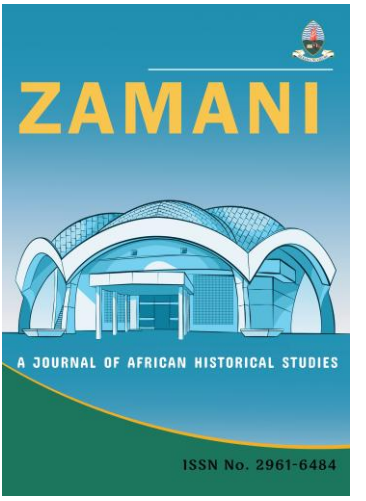
Zamani

A Journal of African Historical Studies



ISSN: 2961-6484 (print) Journal URL: https://journals.udsm.ac.tz/index.php/zjahs

Research Article: Imagining Hydropower: Transnational Narratives and Realities of the Stiegler's Gorge Project in Tanzania, 1960s–1980s.

Author: Emma Athanasio Minja

Article URL: https://doi.org/10.56279/ZJAHS1114

Citation: Minja, Emma Athanasio. "Imagining Hydropower: Transnational Narratives and Realities of the Stiegler's Gorge Project in Tanzania, 1960s–1980s." *Zamani* 1, no. 1 (2024): 52–82. DOI: 10.56279/ZJAHS1114

Submitted: May 2024

Accepted: November 2024

Published: December 2024

Imagining Hydropower: Transnational Narratives and Realities of the Stiegler's Gorge Project in Tanzania, 1960s–1980s

EMMA ATHANASIO MINJA

Abstract

Hydropower development in the Global South has attracted several donor programmes for decades. How have such interventions shaped energy imaginations in Tanzania? Adopting a historical perspective and drawing on transnationalism and travelling frameworks, this article examines hydropower aid interventions and the dynamic shifts of specific actors and discourses in bilateral relations. The primary focus is on Norway, a leading actor in planning the Stiegler's Gorge hydropower project in Tanzania's Rufiji Basin in the 1970s to mid-1980s. It seeks to understand how, despite substantial aid support, the project failed to kick off in the face of the country's post-independence drive for industrialisation. The study unravels a history of shifting and sometimes conflicting discourses, offering a richer and more nuanced understanding of the hydropower imagination and the role of Norway in planning hydropower development in Tanzania.

Keywords: hydropower imaginations, transnational ideas, travelling ideas, Stiegler's Gorge, Rufiji Basin, Norway, Tanzania.

About the author:
EMMA ATHANASIO MINJA is a PhD candidate at Bonn University, Germany and assistant lecturer at Mwalimu Nyerere Memorial Academy, Tanzania. Correspondence email: emma.minja@uni-bonn.de | ORCID ID: 0000-0002-0410-8700

Introduction

The demand for hydropower is shaped by a complex interplay of socio-economic, political, and environmental dynamics. The implementation of such an endeavour range from local strategies to large-scale projects modelled by the modernisation and industrialisation agendas of internal

Citation: Minja, Emma Athanasio. "Imagining Hydropower: Transnational Narratives and Realities of the Stiegler's Gorge Project in Tanzania, 1960s–1980s." *Zamani* 1, no. 1 (2024): 52–82. DOI: 10.56279/ZJAHS1114

and external actors.[1] In Africa, hydropower is considered a key indicator of development. Transnational actors have played a significant role in supporting hydropower projects, although aid flows have been phased over time.[2] Support for such schemes is driven by the need for electricity, envisioned to provide energy for industrial growth, and irrigation to increase food production.[3] However, even with aid support, some projects have failed to materialise according to their original plan.[4] I argue that one of the key factors contributing to the failure of certain hydropower projects is the complex nature of transnationalism itself. Transnational projects often involve a complex web of interests, priorities, and cultural differences that can hinder the smooth implementation of such projects.

The World Bank's agency for private sector promotion in the global South, the International Finance Corporation, revealed concerning outcomes for development initiatives on the African continent. Their findings show that merely half of the projects they designed had succeeded, and many donors had not fared much better.[5] One notable example in Africa

[1] Gavin Bridge, Begüm Özkaynak, and Ethemcan Turhan, "Energy Infrastructure and the Fate of the Nation: Introduction to Special Issue," *Energy Research & Social Science* 41 (2018): 1–11.

[2] Jens Marquardt, "The Politics of Energy and Development: Aid Diversification in the Philippines," *Energy Research & Social Science* 10 (2015): 259–272; Kate Showers, "Electrifying Africa: An Environmental History with Policy Implications," *Geografiska Annaler: Series B, Human Geography* 93, no. 3 (2011): 193–221.

[3] Heather Hoag, "Designing the Delta: A History of Water and Development in the Lower Rufiji River Basin, Tanzania, 1945–1985" (PhD Diss., Boston University, 2003); May-Britt Öhman, "Taming Exotic Beauties: Swedish Hydropower Constructions in Tanzania in the Era of Development Assistance, 1960s-1990s," (PhD Diss., KTH Royal Institute of Technology, 2007); Heather Hoag, *Developing the Rivers of East and West Africa: An Environmental History* (London: Bloomsbury, 2013); Julia Tischler, *Light and Power for a Multiracial Nation: The Kariba Dam Scheme in the Central African Federation* (New York: Palgrave Macmillan, 2013); Patrick McCully, *Silenced Rivers: The Ecology and Politics of Large Dams,*(London: Zed Books, 1996).

[4] Detlef Müller-Mahn, Kennedy Mkutu, and Eric Kioko, "Megaprojects – Mega Failures? The Politics of Aspiration and the Transformation of Rural Kenya," *The European Journal of Development Research* 33 (2021): 1069-1090; King Matthew Eja and Manu Ramegowda, "Government Project Failure in Developing Countries: A Review with Particular Reference to Nigeria," *Global Journal of Social Sciences* 19 (2020): 35–47; Victor Itumo, "What Hinders Economic Development in Africa?" *European Journal of Interdisciplinary Studies* 9, no. 2 (2017): 13–31.

[5] AAG Ali, C. Mwalwanda, and Y. Suliman, "Official Development Assistance to Africa: An Overview," *Journal of African Economies* 8, no. 4 (1999): 504–527; World Bank. "Assessing Africa's Policies and Institutions," 2016 CPIA Africa Report, (July 2017).

is the Kariba Dam on the Zambezi River between Zambia and Zimbabwe. The Kariba Dam exemplifies the intricate interplay of critical engineering, political intrigue, and environmental concerns in Africa's development history. Built in 1956 during the late colonial era, this massive hydroelectric project was ostensibly designed to stimulate economic growth in white-minority areas.[6] However, its construction was shrouded in controversy. The dam's location was hotly debated, with Northern Rhodesia initially favouring a cheaper option on the Kafue River. At the same time, Southern Rhodesia pushed for the Kariba site, citing its greater power generation potential and proximity to the federation's capital. The whole idea behind this project reflects the wider colonial strategy of developing infrastructure in southern Africa during the Cold War era.[7] The financing and construction of the dam involved complex international elements. The World Bank provided a substantial loan, demonstrating international support for the project. The French engineering company Coyne et Bellier was responsible for the design, while the Italian company Impresit supervised construction.[8] Initial estimates put the cost of the first phase at $135 million, although the final cost rose to $480 million due to various political issues. In addition, the Kariba Dam displaced some 57,000 people living in the Gwembe Valley, which was to be flooded. At the time, there was minimal assessment of the ecological impact of the dam.[9] Despite efforts to maintain the dam, it was described by Zambia's energy minister in 2016 as being in a 'dire' state, threatening to shut down power generation during an unprecedented

https://documents1.worldbank.org/curated/en/891501500349324004/pdf/117514-REVISED-96p-WB-CPIA-Report-July2017-ENG-v16.pdf accessed December 2, 2024.

[6] Thayer Scudder, "The Kariba Case Study," Social Science Working Paper No. 1227 (Division of the Humanities and Social Sciences, California Institute of Technology, June 2005).

[7] Tischler, *Light and Power*, 29–40.

[8] World Commission on Dams, "Kariba Dam, Zambia and Zimbabwe," (2000), https://www.academia.edu/6971886/Kariba_Dam_Zambia_and_Zimbabwe, accessed October 20, 2024.

[9] Terence Mashingaidze, "The Kariba Dam: Discursive Displacements and the Politics of Appropriating a Waterscape in Zimbabwe, 1950s-2017," *LIMINA*: *Journal of Historical and Cultural Studies* 25, no.1 (2019): 1–15.

drought.[10] Despite these challenges, the Kariba Dam remains an impressive feat of engineering and an excellent case study of how large-scale infrastructure projects are shaped by political, financial, and social factors. Its legacy serves as a cautionary tale of the complexities involved in developing massive infrastructure projects in politically sensitive regions.

