of Tana Delta

Data in mm	Max	Min	Mean
Garsen 1962-1967 and 1971-1985 (annual values)	1,029.8	250.9	518.8
Garsen Mays (peak LRS)	293.1	11.5	94.4
Garsen Novembers (peak SRS)	173.7	5.6	82.0
Ngao 1953-1978 (annual values)	1,622.2	388.9	727.5
Ngao Mays (peak LRS)	378.7	23.6	134.9
Ngao Novembers (peak SRS)	464.4	5.6	86.7

Source: TARDA (1987: Annex 16).

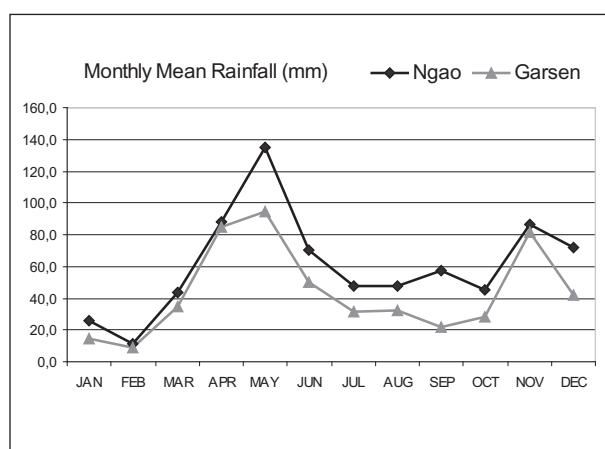


Fig. 8: Historical monthly mean rainfall in Ngao (1953-1978) and Garsen (1962-67 and 1971-85).

Table 4 and Fig. 8 on historical rainfall data indicates that conditions in Ngao, which is closer to the sea (see Fig. 7), are already much wetter than those in Garsen. The complete data also display greater variability in rainfall for Garsen than for Ngao (TARDA 1987). In particular in November, the peak month of the short rains, variability seems to have increased and the decadal means – as far as data are available – have declined. Thus data indicate a November mean of 98.2 mm for 1962-1966, of 82.9 mm for 1972-1979, and of 70.0 mm for 1980-1985. It was, moreover, only in the first half of the 1980s when November rainfall reached erratic levels around 6 mm (1981, 1983, 1985). Data available from Garsen for the three consecutive years 2008-2010 show an average rainfall of 72.1 mm for November. The 2011 drought is likely to bring this average down again for the year. In contrast, Ngao only experienced low rainfalls of around 6 mm in November in 1959 and in 1971. For Garsen, however, it could be cautiously concluded that there has been a declining trend in short rain rainfall from the beginning of the 1960s at least up to the 1980s.

To obtain an overview of rain development during the past decades it is, however, advantageous to rely on the more complete data sets (90%) of the Meteorological Department of Kenya that also cover the past 20 years. Gauge stations closest to the delta that provide such data are Lamu and Malindi on the coast north and south of the delta, and Garissa west of the delta (see Fig. 9). These data show reverse trends for the short rains.

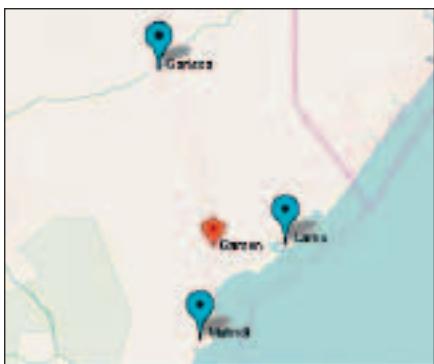


Fig. 9: Location of meteorological gauge stations; based on OpenStreetMap and contributors CC-BY-SA.

As can be seen from Fig. 10, Lamu and Malindi show an average rainfall for May (peak of the long rains) of around 300 mm for the years 1959-2006. For its peak month during short rains Lamu has a mean of 71.69 mm (November) and Malindi of 85.27 mm (October). Both also show some rainfall outside the rainy seasons. In contrast, Garissa shows an average rainfall of 80 mm for its long rain peak month (April) and about 100 mm for its short rain peak month (November), but no rain at all between June and September. It is thus particularly the long rains and the dry season between June and September that make the difference between the coast and the hinterlands (Fig. 9). The delta's rainfall climatology lies exactly between the systems of the coast and Garissa (compare Fig. 8 and Fig. 10).

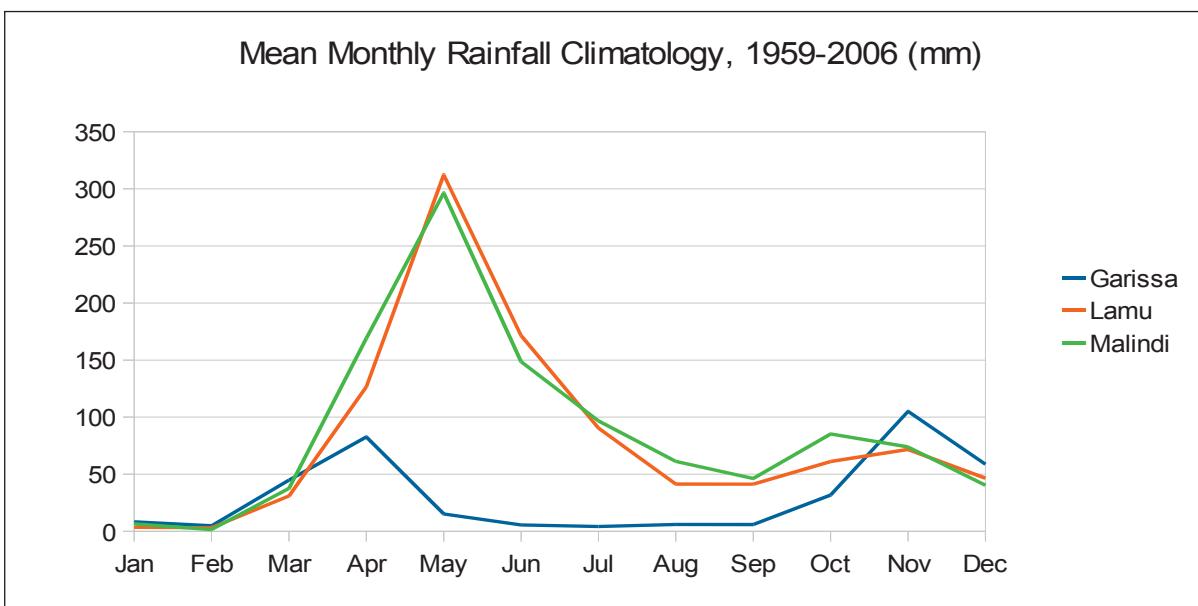


Fig. 10: Quality controlled data on mean monthly rainfall for Garissa, Lamu, and Malindi (Rourke 2011)

The decadal comparison indicates a decreasing trend of precipitation during the peak month of the **long rains** (Fig. 11) since the 1990s, in particular for Lamu. The long rains in Malindi and Garissa seem, in contrast, relatively stable with a slight decrease for the former and a slight increase for the latter during the past decade. Interestingly, the current decadal mean for all three gauge stations is not that different from the 1960s, but it is striking how the variability of the long rainy season has increased since the end of the 1970s (see amplitudes of the curves). In contrast, variability during **short rains** (Fig. 12) has always been considerable. All three gauge stations indicate an increasing trend of the decadal mean since the beginning of the 1980s after a very low phase during the 1970s. The current short rain level of precipitation for Lamu and Garissa also seems to resemble that of the 1960s, whereas that of Malindi lies above the former values.

The reduction in precipitation during long rains is particularly severe, because on a national scale the long rains are assumed to provide for 70% of total rainfall. The Lamu decadal mean of long rains, for example, indicates more than 200 mm less rain annually in the 2010s compared with the 1980s. In contrast, the increase during short rains only provides for about 50 mm more rain annually. On an annual average this is still a considerable loss.

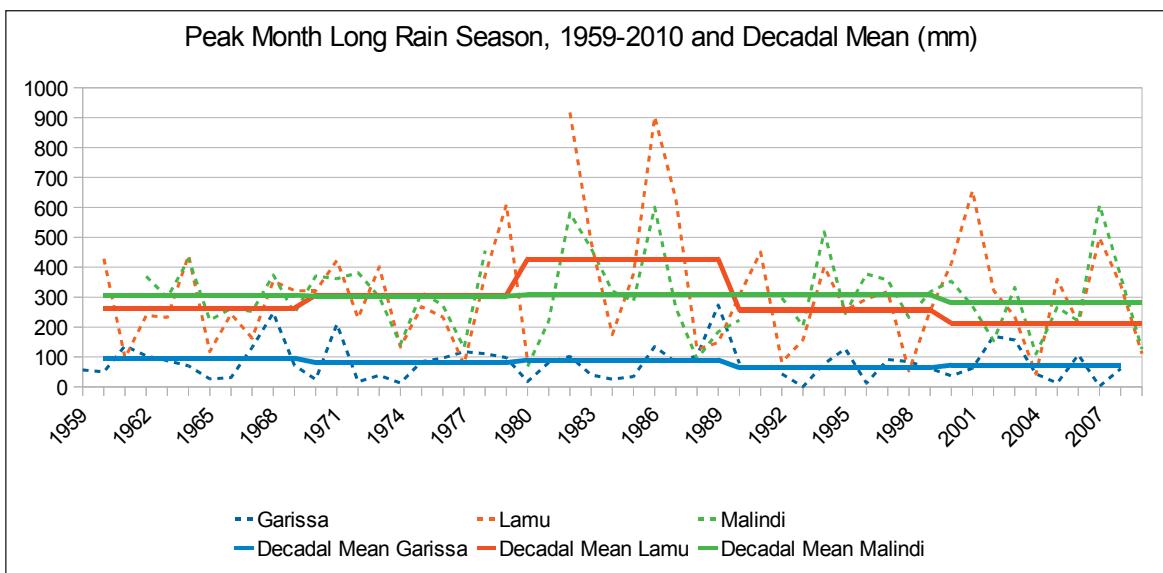


Fig. 11: Rainfall of peak months during LRS (1959-2010) and decadal mean for Garissa, Lamu, and Malindi

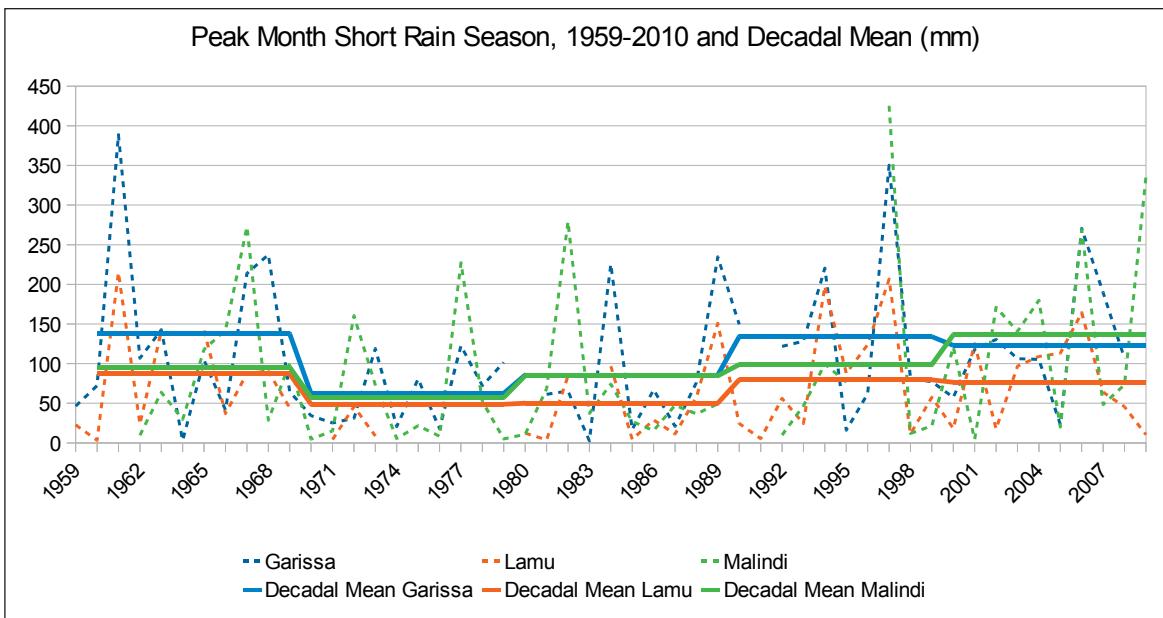


Fig. 12: Rainfall of peak months during SRS (1959-2010) and decadal mean for Garissa, Lamu, and Malindi

Temperature is another important indicator for the changing climate. In Lamu the annual maximum temperature as well as the maximum temperature during the peak month of the long rains has increased clearly since the 1980s (see Fig. 13, right and left). For Garissa, such a trend is not that clear. There has, however, been an increase in the annual minimum temperature since the 1980s and there is generally high variability in temperature during the peak months of the rainy seasons. At present the current temperature increase on the coast corresponds to a decrease in precipitation during the Lamu long rains. This might be due to increased evaporation that does not saturate the air sufficiently to result in rains and/or winds that transport atmospheric humidity towards the sea. Conditions in the delta are even drier than on the more humid coast. If the Lamu area is already becoming drier, it is likely that the delta will also receive less rain, as the decadal trend of precipitation data from Garsen and Ngao for the 1960s to 1980s already suggests. Only if increased evaporation at the coast resulted in increased cloud building, and if winds were to transport those clouds inland, and if those clouds did not dissolve due to the dry and hot conditions there, could the delta then experience a wetting.

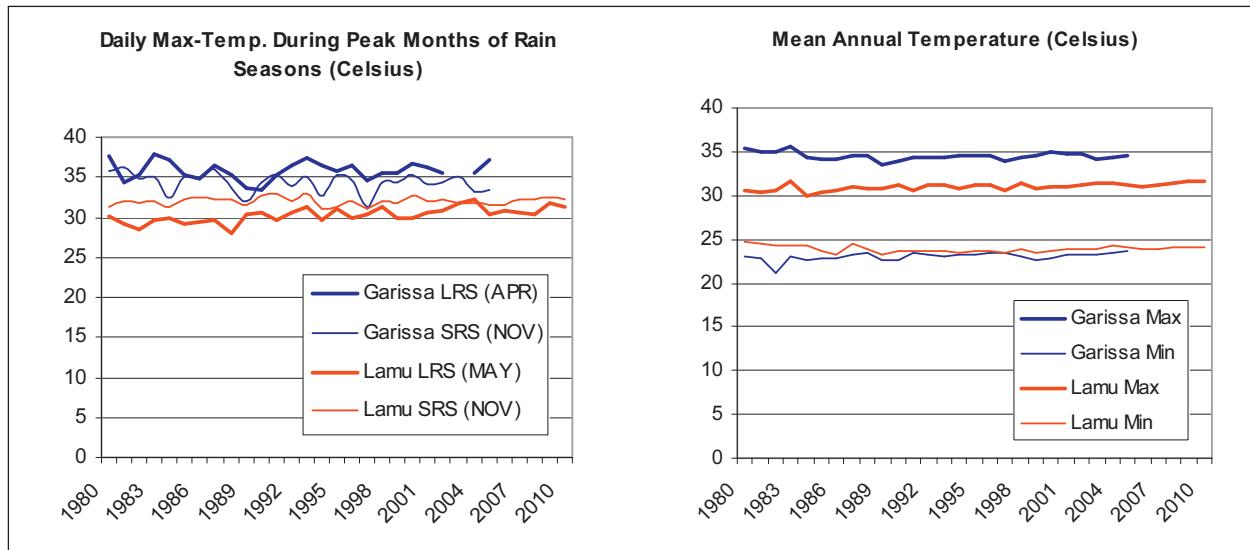


Fig. 13: Daily maximum temperature during peak months of rainy seasons and mean annual temperature for Garissa and Lamu; Source of data: Meteorological Department of Kenya.

