



Constructing the Tana Delta: Imaginaries, Scales and Placeness of Watery Infrastructure

by Sandro Simon



Masinga Dam is one of five dams along the Tana river. Located hundreds of kilometers upstream from the delta, they together generate 70 percent of the country's hydropower. Their construction decreased peak flows, runoff and meandering of the Tana and the related deposition of sediments, which resulted in a reduction of the floodplain fertility and of riverine forest. This again adversely affects deltaic flood recession agriculture, livestock keeping, and fish production.



The Malindi-Lamu road hurdles the Tana river before it ramifies into the delta and has recently moved up the national agenda as the places it connects gain economic importance for the country. Along its route, settlements sprawl, new economies develop and imaginaries of mobility and modernity evolve.



Pumps for irrigation are used increasingly by those who can afford them to compensate for the lack of rain and flooding or to increase commercial production. Compared to the water harvesting upstream, whether for large scale irrigation or Nairobi's freshwater, pumps in the delta appear to be a drop in the bucket.



Once the Oda channel (right) was the main branch of the Tana river. Along its way, farming communities were practicing flood recession agriculture, while pastoralists used to graze at the smaller Matomba channel. With the water's alteration of route over the past decade through environmental change and human influences such as upstream damming or local channelling and unsuccessfully tried to be held or redirected back by governmental and community interventions (e.g. sandbags), these practices as well as the management regimes and social relations around them, get challenged.



In the lower delta, irrigation channels are cut and dug from the river to direct water to rice-paddies. With the tide, the ocean pushes up the river, which then again flows into the channels. With tidal variation, decrease of river water and flow and the rise of the sea level, constant re-attunement of the channelling practices is indispensable to protect the fields from salinization.



The Tana Delta Irrigation Project (TDIP) was a large scale rice farming project financed by the Japanese Overseas Economic Cooperation Fund. Its history is characterized by mismanagement and underperformance in yields, conflicts between the local communities and the operator, the parastatal Tana and Athi River Development Authority and massive damage by El Niño floods in 1997. In its ruins, the surrounding communities still grow crops, but the remaining channels increasingly fall dry.



Inland flowing streams with brackish water threaten to contaminate the main river. In the absence of (governmental) spill-over blockages, sandbags and sticks are used to hold back the brackish water.



Spill-over blockages made out of cement allow the fresh water to flow during the rainy season, while blocking brackish water in the dry season. However, they are rare, might be 'left back' after the water found new ways and, in the absence of governmental maintenance, disintegrate. A bridge assembled out of sticks by the local communities allow for small transport and, with its localized malleability, contrasts the cement blockage.

“We are now leaving Kenya”, my companion said to me as Malindi, the last town before the Tana Delta, vanished behind us. This sarcastic account mirrors the longstanding perception of the delta as consisting of around 1,300km² of underdeveloped and unused “wasteland” or “swampland”, which for decades fostered imaginations and attempts at political and material reconfigurations, as well as negligence and marginalization (cf. Duvail et al. 2012, Leauthaud et al. 2013, Sampson 1935). Its approximately 100,000 inhabitants, however, contest such narratives and projects as they creatively and productively engage with the perceived “wasteland” or “swampland” and its challenges, such as changing water patterns due to seasonality, damming, water harvesting, deforestation, decreasing rainfall and rising sea levels, population increase and migration, landgrabs and overgrazing (Kenya Census 2010).

Life in the delta is thus rich and multifaceted, while at the same time caught up in challenging multi-stranded social, ecological, political, technological and economic forces that reach across local, national and global scales. Because these forces manifest and become visible in infrastructure and in people’s engagement with it, be it through creation, usage, contestation, manipulation or destruction, drawing our attention to infrastructure can help us to trace and assess those same forces.

Infrastructure is a concretization of aspirations, values and meanings, and simultaneously transports and evokes them (Fennel 2015). It materializes and reflects technopolitical projects that aim to bind together different agents in a particular way to allow for specific activities, but always exceeds its design as it is an emergent assemblage of social, material and semiotic forces caught up in time and space (cf. Anand 2015, Harvey et al. 2016, Latour 1996). Infrastructure is hence a thing for itself and also the relation between things, both human and non-human (Larkin 2013, Wilson 2009). Thereby, it points beyond itself – it is not a closed feedback loop but is involved in relating and redefining actors (Jensen & Morita 2015).

Infrastructure and its complexity across scales, as well as the difficulty involved in constructing and maintaining it in an environment that is both socially and ecologically volatile and that does not necessarily allow for common ways of governance and development, have played and continue to play a pivotal role in the perception of and the agenda regarding the Tana Delta and its inhabitants – whether in the form of failed large-scale irrigation schemes, upstream damming with beneficial effects for the country but detrimental effects for the people downstream, or spillover blockages that demand continuous maintenance. On the other hand, delta dwellers’ experiences with infrastructure affect their relationships with governmental authority as well as their creativity, work practices, imaginaries and (national) identity. This relational dimension of infrastructure thus introduces the question of political aesthetics, which arise more or less as a byproduct of an infrastructure’s technical functioning (Larkin 2013, 2015). As a manifestation of power, the construction of a large-scale irrigation scheme might produce canals, sluices and rice paddies, bring about work opportunities, management regimes or land allocation, and affect the corresponding sociality, just as it might introduce certain imaginaries of development and modernity. Such imaginaries are neither universal nor stable because people apprehend infrastructure in individual, situative and positional ways and because its internal and relational functionings are subject to continuous change. This change can again fall back onto those associated with the working of infrastructure – if the attempt to redirect a river fails, those responsible for the design, construction and/or maintenance of the redirection might be perceived as incapable and expendable.