Related to Kariba is the Lesotho Highlands Water Project, backed by the World Bank, European Investment Bank, and African Development Bank. This project sparked controversy and significant environmental changes, impacting crucial floodplains and local livelihoods.[11] Conceived in 1986 to divert fresh water from the mountain to South Africa for sale and electricity generation, the project was strategically important for apartheid-era South Africa's industrial development, particularly in Gauteng Province, which accounted for nearly 40 percent of South Africa's total economic output.[12] In terms of politics, the project was also strategic in that it transported and supplied water to the ever-expanding urban areas of the same province.[13] Although signed in secret, the plans also included a small hydroelectric plant ceremonially favouring South Africa[14] Despite costing over $3.5 billion in foreign aid for planning and development, the project ultimately failed to meet its economic goals. The generated electricity proved too expensive for most people, and the diversion of so much water caused environmental and economic havoc downstream. The development fund raised by selling the water was shut down in 2003. Courts convicted three of the world's biggest construction companies of corruption, and the project's Chief Executive Officer was jailed. Tens of thousands of people whose lives were ruined by the diversion were also left uncompensated.

[10] Jacques Leslie, "One of Africa's Biggest Dams is Falling Apart," *The New Yorker*, February 2, 2016. https://www.newyorker.com/tech/annals-of-technology/one-of-africas-biggest-dams-is-falling-apart, accessed October 20, 2024.

[11] Barry Dalai-Clayton, "Southern Africa Beyond the Millennium: Environmental Trends and Scenarios to 2015," *Environmental Planning Issues* 13 (1997): 47.

[12] Oscar Mwangi, "Hydropolitics, Ecocide and Human Security in Lesotho: A Case Study of the Lesotho Highlands Water Project," *Journal of Southern African Studies* 33, no. 1 (2007): 3–17.

[13] Lawrence J Haas, Leonardo Mazzei, and Donald T. O'Leary, "Lesotho Highlands Water Project: Communications Practices for Governance and Sustainability Improvement," Working Paper No. 200 (World Bank, Washington DC, 2010).

[14] SK Fullalove, ed., *Lesotho Highlands Water Project*, Proceedings of the Institution of Civil Engineers 120 (London: Thomas Telford Ltd, 1997).

While supporters hailed it as a model of cooperation between Lesotho and South Africa, critics argue that it exemplifies how powerful states pressure weaker ones for access to scarce resources, and was, therefore, a failed attempt at future-making for Lesotho.[15]

Last but not least, the Inga Dam project in the Democratic Republic of Congo (DRC) exemplifies one of the most ambitious hydropower endeavours on the African continent.[16] Conceived during the Belgian colonial period in the late 1950s, this mega-project sought to capitalise on the vast hydroelectric potential of the Congo River at Inga Falls. Initially envisioned to generate approximately 40 gigawatts of electricity, the project was implemented in two phases: Inga I, completed in 1972, and Inga II, finalised in 1982, as part of the broader Inga-Shaba initiative under the presidency of Mobutu Sese Seko.[17] However, despite its grand ambitions, the Inga Dam project encountered numerous challenges that significantly impacted its effectiveness and sustainability. Cost overruns were a major issue, leading to substantial financial burdens for the DRC government. Furthermore, the lack of revenue to repay debts incurred during construction posed significant economic strain. The collapse of the aluminium industry, which had initially been expected to be a primary consumer of the generated electricity, resulted in low-capacity utilisation rates. Additionally, limited local electrification needs meant that much of the produced energy went unused, exacerbating the project's economic viability concerns.[18] These challenges had far-reaching consequences beyond the DRC. The difficulties faced by the Inga Dam project contributed to a decline in support from the international development community for large-scale infrastructure lending throughout the 1980s and 1990s.[19] This

[15] William M Adams, *Wasting the Rain: Rivers, People and Planning in Africa* (London: Earthscan, 1992), 240.

[16]Kate Showers, "Congo River's Grand Inga Hydroelectricity Scheme: Linking Environmental History, Policy and Impact," *Water History* 1, no. 1 (2009): 31–58.

[17] Laure Gnassou, "Addressing Renewable Energy Conundrum in DR Congo: Focus on Grand Inga Hydropower Dam Project," *Energy Strategy Reviews* 26 (2019): 1–6.

[18] Charles Kenny and John Norris, "The River that Swallows All Dams", *Foreign Policy*, May 8, 2015, https://foreignpolicy.com/2015/05/08/the-river-that-swallows-all-dams-congo-river-inga-dam/, accessed October 21, 2024.

[19] Kenny and Norris, "The River that Swallows all Dams," May 8, 2015.

project demonstrates the crucial role of realistic projections and long-term sustainability considerations in major infrastructure initiatives.

These examples show us that ambitious transnational projects often encounter resistance, leading to setbacks or even outright failure. However, there has been little exploration into how hydropower initiatives in developing nations have faltered due to the involvement of donors. Considering the symbolic role of infrastructure, mega projects such as hydropower play a crucial part in future-oriented development politics as objects of imagination, vision, and hope.[20] In terms of a failed project's aspirations, the variety of metaphors and meanings suggests that a failed project retains significance beyond mere abandonment, embodying complex meanings and influences. Their impact extends beyond visibility, exerting subtle yet tangible effects on their surroundings. These dormant endeavours possess agency, linking past and present while shaping orientations for the future. Although seemingly insignificant, their presence lingers, suggesting that there is more than a total failure.[21] The Stiegler's Gorge project in Tanzania's Rufiji Basin represents a good case study. The transnational dimension of this project is evident in the involvement of foreign investors, who brought with them the travelling ideas of technical expertise from international engineering firms and financial support from external sources.[22] While various actors were involved in this project, the current article takes Norway as an agent of transnationalism to shed light on the complex interconnections between hydropower imaginations and the political economy of development aid. The history of Norway as a donor towards the energy sector and, particularly, hydropower, in developing countries is rich and long. For Tanzania, such a relationship with Norway dates back to the 1960s. This article seeks to explore the travelling of ideas model, focusing on how concepts move between different regions through

[20] Müller-Mahn, Mkutu, and Kioko, "Megaprojects – Mega Failures?" 1072.

[21] Ibid., 1072–1073.

[22] Paul Bjerk, "Postcolonial Realism: Tanganyika's Foreign Policy Under Nyerere, 1960–1963," *The International Journal of African Historical Studies* 44, no. 2 (2011): 215–247; Rolf Baldus,"Stiegler's Hydroelectric Dam," in *Wild Heart of Africa: The Selous Game Reserve in Tanzania*, edited by Rolf Baldus (Johannesburg: Rowland Ward Publications, 2009); Terje Oestigaard, Atakilte Beyene, and Helga Ögmundardóttir, eds., *From Aswan to Stiegler's Gorge: Small Stories about Big Dams,* Current African Issues 66 (Uppsala: Nordiska Afrikainstitutet, 2019).

a process of adaptation that can lead to their adoption, alteration, or outright dismissal. Central to this exploration is the premise that these ideas naturally spread, transitioning from areas of high concentration to those of lower intensity.[23] Given that these ideas do not only travel in one direction, the article focuses on the concept of ideas travelling in reverse directions, particularly examining the case of the Stiegler's Gorge project and Norway's engagement, investigating both the mechanisms behind its failure as an anticipated initiative in the 1980s and the reasons contributing to this outcome.

The analytical approach of this article combines a focus on hydropower imagination with a mapping of changing transnational aid in Tanzania from the 1960s to the mid-1980s. Hydropower plays a significant role in Tanzania's energy growth, and analysing the evolution of transnational support offers important perspectives on the country's progress and challenges throughout these decades. As Jasanoff and Kim observe in their notion of "Socio-technical imaginaries," hydropower development frequently aligns with publicly stated aspirations and commitments to development and modernisation.[24] These goals are commonly proclaimed, yet there may also be undisclosed motives, vested interests, and tactical objectives at play. In addition, imaginaries are intimately linked to the materiality of infrastructures, while reflecting the question of national identities. The socio-technical imaginaries are collectively imagined forms of social life and social order that are reflected in the design and implementation of nation-specific scientific or technological projects.[25] In framing hydropower futures, it is important to highlight how these imaginations emerge and gain traction as well as the drivers behind such imaginaries. In this case, the agendas and actions of international aid agencies and other implementation actors potentially influence government policies. It is through such interactions that

[23]Andrea Behrends, Sung-Joon Park, and Richard Rottenburg, "Travelling Models: Introducing an Analytical Concept to Globalization Studies," in *Travelling Models in African Conflict Management: Translating Technologies of Social Ordering*, eds. Andrea Behrends, Sung-Joon Park, and Richard Rottenburg (Leiden: Brill, 2014), 1–40.

[24] Sheila Jasanoff and Sang-Hyun Kim, "Sociotechnical Imaginaries and National Energy Policies," *Science as Culture* 22, no. 2 (2013): 189–196.

[25] Ibid.

particular energy discourses do or do not materialise as originally planned.[26] Norway's role in the Stiegler's Gorge project provides a unique perspective on energy infrastructure planning. It enriches the discussion on large-scale aid projects in the Global South and shows how the involvement of donor countries can have a positive or negative impact on such projects. This also provides an insight into how factors in the donor country can affect the success of aid projects in the recipient country, as ideas travel from the Global North.