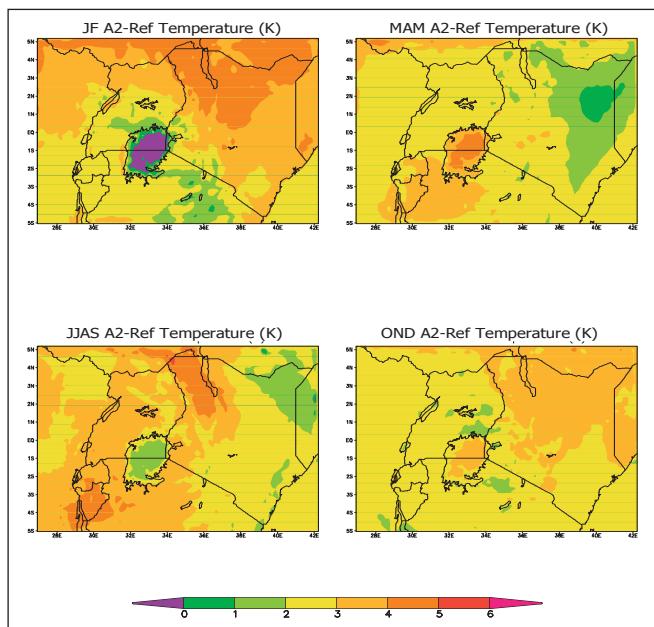


Fig. 14: Regional modelling projection results for temperature; Source: Washington / Semazzi 2007: 25.

As regards the wetting projected by both the global and the regional climate model, current observation data support the results of the global models that project wetting of the short rains, instead of the long rains (see p. 22). However, all models agree on temperature increase. The downscaled projections of the regional model (see Fig. 14) imply that the delta area might be affected by an average temperature increase of 1-2 °C during the rainy seasons and of 2-4 °C during the dry seasons. The projected moderate wetting therefore might be offset by the increased evaporation as well as by the decline in precipitation during the long rains.

5.1.3 Impact of Environmental and Climate Change in the Tana Delta

The changing climatology in the delta as well as the upstream activities impact considerably on the environmental conditions of the Tana Delta. There is the decline in long rains, which are not compensated by the increase in the short rains. In particular the dam management and the over-allocation of licences to use Tana water, mainly for agricultural purposes, are a major factor for the reduced water flow of the river (ABF 2010: 114), and thus for the disturbances in the flooding scheme in the delta. Moreover water availability in the region is impaired by the developments described in chapter 3 on climate changes in Kenya. The glaciers that feed the Tana River are receding, and it is by no means certain that the slight increase in precipitation over Mount Kenya, predicted by the climate models, will compensate for these losses (see p. 23). The temperature is very likely to increase further, which will increase the losses of water and humidity due to evaporation. This again is likely to deteriorate the river's water flow as well as to further contribute to

the drying-up of the delta's wetlands and the lagas' subsurface water flows. This overall drop in water availability and recharge capacities will and already does impact negatively on the groundwater capacities of the Tana Delta, as was confirmed by the reports of the focus groups, who found it hard to dig for groundwater as they had done in the past without major technical equipment.

In sum, people living in the delta are very likely to be exposed to severe water stress due to human activity, increased variability and a declining rainfall trend. Water scarcity, however, might interact with an increased risk of floods. Storage capacities of the catchments are only limited, due to the high levels of deforestation in the catchment areas, and thus might not be able to absorb the rainfalls over Mount Kenya and the Aberdare ranges. The same is true for the increasingly silted upstream water reservoirs, which would than not be able to release caught run-off water on a sustainable basis, but would just have to open their gates. Given these threats it is alarming that neither an overall assessment of groundwater levels in the delta nor an integrated water management for the whole of the Tana basin exist yet.

5.2 Socioeconomic Context of the Tana Delta

Tana Delta District only became an administrative district of its own in 2007. Formerly it belonged to the Tana River District (as 'Garsen Division'). Tana Delta District still forms part of the Tana River County. Thus the decisive authority in the district, particularly with regard to land issues, is still the County Council of Tana River. Moreover, food aid assessments by the Kenyan Food Security Steering Group (KFSSG) or measurement of rainfall means in 'Tana River District' in the governmental Drought Monthly Bulletin (DMB) are also still based on the boundaries of the Tana River County. Therefore, if references are made to the old Tana River District in the following, it will be called Tana River County. The administrative unit responsible for organizing public services and governmental development activities in the delta is, however, the Tana Delta District Commission (TDDC).

Tana Delta District is much larger than the delta, but is still a low lying area with its highest elevation being 40 m. It has a total land area of 16,013.40 sq km, of which 8,964 sq km are rangeland, 1,186 sq km are arable land (only 9% of land cover), and 5,118.40 sq km are regarded as non-arable. Due to the delta it has a considerable water mass of 3,203 sq km, 270 km of the Tana River and 76 km of coast with the Indian Ocean (TDDC 2008: 10, 14). The district has 3,457 sq km of gazetted forests and is home to the Tana River Primate National Reserve, which covers 169 sq km and is managed by Kenyan Wildlife Services (KWS). Other reserves nearby are the Arawale National Park in the immediate west and the Dandori and Boni National Reserves in Lamu District. The far south of the Garsen division, moreover, forms part of the Tsavo East National Park, which covers about 19% of the district's total land mass (TDDC 2008: 1). Fig. 15 below shows the livelihood zones of the Tana Delta District. Most of the planned agrofuel investments will take place in the dark green area of mixed farming.

Table 5: Land type and land use in Tana Delta District

Land mass / land use	ha	sq km	% of land mass	employment
Arable land	1,186,000.00	1,186.00	7.41	
Non-arable land		5,118.40	31.96	
Gazetted forests		3,457.00	21.59	
National parks		3,049.00	19.04	
Water mass		3,203.00	20.00	
Total	16,013,400	16,013.40	100.00	71,679.00*
Cropland	9885.00	98.85	0.62%	50%
Rangeland	10,728,980.00	10,728.98	67%	40%
Fish grounds				10%

Source: (TDDC 2008: 10, 14, 16, 54); 1 sq km = 100 ha;

Note*: Total no. of people employed in the agricultural sector (farming, livestock breeding, fisheries), which is equivalent to 82.2% of employment by sector (TDDC 2008: 16).

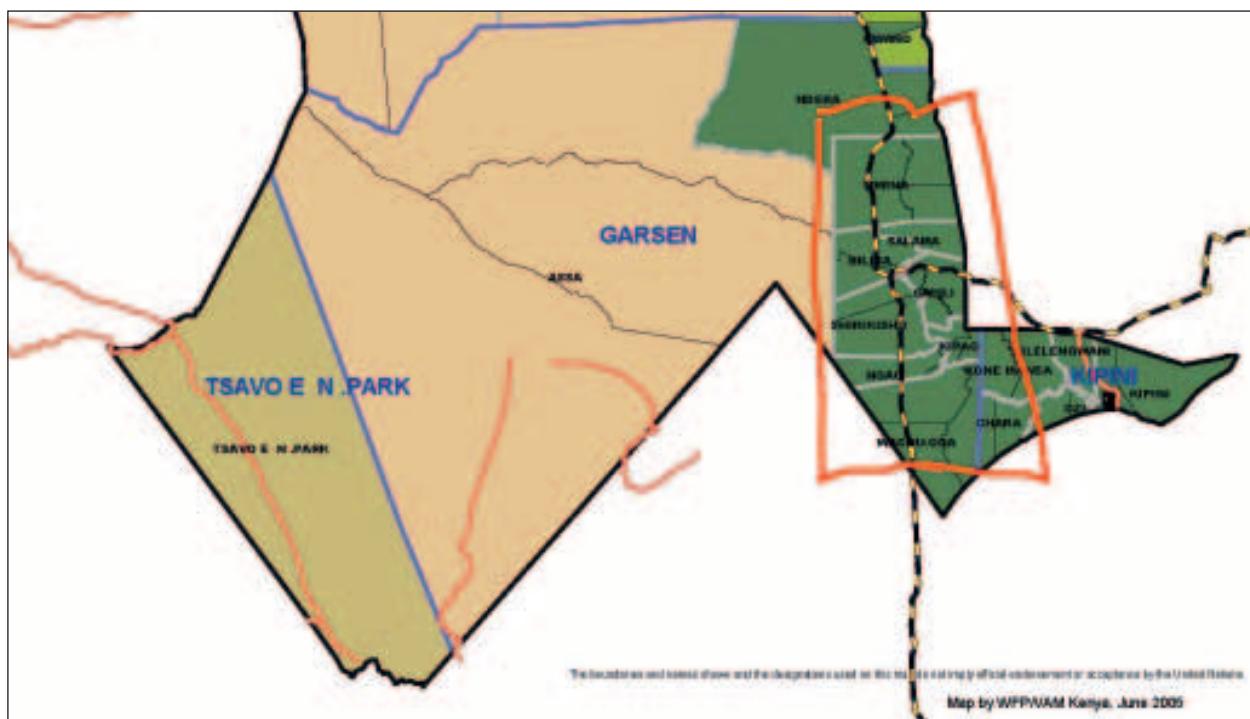


Fig. 15: Livelihood Zones of Tana Delta District: dark green: mixed farming; light green: marginal mixed farming; ochre: pastoral (all species); note: this a modified map of the Tana River County livelihood zoning map. Tana Delta District comprises the area below the blue line at the upper image border; Source: DMB Tana River; red line: approximate area of proposed agrofuel investments (compare Fig. 20, p. 51).

5.2.1 Economy of the Delta

The district's infrastructure conditions are poor. The district possesses only one commercial bank, one micro-finance institution and one post office, and does not have a court of its own. Only 246 of the 12,457 households have access to electricity, despite the fact that the hydropower reservoirs of the upper Tana River produce more than half of the nation's electricity. Thus about 90% of the households depend on firewood and charcoal for cooking and other energy needs. The average distance to the nearest water point for domestic use is about 4 km, the average distance to the nearest water point for livestock about 10 km. The most common source of water is wells (around 100) and the river itself (TDDC 2008: 21; DMB Tana River; UNEP 2009: 18).

The most important economic sector of the district is agriculture, which contributes 82.2% to household incomes and employs about 71,679 people. The most important activities are farming, livestock breeding and fisheries. These three agricultural sub-sectors employ about 60%, 30% and 10% respectively of the working population (TDDC 2008: 54). Agriculture along the river traditionally depends on the river's flooding scheme. Rice used to be planted in depressions and old river arms after the water level had fallen to less than 30 cm. Maize and green gram are planted on the plains after the flood has receded. As the floods do not always extend similarly from year to year, and as the river shifts from time to time, a migratory type of agriculture used to be practised. Cultivated crops moreover include maize, green gram, cow peas, plantains, coconuts, mangoes, sugar cane and cotton (Ominde 1968: 41; TDDC 2008: 54; FGD Wema). Food crops are planted on 4,705 ha, cash crops on 5,089 ha and organic farming is conducted on 95 ha (TDDC 2008: 16). This represents a total of 9,885 ha, which would mean that of the 1186 sq km of land classified as arable, only around 8.3% is actually cultivated. This raises hopes and speculations about the agricultural potential of the Tana Delta District, which is regularly emphasized in official development plans. The African Land Utilization and Development Board already held such a positive opinion about the delta's high agricultural potential, and the river plains in general in 1953, a decade before decolonialization. However, the board came to differing estimates regarding the area of arable land if irrigation schemes were to be put in place. For the section of the Tana between Bura and the Indian Ocean it estimated that 200,000 acres, that is 809.71 sq km (1 sq km = 247 acres), are suitable for irrigated agriculture. (Ominde 1968: 49). That is 376.3 sq km less than the estimate by current

authorities for the Tana Delta, i.e. for an area that is less extended (Bura lies around 100 km upstream from Garsen). Moreover, upstream water use makes irrigation less feasible than in pre-dam times.

Livestock in the delta mainly consists of cattle (ormo-borana), goats (galla) and sheep (blackhead persian). However, some chicken breeding and beekeeping are also carried out and camels are kept (TDDC 2008: 17). The 211,838 head of cattle in Tana Delta District account for about 22% of the cattle from Coast Province and 5.5% of the total cattle in Kenya (own countings based on Census 2009, Table 11: Livestock population by type and district). The delta also holds 249,830 sheep and goats. Indeed, livestock breeding is an important part of the delta's economy and has increased considerably over the past decades. For example, at the end of the 1970s the whole Tana River County area supported only 145,000 head of cattle and only 95,000 sheep and goats (ILCA 1979: 95). This means that today Tana Delta District has 46% more cattle and 163% more goats and sheep than the whole of Tana River County had in 1979. They produce 500,000 litres milk, 150 tons of beef, 35 tons of goat meat, and 10 tons of mutton worth KES 45.4m annually (TDDC 2008: 17). Fishing is carried out at sea, in the oxbow lakes and in the river itself. In 2007 most of the catch (about 390 tons) was fresh-water fish and a further 224 tons were caught at sea, amounting to KES 53m in total (TDDC 2008: 17). The district has about 3,000 fishermen and 32 fish farmers (TDDC 2008: 119f.). Fishers and vendors in the Tana Delta say that the price for fish is generally good, but they claim that the fish stocks have declined during recent years (FGD Moa).

5.2.2 Population of the Delta

Tana Delta District is divided into the divisions of Garsen, Tarasaa and Kipini. Politically it is still known as the constituency of Garsen (TDDC 2008: 3). The constituency is populated mainly by Pokomo (44%) and Orma (44%), who are farmers and pastoralists respectively. The remaining population consists of the agro-pastoralist Wardei (8%) and other minority groups such as hunters and gatherers (4%) (HVA 2007: 44). Minority tribes include the Watta, Galjil, Munyoyaya, Malakote, Mijikenda, Somali, Boni, Bajuni, Wakone, and Wasanya (TDDC 2008: 41; Odny 2011). The district is moreover home to Luos, who migrated to the delta during the second half of the 20th century. Political representation, in particular of the minorities, is a great problem. Although the district has an eligible voting population of 41,866 citizens, only 28,541 are registered as voters (status 2008) (TDDC 2008: 122). Moreover, according to a lawyer and human rights activist, 90% of the 20 councillors of Tana River County Council are Pokomo (K. Sing'oei, 26.07.2011). Also the current Garsen representative in Parliament, Danson Mungatana, is a Pokomo. It is only recently that minorities have started to organize themselves under an umbrella organization with support from CEMIRIDE.

The population of the Tana Delta is very diverse in its socio-economic characteristics. The different ethnic groups do not usually mix with each other and are traditionally associated with a specific type of livelihood, religion and language. Those who were represented in our focus group sample are described below.

The Pokomo community lives along the river and mainly carries out farming and some fishing. Under colonial rule this area was Pokomo Community Reserve Land customarily owned by the Pokomo community (Diwayu, Mobilizer). In the meantime many also keep small numbers of livestock. It is presumed that they arrived in northern Kenya in the 17th century, fleeing wars in Ethiopia. Before independence they were already known to the African Land Utilization and Development Board for their 'considerable skill in cultivating irrigated rice' (Ominde 1968: 49). The Pokomas, in particular young men and to a lesser extent young women, are also among the few ethnic groups in the Tana Delta that practised considerable labour migration already in the 1960s, mainly to the town of Malindi on the coast (Ominde 1968: 156). The Pokomo of the Tana Delta have been almost exclusively Catholic since the early 20th century (Odny 2011). They have on average fewer household members (6.52 persons) and are better educated (HVA 2007: 46).