Infrastructural roles are not always so clearly differentiated. In the Tana Delta, the volatility of which is characterized by its shifts between wet and dry, and its dwellers’ diverse, partly competing livelihoods and work practices – namely farming, pastoralism and fishing – more flexible, fragile, emplaced and hybrid forms of infrastructure also evolve. For example, a system of water channels that diverts tidal waters into rice paddies, built and managed by those who farm the paddies, can get along without any top-down planning and implementation and might be changing continually and interdependently through both human and non-human influence. Researching infrastructure in volatile places like deltas thus encourages us to reconsider our common understanding of infrastructure as something designed, fixed and exclusively human, and question the epistemological and political commitments involved in its definition (cf. Larkin 2013).



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References

- Anand, N. 2015. „Accretion.“ Theorizing the Contemporary, Cultural Anthropology website, September 24, 2015. <https://culanth.org/fieldsights/715-accretion>
- Duvail, S., Médard, C., Hamerlynck, O. and Nyingi, D.W. 2012. Land and Water Grabbing In an East African Coastal Wetland: The Case of the Tana Delta. *Water Alternatives* 5/2: 322-343
- Fennell, C. 2015. „Emplacement.“ Theorizing the Contemporary, Cultural Anthropology website, September 24, 2015. <https://culanth.org/fieldsights/716-emplacment>
- Harvey, P., Jensen, C. B. and Morita, A. 2016. Introduction: Infrastructural Complications. In: Harvey, P., Jensen, C. B. and Morita, A. (eds.). *Infrastructures and Social Complexity – A Companion*. New York: Routledge. 1-41.
- Jensen, C. B. and Morita, A. 2015. Infrastructures as Ontological Experiments. *Engaging Science, Technology, and Society* 1: 81-87.
- Larkin, B. 2015. „Form.“ Theorizing the Contemporary, Cultural Anthropology website, September 24, 2015. <https://culanth.org/fieldsights/718-form>
- Larkin, B. 2013. The Politics and Poetics of Infrastructure. *Annual Review of Anthropology* 42: 327-343.
- Latour, B. 1996. *Aramis, or the Love of Technology*. Translated by Catherine Porter. Cambridge, Mass.: Harvard University Press. Originally published in 1993.
- Leauthaud, C., Duvail, S., Hamerlynck, O., Paul, J.-L., Cochet, H., Nyunja, J., Albergel, J. and Grünberger, O. 2013. Floods and livelihoods: The impact of changing water resources on wetland agro-ecological production systems in the Tana River Delta, Kenya. *Global Environmental Change* 23: 252–263.
- Republic of Kenya. 2010. Kenya Population and Housing Census. Central Bureau of Statistics.
- Sampson, H. C. 1935. The Tana River Region of Kenya Colony. *Journal of the Royal Society of Arts* 84/4333: 92–111.
- Wilson, M. W. 2009. Cyborg Geographies: Towards Hybrid Epistemologies. *Gender, Place & Culture* 16/5: 499–516.

Sources Poster

All pictures by Sandro Simon except Waterpump by Eric Kioko.

Map

Designed by Marvin Hass after Hamerlynck, O., Luke, Q., Nyange, T., Duvail, S., Leauthaud, C. 2012. Range Extension, Imminent Threats and Conservation Options for Two Endangered Primates: The Tana River Red Colobus *Procolobus rufomitratus rufomitratus* (Peters, 1879) and the Tana River Mangabey *Cercocebus galeritus* (Peters, 1879) in the Lower Tana Floodplain and Delta, Kenya. *African Primates*, Nairobi 7: 211–217.

Dams

Wetlands International. 2016. Kenya Tana Delta generates millions annually from its ecosystems. Wetlands International Website, September 30, 2016. <http://www.ramsar.org/news/kenya-tana-delta-generates-millions-annually-from-its-ecosystems> (Retrieved on September 13, 2017.)

Maingi, J. K. and Marsh, S. E. 2002. Quantifying hydrologic impacts following dam construction along the Tana River, Kenya. *Journal of Arid Environments* 50: 53–79.

Waterpumps

Wetlands International. 2016. Kenya Tana Delta generates millions annually from its ecosystems. Wetlands International Website, September 30, 2016. <http://www.ramsar.org/news/kenya-tana-delta-generates-millions-annually-from-its-ecosystems> (Retrieved on September 13, 2017.)

TDIP Irrigation Scheme

Lebrun, D., Hamerlynck, O., Duvail, S. and Nyunja, J. 2010. The Importance of Flexibility: An Analysis of the Largescale Tana Delta Irrigation Project in Kenya, Implemented Under an Estate System. In: Calas, B. and Mumma Martinon, C. A. (eds). *Shared Waters, Shared Opportunities*. Nairobi: Institut Français de Recherche en Afrique and Hakimani College. 261-282.

Matomba vs Oda

Leauthaud, C., Duvail, S., Hamerlynck, O., Paul, J.-L., Cochet, H., Nyunja, J., Albergel, J. and Grünberger, O. 2013. Floods and livelihoods: The impact of changing water resources on wetland agro-ecological production systems in the Tana River Delta, Kenya. *Global Environmental Change* 23, 252–263.

Duvail, S., Médard, C., Hamerlynck, O. and Nyingi, D. W. 2012. Land and Water Grabbing in an East African Coastal Wetland: The Case of the Tana Delta. *Water Alternatives* 5: 322.