Using a combination of archival documents, grey literature, and oral interviews with Tanzanian Ministry of Energy staff, TANESCO staff, and former RUBADA officials, this article seeks to critically understand Norway's role in imagining hydropower and shaping the future of Tanzania's socialist development planning in the 1970s and 1980s. Archival research was carried out at the Tanzania National Archives (TNA), Dar es Salaam, the East Africana Section, and the Institute of Resource Assessment (IRA) at the University of Dar es Salaam, the National Archives of Norway (NAN), Oslo, and the Swedish National Archives (SNA), Stockholm. These archives provided relevant documentation on hydropower planning under the Norwegian commitment. Oral histories provided valuable insights that might not be captured in official project documents and technical reports and offered a more nuanced understanding of the project.

A Brief History of the Stiegler's Gorge

Franz Stiegler, born around 1878 in the village of Diessen on the Ammersee in southern Germany, became a civil engineer and emigrated to German East Africa in 1905. He was employed as a surveyor in February 1907 and later became the leader of the Rufiji expedition. Deutsch-Ostafrikanische Zeitung of 11. April 1908, reported the death of Stiegler that was caused by an elephant attack during surveys of the Rufiji River basin. The death site came to be known as Stiegler's Gorge. The site gained more recognition following the publication of the Rufiji Basin Reconnaissance Surveys conducted in the late 1950s, which were published in 1961. The map below

[26] Jonathan Cloke, Alison Mohr, and Ed Brown, "Imagining Renewable Energy: Towards a Social Energy Systems Approach to Community Renewable Energy Projects in the Global South," *Energy Research and Social Science* 31 (2017): 263–272.

shows the location of Stiegler's Gorge, along with other rivers that form the Rufiji River before the water is poured into the Indian Ocean.

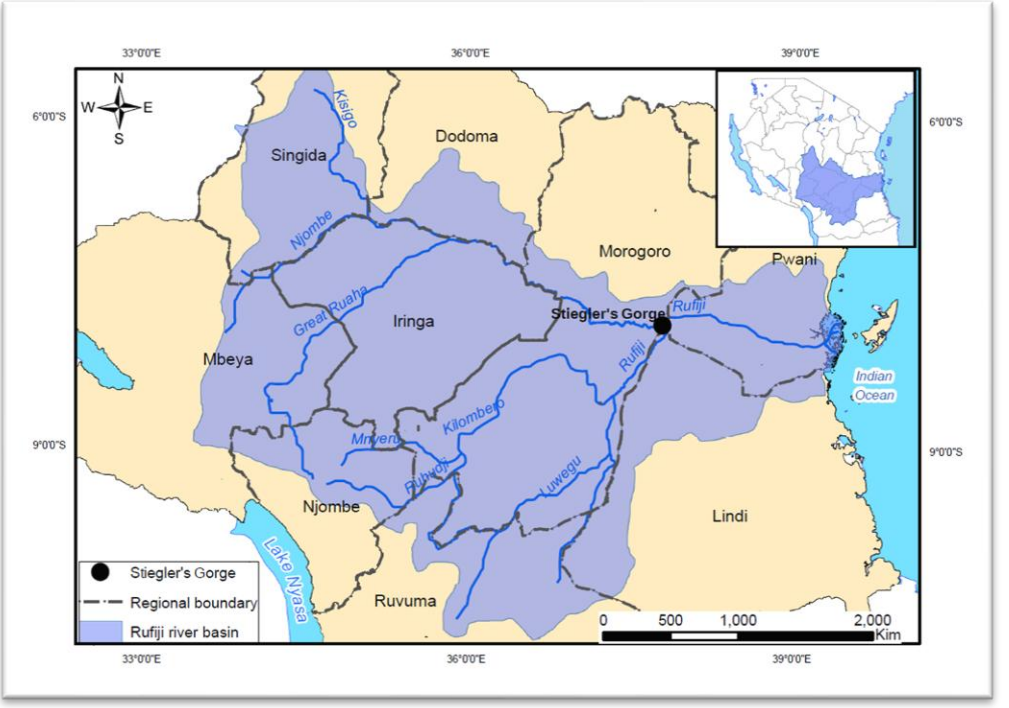


Figure 1: The location of Stiegler's Gorge in Tanzania's Rufiji Basin
Source: Sauda Kileo, GIS, University of Dar es Salaam.

The proposal to develop Stiegler's Gorge began during the German colonial era but gained momentum in the late colonial period and was greeted with excitement and optimism in the British colony. On September 1, 1959, the *Daily Telegraph* carried the headline "£100m Dam plan in Tanganyika," which pertains to a significant news story that celebrated the expectations of a colonial government at the time.[27] The *Times* Newspaper followed suit with "Tanganyika the Second Kariba," emphasising the hopes of the colonial government towards a large hydropower infrastructure in Tanganyika.[28] With such headlines, the expectation was that the project would be

[27] "£100m Dam plan in Tanganyika," *Daily Telegraph*, September 1, 1959.
[28] "Second Kariba in Tanganyika," *The Times*, September 2, 1959.

implemented soon after the survey.[29]Aside from other prospects and the other fourteen proposed dam sites in the colony, Stiegler's Gorge would offer a more valuable option in terms of hydroelectric power generation and other facets such as flood control, irrigation, and transport, as detailed later in this article.

Although the project had its roots in colonialism, it gained a new momentum under President Julius Nyerere's socialist vision of modernisation. During this period, dam construction became a key element of national development strategies. This approach was inspired by countries such as the United States, which had already demonstrated the profound impact of large-scale hydropower initiatives on economic growth and social transformation.[30] In the early days of African independence, dams became powerful symbols of state-led economic transformation. The impact of this perception extended beyond national borders. In Tanzania, for example, the local media closely followed developments in neighbouring countries. When Ghana commissioned the Akosombo Dam on the Volta River in 1966, Tanzanian newspapers hailed it as a beacon of prosperity.[31] A similar phenomenon occurred in 1978 with the inauguration of the Cabora Bassa Dam in Mozambique. Local press coverage featured pictures and emphasised the dam's crucial role in the nation's fight against poverty.[32] These examples show how post-colonial leaders viewed dams, and how dams became synonymous with modernisation and economic progress in post-colonial Africa. Nyerere highlighted the Stiegler's Gorge project as a good opportunity, which was reflected in the country's *Second Five-Year Plan*.[33] Subsequently, on August 26, 1976, the government-controlled media

[29] The total survey cost was £727,000, with £520,000 from the Colonial Development and Welfare Fund and £207,000 from funds raised through the Food and Agriculture Organization.

[30] Kjell J Havnevik, *Tanzania: The Limits to Development from Above* (Uppsala: Nordiska Afrikainstitutet in cooperation with Mkuki na Nyota Publishers, 1993).

[31] "Nkrumah Switches on Volta River Power," *The Nationalist*, January 24, 1966.

[32] George Schreyögg, and Horst Steinmann. "Corporate Morality Called in Question: The Case of Cabora Bassa." *Journal of Business Ethics* 8, no. 9 (1989): 677–85. http://www.jstor.org/stable/25071954, accessed 02.12.2024.

[33] Food and Agriculture Organization (FAO), *The Rufiji Basin, Tanganyika: Report to the Government of Tanganyika on the Preliminary Reconnaissance Survey of the Rufiji Basin*, Vol. I. (Rome: FAO, 1961); United Republic of Tanzania, hereafter URT, *Second Five-Year Plan for Economic and Social Development, 1st July 1969-30th June 1974*, Vol. I (Dar es Salaam: The Ministry of Planning, 1969).

ran a big story in favour of the project: "Bwawa la Sh. 2.5m Kujengwa Rufiji" (a 2.5 million shillings dam to be built in Rufiji).[34] Days later, the same newspaper ran the headline that highlighted on the future prospects of the Rufiji project to national economy.[35] The headlines suggests that the Socialist government had committed itself in supporting the project's progress, aligning it with its wider economic modernisation goals.

The post-colonial government actively sought partnerships with foreign governments to achieve the project. Bilateral agreements and diplomatic efforts were made to secure technical assistance, investment, and expertise, particularly from countries with advanced hydropower development capabilities.[36] The ambivalence in Tanzanian politics around self-reliance reflected the complex interplay between national sovereignty and the realities of global economic integration. On the one hand, self-reliance was seen as essential for preserving national identity and promoting sustainable development, while on the other hand, partnerships with foreign entities offered opportunities for technological advancement, capacity building, and access to markets that could accelerate economic growth.[37] From the 1960s to the 1980s, various transnational actors, including governments, multinational corporations, and international financial institutions, were involved in the planning and development of the Stiegler's Gorge project.[38] Their participation mirrored a broader pattern of international cooperation in infrastructure development across developing nations during this era.[39] Their involvement in supporting Tanzania also had to do with Julius Nyerere's reputation. In particular, Nyerere had strong links with several Nordic social democrats during the 1960s and 1970s.