The Bantu-speaking, Catholic Pokomo share the delta with the largely Muslim pastoralist communities of the Orma and the 'Cushitic'-speaking Somali sub-clans of the Wardei and Galjil (Kagwanja 2003: 130). Orma are semi-nomadic pastoralists who have their base villages (Manyattas) in the delta, but move back and forth with their cattle from the hinterlands (wet season grazing areas) towards the river (dry season grazing areas) according to the season. They are descendants of the Galla nation of Ethiopia and northern Kenya, who moved to the Tana Delta in the

late 19th century after tribal clashes. They have been entirely Muslim for four generations now. The traditional livelihood of the Orma is raising cattle, but also some goats and sheep. The cattle have a high cultural value as bride price, for weddings and funerals, and Orma men with more than 1,000 cattle are granted special recognition (Odeny 2011). Ormas are the second majority group and have large families of on average 10.36 persons per household (HVA 2007: 46).

Generally, many pastoralists groups are now diversifying their livelihoods, because due to the frequent droughts in past years pastoralism is hard to sustain. Access to social infrastructure such as schools, water points and food aid also provides important incentives to approaching non-nomadic lifestyles. Thus sedentarism is becoming more and more common among pastoralists too. Wardeis are actually already characterized as agro-pastoralists (Odeny 2011). The Wardei came to the delta from Somalia, where they fled suppression by another clan. They were helped by local Pokomo to escape their persecutors and to cross the river, which at the same time improved the Pokomos' milk situation (Diwayu, FG Mobilizer). The authorities, however, treat them mainly as squatters, which puts them in a very weak political position. Moreover, the Muslim Wardei speak some Somali dialect and barely any Kiswahili. Thus they belong to the very marginalized groups of the Tana Delta.

The Wattas are hunters and gatherers. In 1976 hunting was completely forbidden and they were deprived of their main livelihood source. Thus they also had to diversify their livelihood, mainly through fishing, bee keeping and also some farming. To improve household incomes their women, as is also the case with many other (deprived) tribes, collect and cut wood to sell it. Men do speak Kiswahili, but women often do not. In particular young men seem also very keen to learn English. They are also a Muslim community, but – with a twinkle in their eye – call themselves ‘untouchables’ according to the Dalit caste of India, because – as they say – the other tribes shun them for their bad luck (FGD Bilisa).

Luos are originally from western Kenya, Nyanza Province, which shares parts of Lake Victoria. They are traditionally fishers and try to fish in the Tana Delta also. Luos first came into the Coast Province as soldiers in the course of World War II, and afterwards settled in Mombasa (FGD Moa). They also came as labourers, mainly to Kilifi-Malindi district, which is relatively close to the delta (Ominde 1968: 157). It is assumed that current Luo communities in the Tana Delta are mainly descendants of the Luo migrants to Malindi and Mombasa, but new inward migration from the south-west is also practised. Other tribes also fish, but – at least until recently – this was mainly practised as an additional source of subsistence.

The human population of the delta is growing continuously. In 1999 the area of the Tana Delta District had a population of 67,835; in 2008 the count was 87,201 persons. Population growth rate is at 3.62%, and for 2012 the District Statistic Office projected a population of 97,498 persons. The latest national census already counts 96,664 persons (Census 2009, table 1). The district (based on the numbers of 2008) has a comparatively low population density of 7 persons per sq km, but most of the population is located close to the river. Thus density between divisions varies greatly, with the largest division of Garsen (14,460.50 sq km) having a density of only 4 persons per sq km, whereas Kipini and Tarasaa have population densities of 22 and 28 persons per sq km respectively (TDDC 2008: 6, 9f.).

Due to the high number of rural population, the agricultural sub-sectors provide for 82.2% of the income of the estimated 12,457 households (each with an average number of 7 persons). The health status of the population is also very low: 42% are lame, 32% suffer some form of mental illness, 21.2% are blind, and 63.3% suffer from Malaria. With only one hospital and two health centres, one doctor and 33 nurses for the whole district, that might not come as a surprise. Thus most of the health services are delivered by mostly untrained, traditional birth attendants (75.6%). This is associated with an added neo- and post-natal mortality rate of 145.4 per 1,000 babies and another 147 per 1,000 children dying before they reach the age of five. The maternal mortality rate is even 270 per 1000 mothers giving birth (TDDC 2008: 16, 19f., 121). Infant mortality at the national level is in contrast 55 per 1,000 live births (World Bank 2011). The education level of the population is also below average, as 59.5% of the population (aged 15+) cannot read or write and only 33.7% are capable of both (TDDC 2008: 21). In contrast, the national literacy rate is 87% (World Bank 2011).

The economy of Tana Delta District is not capable of providing sufficient income and affordable foodstuffs to sustain the food security of the population. Absolute poverty is very high and at 76.9% (TDDC 2008: 16) lies significantly above the national average of 46% of the population living below

the food poverty line (indicated in the Kenya Integrated Household Budget Survey 2006). Food relief is distributed in the delta on a regular basis, particularly since droughts have increased. The food aid distribution in the whole of the Tana River County is organized in partnership with the WFP, which relies in its activities on the Kenyan Food Security Steering Group (KFSSG). Assessments are performed on a seasonal basis and thus differentiate between long rain assessments (LRA; Sept/Oct to Feb/Mar) and short rain assessments (SRA; Mar to Aug/Sept). Food relief is distributed on the basis of those assessments in Tana River County (Nyatuga, interview 09.08.2011). Since 2004 there have been on average 60,181 persons requiring food aid during the LRA period and 57,392 during the SRA period. The LRAs of 2006/7 and of 2009/10 with 88,794 and 105,000 persons respectively were clearly above average. The SRAs of 2006, 2007 and 2009 with 71,499 and 64,500 and 73,960 persons requiring food aid equally show higher figures than other years (WFP 2011a). The LRA for 2011 is even worse. A total of 107,600 (or 27% of the population) are estimated to be in need of food aid (OCHA 2011b). For the SRA of 2011 again 61,360 persons were assumed to be in need of food relief, of whom 23,220 are located in the Tana Delta District (i.e. Garsen and Kipini divisions; WFP 2011b). That would be nearly one quarter of the population. According to data of the TDCC, even more than 70% of the population is 'supported by relief supplies' more regularly (TDCC 2008: 37). The DMB reports that food for asset (FFA) programmes in Garsen and Tarasaa have been expanded (DMB Tana River 08/2011: 10).

Anecdotal evidence of migration flows, mainly to Malindi, due to the harsh economic situation and livelihood conditions in the delta was provided by the Wema and Bilisa focus groups. Moa villagers report that locally established fish vendors left to head for fishing centres at major lakes in Kenya, because not enough fish to sustain all of them is caught in the delta any more. Bilisa also reported some inward migration from Wattas who live further up-stream, where conditions are even drier. The most dominant pattern of migration is, however, the in-migration of herders from the North Eastern Province and the adjoining frontier districts during drought.

5.2.3 Resource Deprivation and Proneness to Conflicts

Food insecurity in the delta is largely due to failing crop yields. On arrival of the team in the delta at the end of July, i.e. already in the dry season, local rainfalls were witnessed, but dried-up maize fields could be observed everywhere due to lack of rain during the long rains. According to DMB data, the 2011 long rains in Tana River County had a maximum of about 100 mm in April, May, and June, i.e. they failed almost completely (DMB Tana River 08/2011: 4). In contrast to the small-scale farmers' maize plots, the large-scale rice scheme of the Tana Delta Irrigation Project (TDIP), which is fed by discharges from Tana River, was green. Farmers blame the extraction of river water for TDIP for contributing to local water scarcity (see Fig. 16). TDIP is advertised as an emergency food programme (see Fig. 17). However, the TDCC development plan states that TDIP works on a commercial basis (TDCC 2008: 53). Also, a key informant stated that the yields of the TDIP maize plots are 'sold to business men from outside' (Pakia, 01.08.2011). Maize, one of the major crops grown in the delta nowadays, is the chief ingredient for Ugali, the main side dish (mush) of the poor in Kenya. A similar frequently mentioned cause of crop failure were the up-stream water reservoirs, as confirmed in chapter 5.1 of this study. The lack of rain, on which they rely more heavily than in former times, is also blamed.



Fig. 16: Photo Tana River in July 2011.



Fig. 17: Photo TDIP emergency food advertising.

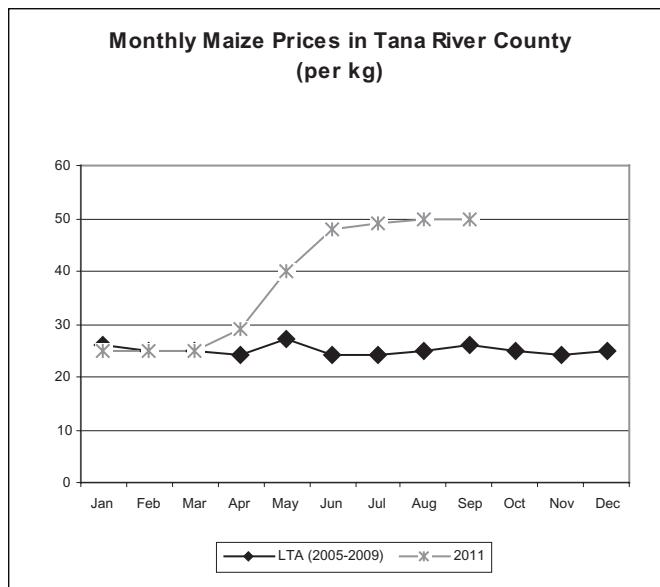


Fig. 18: Monthly Maize Prices in Tana River County: 2011 and long-term average.

and thus conflicts over access to water and in particular over cattle grazing in Pokomo farms arose. Pokomos and Ormas of the FGD alike say that conflicts are settled now and sustainable arrangements have been reached by assigning grazing areas (FGD Wema, FGD Marafa). Generally, the increased frequency of drought perpetuates the diversification of all types of livelihoods. For example Ormas engage in some farming or even fishing, Pokomos keep livestock, Wardeis engage in trading, etc.

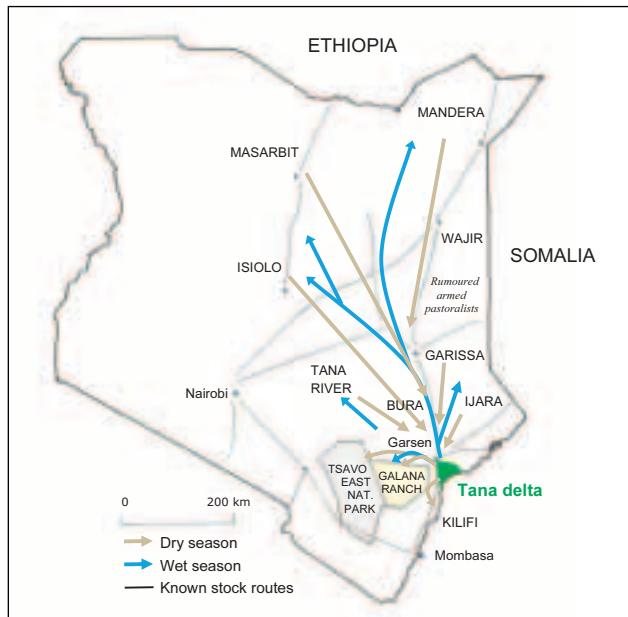


Fig. 19: Livestock migration routes to and from the Tana Delta; Source: Smalley 2011: 27, compiled from Ominde 1971, Muthee 2006, Mahmoud 2010.

contributes to increased human/wildlife conflicts. However, more generally human/wildlife conflicts always increase during droughts, because the animals come closer to human settlements located near water sources to search for water and food. Conversely rates of poaching also increase if yields fail.

The failure of harvests has repercussions on the maize price, which doubled between May and September from on average KES 25 (EUR 0.20) to KES 50 (EUR 0.40) per kilo (see Fig. 18), which is nearly a third of the daily minimum wage for unskilled labour. FAO statistics report wholesale prices of nearly USD 0.50 (EUR 0.35) per kilo in July 2011, which was the peak month of 2011 maize prices (FAO/GIEWS 2011). Purchasing prices of even KES 80 (EUR 0.68) have been detected (IRIN 2011). Now the wholesale price is at KES 33 (EUR 0.25), which is still double the prices in November 2010.

Indeed water scarcity during dry spell seasons, and even more so during droughts, is a major source of conflict. In the past clashes between Orma and Pokomo frequently arose when the Orma brought their cattle to the river. The riverine area, however, is occupied by the Pokomo

Beyond its importance to local farmers and local semi-nomadic pastoralists, the delta serves as a fallback zone for pastoralists from the frequently drought-ridden north and northeast of Kenya (see Fig. 19). They migrate with their livestock to the delta by foot or in lorries. Nowadays trucking the cattle is even the major form of transfer and is likely to have increased the number of livestock reaching the delta. One focus group reported that in one week 7,000 new head of cattle arrived in their neighbourhood (FGD Marafa). For July 2011 the District Commissioner estimated an additional 500,000 cattle (Kithaura, 28.07.2011). Nunow even reported three million cattle during the 2009 drought (Nunow 2011: 7). This is 2-12 times as many as the local cattle.

The high influx of livestock again increases the pressure on water resources and grazing grounds. During the verification process participants affirmed that 'invading' non-local herders perpetuate overgrazing and that the increased pressure on resources also

When droughts cease the non-local pastoralists usually return to their places of origin. But droughts can also trigger more permanent relocation. For example, many inhabitants of the squatter settlements on the Tana Delta ranches came from the North-Eastern Province during the droughts of the 1960s. Instead of leaving again they became permanent residents (together with their cattle) due to the persistency of the droughts in that decade (HVA 2007: 45f). Currently, it seems, that the local population, farmers and pastoralists alike, demonstrate unity, and it is herders from outside that enter the delta who become the new bone of contention. They are accused not only of overgrazing, but also of trespass and banditry. They are also said to be heavily armed.

It is widespread public opinion, shared also by many political leaders, that pastoralists perpetuate environmental degradation by overstocking. Indeed it can be a problem. It is, however, noteworthy that local pastoralists in the delta have been found to be more aware of certain environmental concerns than farmers are. According to the ESIA of the G4 oil seed plantation, 81% of livestock farmers are involved in conservation measures, compared with only 22.4% of crop farmers (AWEMAC 2010: 35). Ormas living on the fringe of Kon-Dertu Ranch, for example, reject the jatropha project because clearing would pave the way for the winds to spread the coastal sand into the delta (FGD Marafa). This might also explain why farmers at times seem to be ignorant about the limits involved in expanding irrigation with regard to the hydrological balance of the delta.

However, not all violent conflicts are related to climate-induced resource scarcity. Lethal clashes in the delta peaked in 2001/2002, when about 100 persons died and 1,000 were injured (Kagwanja 2003: 133). Those violent outbreaks were related to political aspects of conflicts over resources, in this case to a land adjudication programme which seemingly preferred one group over the others (Odeny 2011). Also, in its 2008-2012 development plan, the TDDC schedules a series of settlement schemes and adjudication programmes at an estimated cost of KES 53m (EUR 410,500) in over 15 locations (TDDC 2008: 110f.). This might be a well-intentioned undertaking to improve security of tenure of the beneficiaries. Its potential for conflicts depends, however, on the degree of perceived fairness and its consequences for existing customary land uses. Also fears were voiced that the government can take one's land away at any time, in particular if it is not used productively. Such fears obviously have their root cause in the past land regulations and local experiences, but also in the provision of the new constitution that land has to be used productively. In particular amongst farmers and ranchers, aspirations to secure ownership titles under statutory law could be felt strongly.