[34]"Bwawa la Sh. 2.5m Kujengwa Rufiji," *Uhuru*, August 26, 1976.

[35]"Rufiji ni Matumaini ya Msukumo wa Uchumi Wetu," *Uhuru*, October 22, 1976.

[36]Bryceson, Ian. "Norwegian Hydropower Developers in Tanzania." *Power Conflicts: Norwegian Hydropower Developers in Third World* (Oslo: FIVAS, 1996). http://www.fivas.org/publikasjoner/power_c/k14.htm accessed 18.12.2023.

[37] Michael Jennings, *Surrogates of the State: NGOs, Development, and Ujamaa in Tanzania* (Bloomfield, CT: Kumarian Press, 2008).

[38] Swedish National Archives, hereafter SNA, Biständskontoret, F6:1, SIDA: Tanzania Development Cooperation Report, 1987–1991.

[39] Bryceson, "Norwegian Hydropower Developers."

These relationships played an important role in shaping these countries' involvement in Tanzania's development efforts.[40]

Although the political discourse on dams at the time supported the development of large hydropower dams as showcases of modernity in the 1960s and 1970s, structural adjustment policies in the 1980s crushed national initiatives to build small dams and curtailed state power throughout the Global South.[41] The shift to small dams was a response to demands from the international donor community to stabilise the economy at a time of global financial uncertainty.[42] By the time the necessary feasibility, design, and environmental studies for Stiegler's Gorge were completed, Tanzania was in the throes of a deepening debt crisis, Nyerere had left office and, in line with growing global interest in environmental protection, transnational supporters had rejected the project.[43] Thus far, this section has argued that if the aid had come in the early 1960s, construction would probably have continued, all other factors being equal, and could have made a huge difference to Tanzania's energy sector.

Transnational Relations in Post-independence Tanzania

The transition from colonial rule to the independence of Tanzania did not bring radical changes to domestic and foreign policies.[44] Since then, the country became a hub of different actors and international organisations to support development.[45] The energy sector was no different, as it continued

[40] The National Archives of Norway, hereafter NAN, TAN- L0292- Africa: Tanzania; Jarlie Simensen, "The Norwegian-Tanzanian Aid Relationship: A Historical Perspective," in *Tanzania in Transition: From Nyerere to Mkapa*, edited by Kjell Havnevik and Aida C. Isinika (Dar es Salaam: Mkuki na Nyota, 2010), 57–70.

[41] Ernst Friedrich Schumacher, *Small is Beautiful: A Study of Economics as if People Mattered* (London: Blond and Briggs, 1973); Tom Lavers and Barnaby Dye, "Theorising the Political Economy of Dams: Towards a Research Agenda," Future DAMS Working Paper 001 (Global Development Institute, University of Manchester, 2019); Howard Stein and Machiko Nissanke, "Structural Adjustment and the African Crisis: A Theoretical Appraisal," *Eastern Economical Journal* 25, no. 4 (1999): 399–420.

[42] Roger Nord et al., *Tanzania: The Story of an African Transition* (Washington, D.C.: International Monetary Fund, 2009).

[43] Havnevik, *Tanzania*, 275–276.

[44] Leander Schneider, "Colonial Legacies and Postcolonial Authoritarianism in Tanzania: Connects and Disconnects," *African Studies Review* 49, no. 1 (2006): 93–118.

[45] Jennings, "Surrogates of the State"; Aleck Humphrey Che-Mponda, "Focus on Foreign Aid: The Case of Select Norwegian Aided Projects in Tanzania," *African Study Monographs* 5 (1984): 75–89.

to enjoy diplomatic relations with Britain, with the Hale Hydropower Project being the first post-colonial project to be supported by the Colonial Development Corporation in London. Other donors, such as Sweden, also stepped in to fund various projects including the Great Ruaha initiative to support the country's industrialisation drive. In the early decades of independence, the political landscape of post-colonialism played a crucial role in shaping transnational relations in the energy sector. It was the exact time when Cold War tensions were at their peak. Tanzania strategically positioned itself as a neutral nation. As a newly independent state, it deliberately avoided taking sides in the bipolar conflict between the Western and Eastern blocs. This stance allowed Tanzania to pursue a unique foreign policy approach focused on non-alignment, which largely shaped hydropower infrastructure.[46] Although Nyerere declared that the country would adopt the policy of socialism and self-reliance, he never claimed that he was cutting off capitalism because Tanzania was a great beneficiary of Western capital.[47] The first and second development plans also envisaged a heavy reliance on foreign aid.[48] Engagement in transnational relations aimed at gaining access to the expertise and technology needed to develop the energy sector.[49] Consequently, the government sought partnerships with foreign companies to facilitate knowledge transfer, investment and infrastructure development.[50] The aid landscape evolved as global priorities and donor interests changed with time.[51] In the 1960s, Tanzania received significant support from the British

[46] Ibrahim H. Lipumba, "Foreign Aid and Economic Development in Tanzania," in *Change in Tanzania, 1980–1998: Political and Economic Reforms as Observed by Four Tanzanian Scholars*, ed. Gabrielle Winai-Ström (Stockholm: SIDA, 1995), 20.

[47] SNA, F52.3(2.32 1-4), KEC, Nordiska Tanganyika Projektet, 1962–1970; Andrew Coulson, *Tanzania: A Political Economy*, 2nd ed. (Oxford: Oxford University Press, 2013).

[48] Che-Mponda, "Focus on Foreign Aid," 75.

[49] Jonas Van der Straeten, "Electrification in Tanzania from a Historical Perspective: Discourses of Development and Marginalization of the Rural Poor," in *Micro Perspectives for Decentralized Energy Supply: Proceedings of the International Conference*, ed. Martina Schäfer (Berlin: Universitätsverlag der TU Berlin, 2015).

[50] Christopher S. Adam, Paul Collier, and Benno Ndulu, eds., *Tanzania: The Path to Prosperity* (Oxford: Oxford University Press, 2017).

[51] Synne Movik and Jeremy Allouche, "States of Power: Energy Imaginaries and Transnational Assemblages in Norway, Nepal and Tanzania," *Energy Research & Social Science* 67 (2020): 1–11; Maia Green, *The Development State: Aid, Culture and Civil Society in Tanzania* (Woodbridge: James Currey, 2014).

but then shifted to socialist countries, which provided grants, soft loans, and technical assistance to help the country build its hydroelectric infrastructure. The shift away from Britain had to do with British politics in Southern Rhodesia.[52]

Nevertheless, as the global political landscape changed in the 1970s, Tanzania's aid relationships diversified, with the United States, Western European countries, and international financial institutions becoming more prominent sources of support. Compared to other donor countries such as the United Kingdom or the United States of America, Norway lacked a colonial past and thus qualified as the ideal and preferred donor to Tanzania. Norwegian cooperation and technical assistance was thus provided to develop Tanzania's hydropower potential.[53] Norway's transnational aid, in terms of financial assistance, technical support, and expertise, played a pivotal role in the development of Tanzania's hydropower sector from the 1960s to the 1980s.[54] The 1980s marked a further shift in Tanzania's aid landscape as the country embraced structural adjustment programmes (SAPs), imposed by international financial institutions in exchange for loans.[55] The SAPs emphasised economic liberalisation, privatisation, and cost-recovery principles, leading to a decline in donor support for large-scale hydropower projects and an increased focus on small-scale, decentralised renewable energy projects.[56] The Norwegian Stiegler's Gorge hydropower project intervention illustrates these complexities.

Norway and the Development of Tanzania's Stiegler's Gorge Project

Hydropower was Norway's starting point for development assistance, as its own industrial and economic development at the time was also driven by

[52] Lipumba, "Foreign Aid," 19–21.

[53] Che-Mponda, "Focus on Foreign Aid," 77; URT, "Second Five-Year Plan for Economic and Social Development," 51.

[54] NAN, TAN 009: Agreement Between Government of the Kingdom of Norway and the Government of Tanzania Regarding Regional development, May 14, 1971; Barnaby Dye, "Dam Building by the Illiberal Modernisers: Ideological Drivers for Rwanda and Tanzania's Megawatt Mission," *Critical African Studies* 14, no. 3 (2022): 231–249.

[55] Lipumba, "Foreign Aid," 19–21.

[56] SNA, Biständskontoret, F6:1, SIDA: Tanzania Development Cooperation Report, 1987–1991; Dye, "Dam Building," 234–249.

the increased use of its abundant hydropower resources.[57] Norway's early support to Tanzania focused on technical assistance for mapping and assessing hydropower potential in feasibility studies.[58] Efforts to expand the national power grid were in line with the state-building projects of Tanzania's early leaders, inspired by colonial logic. Nyerere's socialist government, during its first years, focused more on industrialisation, but from the end of the 1960s, the emphasis was more on agricultural and rural development. The development of *Ujamaa* villages, social services, agriculture, and mechanisation, coupled with electricity and industrialisation, became a single vision for the country.[59] The United Nations Food and Agriculture Organization (FAO) survey report showed great potential for hydropower at Stiegler's Gorge on the Rufiji River.[60] Other donors, such as the US, were interested in funding the project, but their interest waned as antipathy to Nyerere's socialist ideas grew in the US. Norway stepped in, attracted by the opportunity to export its hydropower expertise and share its experience of building large dams. [61]

Norway's history of hydropower development dates back to the 1900s, driven by the country's modernisation strategy and industrial development.[62] With the development of the aluminium and chemical industries, large hydropower projects were built in line with the country's vision of building a modern country. With these developments, educational institutions were established as hubs for technology and innovation, which later became involved in overseas projects.[63] Although official cooperation on Stiegler's Gorge started in 1971, it was culmination of activities of the Norwegian Agency for Development Cooperation (NORAD) that had been undertaken the preceding year. In a letter to local representatives in

[57]Tomas Hostad Løding, "Arvesølvets Verdi: den historiske transformasjonenav vannkraftforvaltningens legitimering," *Tidsskrift for samfunnsforskning* 58, no. 4 (2017): 367-388.

[58] NAN, TAN 009: Africa: Tanzania. General. 1971–1977; "Norway Backs the Poor," *Daily News*, May 8, 1976.

[59] Coulson, *Tanzania*, 2.

[60] FAO, *Rufiji Basin, Tanganyika*.

[61] "Mwalimu Arrives in Norway," *Daily News*, April 29, 1974.

[62] Torodd Jensen and Inge Harald Vognild, *Hydroelectric Development in Norway, 1945–1990* (Oslo: Norwegian Water Resources and Energy Directorate, 2023).

[63] Movik and Allouche, "States of Power," 6–7.

Tanzania, the head of NORAD stated: "as far as this project [Stiegler's Gorge] is concerned, we see an opportunity to make a significant contribution and at the same time to give Norwegian technical and financial resources access to an important project."[64] The Norwegians were interested in the project to sell their technical expertise, to be part of the development support to Tanzania and to learn from this important project. In addition, most of the technical material would be imported from Norway, so Norwegian companies would benefit immensely from such an investment. Later, on August 20, 1971, under the headline "Pact to be signed soon on Stiegler's Gorge Survey," the *Standard* announced that the Norwegian government would provide technical expertise and financial support for the planning and development of the project.[65] Moreover, in his opening speech, Hon. Al Noor Kassum, the then Minister of Water, Energy and Minerals acknowledged Norway as the first country to establish an electricity and light company in 1890. He hoped that the Stiegler's Gorge project, with the invaluable experience of the Norwegians, would do the same for Tanzania.[66] This site was developed with an awareness of the long-term benefits of the investment. Norway's participation in this initial phase exemplifies the travelling of ideas in terms of the global exchange of innovative concepts and technological advancements. This collaborative endeavour could revolutionise Tanzania's energy sector, introducing cutting-edge power generation methods and contributing significantly to the country's economic and social development goals.

The discussions on the development of hydroelectric power from Stiegler's Gorge were held in Oslo early in 1974. The main premises for cooperation were firstly, the ambition to build a large dam and hydropower plant to solve Tanzania's energy problems and to achieve independence

[64] NAN, A - 1871, TAN 012 P.B. 13 - 31: Letter, Jensen to Local Representative, July 1, 1970.

[65] NAN, UD 37 4/149, Vol. 17: Letter from the Embassy in Dar es Salaam to NORAD, with a copy to the MFA, September 11, 1979; NAN, TAN 012 A – 1846 A – 188: Ministry of Foreign Affairs (MFA) 37 4/149, Vol. 17: Press Release; NORAD, Institutional Cooperation between the United Republic of Tanzania and the Kingdom of Norway within the Upstream Petroleum Sub Sector Programme Document, January 2014.

[66] Opening Speech by Hon. Al Noor Kassum, M.P, Minister for Water, Energy and Minerals and Chairman of the Board of Directors of RUBADA, Kilimanjaro Hotel, Dar es Salaam, November 20, 1979.

from energy imports. Secondly, the desire of the Tanzanian authorities to build a power plant on the Rufiji River to improve the country's energy situation. Thirdly, the project was to use Norwegian expertise and technology, with Norway guaranteeing the financing. The project was part of a wider Norwegian aid agenda in Tanzania, which included other projects in shipping, fisheries, and forestry.[67] Norway wanted to take a more independent stance in its aid cooperation, independent of the influence of the US and the Development Assistance Committee (DAC). The Norwegian support for Stiegler's Gorge was evident. The government, through NORAD, undertook the responsibility of financing feasibility studies for the project and commissioned the task to another Norwegian engineering company, Norconsult.[68]

Norconsult carried out a further feasibility study, estimating costs and recommending energy-consuming industries for the region. In 1976, with these studies completed, another Norwegian engineering firm, Hafslund, began work on plans for the Stiegler's Gorge Dam.[69] A comprehensive report, including tender documents, on how development could be implemented and financed by the agency was presented to Tanzania by NORAD.[70] NORAD took care of all the stages before a shovel could be put in the ground.[71] The project became one of the most important for Norwegian aid in the 1970s and early 1980s and would have been by far the largest if the ambitious plans had been realised.[72] As Hoag and Öhman pointed out in their work, "[b]y the slowdown of planning efforts during the 1980s, Norway had given Tanzania over US$24 million to support the planning of

[67] NAN, NORAD I-TAN 012-021: Minutes of Meetings between the Representatives of the Government of Tanzania and NORAD (undated).

[68] Simensen, "Norwegian-Tanzanian Aid Relationship," 57–70.

[69] AS Hafslund, Stiegler's Gorge Power and Flood Control Development, Project Planning Report, Vol. I (Oslo, 1980).

[70] NAN, TAN 012-008.02: RUBADA, Short Notes on the Implementation of Stiegler's Gorge Power Project, June 1980.

[71] Expert interview with a former Chr. Michelsen Institute Ecologist, January 5, 2024, Dar es Salaam.

[72] NAN, TAN 012-008.08. RUBADA. No. 2/81: A Brief Memorandum on the Stiegler's Gorge Power and Flood Control Development Report. Dar es Salaam: Tanzania, February 1981, 4.

the Stiegler's Gorge project."[73] In retrospect, it seems clear that the feasibility studies were excessively expensive, and the project itself was potentially too large and costly to undertake.[74] However, Norway's proposal of the Stiegler's Gorge project was focused on one purpose (electricity generation) and opted for maximum size and the use of advanced technology.[75] Their approach also ignored concerns about social and environmental impacts, an approach that was commonly favoured by the Norwegian hydropower companies and engineers. It was also supported by consultants, some NORAD staff and certain key Tanzanian leaders and bureaucrats.[76] Norwegian consultants such as Norconsult, the Christian Michelsen Institute, Norplan (Mult consult), and Hafslund were involved in various phases of the project, with the task of assessing the feasibility of building an industry around mineral resources to create the necessary demand for hydropower.[77] Even so, some Tanzanian and Norwegian researchers, as well as some NORAD staff and Tanzanian leaders expressed criticism regarding the single-purpose approach. This situation suggests that the journey of ideas is shaped by a complex interplay of factors, including political landscapes, economic conditions, and cultural contexts. These elements interact dynamically, influencing the development and dissemination of ideas across various domains.

The World Bank also considered the approach inappropriate due to concerns about its technical feasibility, economic viability, and environmental impact.[78] Although the World Bank deemed the project unrealistic, Norway supported it without knowing the Bank's assessment. The feasibility studies carried out in 1973 by Norconsult, were unaware of the World Bank's findings. The choice to conduct an independent assessment showed dedication to the project, even though concerns were

[73] Heather J. Hoag and May-Britt Öhman, "Turning Water into Power: Debates over the Development of Tanzania's Rufiji River Basin, 1945–1985," *Technology, Water and Culture* 49, no. 3 (2008): 644.

[74] Expert interview with a TANESCO engineer, March 29, 2024, Dar es Salaam.

[75] NORAD, "50 Years of Energy Cooperation: Tanzania-Norway," 27–30. https://www.norad.no/contentassets/e43312daec384b7ab4987b3a2fcd75fa/50-years-of-energy-cooperation-tanzania-and-norway/, accessed 20.12.2013.

[76] Bryceson, "Norwegian Hydropower Developers."

[77] NAN, TAN 012-013.1: Rufiji Basin Multipurpose Development Project, Chr. Michelsen Institute, Oslo, 232.12.1977; NORAD, "50 Years of Energy Cooperation," 28–30.

[78] Bryceson, "Norwegian Hydropower Developers."

already voiced by the World Bank. The project's continuation was ensured by the subsequent financing of a new feasibility study by Norconsult, despite the initial doubts raised by the World Bank. The project's progression was based entirely on the Norconsult study results.[79] At the same time, the Tanzanian authorities were eager to implement the plans.[80] The table presented below outlines the estimated total costs of the project in millions of US dollars as they were projected in 1980.