Ethnic-framed banditry can also be related to election campaigns (often related to promises and frustration about land issues), as was the case in the multi-party elections of 1992 and 1997 (Kagwanja 2003: 135). The linkages between the ethnic groups and the local authorities are not always helpful for achieving just investigations and decisions from a rule of law perspective, and even less so from a human rights perspective. In 1999, for example, the assault and death of a senior government officer, an Orma, led to the deprivation of citizenship and the eviction of the Galjil community of the lower Tana (Kagwanja 2003: 131).

With regard to political representation it is obvious that education also plays a role. Although none of the Tana Delta tribes has Kiswahili as its mother tongue, it is the Pokemos who manage the national language very well and most of them even speak English. Of the Orma community, at least men and midwives usually manage Kiswahili well, though they speak no English, and they enjoy representation in local government. By contrast, the minority tribes' command of Kiswahili is often underdeveloped, if indeed it exists at all. Whereas only 21% of Pokemos are without any formal education, the figure for the Wardei is 85% (ABF 2010: 49). It seems that political representation and education levels do reinforce each other.

5.2.4 Development Efforts and the Issue of Land

In Tana Delta District, due to the particularities of the coast (see p. 29 f.), the majority of land is state land, more exactly 70% of the district's landmass is state land and only 20% is trust land (TDDC 2008: 10). Most of the trust land is located along both sides of the river, where the Pokomo practice small-scale agriculture. The remaining 10% of the territory is water mass that from a constitutional point of view also belongs to the state (see p. 32 f.). Individual ownership of land barely exists in the delta. So it is worth noting that only 4.3% of the farmers in Tana Delta District have title deeds to their land, and ownership is very fragmented. Most of the farms are small-scale (about 1 ha) and even large farms have only about 4 ha (TDDC 2008: 16).

Efforts to develop the delta region and the lower Tana River started in the 1970s with rice irrigation schemes and livestock development alike. Attempts to modernize agriculture were headed by the Tana and Athi River Development Authority (TARDA), when in 1978 it started to investigate the possibilities of a large-scale irrigation scheme – a project with many pitfalls (ILCA 1979: 99) described in more detail in chapter 5.3.1. Livestock development was sought by the establishment of ranches under the Land (Group Representatives) Act (see p. 31). Ranches are not owned by individual persons but by groups of 50 to some hundred local people, and are managed by ranch management committees. They are private leaseholds of the respective groups, who have to pay for that lease.

Unlike other parts in Kenya, where ranches are usually owned by pastoralists, some of the ranches in the delta had been given to farmers, although they were inexperienced in ranching. But pastoralist- and farmer-owned group ranches alike were initially authorized and expected to carry out commercial ranching. The incentive for locals to join the ranch schemes of the 1970s was to avoid alienation of communal land by politicians in favour of large-scale commercial agriculture, or the establishment of nature reserves (Smalley 2011: 22). Thus pastoralists regarded it a protective measure to secure their access to grazing grounds (Nunow 2011: 19f.). Success of ranches in terms of modernizing livestock keeping was limited for several reasons, such as lack of loans for investments, loss of cattle during droughts, banditry, indebtedness, and presumably also mismanagement. Indeed the foundation of group ranches in Kenya was supposed to be accompanied by governmental programmes to develop water access and other facilities needed for livestock keeping, which were in fact not provided in all instances (Ng'ethe 1993: 187-190). This also happened in the case of the Tana Delta. Thus most of the ranches in the delta are dormant and the number of permanent livestock is currently limited.

Present efforts to develop the local economy comprise all three agricultural sub-sectors (farming, ranching, fishing). The TDCC provided KES 32m (EUR 0.25m) to invest in at least nine smaller irrigation schemes (most 50 ha), which would amount to 440 ha of additionally irrigated land, or an increase in this from 9.4% to 15% of the delta's arable land (TDCC 2008: 74, 77f., 113f., 109, 119). Another KES 45m (EUR 0.35m) are scheduled for the promotion of banana, mango, oil crop, and cotton, and KES 10m (EUR 0.78m) for crop disease management (TDCC 2008: 108). Also investments to modernize livestock keeping are scheduled. Projects to form livestock cooperatives, improve dairying, and install crushes and cattle dips amount to KES 35m (EUR 0.27m). A further 50m (EUR 0.39m) are scheduled to combat livestock diseases (TDCC 2008: 106f.). Around KES 10m (EUR 0.78m) are assigned to the development of fisheries (TDCC 2008: 107). In sum, the TDCC seeks to boost the number of farmers participating in irrigation schemes from 0 to 400, to double annual milk yields and to nearly triple annual beef production, as well as to increase the fish harvest by about 15% by 2012 (TDCC 2008: 119, 122).

Not all development initiatives target smallholders. Large-scale agricultural projects include the revival and expansion of the TDIP and several large-scale agricultural investments into agrofuels. Local authorities as well as the parliamentarian representative of the Tana Delta District regard agrofuels as an attractive approach to developing agriculture, employment, and infrastructure in the region. The commitment of the local government and the local parliamentarian to expanding agricultural investments and agrofuels in particular is in line with national development policies. Kenya's *Vision 2030*, issued in 2007, considers investment as key to agricultural development, including investments in agrofuels. It does not place comparable emphasis on livestock development. According to FIAN, various remarks in Vision 2030 imply the phasing-out of pastoralism, e.g. by converting wetlands into irrigated agricultural land or by boosting the plantation of drought-resistant oil seeds in arid and semi-arid areas (FIAN 2010a: 18, 21).

Taking into account the current adjudication processes and the support for large-scale agriculture by officials and politicians, it is not yet clear how the current land reform process influences these dynamics. Opinions were given that the delta population is unlikely to be able to take advantage of these reforms, because most of the land is government, not trust land. Current assignment of land and even the formation of ranches on state land in the 1970s counter that opinion. Rather, the run on the land might also start between the local population. Demarcation activities have been witnessed for example in Witu. Moreover, the provisions to use land productively scare people. Some of the ranchers, for example fear that farms might be alienated because of lack of productivity. In other words registration of individual land titles is on its way, and it is far from clear who are the ones who will profit, and who will lose (see situation of Wardeis in Mkoko).

5.3 Agofuel Investments in the Tana Delta

A series of agofuel plantations have been planned in the Tana Delta. These projects are the MAT sugar and jatropha plantations, the G4 oil seed plantations, the Tana River Integrated Sugar Project (TISP) of the Tana and Athi River Development Authority (TARDA) and the Kenyan Mumias Sugar Company Ltd., and the jatropha project of the Canadian Bedford company. The latter two projects are described in more detail below. The map in Fig. 20 shows the areas planned for agofuel production, the location of the villages where the focus group discussions took place, and the gauge stations where the meteorological data used in chapter 5.1.2 were generated.

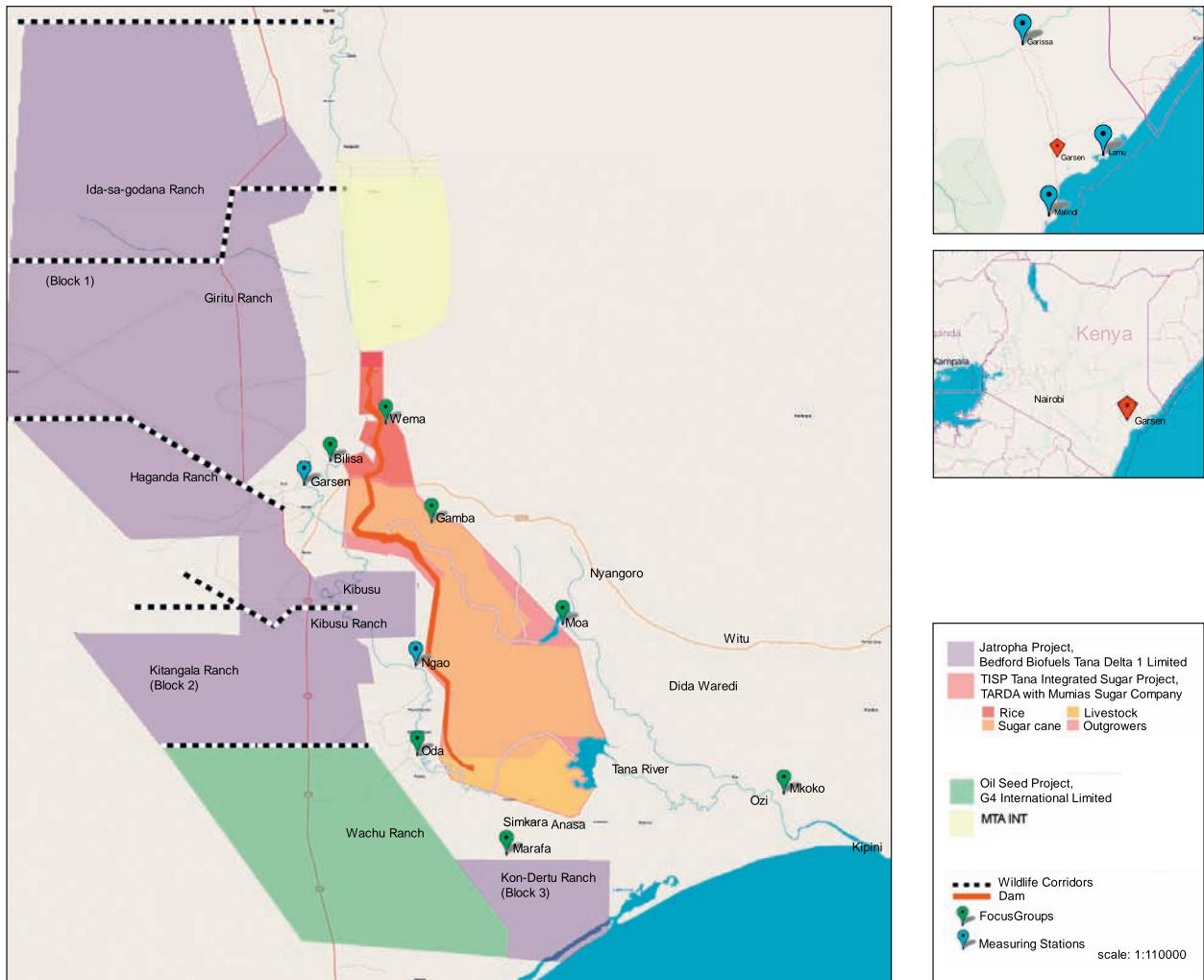


Fig. 20: Area map indicating planned agofuel investments, focus group villages, and meteorological stations; note: presumed MAT area extends northwards; Sources: HVA 2007: 11; ABF 2010: 10, 101; Dickens 2010; based on OpenStreetMap and Contributors CC-BY-SA.

MAT International Ltd., a Kenyan company and part of the TAL Group, seeks to invest in additional sugar and jatropha plantations comprising 120,000 ha, of which – according to current information – 30,000 ha are within the Tana Delta, north of Garsen, and the remainder in the adjacent neighbourhood in Lamu District (30,000 ha) and Ijara District (60,000 ha) (HVA 2007: 322). The status of the project is largely obscure. According to TARDA, the agency once sought a public-private partnership with MAT, but the cooperation failed to acquire the required approval by the government. TARDA's company secretary, Andrew M. Nyachio, therefore denies that such a project exists and if so, that TARDA is involved (Petition No. 14, Replying Affidavit 2010: 7). However, MAT states on its website that the company has 'entered into a strategic agreements with Tana Delta and Lamu District communities, with the goal of developing an integrated sugar cane growing industry in the coast region to produce sugar, ethanol and power generation' (The TAL Group 2011). Indeed the Tana Delta District development plan 2008-2012 even schedules one million KES (EUR 7,750) for identifying outgrowers for the MAT International Sugar Zone (TDDC 2008: 110). And the member of

parliament (MP) representing the constituency, Danson Mungatana, describes MAT International as the investor, who has ‘been very consistent in pushing for this sugar project’ (Mungatana, 08.08.2011). It is subject to speculation whether such cooperation can exist without the knowledge of TARDA. The fact is that the land had already been allocated to MAT, but the allocation was nullified again by the Minister of Lands, James Orengo, because of irregularities. The company is said to have allocated itself three times more land than initially agreed upon (The Star, 29.09.2010). MAT is said to have filed a lawsuit against the nullification (FGD Wema, 30.07.2011).

Moreover, the British firm G4 Industries planned to invest in 32,000 ha for oil seed production on the Wachu Ranch (irrigated crambe, castor and sun flowers suitable for biodiesel). An environmental and social impact assessment as well as a resettlement action plan were carried out. The project came to a halt due to the burdens of financial recession, costs of installing water capture and irrigation systems, and because of ‘Kenyan Government corruption issues’ in which the company was not prepared to become involved (Pond, 02.12.2011). In principle the company is convinced that food and fuel production in Africa do not exclude each other, but also considered changing world opinion in its decision (*ibid.*). The G4 website, however, still states that the G4 research and development unit is ‘currently providing major consultancy to G4 Industries on their Wachu Ranch project in Kenya’ (G4 Group 2011). In any case, if the project had been realized 500 households or around 3,000 people would have been expected to vacate the land and be resettled (AWEMAC 2010: 103).

It is worth mentioning with regard to land grabbing in the context of climate change, though not related to agrofuels, that in 2008 a further 40,000 ha were under consideration for food crop production for Qatar to improve that country’s food security . The deal was related to a promised Qatari loan to the Kenyan Government of USD 3.5bn for the construction of the new Lamu port (Nunow 2011: 18). Altogether 16,200 ha of this land were supposed to lie in the delta. The project is no longer under discussion, which – according to a petition of opponents to the TISP project – is likely to be due to the fact that the Chinese government entered into the Lamu port project (Petition no. 14, 2010: 7; Daily Nation online 2010). It is, however, also China that is involved in export-oriented agrofuel plantations (see p. 28). According to Bedford, China is about to invest in 500,000 acres, more than 200,000 ha, for jatropha plantation in Kenya (Nature Canada Blog, 07.09.2011). The exact location of this large area is, however, not known.

The planned large-scale agricultural investments in the Tana Delta would total 186,000 ha, which is actually considerably more than the already very high estimate of 118,600 ha of arable land available in the delta. But even if only the projects of TISP and Bedford still at stake were realized, those investments (84,000 ha) would still amount to about two thirds of the arable land. The two projects are the focus of this study and are described in more detail below.