	Phase 1	Phase 2	Phase 3	Phase 4
Civil engineering	372	19	104	78
Mechanical enginnering	34	56	3	100
Electrical engineering	32	46	-	89
Transmission	41	43	27	51
Total direct cost	479	164	134	318
Contingencies	107	16	26	36
Engineering	47	14	13	28
Total in million USD	**1,112**	**358**	**307**	**700**

Figure 2: Stiegler's Gorge power project budget (in millions USD), September 24, 1980,
Source: NAN, TAN 012-114.1.

With such a huge investment, the question remains, why did Norway continue to support the feasibility studies and planning to such an advanced stage? With such high-cost estimates given the relatively simple indicators related to the viability of industrial development plans? Considering that the demand for electricity at the time was 100-200 MW and that only a negligible proportion of the population had access to electricity, while the power plant would have had a capacity of ten times that, the project seemed excessively ambitious.[81] Nevertheless, it is reasonable to assume that the idealisation of Tanzania was the main reason why planning continued for so long. Great optimism, combined with close personal relationships, helped

[79] NAN, 0001-TAN 012: Generelt Stiegler's Gorge, 1971–1979.
[80] Expert interview with a former RUBADA Ecologist, January 8, 2024, Dar es Salaam.
[81] NAN, 0003-TAN 012: Progress Reports RUBADA, 1976–1978.

create unrealistic development expectations. The key decision-makers, like Nyerere and important actors in the NORAD directorate were enthusiastic about Tanzania and optimistic about the project.[82] Nyerere was admired by left-wing governments in the West, which were lured into supporting Tanzania's development. They saw him as a hopeful alternative between East and West in the Cold War era, and he had fans all over Europe. The adoption of a non-aligned foreign policy, avoiding direct alignment with either the Eastern or Western bloc, played a crucial role. This neutrality appealed to Western governments looking for allies outside the traditional Cold War alliances.[83]

Stiegler's Gorge: A Dream Deferred despite Norway's Support

Stiegler's Gorge is a special case in the history of Norwegian international and transnational aid. It never got beyond the planning stage and at the same time became one of the most expensive projects of the time.[84] In the processes we have seen, there are nevertheless common features with other projects, such as the Sao Hill project in Tanzania, which had some success but did not manage to transfer expertise to the desired extent.[85] Another problem that the Stiegler's Gorge project also had was that there was little hydropower expertise in the country, and there was no evidence that the project could make a significant contribution. The 1980s were characterised by a shift from post-independence optimism to economic crisis, which affected Tanzania's development trajectory. Tanzania went through a phase of economic shocks, which led to a decline in both agricultural and industrial productivity. Consequently, development assistance became even more critical, as Tanzania endured multiple years of recession. Energy development, including the Stiegler's Gorge project, was halted due to economic and environmental infeasibility.[86]

[82] NAN, 0002- TAN 012: Project Planning Report. Volume 1, 1976; Expert interview, former RUBADA ecologist, January 8, 2024, Dar es Salaam.

[83] Lipumba, "Foreign Aid," 19–21.

[84] Expert interview, former RUBADA ecologist, January 8, 2024, Dar es Salaam; SNA, F52.3(2.32 1-4), KEC, Nordiska Tanganyika Projektet, 1962–1970.

[85] NAN, TAN 012 – MFA: letter from the Embassy in Dar es Salaam to the MFA.10 August 1979; NAN, NORAD. "Evaluation of Sao Hill Sawmill", Evaluation Report, Oslo, Norway, 1983.

[86] NAN, A - 1853, TAN 012 - 008.08: Phase II: Minutes from meetings between NORAD and Tanzanian authorities in Dar-es-Salaam 16/12 - 19/12 – 1974; NAN, UD 37 4/149, Vol. 14: Memo, Minister of Foreign Affairs to the government, July 21, 1978.

On the Tanzanian side, the initial Terms of Reference (TOR) for the project were drafted in the early 1970s, before the formal agreement was signed. These TORs served as a blueprint for the future collaboration between the parties involved. The primary goal outlined in these TORs was to construct a power generation facility designed to produce significant amounts of affordable electricity, which would then be available for purchase by industrial sectors at scale.[87] It is noteworthy that this TOR document was prepared without any direct involvement from NORAD's ranks, and that it formed the basis for all further investigation and planning of the Stiegler's Gorge project, also on the Norwegian side. This shows how crucial and influential this initial planning phase was for the progress and direction of the project and how it formed the basis for all further work. It later turned out that there was no basis for building the necessary power-intensive industry in Njombe, Iringa, as it had been agreed that industry could increase electricity demand. Moreover, the growing criticism of such large, top-down infrastructure projects around the world, including mounting evidence of their economic costs and serious questions about their ability to deliver promised benefits.[88] At the same time, the Tanzanian elite and research community, along with their Norwegian counterparts, raised concerns about various aspects of the project.[89]

Researchers from the University of Dar es Salaam, the Bureau of Resource Assessment and Land Use Planning, the Institute of Development Studies, the Department of Zoology and Marine Biology, and the Department of Economics questioned the social, economic, and environmental impacts of the project, as well as the health problems, economic assessment, and technical aspects such as the artificial flooding. Notably, Kjell Havnevik and Audun Sandberg, two Norwegians, submitted their criticisms to NORAD in 1975.[90] The aforementioned circumstance

[87] NAN, A - 1853, TAN 012 - 008.08: Phase II: Minutes from meetings between NORAD and Tanzanian authorities in Dar-es-Salaam 16/12 - 19/12 – 1974.

[88] See, for example, Adams, *Wasting the Rain*; McCully, *Silenced Rivers*, 23–24.

[89] The National Archives of Tanzania, hereafter TNA, 640/A/COM/BRALUP/2: Programme Committee Minutes, November 16, 1967; Expert Interviews with a TANESCO Engineer and a Ministry of Energy Engineer during the Energy Congress, September 21, 2023, Dar es Salaam.

[90] NAN, TAN 012-301.1. NORAD-I 06431: Kjell Havnevik- Evaluering Av Norconsult on Stiegler's Gorge Rapport, Bergen, October 1975.

resulted in the loss of significant funding from key stakeholders such as the World Bank. Apart from that, the establishment of the World Commission on Dams, along with key federal legislation such as the National Environmental Policy Act of 1970 and the Endangered Species Act of 1973, provided environmental groups with robust legal mechanisms to challenge new dams. This led to the initiation of anti-dam campaigns in the United States in the 1980s, emblematic of a wider movement away from large-scale dam initiatives. This shift was influenced by growing environmental awareness, evolving energy strategies, and changing social attitudes. These campaigns insisted on a careful assessment of such infrastructure.[91] At the same time, there was a growing momentum in Europe towards dismantling dams.[92] Because of these various factors, Norway finally had no choice but to abandon the project in the mid-1980s.

The question remains why, amidst criticism and challenges, the feasibility studies endured for an extended period, with both NORAD and Tanzania continuing to support them. This can be attributed to several factors, including the prevalence of Norwegian consultancy firms leading these projects, which inherently favoured consultants. This situation underscores the dynamics of dominance within the political landscape. According to James Scott, large-scale infrastructures in Africa are characterised by delays or failures, especially when there is too much reliance on one part. This is often the case with an authoritarian state that is willing and able to use the full weight of its coercive power to bring these high-modernist designs to fruition and a prostrate civil society that is unable to resist these plans.[93] The TOR for the project studies were written by the same consultants, with much repetition and duplication in some studies. The TOR were designed to promote the economic interests of Norwegian private companies, among competing and prospective similar global companies, rather than to promote Tanzanian interests through the

[91] Christopher Schulz and William M. Adams, "Debating Dams: The World Commission on Dams 20 Years On," *Wiley Interdisciplinary Reviews: Water* 6, no. 5 (2019): 1–19.

[92] William Lowry, *Dam Politics: Restoring America's River*s, *American Governance and Public Policy Series* (Washington, D.C: Georgetown University Press, 2003); NORAD, "50 Years of Energy Cooperation", 27-30; Simensen, Norwegian-Tanzanian Aid Relationship," 57–70.

[93] James C Scott, *Seeing Like a State: How Certain Schemes to Improve the Human Condition Have Failed* (New Haven: Yale University Press, 1998).

development of the hydropower sub-sector, as originally agreed by the governments of Tanzania and Norway in 1971.[94] The consulting companies were handling the situation. The Norwegian state was footing the entire bill, so there was no risk for the companies. They would benefit financially from the completion of the plans anyway, even if the plans were unrealistic. Therefore, there was no need for them to demand that the plans be modified or cancelled. If the companies had been exposed to risk, the fear of loss and bankruptcy would have been an incentive for change and possible liquidation.

A further problem was that most Norwegian feasibility studies conducted during the 1970s focused solely on hydropower. However, Hafslund's study from 1982 stood out by also considering flood control, while the Rufiji Master Plan study adopted a comprehensive approach that encompassed irrigation, flood control, and hydroelectric generation. Studies from the social sciences, especially organisational sociology, indicate that one of the main factors leading to project failure is changes in project scope.[95] Many projects face changes in requirements before or during implementation. Despite these modifications, they typically occur around the projected end date, facilitated by the prompt provision of funds. Therefore, if Norwegian assistance had been available during the 1960s and adhered to the FAO's advice for the Stiegler hydropower project's development by incorporating social and economic considerations, the project likely would have been completed successfully. However, these changes are often implemented at the expected completion date, given the timely funding.

Given these factors and the poor and dismal state of the Tanzanian economy in the 1980s, it was clear that the possibility of implementing the project was slim, despite the long-time considerations and the high investment into feasibility studies. Even the Rufiji Master Plan, published in 1984, examined and ranked eight other hydropower potentials, including Stiegler's Gorge. The Kihansi project was ranked first and Stiegler's Gorge

[94] NAN, A - 1865, TAN 012: Agreement between the Government of Tanzania and the Kingdom of Norway on Stiegler's Gorge Project, 1971.

[95] Eja and Ramegowda, "Government Project Failure"; Lavagnon Ika and Jan Saint- Macary, "Why Do Projects Fail in Africa?" *Journal of African Business* 15, no. 3 (2014): 151–155; Müller-Mahn, Mkutu, and Kioko, "Megaprojects – Mega Failures?," 1073–1075.

seventh, because it observed that the benefits of the project as a power source were marginal as compared to other projects, especially if the consideration was to be given for the exploitation of coal sources in the vicinity.[96] Additionally, the combination of an increased aid budget, stagnating administrative resources, and the need for major commitments led to staffing problems in the NORAD Directorate. This affected the organisation's ability to effectively manage and implement aid projects such as Stiegler's Gorge.[97] This created a need for large, concentrated and expensive commitments. They required large cash transfers and relatively little administrative effort, as exemplified by the Stiegler's Gorge project. The decision-makers in NORAD had no conscious strategy of taking on large and difficult projects, but the situation required large expenditure items, so it was practical to initiate and continue the plans for Stiegler's Gorge and other large projects.[98] This was not only an expression of poor judgement, but also a method of managing funds in the most responsible way possible.

Conclusion

The article has highlighted some of the mechanisms instrumental in the development of the Stiegler's Gorge project. It can be argued that there was poor preparation and that the major problems that arose along the way were hidden and overlooked when decisions had to be made by both parties. It is important to stress that this 'cover-up' was most likely not deliberate, but rather an expression of the usual mechanisms in large development projects that we can observe in retrospect. Attempts were made to fix the problems to save the process, but they failed. Thus, Stiegler's Gorge project and Norway's involvement ultimately illustrate the 'reverse travel of ideas' from the Global South to the Global North through the lessons that the Norwegians learned from this project. First, the importance of thorough planning and impact assessment before embarking on large aid projects. Second, the importance of setting realistic goals and not over-

[96] Expert interview with a former Hafslund/Norplan Stiegler's Gorge worker, April 5, 2024, Kisaki Village, Morogoro; NAN, Norconsult/NORAD: Rufiji Basin Hydropower Master Plan. NORAD, Oslo: Norway, 1984.

[97] NAN, A- 1862, TAN 012: NORAD & Hafslund/Norplan. Executive Summary on Stiegler's Gorge Power and Flood Control Development, Oslo: Norway, 1982, 20.

[98] NAN, A - 1863, TAN 012 - 011.22: Minutes, Board Meeting, NORAD, December 14, 1979.

ambitious plans, which Stiegler's Gorge lacked in terms of feasibility.[99] Thirdly, the recognition of the importance of learning from past mistakes and experiences of similar projects, and finally, the need for better resource management and financial control for large aid projects.[100]

The study has revealed the multifaceted nature of energy imaginaries and aid interventions in the Global South through a historical lens and drawing on transnational and travelling frameworks. The findings underscore the significant role of donor programmes and bilateral relations in shaping hydropower infrastructure projects and policy narratives. While transnational support opened up opportunities for cooperation and development in the hydropower imagination in Tanzania, it is important to recognise that the support alone does not guarantee materialisation. Although Stiegler's Gorge was imagined in the 1960s, with considerable donor support, at the heart of the country's attempts to find a sustainable energy supply, it can only be described as a failure of Norwegian development aid and Tanzanian planning. Admittedly, the Norwegian hydropower sector benefited from the endeavour, particularly the consulting companies. It was the starting point for Hafslund's engineering activities abroad, while Norplan used it to launch its entire business. The involvement of Norwegian companies was a sub-objective of the project. It was decided that the private sector should be encouraged to participate in development aid in general. Thus, the Norwegian planners sold technologies, expertise, and export finance in forms of development assistance and were major culprits for the failure of the project. In a final assessment, one could say that Stiegler's Gorge was not a failed project, but rather a project too risky to undertake because it was a project in the imagination of the actors rather than in practice. Ultimately, the project

[99] NAN, NORAD, Box 91, 431-TAN 012.5: "Overall Assessment of the Stiegler's Gorge Project," in Lower Rufiji Valley Integration Study, Oslo, December 12, 1983; NAN, UD 37 4/149, Volume 25: Draft Agreement on Hydropower Potential in the Rufiji River Basin, October 20, 1982; NAN, NORAD, Box 262, 45: Rufiji Basin Hydropower Master Plan (Main Report), November 1984.

[100] NAN, NORAD A–1846, TAN 012 - 00808 (1969-72): "Report of Preliminary Studies on Stiegler's Gorge Project," Overseas Technical Cooperation Agency Government of Japan, November 1969; NAN, NORAD A– 1846, TAN 012: Japanese Report sent by the Principal Secretary to the Minister of Finance, Cleopa Msuya to NORAD on October 14, 1970.

exemplifies how people's agencies, temporalities, processes, and demands can change, and that failed projects can still lead to changes and adaptations over time.

References

Oral Sources

Expert interview with a former Chr. Michelsen Institute Ecologist, January 5, 2024, Dar es Salaam.

Expert interview with a former RUBADA Ecologist, January 8, 2024, Dar es Salaam.

Expert interview with a TANESCO engineer, March 29, 2024, Dar es Salaam.

Expert interview with a former Hafslund/Norplan Stiegler's Gorge worker, April 5, 2024, Kisaki, Morogoro.

Expert Interviews with a TANESCO Engineer and a Ministry of Energy Engineer, September 21, 2023, Dar es Salaam.

Archival Sources

The National Archives of Norway (NAN), Oslo, Norway.

The National Archives of Tanzania (TNA), Dar es Salaam, Tanzania.

The Swedish National Archives (SNA), Stockholm, Sweden.

Chama cha Mapinduzi (CCM) Library, Dodoma, Tanzania.

East Africana Collection, University of Dar es Salaam, Tanzania.

Institute of Resource Assessment (IRA), University of Dar es Salaam

Published Sources

Adam, Christopher S., Paul Collier, and Beno Ndulu, eds. *Tanzania: The Path to Prosperity*. Oxford: Oxford University Press, 2017.

Adams, William M. *Wasting the Rain: Rivers, People and Planning in Africa*. London: Earthscan, 1992.

Ali, AAG, C Mwalwanda, and Y Suliman. "Official Development Assistance to Africa: An Overview." *Journal of African Economies* 8, no. 4 (1999): 504-527.

Baldus, Rolf. "Stiegler's Hydroelectric Dam." In *Wild Heart of Africa: The Selous Game Reserve in Tanzania* edited by Rolf Baldus. Johannesburg: Rowland Ward Publications, 2009.

Behrends, Andrea, Sung-Joon Park, and Richard Rottenburg."Travelling Models: Introducing an Analytical Concept to Globalization Studies." In *Travelling Models in African Conflict Management: Translating Technologies of Social Ordering* edited by Andrea Behrends, Sung-Joon Park, and Richard Rottenburg, 1–40. Leiden: Brill, 2014.

Bjerk, Paul. "Postcolonial Realism: Tanganyika's Foreign Policy Under Nyerere, 1960-1963." *The International Journal of African Historical Studies* 44, no. 2 (2011): 215–247.

Bridge, Gavin, Begüm Özkaynak, and Ethemcan Turhan. "Energy Infrastructure and the Fate of the Nation: Introduction to Special Issue." *Energy Research & Social Science* 41 (2018): 1–11.

Bryceson, Ian. "Norwegian Hydropower Developers in Tanzania." In *Power Conflicts: Norwegian Hydropower Developers in Third World*. Oslo: FIVAS, 1996. http://www.fivas.org/publikasjoner/power_c/k14.htm accessed 18.12.2023.

Che-Mponda, Aleck Humphrey. "Focus on Foreign Aid: The Case of Select Norwegian Aided Projects in Tanzania." *African Study Monographs* 5 (1984): 75–89.

Cloke, Jonathan, Alison Mohr, and Ed Brown. "Imagining Renewable Energy: Towards a Social Energy Systems Approach to Community Renewable Energy Projects in the Global South." *Energy Research & Social Science* 31 (2017): 263–272.