5.3.1 Tana River Integrated Sugar Project (TISP)

The main focus of this study is the TISP irrigated sugar project of TARDA and Mumias Sugar Ltd. TARDA is a parastatal development body set up in 1974 that operates on a concessional basis regarding fees for the use of resources, access to loans, etc. Its major current project in the Tana Delta is the Tana Delta Irrigation Project (TDIP), which was started in the 1980s to grow rice to improve the country’s food output. According to TARDA, the current project area comprises 12,000 ha; however in 1991 it was stated to have 16,800 ha (Hirji/Ortolano 1991: 223). In 1986 a dyke 35.9 km long for flood protection of the rice fields was constructed and cooperation with the Overseas Economic Cooperation Fund of Japan was sought to realize the first 2,000 ha of the project. According to TARDA, the project was completed in October 1997 and immediately afterwards destroyed by the wet ENSO events of 1997/98 (Petition No. 14, Replying Affidavit 2010: 8). Mismanagement, however, also seemed to be at work. The head of the local NGO Tadeco, a former employee of TARDA, reports that the rice mill of TDIP had already stopped working before the El Niño events and only functioned for one week in total (Diwayu 2011). Revival of TDIP is proceeding at a slow pace. In 2003 about 600 ha had been restored. At the time of our visit the area was said to be 800 ha. The new expectation of TARDA is to establish 4,000 ha of paddy production. Those 4,000 ha are integrated into the TISP as its rice irrigation component. TISP has an earmarked project area of 28,500 ha, of which 5,000 ha were approved by NEMA for a first project phase in July 2008, obviously shortly after it had been presented in a Cabinet Paper ‘sometime in July 2008’ (NEMA 2008; Petition No. 14, Replying Affidavit 2010: 5).

TARDA's popularity amongst inhabitants of the delta is low. This is mainly due to the obscure process of land allocation to TARDA, which many locals regard as unlawful alienation of commonly used trust land. Instead of being properly consulted, they were just informed about the allocation by the County Council (FIAN 2010b: 20). In 1994 the Pokomo village of Wema/Salama filed a case against TARDA (Smalley 2011: 20), but subsequently the GOK issued a Letter of Allotment to TARDA in January 1995 for about 28,500 ha. Such a letter is 'a mere offer' stating the conditions of that offer. It has to be officially accepted and its conditions fulfilled, otherwise it can be withdrawn. At the time of the TISP EIA in 2007 TARDA still had not accepted the letter officially, but nevertheless claimed the land to be its 'individual property'. Locals state that TARDA even regards 40,000 ha to be its own (Diwayu, Mobilizer). Evictions of squatters living on that land occurred even before 1995, back in 1993 (HVA 2007: 295f.). After the failure of TDIP in 1998, former inhabitants occasionally returned to the abandoned villages and also new settlements emerged.

TARDA's performance in implementing irrigation schemes is also lacking. In addition to the rice mill mentioned above, the pumps of the small-scale Lower Tana Village Irrigation Project do not function any more either (Petition No. 14, Replying Affidavit 2010: 9). Again the hospital, being part of the TDIP's social amenities, was a failure and was later converted into a school (Diwayu, Mobilizer). Mismanagement is mixed with rumours of political corruption. The draft of an EIA of the TDIP, conducted in 1983 on behalf of the Dutch Directorate General for International Cooperation, did not recommend realization of TDIP, not only due to its severe environmental and social impacts, but also because TARDA's Bura irrigation scheme north-west of the delta was already regarded a dismal failure. TARDA, however, obviously enjoys governmental backing. Only one week after the said EIA draft was submitted to TARDA, the Minister of Energy and Regional Development announced successful completion of the feasibility study for TDIP in newspapers, and the final EIA report was delayed for two years due to interventions of the Minister at the Dutch Embassy (Hirji/Ortolano 1991: 225). Concerns about maladministration and political corruption had been expressed already in 1974 by Members of Parliament, who feared the 'eating' of land due to direct appointment of the chair by a minister and the weak position of the few 'non-officials' and district authorities on TARDA's management board (Rowntree 1990: 36f.). Thus it is not surprising that TARDA is known for a top-down development approach. Locals complain, for example, that TARDA does not consult or consider local people, but excludes them from the TDIP. TARDA is said to neither allow them to sell their produce to plantation workers, nor to provide for contract farming. (FGD Wema, 29.07.2011).

Altogether TARDA enjoys only little credibility and sympathy amongst the local population, which has repercussions on its TISP project in cooperation with Mumias. This planned 'private joint venture' is based on a Memorandum of Understanding between TARDA and Mumias of October 2006. Together with the area in Lamu District, TISP is supposed to cover about 33,000 ha of land (Petition No. 14, Replying Affidavit 2010: 9.). Mumias is domiciled in the west of Kenya in Mumias District, the GOK being its major shareholder. Mumias is the one amongst Kenyan sugar companies that is already experienced with cogeneration out of molasses, and is mentioned in various documents concerning agrofuel production (e.g. KFRI 2010; Pipal 2010). According to Pipal, bio-ethanol production in the Tana Delta was selected as a flagship project by Vision 2030 that wanted irrigated sugar cane plantations in the delta and related ethanol production to be started within 12 months (instead of 18 in Western Kenya) (Pipal 2010). TARDA is thereby supposed to provide the land and Mumias would run the plantation and the sugar mill, as well as provide for a cogeneration electricity facility, an ethanol plant, a water and a waste water treatment facility and other infrastructure development (HVA 2007: 11). According to its EIA, the TISP project site in the Tana Delta comprises 20,000 ha of irrigated sugarcane production, of which 16,000 ha are supposed to be cultivated through estate and 4,000 ha through an outgrower system. This land is part of the above-mentioned 28,500 ha entrusted (or 'offered') to TARDA as an area for development in 1995. Additionally 2,000 ha are planned for the irrigated rice of TDIP, and the remainder is mainly earmarked for pasture and livestock development (HVA 2007: 9).

The executing organizations estimate that over 20,000 skilled and unskilled labourers would be needed that 'after proven ability be accepted as farmers with the obligations to deliver contractually cane to the factory' (HVA 2007: 15). The responsibility of the farmers would then be to take care of irrigation, to apply fertilizers (and herbicides), and to assist with harvesting. They should moreover organize themselves in an outgrower company that is to provide them with credits to afford these inputs. The responsibility of TISP would be the 'logistics of all operations' (*ibid.*), namely land

preparation, harvesting, loading and cane transport. Experiences of the local communities with TARDA do not, however, convince them. Salaries for casual labour on TDIP fields are too low and working conditions too hard to allow for a decent income. It was reported that daily payment is KES 150, that it is only seasonal employment, that working hours are long, and that there are water snakes in the rice fields. The majority of the roughly one thousand employees accepting these conditions are young women (FGD Wema 29.07.2011; Warsamez 01.08.2011; Pickmeier, 30.07.2011). According to MP Mungatana, the salary is based on the national minimum wage for unskilled labour, which in 2010 was at KES 140.55 and is currently at KES 158.10 (Mungatana 08.08.2011; GOK/Ministry of Labour 2010 and 2011). Actually, it is anything but sure that prospects would improve with the involvement of Mumias. Small-scale contract farmers of Mumias in its district of origin are not well-off and face many structural problems. Indeed, Mumias District also has a poverty level of 62% (Arum 2011).

The environmental NGO Nature Kenya, one of the main local opponents of the project, undertook an economic assessment of its own, which states that TISP land and water costs indicated in the project planning are based on the concessional costs TARDA currently has to cover for these resources. This is KES 71,700 (currently EUR 560) per year to the Ministry of Land and KES 578,271 (currently EUR 4,516) per year to the Tana River County Council for a total 28,600 ha, which makes for KES 22.7 (less than EUR 0.18) per year and ha (Mireri et al. 2008: 29). Water for irrigation is channelled by the Matomba Brook into the project area, which 'diverts up to 50% of the Tana flow' (HVA 2007: 19). No charge is made for using this water. This is particularly surprising as the EIA of TISP assumes that the project will abstract 28m³ water per second (of which 22m³/s are for irrigation), which might amount to a third or more of the Tana water flow during dry seasons. Paying nothing contradicts the 'provision of Water Act of 2002 rules, which states that water extracted from the environment for such use should be chargeable at Kenya cents 75/m³/second' (Mireri et al. 2008: 29) and does not work as an incentive for responsible and sustainable use of natural resources. Regarding the substantial amounts of water involved, it is moreover surprising that the TISP EIA states that the river 'has the potential to support a large industrial sector in the district' (HVA 2007: 28f.).

Planning regarding the necessary resettlements if TISP is realized was lacking at the time of the EIA. There is not even any indication of how many people will have to move, and how and where they will be resettled. Beyond a general statement by the proponent that 'almost all villages around the project site will not be affected', the EIA only states that 'a good Human Resettlement Plan for the existing legal and illegal villages within the envisaged project area (nucleus estate, factory sites and canals) will require a detailed study/assessment, mapping, negotiation, compensation, formulation and implementation before commencement of the project in order to avoid unnecessary conflicts' (HVA 2007: 330). Other sources indicate that currently around 25,000 people are living in the project area (in varying numbers (18 to 30) of villages (Petition No. 14 (2010); Nunow 2011: 16) and potentially threatened by eviction. The villagers of Gamba were evicted already in 2010 (see p. 64). Villages that are threatened by eviction when TDIP phase II starts are Wema, Hewani, Vumbue, Bandi, Kulesa, Mnazini, and Mwina. Oda and Marafa villagers equally fear eviction since a note in the local dailies in May 2011 (Validation meeting, 06.12.2011). The Marafa case could be related to the Bedford project too.

Civil society organizations and locals oppose the project for diverse reasons such as environmental protection, water subtraction, unconvincing prospects that it generates income for locals by means of labour, contract farming, or trade. Nature Kenya argues against the project economically and has elaborated a cost-benefit-analysis on the alternatives in the Tana River Delta, which shows that the income generated by traditional farming, fishing and cattle grazing is almost three times higher than potential agrofuel revenues (FIAN 2010b: 20). It suggests that investment in roads, markets, and a mango processing plant would bring more development than agrofuel production. Also development of eco-tourism is an option brought forward as a viable alternative that would allow economic development and environmental protection to go hand in hand. Indeed, all participants of the validation meeting, representatives of villages, authorities, NGOs and KWS alike, agreed that TARDA has, in one way or another, impacted negatively on the socio-economic conditions in the delta.

5.3.2 Bedford Jatropha Plantation

Bedford Biofuels Inc. is a privately held multinational company incorporated in Canada. According to the Environmental and Social Impact Assessment (ESIA) which was carried out in September 2010, Bedford will acquire over 160,000 ha of land by means of sub-lease agreements with six ranches: Ida-sa-Godana, Giritu, Haganda, Kibusu, Kitangale and Kon-Dertu Ranch (ABF 2010: 9). Of those 'only' 64,000 ha will be developed into plantation, much of it located in the mixed farming areas (see map). The crop that will be planted is jatropha, as Bedford considers jatropha to be one of the most viable crops for agrofuels (ABF 2010: 6). Bedford's ESIA was approved by NEMA with a pilot project to start with. Accordingly the company started with 10,000 ha on the Kitangale Ranch in 2011. In a second phase another 30,000 ha on the other ranches will be developed for plantation, and phase 3 will complete the development with approximately another 24,000 ha. Most of the ranch areas are located in the semi-arid lands adjacent to the wetlands, a climate more appropriate for jatropha than the wetlands. Only Kon-Dertu and Kibusu Ranch stretch partly into the floodplains (ABF 2010: 44; see Fig. 20). Final areas to be placed under plantation will be determined by further site surveys and mapping. Approximately 60% of the total ranch areas will not be turned into plantation, a fact that is supposed to allow continuation of existing land uses (such as livestock grazing and already existing cropping) as well as settlements (ABF 2010: 8). Bedford states that parts of the ranches will be kept available for the protection of native vegetation, providing necessary habitat and migratory corridors for wildlife and livestock. However, except for one, all proposed plantation sites are located along the main road (ABF 2010: 142). This means that they (a) are located in the mixed farming zone (see Fig. 15, p. 44) and (b) easily come into conflict with existing settlements.

The contractual situation differs from that of TISP. Whereas the latter is a more or less parastatal undertaking on pretended own land that was former trust land, Bedford entered into sub-leasing contracts with ranch owners, who had their main leases assigned by the Commissioner of Lands on the basis of 20-45 year leases. Although it is leased public land and sub-leases have to be authorized by the District Land Control Board (Ruttu, Bedford representative, 01.08.2011), the ranches are regarded as privately owned, at least as long as the leasing contract is active. Thus the jatropha plantation is built upon a private-to-private relationship.

Table 6: Ranches in the delta involved in plans for agrofuel production

Ranch	Size in ha	Year of establishment	Initial & current membership	Original expiry date of lease	Ethnic affiliation	Form of ownership	Actual activity	Investor
Kon-Dertu	23,000	1978	320→113	2035	Orma	Directed agricultural company	Subsistence agriculture and pastoralism	Bedford
Kitangale	23,000	1976	50→102	2021	Pokomo	Private company	Pastoralism	Bedford
Kibusu	27,400	1990		2035	Pokomo	Private company	Subsistence agriculture	Bedford
Haganda	13,000	1977	50→53	2021	Orma	Private company	Pastoralism	Bedford
Giritu	42,000	1975	360→250	2021	Pokomo	Directed agricultural company	Pastoralism	Bedford
Ida-sa-Godana	50,828	1975	90→106	2015	Orma	Cooperative	Minimal ranching and pastoralism	Bedford
Wachu	32,000	1975	90→			Directed agricultural company		G4

Source: ILCA 1979: 95-100; ABF 2010: 42, 59; Smalley 2011.

As the new constitution demands that land has to be used productively and as some of the leases were soon to expire, ranchers feared disappropriation of the ranches. Thus they embraced the sub-leases to Bedford as an opportunity to secure the prolongation of the lease and to generate some

income (Smalley 2011: 23; Pakia, 01.08.2011). Indeed, by entering into the contracts Bedford did clear all debt burdens of the ranches and though the land is not yet cultivated for jatropha already pays an annual fee of USD 1-1.5 per acre. Also in future the fee is said to be paid for the total, not only for the cultivated area, and will be raised to USD 1.7 per acre. The cleared debts have to be repaid to Bedford as soon as profits are made (developers' meeting, 01.08.2011; Pakia, 01.08.2011). However, the standing of the ranches in the communities is mixed, as some are not regarded to be true community projects but elite ventures. Some of our respondents, for example, are known to be officially members of a ranch, i.e. they are registered in the Adjudication Register under the Land (Group Representatives) Act, but they have never been actively involved in the ranch's undertakings. They assume they have been abused by the management to acquire group status and thus the leasehold in the first place (FGD Mkoko, 30.07.2011). Others say that evictions from communal land were involved when the ranches were founded (Smalley 2011: 24). In any case membership is restrictive, because contribution of livestock and/or the payment of fees are required to become a member. Thus the truly marginalized population is excluded. The ranch management members we met were in fact noticeably wealthier than the average. Also inheritance of ranch membership is constrained and some do not allow female inheritors to enter. Others do not resent ranches, but admire them as an expression of local power.

Many tend to regard the Bedford investment as a great opportunity for development and income. Bedford, indeed, pays a salary more than three times higher (KES 500) on its pilot farm than that of TARDA (FGD Wema, 29.07.2011). Bedford moreover promises to invest in a major outgrower scheme worth USD 3.6m (EUR 2.5m) per 10,000 ha, to include a grazing scheme for ranch cattle that also serves to reduce fire risks on the plantation, as well as a community support programme to develop other livelihood activities and social infrastructure (ABF 2010: 24f.). According to the local representative of Bedford, the community support programme has a value of USD 3m (EUR 2.1m) (Ruttu, 01.08.2011). The EISA does not state a particular amount for the social component of the project, nor does it state how many hectares are assigned for the outgrower scheme. However, a major part of the local population does support the project because they believe in its economic prospects. This is in particular true for the farmers and some of the ranchers, because farmers can just grow another more drought-resistant crop and they expect the income from outgrowing to improve their purchasing capacities. In contrast, pastoralists gain comparatively little and in addition lose grazing ground and thus long-term perspectives (Pickmeier 30.07.2011).

With regard to settlements, Bedford 'has indicated that none of the established villages around the project area will be affected by the project' and that 'any resettlement plan, should it be necessary, will only be implemented after detailed study/assessment, mapping, negotiation and compensation' (ABF 2010: 73). Some of the ranches are, however, home to about 375 squatters (75 households) without registration or title deeds. Some of these are there with the ranch management's permission, but others do not have the ranchers' consent. However, the latter have often developed more permanent infrastructure, such as schools and mosques. Statements in the ESIA on the need for evictions are somewhat contradictory. On the one hand the ESIA states that some squatters do pose a challenge for the ranches and thus for the project. On the other hand 'Bedford does not consider these to pose insurmountable issues: the squatter settlements with permanent structures and /or the ranch owners' permission will be recognized in the site planning for each ranch; and it is anticipated that the squatters will gain employment in the project' (ABF 2010: 46, see also p. 103). Then again it seems that those who do not have the permission of the ranches (that is Giritu and Haganda ranches) are regarded to be a matter for the ranch owners (with court cases pending) and the local authorities, who are expected to organize required resettlements (ABF 2010: 72). In particular for Ida-sa-Godana, Giritu and Haganda ranches, evictions are likely to be needed and cannot be avoided for all settlements due to the design of the plantation blocks (ABF 2010: 104). Prospects of such evictions are not clear, as the local attitude is that squatters usually have no rights. Or as one of the ranchers puts it: 'Bedford says it makes no evictions. It is up to the management of ranches to talk to these people. As it is leased land they have the right to make them leave.' (Pakia, 01.08.2011). The local Bedford representative denies that any evictions will be involved (Ruttu, 01.08.2011).

Bedford emphasizes repeatedly that the plantations, with the exception of the nucleus, will not need irrigation. It is planned that the water needs of the project area will be provided by means of earth dams to store surface runoff, surface water pans, water tanks to collect runoff water from roofs, and drainage lines to divert storm water from the plantation area (ABF 2010: 16, 18). Bedford assured

communities that it will not access river water of the overstrained Tana and often states so in the ESIA. It does not, however, absolutely exclude that option, but wants to seek, 'if it does become necessary, appropriate abstraction permits' (ABF 2010: 97). Moreover, an unspecified number of boreholes on the ranches to access groundwater are planned, claimed to be used for staff and livestock consumption only (ABF 2010: 16). As studies on recent experiences with jatropha (see p. 28) indicate, it is however not likely that the plantations can be productive without any – probably even extensive – irrigation, in particular if the trend of persistent droughts continues. The capture of runoff water might, moreover, have negative repercussions on groundwater recharge capacities, and the abstraction of groundwater for irrigation would equally lower its levels considerably. In an environment of such complex hydrological conditions with climate change in advance, it is anything but sure that the plantation would not affect the delta and the district hydrology negatively.

At the same time the reduction of land accessible for livestock grazing and fuel wood collection 'will have detrimental effects' and lead to increased pressure on the natural resources of the project's hinterlands (ABF 2010: 98). Although resident livestock numbers on the ranches are low, a total of 160 cattle and 830 small livestock against a carrying capacity estimated at 18,500 cattle, this will be a threat particularly to nomadic and semi-nomadic herders and their herds from neighbouring communities and districts who use these grazing areas during dry seasons. No counting of the real use of these ranches exists or was conducted for the EIAs. The latter, however, confirms that in the villages surrounding the ranches a total of 12,219 cattle and about the same number of small livestock exist (ABF 2010: 42f.). Moreover, during the peaks of the dry seasons (March and September) 'it is estimated that about 85% of the livestock found in Garsen and Tarasaa division [...] are from neighbouring districts' (ABF 2010: 44). It has to be assumed that the ranches are used for grazing of non-ranch cattle, and that ranches are not just passed to access water resources and market places of the Tana Delta. This use should be included in the ESIA.

5.4 Conclusions

Agofuel production in the Tana Delta is a priority project of GOK's Vision 2030. The delta is expected to serve as a pilot area to realize related promises such as reducing fossil fuel imports, diversifying the sugar industry, making some agricultural use out of semi-arid lands, cultivating carbon sinks, and so on. Impoverished and aid-dependent Tana Delta District is indeed thirsty for some kind of development to improve poverty levels, access to infrastructure and income opportunities. Thus it is comprehensible that authorities, political leaders and parts of the population want to embrace the opportunity they see at hand, at least with regard to the Bedford project.

At the same time it is obvious that the Tana Delta suffers severe environmental changes related to human activity and global warming alike. The observed increase in short rains by no means matches the decline in precipitation during the long rains. The net loss in rainfall will in the long run be exaggerated by above-normal temperatures and thus higher evapotranspiration rates. If this trend of the past three decades proceeds, the wetlands of the delta cannot escape becoming drier. Climate change projections, at least those for temperature, clearly support this assumption.

For the delta however, due to its hydrology system, the exploitation of water resources and deforestation upstream is at present even more significant, because it is the change of the flooding scheme that primarily affects agriculture and wetland ecosystems negatively. Reduction of water flow in the long run will be aggravated by receding glaciers. The negative impact on groundwater levels and quality is already sensible, with the degree of salinity becoming worse.

Considering this it is surprising that EIAs of such agofuel projects as well as of the TDIP do not factor in the challenges of climate change. Their planned (TISP) and doubtless underestimated (Bedford) water consumption cannot be sustainable with regard to general livelihood needs and the delta's ecosystem. The latest experiences with the wonder plant jatropha show that the assumption it would need no irrigation to be profitable is no longer valid (see p. 28). It is careless or even irresponsible to perform such investment planning without proper knowledge of groundwater resources, their recharge capacities and systems. Boreholes, seemingly regarded as a solution to local water scarcity, might thus fail already in the medium term. Beyond all doubt both projects, if they are to be profitable, will increase the pressure on local water resources.

In the case of the land held by TARDA there is moreover strong evidence that the process of land allocation was wrongful and that there were grave irregularities regarding the initial environmental impact assessment for the rice irrigation scheme. The 'TARDA land' contributes considerably to

insecurity of tenure along the left bank of the river, depriving the communities of valuable arable land and of land that could have become community land under the new constitution. Proper judgement of the pending court cases and a review of the allocation process under the constitutional provisions to undo past land injustice should therefore be up for consideration.

Both projects interfere with existing uses. According to interviews and participatory mapping, performed by Rebecca Smally, the TISP area and the Bedford ranches are currently used for livelihood activities, in particular for grazing, fishing and charcoal burning (Smalley 2011: 19). Both projects will thus involve serious changes in livelihoods of the affected population, including exclusion from natural assets and the threat of eviction. Pastoralists not belonging to the ranches are likely to lose grazing grounds, and the very marginalized will lose income from the banned livelihood activities they depend upon. Also, for non-local pastoralists, areas accessible as a fallback option during severe droughts will shrink, and pressure on the remaining land of the delta will subsequently increase.

It was noted that many farmers and ranch owners support the jatropha plantation as a way for development. This is due to their particular livelihood situation that brings them into a position to profit from the project as contract farmers or agricultural labourers, and from payments of Bedford for the sub-lease, provided the jatropha plantation works out as outlined by the company. Finally, the felt insecurity of tenure is also a major reason for embracing the project. Ranchers and farmers alike fear losing their lease, or that authorities will alienate their plots under customary law if the land is not used 'productively'. Clarification on how the respective provision of the constitution is to be interpreted is needed here in order to avoid fear-driven land use for an alleged productivity system that is environmentally unsustainable and thus also socially unacceptable.

As regards the increased persistence and severity of droughts in the past two decades and the net decline in rainfall, both projects seem to incorporate some wishful thinking. Both will have repercussions – most likely severe ones – for humans, wildlife, and vegetation that are already under stress. Increased conflicts over resources between the projects and the population, between the farmers and the herders, and between human and wildlife are the likely result.

6 Human Rights Impact Assessment

The negative impact on human rights of both climate change itself and policies installed as mitigation measures (i.e. agrofuel production) can be witnessed in the case of the Tana Delta. There were several instances of local rain showers during our stay in the delta in the dry season, but it was obvious from the dried out maize fields along the roads that there had been considerable rain shortage during the preceding season of long rains that had almost completely failed. During the verification process conducted in December, the situation changed. Short rains were intense and flooding made the temporary evacuation of 5,000 people necessary (Gitonga Kithaura, 05.12.2011). However, chapter 5.1.2 has shown that on average the annual rainfall is decreasing due to global warming and local environmental and climatic changes. Indeed, the water situation throughout the delta is severe. This was confirmed in all of our focus group discussions as well as by the District Commissioner, who stated that water is the main problem (Gitonga Kithaura, 28.07.2011). The water issue affects all types of livelihoods represented in the Tana Delta negatively. Other main problems that impede the enjoyment of human rights are closely related to the land policies of the past and, in the end, to the plans to boost agrofuel production in the delta.

A total of six focus groups were selected and considered for the research mission. They represent different livelihoods affected by environmental and climatic changes as well as by the agrofuel projects of the TARDA-Mumias cooperation (TISP/TDIP) and Bedford International. The focus groups comprised Bilisa village (Bilisa location) inhabited by members of the hunter and gatherer community of the Watta; Wema village (Salama location) inhabited by farming Pokomo; Mkoko (Ozi location) inhabited by members of the agro-pastoralist Wardei community who formerly lived in Gamba; the ethnically mixed Moa village (on the fringe between Tana Delta District and Lamu District) with a big Luo community; Oda village (Wachu Oda location) with a mixed population including many Pokomo; and Marafa (Chara location) inhabited by pastoralist Orma. All are located in and around the planned Tana Integrated Sugar Project (TISP) of TARDA and Mumias Sugar Ltd. Bilisa, Oda, and Marafa are, moreover, close to the Giritu, Kitangale, and Kon-Dertu ranches respectively, which are part of the planned Bedford International jatropha plantations. Nearly all the villages are officially registered; only the status of Mkoko village could not be clarified, but it is most

probably a squatter settlement. The focus groups comprised around 20 village members each. More detailed information on methodological issues can be found in chapter 2.6.

The first of the two sub-chapters summarizes the findings on the human rights situation made by the team in each of the selected villages, including the reports and testimonies produced by the focus groups and other informants. Information gained from the context studies and the verification process is also considered. The second sub-chapter then details the abuses and violations of human rights contributing to the situation. It identifies responsibilities and, where possible, provides recommendations. Both sub-chapters primarily address the right to water, the right to housing and security of tenure, and the right to food. Other issues of concern are also considered where appropriate.

6.1 Human Rights Situation

6.1.1 Findings Related to the Right to Water

In **Bilisa**, villagers depend on a borehole once sponsored by a Muslim aid organization, with a receding water level and water of polluted quality. The water flow of an adjacent tributary of the Tana is reduced, a fact they attribute to increased droughts and to TDIP. Villagers report that in former times they were able to dig shallow wells by themselves and elderly people remember that in the past water was never a problem. Now they depend on technical support, which indicates that the groundwater level has declined considerably. Also nearby ponds, where they used to fish, have dried up. They have been aware of the recession of water since the 1990s, but do not know what to do about it. They attribute droughts and lack of rain to the logging of forests that used to attract the rain, but the young in particular are also aware of scientific explanations related to carbon emissions of industries in Kenya and far abroad.

Wema villagers also face severe water problems, although Wema is located near the brook that feeds the irrigation channels of the TDIP paddy fields. They are, however, not allowed to use that water. They see two main causes leading to their current situation. First TARDA came in 1993/94 and tapped river water for its irrigation purposes without consulting or integrating the community. Then in 1997/98 El Niño floods silted the river bed and the Tana changed its course. Now the river is a walking distance of 45 minutes away and the TDIP channel has since been the only nearby source of water. Village representatives are highly indignant that TARDA denies them access to the channel water, if necessary even with the help of police force. From a legal perspective the national Water Act does indeed oblige villagers to first acquire official permission from TARDA to access the water, which other communities have seemingly done successfully, for example for the irrigation of banana plantations. Two things, however, might be noted here: the competing concepts of statutory and customary law regarding the use of natural resources, and the fact that the Wema community has filed a court case against TARDA to prevent their eviction from the TISP area, which discourages approaching TARDA for official permission.

The **Mkoko** villagers, who were evicted from Gamba by TARDA, have only a shallow well with salty water, which forces them to buy large amounts of water at high prices. An average-sized family of 10 people needs about 200 litres daily, which costs KES 200 to 600, depending on the well they access. The closest well is about 10km away, which poses a considerable burden on the women, who are responsible for this task, and even exposes them to human/wildlife conflicts. The women reported one clash with a buffalo that hit a mother with her child. Families try to mitigate the financial burden by harvesting rainwater from coconut trees using primitive means such as turned down palm leaves, so that rain and dew water drip into plastic bottles.

Moa village has three boreholes, all of which suffer high levels of salinity. Their operation is moreover constantly affected by frequent mechanical breakdowns due to over-reliance on external support for repairs. In addition, Moa straddles two districts (Lamu and Tana Delta), which entails apparent neglect of attention by authorities and other jurisdictional bottlenecks. Thus Moa currently



depends largely on Lake Moa for its water supply, which is a source of water-borne diseases with a water quality that is – to say the least – disputed. Other nearby sources of water such as smaller oxbow lakes and small river arms have silted and dried out since the last floods they experienced. Reportedly there used to be around 50 oxbow lakes in the 1990s, of which only four still exist today. According to the villagers, since 2006 there has been no flooding of their area, which would be a precondition for refilling the lakes.

Since the Tana shifted its course, **Oda** villagers too have depended on water relief from government trucks. These are said to bring 16,000 litres every two weeks for around 750 households, i.e. about 53 litres per week and household. This does not satisfy the village's need for water, so that the population relies on additional options such as boreholes, digging into the old river bed, and covering long distances to the new river course. However, boreholes so far only produce salty water. The water from the old river bed is not salty, but it has to be purified with chemicals. **Marafa** has five boreholes, but all except two dried up during 2010 so that these villagers also suffer water scarcity. The river as an alternative source of water has been steadily drying up since 2003.

6.1.2 Findings Related to the Right to Housing and Security of Tenure

Negative impacts on the right to housing and security of tenure were documented in most cases. Half of the land on which the **Watta** community in Bilisa is settled belongs to Bedford's Giritu Ranch and the other half is public land. Therefore they fear they will be evicted some day when the land is used for large-scale investments.

The **Wema** community lies within the TDIP project area and is thus liable to eviction by TARDA. The community filed a case against the allocation (they call it annexation) of their ancestral lands to TARDA (HCC No. 660 of 1994), but judgment is still due to be delivered. Also **Moa** village lies right at the edge of the TISP project area and thus villagers fear that eviction will come soon. A representative of Moa's Beach Management Unit therefore joined a petition against TARDA. During the verification process, moreover, information was supplied that **Marafa** and **Oda** villages had also received notice in May 2011 and equally face the immediate threat of eviction. Participants also pointed to villages not included in the selection of focus groups, but which are also threatened with displacement due to the investments. These are Chara, Hewani, Vumbue, Bandi, and Kulesa villages, and the areas of Mnazini and Mwina. An example how such evictions may evolve is provided by the case of the Wardeis of Gamba, some of whom now live in Mkoko.