Coulson, Andrew. *Tanzania: A Political Economy*. 2nd ed. Oxford: Oxford University Press, 2013.

Dalai-Clayton, Barry. "Southern Africa Beyond the Millennium: Environmental Trends and Scenarios to 2015." *Environmental Planning Issues* 13 (1997): 1–98.

Dye, Barnaby. "Dam Building by the Illiberal Modernisers: Ideological Drivers for Rwanda and Tanzania's Megawatt Mission." *Critical African Studies* 14, no. 3 (2022): 231–249.

Eja, King Matthew, and Manu Ramegowda. "Government Project Failure in Developing Countries: A Review with Particular Reference to Nigeria." *Global Journal of Social Sciences* 19 (2020): 35–47.

Fullalove, S. K., ed. *Lesotho Highlands Water Project*. Proceedings of the Institution of Civil Engineers 120. London: Thomas Telford Ltd, 1997.

Gnassou, Laure. "Addressing Renewable Energy Conundrum in DR Congo: Focus on Grand Inga Hydropower Dam Project." *Energy Strategy Reviews* 26 (2019): 1–6.

Green, Maia. *The Development State: Aid, Culture and Civil Society in Tanzania*. Woodbrige: James Currey, 2014.

Haas, Lawrence J., Leonardo Mazzei, and Donald T. O'Leary, "Lesotho Highlands Water Project: Communications Practices for Governance and Sustainability Improvement." *Working Paper* No. 200. World Bank, Washington DC, 2010.

Hafslund AS. *Stiegler's Gorge Power and Flood Control Development, Project Planning Report*, Vol. I (Oslo, 1980).

Havnevik, Kjell. *Tanzania: The Limits to Development from Above*. Uppsala: Nordiska Afrikainstitutet, 1993.

Hoag, Heather J, and May-Britt Öhman. "Turning Water into Power: Debates over the Development of Tanzania's Rufiji River Basin, 1945–1985." *Technology and Culture* 49, no. 3 (2008): 624–651.

Hoag, Heather J. "Designing the Delta: A History of Water and Development in the Lower Rufiji River Basin, Tanzania, 1945–1985." PhD diss., Boston University, 2003.

Hoag, Heather J. *Developing the Rivers of East and West Africa: An Environmental History.* London: Bloomsbury, 2013.

Itumo, Victor. "What Hinders Economic Development in Africa?" *European Journal of Interdisciplinary Studies* 9, no. 2 (2017): 13–31.

Jasanoff, Sheila, and Sang-Hyun Kim. "Sociotechnical Imaginaries and National Energy Policies." *Science as Culture* 22, no. 2 (2013): 189–196.

Jennings, Michael. *Surrogates of the State: NGOs, Development and Ujamaa in Tanzania*. Danvers: Kumarian Press, 2008.

Jensen, Torodd, and Inge Harald Vognild. *Hydroelectric Development in Norway, 1945–1990*. Oslo: Norwegian Water Resources and Energy Directorate, 2023.

Lavers, Tom, and Barnaby Dye. "Theorizing the Political Economy of Dams: Towards a Research Agenda." Future DAMS Working Paper 001. Global Development Institute, University of Manchester, 2019.

Lipumba, Ibrahim H. "Foreign Aid and Economic Development in Tanzania." In *Change in Tanzania, 1980-1998: Political and Economic Reforms as*

Observed by Four Tanzanian Scholars edited by Gabrielle Winai-Ström, 19–58. Stockholm: SIDA, 1995.

Løding, Tomas Hostad. "Arvesølvets Verdi: den historiske transformasjonenav vannkraftforvaltningens legitimering.*Tidsskrift for samfunnsforskning* 58, no. 4 (2017): 367–388.

Lowry, William. *Dam Politics: Restoring America's Rivers. American Governance and Public Policy Series*. Washington, D.C: Georgetown University Press, 2003.

Marquardt, Jens. "The Politics of Energy and Development: Aid Diversification in the Philippines." *Energy Research & Social Science* 10 (2015): 259–272.

Mashingaidze, Terence. "The Kariba Dam: Discursive Displacements and the Politics of Appropriating a Waterscape in Zimbabwe, 1950s-2017." *LIMINA Journal of Historical and Cultural Studies* 25, no. 1 (2019): 1–15.

McCully, Patrick. *Silenced Rivers: The Ecology and Politics of Large Dams*. London: Zed Books, 1996.

Movik, Synne and Allouche, Jeremy. "States of Power: Energy Imaginaries and Transnational Assemblages in Norway, Nepal and Tanzania." *Energy Research & Social Science* 67 (2020): 1–11.

Müller-Mahn, Detlef, Kenedy Mkutu, and Eric Kioko. "Megaprojects – Mega Failures? The Politics of Aspiration and the Transformation of Rural Kenya." *European Journal of Development Research* 33 (2021): 1069–1090.

Mwangi, Oscar. "Hydropolitics, Ecocide and Human Security in Lesotho: A Case Study of the Lesotho Highlands Water Project." *Journal of Southern African Studies* 33, no. 1 (2007): 3–17.

NORAD. "50 Years of Energy Cooperation: Tanzania-Norway," 27–30. https://www.norad.no/contentassets/e43312daec384b7ab4987b3a2fcd75fa/50-years-of-energy-cooperation-tanzania-and-norway/. accessed 20.12.2013

Nord, Roger, Yuri Sobolev, David Dunn, Alejandro Hajdenberg, Niko Hobdari, Samar Maziad, and Stéphane Roudet. *Tanzania: The Story of an African Transition*. Washington, DC: International Monetary Fund, 2009.

Öhman, May-Britt. "Taming Exotic Beauties: Swedish Hydropower Constructions in Tanzania in the Era of Development Assistance, 1960s–1990s." PhD diss., University of Stockholm, 2007.

Oestigaard, Terje, Atakilte Beyene, and Helga Ögmundardóttir, eds*. From Aswan to Stiegler's Gorge: Small Stories about Big Dams*. Current African Issues 66. Uppsala: Nordiska Afrikainstitutet, 2019.

RUBADA, Short Notes on the Implementation of Stiegler's Gorge Power Project, June 1980.

Schneider, Leander. "Colonial Legacies and Postcolonial Authoritarianism in Tanzania: Connects and Disconnects." *African Studies Review* 49, no. 1 (2006): 93–118.

Schulz, Christopher, and William Adams. "Debating Dams: The World Commission on Dams 20 Years On." *Wiley Interdisciplinary Reviews: Water* 6, no. 5 (2019): 1–19.

Schumacher, EF. *Small is Beautiful: Economics as if People Mattered*. London: Blond & Briggs, 1973.

Scott, James C. *Seeing Like a State: How Certain Schemes to Improve the Human Condition Have Failed*. New Haven: Yale University Press, 1998.

Scudder, Thayer. "The Kariba Case Study." Social Science Working Paper No. 1227. California Institute of Technology, June 2005.

Showers, Kate. "Congo River's Grand Inga Hydroelectricity Scheme: Linking Environmental History, Policy and Impact." *Water History* 1, no. 1 (2009): 31–58.

Showers, Kate. "Electrifying Africa: An Environmental History with Policy Implications." *Geografiska Annaler: Series B, Human Geography* 93, no. 3 (2011): 193–221.

Simensen, Jarlie. "The Norwegian-Tanzanian Aid Relationship: A Historical Perspective." In Tanzania *in Transition: From Nyerere to Mkapa* edited by Kjell Havnevik and Aida Isinika, 57–70. Dar es Salaam: Mkuki na Nyota, 2010.

Stein, Howard, and Machiko Nissanke. "Structural Adjustment and the African Crisis: A Theoretical Appraisal." *Eastern Economical Journal* 25, no. 4 (1999): 399–420.

Tischler, Julia. *Light and Power for a Multiracial Nation: The Kariba Dam Scheme in the Central African Federation.* New York: Palgrave Macmillan, 2013.

United Nations Food and Agriculture Organization (FAO). *The Rufiji Basin, Tanganyika: Report to the Government of Tanganyika on the Preliminary Reconnaissance Survey of the Rufiji Basin*. Vol. I. Rome, 1961.

United Republic of Tanzania. *Second Five-Year Plan for Economic and Social Development", 1st July 1969–30th June 1974*, Vol. I. Dar es Salaam: The Ministry of Planning, 1969.

Van der Straeten, Jonas. "Electrification in Tanzania from a Historical Perspective: Discourses of Development and Marginalisation of the Rural Poor." In *Micro Perspectives for Decentralized Energy Supply: Proceedings of the International Conference* edited by Martina Schäfer, 156–161. Berlin: Universitätsverlag der TU Berlin, 2015.

World Commission on Dams. "Kariba Dam, Zambia and Zimbabwe." Final Report VI, 2000. https://www.academia.edu/6971886/Kariba_Dam_Zambia_and_Zimbabwe, accessed October 20, 2024.