The **Mkoko** villagers completely lack security of tenure. They had lived in Gamba already at the end of the 1980s, but were evicted for the sake of the TDIP project. They had regarded Gamba as the ideal place to live, because grazing ground, water and schools were all nearby. When they found the project had collapsed, in 2003 they gradually started to move back. At the end of 2009 they were given notice by TARDA at a public meeting that they had to leave Gamba. There was no further follow-up for about six months, but one day police and plant operators came to carry out the eviction forcefully, *inter alia* by using teargas. During the incident property such as domestic tools was lost, one villager was shot in the leg, and also a representative of the investors and a policeman were injured. After that some households in the village decided to leave and resettled in Mkoko, near Kipini, but others stayed. After a second attempt with even more police force and plant operators enforcing the eviction, the remaining villagers followed to Mkoko or went elsewhere. The crucial problem of the Wardei community is that at their previous settlement in Gamba, as well as at their current settlement in Mkoko, they are regarded as squatters who do not enjoy any type of land tenure. Thus they fear being evicted again. Neighbouring farmers have told them, for example, 'not to step into this land', and they have been threatened by words and deeds. This would be the third eviction suffered since the beginning of the 1990s.

Indeed the area of Kipini is one of the few areas of Tana Delta District that had a settlement scheme in the past and therefore much of the land is owned individually. At the time of the first FGD in Mkoko, villagers therefore complained that they faced problems in accessing pasture and were involved in conflicts with neighbouring farmers, because their cattle had to enter



the farmers' lands to find pasture. This statement was revoked during the validation session, which might be due to the presence of the acting district officer who denied such reports. Thus Mkoko villagers may have felt intimidated. The area chief of Garsen added that Kipini conservancy (Mkoko is located in Kipini Division) as well as private ranchers and individual land owners had in the past put up restrictions to guard against invasion by non-local herders from the North Eastern Province, implicitly suggesting that they unfortunately became victims of those policies.

6.1.3 Findings Related to the Right to Food

In all communities, availability of and access to adequate supplies of food proved to be a serious problem, which was often related to the water and tenure issues discussed above. The Wattu community of **Bilisa** were formerly hunters and gatherers who used to hunt in the forests they call the 'White Forests'. When hunting was prohibited by the Wild Life Conservation Act of 1976 they became deprived of one of their main sources of livelihood and were thus forced to adapt their diet and livelihood strategies. In former times, for example, they never used to eat maize. Since the surrounding ponds dried up, they also lost fish as a major food item. Yields from the small-scale and rain-fed agriculture they practice are not sufficient and reliable to feed the community adequately. Since 2006 they have been participating in WFP food relief programmes, which they regard as insufficient and unreliable. As life has become very expensive, they supplement their income by cutting and selling fire wood, which contributes to environmental degradation. They share this type of livelihood strategy with many other marginalized groups. Due to their marginal status and lack of education they unfortunately have only few alternative options that provide for a decent income. Bilisa villagers additionally carry out some bee keeping for honey.

In former times the **Wema** villagers cultivated rice, maize, beans, cassava, green gram, sugar cane and bananas. They had a rich diet and never suffered food shortages until TDIP was started around 15-20 years ago. Since then seasonal floods have receded considerably and plots for food crop production have started to dry out. The increased frequency of droughts since the El Niño floods of 1997/98 worsened the situation. 'Today we eat Ugali every day, Ugali, Ugali, Ugali', they say. Working on adjacent TDIP rice fields as casual labourers does not provide a decent livelihood and the daily wage is too low to cover all food needs. Indeed, the daily minimum wage for unskilled labour is about KES 150, which around July only sufficed to buy three kilos of maize, let alone meet any other needs. The villagers now participate in food aid programmes too, which they experience as being unreliable.

The **Moa** villagers' food supply is threatened by the drying up of Lake Moa and receding fish stocks, their main source of livelihood. More recently the Moa fishing community was joined by pastoralists, who lost their cattle during droughts and thus started fishing too. Fishers also started farming. Occasionally they receive food aid, but cannot rely on it. Most of them have started to diversify their source of livelihood. Also **Oda** villagers largely lost fishing as source of food due to the drying up of most oxbow lakes. Equally, yields from agriculture have declined sharply since the swamps dried out. The villagers regard freely grazing livestock as an increasingly uncontrollable problem, because the animals destroy their plots. Also Oda villagers receive food aid. Food aid rations across the villages seem to range between 1.5-2.0 kg per household every 1-2 months.



The communities mainly relying on pastoralism, **Mkoko** and **Marafa**, have meat supplemented by milk and blood from their livestock as their main traditional diet. The milk yield of their cattle depends highly on availability of pasture and water for livestock, however. Climate change and human activities increase pressure on both, so that Marafa villagers found their cattle gave only poor milk during the 2011 drought. They increasingly also try to grow food crops, but with no or little success due to the scarcity of rain and water. Mkoko villagers first reported similar problems, but later denied that this is true in their case, which might be connected with the above issue. They have not resumed the subsistence farming that they practised in Gamba again due to the tenure problems and conflicts they face at their new place.

6.1.4 Other Findings of Interest

Other findings that are worth mentioning concern the right to life, incidents of arbitrary application of law, and widespread mismanagement and corruption regarding the handling of natural resources.

Villagers from Bilisa, Mkoko, and Marafa reported an increase in human/wildlife conflicts, some of them with lethal consequences for humans and livestock. Due to the persistent drought, wildlife such as buffalos and lions comes closer to the settlements than usual in search of food and water. Bilisa villagers reported nine incidents in June and July, with one person dying on the way to the hospital. When fetching water from the wells, one Mkoko woman with her child was hit by a buffalo. Marafa villagers reported that within the past year 46 head of livestock have been killed by lions. Moreover buffalos coming from the beachline bring diseases and tsetse flies, so that villagers' cattle become infected. Both Bilisa and Marafa communities claim that the appropriate authority, the Kenyan Wildlife Society, has not helped them, neither with transport to hospital nor with compensation for lost livestock.

Villagers of Mkoko were subject to vigilantism when one herd of 50 cattle was captured, one of the herders tied to a tree, and the other one kidnapped and beaten by some farmers, who requested ransom of KES 30,000 for herd and herder. Two police officers and finally even action by the District Commissioner were necessary to effect their release. Afterwards, however, no action was taken against this act of vigilantism. The villagers' cattle are also frequently hurt by farmers and individual land owners, and occasionally die subsequently. Villagers claim to have lost about 20 cattle in this way. Other animals simply disappear, which might be due to clashes with wildlife as well. The Mkoko villagers were subject to such aggression because their cattle entered the farmers' plots. This incident too was denied during the validation process, although the case was documented with photos beforehand.

In any case such acts of vigilantism are wrongful and provide an idea of how non-local pastoralists are probably treated if they do not respect the restrictions imposed by farmers and private land owners. Conversely, these pastoralists are accused by locals of fuelling tensions for instance by overgrazing, banditry, human/wildlife conflicts, destruction of crops and invasion of private farms and ranches (trespassing). It is also known that many of them are heavily armed. No clear mechanisms have been put in place to deal with such trans-boundary movements, conflict mitigation and resource sharing. In the past, District Peace Committees and provincial administrators sought to quell such tensions. The instance of the Wardei is probably a worst case example of the approach of private actors to 'solving' such resource conflicts. Due to time and budget constraints the mission was unfortunately unable to obtain the views of non-local pastoralists as well. A future HRIA should include them.

Mismanagement and – in the belief of all focus groups – also corruption represent a great problem. Two of the villages, Bilisa and Moa, benefited from governmental development projects, but both of these failed due to wrong (but cheaper) technical inputs by the project implementers. The pipes of Bilisa's small scale irrigation scheme were too small for the pump's capacity and broke. Since then the cleared plot has remained dry and empty. The pump was brought to the mosque for safeguarding. Moa village was supposed to be supported in its fish breeding efforts to restock the lake. The installed fish ponds did not, however, keep the water in; instead it trickled away through the pond walls.

Finally, there is an overall lack of political representation and participation of many inhabitants of Tana Delta District. Although the district has an eligible voting population of 41,866 citizens, only 28,541 are registered as voters (status 2008). This violates fundamental political and civil rights. It might be that this is not only due to mismanagement. A member of Bilisa community reported loss of identity card and thus the ability to vote during the lootings of the 2007 election. Since then, this person reports, it has not been possible to obtain a new card because appointments have not been kept and some 'gratitude' is expected. Attempts to involve councillors have not been successful so far.

In sum, the reports of the villagers confirm the facts concerning the hydrological situation of the Tana Delta that were elaborated in chapter 5.1. They are aware of upstream activities, deforestation, and the TDIP rice fields as the main causes of these changes, to which they also attribute the changes in local rainfall. Some of them have also heard about global climate change. The problem that concerns them most is, however, the problem of land tenure. This is comprehensible in view of the

threat of eviction they face due to TISP. Indeed the unpopular project is based upon a land allocation process anchored in the disempowering land laws of the past, and obviously even involved a few irregularities (chapter 4.3.1 and 5.3.1). Since TARDA ‘annexed’ that land, it has been pursuing a top-down approach to developing it, which the focus group participants experience as neglecting their needs and rights. The question of land is indeed crucial, because other resource issues are also linked to it, such as the crucial access to water. The affected therefore call for a rights-based approach to development which considers and consults them, and claims to undo past land injustice. Villagers would, however, underestimate the problems of local and global climate and environmental change if they assume that resolving the land problem, which moves them so deeply, would solve all resource problems they face. It is, however, an indispensable precondition for improving their human rights situation and their prospects for a sustainable livelihood.

6.2 Human Rights Analysis

Based on the findings of the desk studies, focus group discussions and interviews with key informants, this HRIA comes to the following conclusions.

6.2.1 Violations of the Right to Water

Climate changes and global warming threaten the realization of the right to water and to adequate food. In the delta they contribute to failing crops and water scarcity as a consequence of failing long rains and deteriorating groundwater quality and levels. Long-term cyclic changes might be involved and aggravate current trends, but climate change research agrees that a clear warming trend and associated changes in hydrology can be observed. Drying up of water sources such as ponds, oxbow lakes, sub-surface water of lagas, etc., is perpetuated by climate change and jeopardizes availability, accessibility, and quality of water – all dimensions of the right to water enshrined in GC 15. Water not only decreases in volume, but also becomes more difficult to access technically and more saline. Access is moreover already strained by increasing human/wildlife conflicts close to water holes. People might increasingly be dependent on water trucking by GOK and humanitarian organizations, and safe drinking water is prone to rising prices. The Mkoko villagers pay between KES 200-600 for the daily household water needs, that is up to four times the daily minimum wage.

The right to water of the communities of the Tana Delta is also violated, because those responsible for upstream activities along Tana River, i.e. managements of irrigation schemes, of hydropower water reservoirs and of logging activities, do not respect this right. Water flow has become more variable and often derogated, siltation has increased, and the flooding scheme is reduced in duration and breadth, which also impacts negatively on groundwater levels. Equally the right to water is violated because TARDA’s TISP project area and its rice irrigation scheme in the midst of the delta’s wetlands extracts large volumes of water, amounting to a third of the remaining river flow during dry seasons. Tana River is the only river in the area with water the whole year round and serves as a fallback zone for nomadic pastoralists during droughts. Putting such high pressure on river water availability and accessibility when people, including the non-local pastoralists, depend most on the Tana aggravates the violation of the peoples’ right to water due to dry spells.

Even though TARDA might grant licenses to communities to use channel water now, these could be withdrawn or reduced when the water is used to irrigate the 24,000 ha of sugar cane and rice. Future realization of the right to water is likely to be severely threatened. Such future threat of the right to water is equally entailed in the jatropha project. As recent scientific evidence suggests, the intention voiced by Bedford of growing 64,000 ha of jatropha without irrigation is unlikely to materialize. Thus the planned plantations will provoke similar violations of the right to water under GC 15 as described above, and are likely to retrograde current (already weak) enjoyment of the human right to water. This is a matter of concern, also because efforts of authorities to satisfy the right to water fall short at times. Thus, for example, the Bilisa community was advised that the water quality of its well is not safe, but there was no follow-up, which might be due to lack of options and capacities, i.e. a failure of the government’s obligation to produce results.

It is the responsibility of GOK to protect the Tana Delta people from these severe impacts on their right to water. It should do so by providing sound and holistic information on the hydrological system and groundwater resources for development planning, which lies within the responsibility of the Ministry of Water and Irrigation, and by ensuring that its governmental and parastatal bodies, such as the Water Resource Management Authority (issuing abstraction licences) and TARDA (under the

Ministry of Regional Development), respect human rights in their development activities, for example by reforming statutes and guidelines. The same can be said for the local level of government. Also Tana River County Council and local authorities fail to protect the people's right to water by not thoroughly assessing potentials of investments to jeopardize the fundamental human right to water.

GOK itself contributed to the human rights situation by selecting the Tana Delta as a pilot area for agrofuel production and by promoting agrofuel policies that jeopardize the enjoyment of this right. It is a failure of GOK's obligation to conduct not to have implemented respective requirements for its executing bodies. It must be remembered, however, that Kenya's new constitution provides for the necessary provisions and already obliges the state of Kenya, its officers, representatives, and executing agencies to respect all human rights enshrined in the constitution, including the right to water. It must further be acknowledged that currently nearly every single law in Kenya is in the process of being reviewed because of the constitution. This is expected to include national water regulations too. Finally, it has to be recognized that GOK has put efforts such as water trucking and drilling of boreholes in place to relieve the water stress of the delta population. Afforestation measures to improve the water tower situation are already included in its climate change policies. GOK should not undermine those efforts by drafting competing agrofuel policies, and should ensure that its commitment to conduct is followed by results.

6.2.2 Violations of the Right to Housing and Security of Tenure

The right to housing of the Wardeis of Gamba village was violated, because TARDA abused it the way it ordered and conducted their eviction from Gamba in 2010. According to GC 7 of the CESCR, forced eviction is defined as the permanent removal of individuals, families, and/or communities from the homes and/or lands they occupy, on either a permanent or temporary basis, without offering appropriate measures of protection, legal or otherwise, or allowing access to these protection measures. The same GC establishes that cases of forced evictions are *prima facie* incompatible with the requirements of the ICESCR, and are only justifiable in the most exceptional circumstances. Under these circumstances, action must be taken in accordance with relevant principles of International Law by establishing legal obligations, in particular preserving the rights of those people threatened with eviction.

Comparing the process of eviction from Gamba with the standards of the Kothari Guidelines, the rights of the affected were violated in all phases of an eviction process. Notice that the villagers had to leave was only given in a public hearing. Thus the requirements for the decision phase to prove that the eviction was unavoidable and to provide the necessary information and time for its review to enable prior and informed consent were not observed. There was no further planning for relocation, let alone consultation and participation of the affected in such planning. In fact the process of leaving and moving was reduced to the forced removal of the villagers from their place, abusing several human rights that have to be safeguarded during such processes. The human rights abuses include *inter alia* the use of disproportionate force and violence against the villagers, the destruction of their possessions, lack of compensation, the reluctance to provide for an alternative place to resettle, not to mention their involvement in a joint effort to select an appropriate new place. Due to the lack of including planned relocation in the eviction process, the Wardei in Mkoko are now confronted with outright hostility, insecurity of tenure, and severe problems in accessing water and social services such as schools. Also procedural rights of the Gamba villagers attached to processes of eviction and relocation were violated. They were not provided with access to legal and technical advice or to a complaint mechanism to claim their rights against wrongful treatment, to say nothing of the right to make alternative proposals to the eviction decision.

The GOK has violated the right to housing and security of tenure of the Gamba villagers by supporting this process of forced eviction with police force instead of protecting the villagers from TARDA's conduct. This is clearly a failure of GOK's obligation to conduct. The conduct of GOK and TARDA is rooted in a long-standing history of insecurity of tenure legitimized by the old national land laws of Kenya that are currently being reformed according to the spirit of the new constitution. This includes the development of eviction guidelines that are pending adoption as a sessional paper. It is recommended that in their legal provisions, these guidelines match the standards set out in the Kothari guidelines for development-based evictions and other related standards. Indeed, the draft of these guidelines provides for crucial provisions such as the consideration of alternatives, non-retrogressive measures, prompt and full compensation, and – most importantly – the restrictive

reading of 'exceptions to the prohibition of forced evictions' (Ministry of Lands 2011: 42). Art. 40 of the New Constitution also stresses GOK's responsibility for realizing the right to access a court of law in such matters.

GOK should ensure that adherence of the guidelines to international standards is reflected unambiguously in its provisions, and that a moratorium is put on planned evictions until such guidelines are adopted. The guidelines should embrace thoroughly the ACHPR references and ruling on indigenous peoples' rights to their natural resources that informed the judgement on the Endorois' case. The general objective of such guidelines should not be to have more convenient evictions, but to bring about a decrease in forced evictions. Such guidelines should be adopted as soon as possible, obligating all levels of government and all parastatal bodies to adhere to these guidelines and to monitor their compliance. This would help to ensure that the destiny of the Gamba villagers is not repeated in the cases mentioned above of Moa, Marafa, Oda, Chara, Hewani, Vumbue, Bandi, Kulesa, Mnazini, and Mwina, and any others that might arise related to the planned agrofuel plantations in the Tana Delta.

6.2.3 Violations of the Right to Food

The right of the population of the Tana Delta to adequate food supplies is violated through the same conditions described above with regard to the right to water, i.e. climate and man-made environmental changes that impact negatively on Tana River's flooding scheme and groundwater levels that are so important for productive small-scale agriculture, fishing, and dry season grazing areas in the delta. The combined circumstances violate crucial dimensions of the right to food, namely availability and accessibility. Food aid is extensive and the diet of many is largely reduced to Ugali. Capacity to produce milk was reported as reduced because availability of pasture was below normal at the time of the mission. Fish stocks are shrinking. Failed maize yields lifted purchase prices per kilo up to a third and more of the daily minimum wage. Such prices imply that the right to food can only be realized at the expense of other crucial rights and is thus not fulfilled.

The prospective environmental impact of the planned agrofuel projects again threatens food production for reasons related to the extraction of water described above, which is very likely to be environmentally and socially unsustainable. Moreover, both projects threaten the right to food because they compete for land suitable for food crop production (in the case of TISP) and ranching (in the case of Bedford). Thus the right to food for future generations specified by GC 12(7) and (9) is also jeopardized. The Bedford jatropha plantation intends to compensate for the loss of local food production by providing decent job opportunities, and already pays daily wages more than three times those of TARDA. There will, however, be winners and losers, with the non-ranch pastoralists very likely being among the latter. TARDA, paying only the meagre minimum wage of about KES 150, is far from producing any winners. Finally, TARDA's rice and maize irrigation scheme contributes to national food security only by means of increasing food production, thereby failing to integrate the food security of the local population properly. Human rights are indivisible and development without human rights considerations is hollow. Neither the production of food nor the production of energy for the national (or even international) demand must be allowed to lead to violations of the right to food of local inhabitants.

GOK fails to protect the right to food of Tana Delta people by defining minimum wages that are not adequate to sustain realization of the right to food. It fails, moreover, to respect the right to food by promoting agrofuel policies in the delta without a sound policy base that considers its impacts on human rights and the environment, the latter providing ecosystem services that are crucial for the realization of the right food (and others). Agrofuel and food policies which do not consider the complex interrelationships affecting food security such as competition with non-food crops, its impact on food production and food prices, lack of access to means of food production by small-scale farmers due to cuts in the agricultural sector, etc. have a lopsided focus on food output and general availability. Revised food policies should be built upon the insights gained into causes of famine and hunger over the past decades (e.g. Sen 1990). A review of food policies should therefore be anchored in the FAO RtF Guidelines and require other policies, such as agrofuel policies, to be adapted to its objectives.

6.2.4 Obligations with Regard to Environmental Law and ETOs

Kenya is party to many treaties of IEL and thus obliged to comply with its principles such as the paradigm of sustainable development, the right to a healthy environment, and the precautionary principle. The right to a healthy environment, enshrined in IEL and Kenya's constitution, again stresses GOK's obligation to protect the delta population from the negative impacts of upstream activities and from local investments that jeopardize the ecosystem of the delta, on which services most of the local inhabitants depend on for their livelihoods and the realization of their human rights. The question of the environment is, moreover, closely linked to provisions detailing the rights of indigenous people to access the natural resources inherited in their customary land rights. Kenya, as a party to the ACHPR, is obliged to comply with the latter's respective interpretations of indigenous peoples' rights.

Euphoria among international donors regarding jatropha once gave strong impetus to developing countries with vast arid and semi-arid lands, encouraging them to approach jatropha as a way to mitigate climate change, develop agriculture, and improve energy security. In the meantime, however, scientific evidence exists that jatropha will not meet the promises made about its high yields on arid and semi-arid soils. International organizations have already changed their position and recommend abolishing quotas and subsidies that are meant to expand agrofuel production (FAO et al. 2011). Those in GOK who still doubt this evidence should be reminded of the precautionary principle, inherited in IEL, that requires action even before full scientific evidence can be provided about the negative impacts on environmental and human conditions. If no change targeting environmental safeguards can be established in agrofuel policies and politics, the wetlands of the Tana Delta are very likely to disappear.

Also the international community must adhere to its extra-territorial state obligations and its duty to respect and protect the human rights of local people by not providing wrong incentives. This concerns not only quotas and subsidies for agrofuels, but also the CDM and Carbon Trading schemes under the UNFCCC. These are regarded by GOK as incentives to expand jatropha plantations, not taking into account the human rights abuses related to CDM project activities and other carbon trading schemes. International environmental and human rights-based safeguards are needed to ensure that decisions to participate in such trading scheme are taken by and for the benefit of the local people, which again is related to questions of land ownership. It might be noted that the ESIA of the Bedford jatropha plantation mentions the potential for participation in CDM schemes several times, but does not set out to whom potential benefits should accrue.

Their ETOs moreover obligate other states to protect the local population from human rights abuses by companies under their jurisdiction, including agrofuel companies. They could strengthen the adherence of the latter to human rights standards not only by abolishing quotas and subsidies, but also by attaching human rights standards – concerning all substantial and procedural rights discussed here – to the production of agrofuels that they import.

The international community certainly has a responsibility to reduce GHG emissions globally in order to mitigate the adverse impacts of climate change on human rights in Kenya and elsewhere. It equally has a responsibility to support Kenya and other developing countries in their efforts to adapt to climate change and should help to develop more sustainable economic options. Eco-tourism that benefits the local population might be part of the approach.

Finally, if the international community is truly interested in fighting hunger and effectively strengthening conflict prevention, they need to strengthen Kenyan agriculture by supporting small-scale farming and pastoralism with regulations on global investors and land reforms that keep farmers on their land and do not produce even more squatters. Local control of small scale farming and pastoralism – including territory, land, grazing, water, seed varieties, livestock breeds, biodiversity and fish populations – is crucial to food sovereignty and stable communities in the Tana Delta.

7 Final Remarks and Summary of Recommendations

The interviews with focus groups confirmed the facts on the hydrological situation of the Tana Delta that were elaborated in chapter 5.1. Those consulted are well aware of upstream activities,

deforestation, and the TDIP rice fields as major causes of those changes, to which they also attribute the changes in local rainfall. Some of them have also heard about global climate change.

The problem that worries them most, however, is the problem of land tenure. This is understandable considering the threat of eviction they face due to TISP. Indeed, the unpopular project is based upon a land allocation process anchored in the disempowering land laws of the past, and obviously even involved a few irregularities (chapter 4.3.1 and 5.3.1). Since TARDA ‘annexed’ (focus group wording) those substantial portions of their land, it has pursued a top-down approach to developing it, which the people experience as neglecting their needs and rights. The question of land is indeed crucial, because other resource issues are also linked to it, such as access to water.

The affected therefore call for a rights-based approach to development which considers and consults them, and claims to undo past land injustice. Indeed, many of the violations of human rights to water, housing, and food in the Tana Delta have been found to be due to Kenya’s inherited colonial-like land regulations of the past, which vested the command over natural resources on state and trust land in the hands of the central government and county councils respectively, without much control by the public or parliament.

Villagers would, however, underestimate the problems of local and global climate and environmental change if they assume that resolving the land problem, which moves and affects them so deeply, would solve all the resource problems they face. It is, however, an indispensable precondition for improving their human rights situation and their prospects for a sustainable livelihood.

The adoption of the new constitution in August 2010 has the potential to change the situation of Tana Delta inhabitants and other Kenyans, with hopefully positive repercussions for the respect of human rights by state organs and officials. According to the New Constitution, GOK and its representative bodies have to comply with crucial economic and social human rights, *inter alia* ‘the right to accessible and adequate housing’, ‘the right to be free from hunger, and to have adequate food of acceptable quality’ and ‘the right to clean and safe water’ (Art. 43(b)-(d)). Its Bill of Rights furthermore recognizes ‘the right to a clean and healthy environment’ – for present as well as for future generations (Art. 42), and in chapter five on Land and Environment it encourages security of tenure by setting *inter alia* the principles of ‘equitable access to land’ and ‘security of land rights’ as guidelines for land management in Kenya. Moreover, Kenyan superior law already obliges GOK, its agencies and representatives, to adhere to ratified international treaties, irrespective of their conversion into national law.

Taking into account the voices of the focus groups considered and the processes of legal reform under way in Kenya, the assessment of the impacts of climate change and agrofuel policies on the human rights of Tana Delta’s residents concludes with the following recommendations:

- The Government of Kenya should give due diligence to developing an integrated water management system that incorporates the needs and rights of the Tana Delta’s inhabitants into upstream activities. One step should be to appoint representatives from the Tana Delta authorities such as the District Development Council to participate in the management boards of responsible authorities.
- The Government of Kenya should conduct a holistic hydrological assessment of the delta and impose a moratorium on large-scale irrigation until such assessment has been carried out.
- A human rights-based and participatory approach to development should be anchored in mandates and practices of development authorities such as TARDA. Equally county government and divisional authorities should reverse past trends and such approaches in the future. This would equally help to combat corruption.
- Environmental and social impact assessments, an obligation for all major investments in Kenya, should be complemented with an HRIA or at least include the actual impacts on human rights.
- The promising draft of eviction guidelines pending for adoption as a sessional paper should be thoroughly aligned with the existing standards of GC 7 and the Kothari

Guidelines where this is not yet the case. A moratorium on evictions should be put in place until adequate guidelines exist.

- With regard to the challenges of climate change it is welcomed that those guidelines already consider the issue of displacement due to natural disaster. Related provisions should be tied closely to GPID standards. Although disaster-related displacement was not the focus of this case study, it is of importance to the delta regarding evacuations of flood victims.
- Food security policies should be revised along the FAO RtF Guidelines. Agrofuel policies should be reviewed and drafted in a way that proves coherent with the country's need for food security, as well as with respect for the human rights of populations directly affected by such investments. Making comprehensively interpreted food security a policy priority is also an important step toward enhancing adaptation to climate change.
- The minimum wage should be raised to a level that enables unskilled workers and their families to cover their most basic needs and permits enjoyment of their human rights. Even though most households in the Tana Delta practice some form of subsistence agriculture, a wage of KES 150 per day is too low to supplement income to a decent level that enables them to purchase remaining commodities needed.
- To render constitutional provisions effective, the government should fast-track the legislative drafting of the bills related to land legislation and devolved government, which are supposed to empower the local population to be the masters of their own affairs. The prevailing problem of squatters in Coast Province, including the Tana Delta, can only be solved by providing security of tenure through the new legislation, including acquaintance with community land and commonly used natural resources.
- Particular priority should be given to the creation of the National Land Commission and its related institutional framework to oversee the land reform processes, thus paving the way to clarifying and resolving past land injustice. It is encouraging that at least the act to establish the Environmental and Land Court has now been adopted, to give access to justice in matters of land as well as of unsustainable and inequitable environmental exploitation. With regard to the many irregularities in the land acquisition by TARDA in the Tana Delta, it is recommended that the pending cases should be treated as contributing to undoing past land injustice and probably bringing back former community land to the people.
- Kenyan civil society organizations engaged in overall reform processes must be invited to provide their rich expertise in the matters at stake. Non-partisan leadership could pressure the government to tackle its present failure to hasten the establishment of the National Land Commission.
- Finally, solutions and standards have to be developed to seek sustainable strategies for managing influx of non-local pastoralists into the Tana Delta or other fallback regions in Kenya and the sharing of resources during droughts. Developed approaches should safeguard the human rights of all stakeholders involved. This aspect of the human rights situation in the Tana Delta was not considered thoroughly in this study and deserves further attention.

The international community should

- take actions to reduce global GHG emissions to prevent further climate change.
- take action to adjust CDMs to the needs of affected people, thereby respecting their human rights and pursuing a rights-based approach to development.
- stop giving wrong incentives for the production of agrofuels at the expense of the local population due to weak environmental and lacking social and human rights standards. Moreover, as claimed by international organizations, quotas and subsidies for agrofuels should be abolished.
- ensure that human rights standards and the environmental standards supporting them are respected in all donor projects financing agrofuel development.

- finally, support the Government of Kenya in its efforts at adapting to climate change by offering incentives and programmes that equally allow for a rights-based approach to development.

It might be noted that on 15 September 2011 an inter-ministerial consultative meeting on sustainable development approaches for the Tana Delta, supported by DFID as part of the international Delta Alliance, took place in Malindi. Hopefully, this opens up alternative and more sustainable options for the delta than boosting agrofuel production.

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COMCAD, the Center on Migration, Citizenship and Development, is a research institute within the working area of transnationalisation and development of the sociological department at Bielefeld University. It has been participating in field studies for the Environmental Change and Forced Migration Scenarios (EACH-FOR) programme, promoted by the 6FP of the EU. COMCAD hosts a research conference series on Environmental Change, Migration and Conflict, a collaboration between the University and the European Science Foundation. Dr. Jeanette Schade is the acting vice chair of the COST Action on Climate Change and Migration.

FIAN Germany is the German section of the FoodFirst Information and Action Network, a human rights organisation that supports the right to food on a global level. It has some 45 active local groups world-wide and 3,600 members in more than 50 countries. Vital parts of FIAN's work are the international fact finding missions. Cases of violations of the human right to food are investigated, verified and documented. FIAN has consultative status with the UN and the FAO and has significantly influenced the interpretation of the internationally recognized right to food. Anton Pieper is programme officer for climate change and the right to food of FIAN Germany.

KYF, the Kenyan Youth Foundation, is mobilizing youth and youth associations for political participation and socio-economic change. It is a local partner of FIAN in Kenya and a member of the African Network on the Right to Food (RAPDA). KYF has worked for FIAN on matters of land grabbing and violations of the right to food. Edwyn Odony's expertise is on sustainable rural development, conflict mediation and the right to food.

CEMIRIDE, the Centre for Minority Rights Development, seeks to strengthen the capacity of minorities and indigenous peoples in Kenya to secure their rights in all social, political and economic development processes. Vivian Ngar's area of expertise is sustainable development. KYF and CEMIRIDE work closely together on the subject of the Tana Delta.