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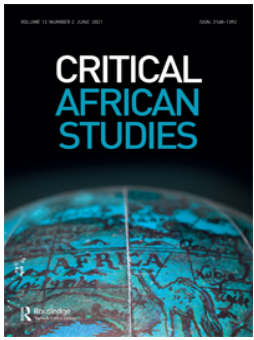
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# Dam building by the illiberal modernisers: ideological drivers for Rwanda and Tanzania's megawatt mission

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## Dam building by the illiberal modernisers: ideological drivers for Rwanda and Tanzania's megawatt mission

### Construction de barrage par les modernisateurs illibéraux: motifs idéologiques pour la Mission Megawatt du Rwanda et de la Tanzanie

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Globally, and especially in Africa, twentieth-century dams were typically imagined through high modernist ideology as the premier development project, but this ended with the decade-long hiatus in dam construction from the mid-1990s to the mid-2000s. However, dam-building is back. Does this mark the resurgence of a modernising ideology, of grand plans of mega-infrastructure implemented from an enlightened vanguard? This article analyses this question using Rwanda and Tanzania as case studies. It makes a twofold contribution. The first, to the literature on why the resurgence of dams is happening. Using theory, it shows how to understand the influence of ideology alongside other strategic factors and conceptualises the application of high modernism to dam building. This allows a more precise assessment of the influence of ideology on dam resurgence, with the cases of Rwanda and Tanzania demonstrating significant contrasts with past tendencies to aggrandise the infrastructure itself as the harbinger of progress. The second contribution is to this special issue on the ideology influencing a raft of 21st century illiberal states in Africa that have embarked on grand development missions. The article compliments other texts in this issue, demonstrating the presence of an evolved *illiberal modernisers* ideology that combines tenants of the past with more recent norms. Thus, an assumption of technologies' ability to linearly generate development is combined with contrasting ideas about sustainability, the importance of the private sector's role and hydropower's limitations. This demonstrates the way today's illiberal modernisers, engaged in global debates, adapt and update development ideology.

**Keywords:** high modernism; development; dam resurgence; ideology; political economy; electricity

Les barrages du XXe siècle étaient généralement imaginés à travers une idéologie hautement moderniste en tant que premier projet de développement, mais cela s'est terminé avec l'interruption pendant une décennie de la construction de barrages, du milieu des années 1990 au milieu des années 2000. Cependant, la construction de barrages est de retour. S'agit-il de la résurgence d'une idéologie modernisatrice, de grands projets de méga-infrastructures mis en place par une avant-garde éclairée? Cet article analyse cette question en prenant le Rwanda et la Tanzanie pour études de cas. Il constitue une double contribution. La première, à la littérature qui explique pourquoi la résurgence des barrages a lieu. En utilisant la théorie, il montre comment comprendre l'influence de l'idéologie tout

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comme d'autres facteurs stratégiques et conceptualise l'application du haut modernisme à la construction de barrages. Cela permet une évaluation plus précise de l'influence de la résurgence de l'idéologie ondam, les cas du Rwanda et de la Tanzanie présentant des contrastes significatifs avec les tendances passées consistant à agrandir l'infrastructure elle-même comme signe avant-coureur du progrès. La deuxième contribution est à ce numéro spécial sur l'idéologie influençant une série d'États illibéraux du XXI<sup>e</sup> siècle en Afrique qui se sont lancés dans de grandes missions de développement. L'article complète d'autres textes de ce numéro, et illustre la présence d'une idéologie évoluée des modernisateurs illibéraux qui combine les tenants du passé avec des normes plus récentes. Ainsi, une hypothèse sur la capacité des technologies à générer linéairement le développement, est combinée à des idées contrastées sur la durabilité, l'importance du rôle du secteur privé et les limites de l'hydroélectricité. Cela démontre la manière dont les modernisateurs illibéraux d'aujourd'hui, engagés dans des débats mondiaux, adaptent et mettent à jour l'idéologie du développement.

**Mots clés:** Haut modernisme; développement; résurgence des barrages; idéologie; économie politique; électricité

## Introduction

Dams are back. Featuring historically as the premier development project, delivering electricity, water and the spectacle of modernity, dams were frequently central to state-building missions. For example, then Rhodesia's Kariba (Tischler 2013) and Portuguese Mozambique's Cahora Bassa Dams (Isaacman and Isaacman 2013) helped sustain colonialism, whilst other projects, like Ghana's Akosombo (Miescher 2014) and Egypt's Aswan High Dams (Mitchell 2002), aimed to found powerful independent countries. However, the decade from the 1990s to mid-2000s saw few dams constructed (Zarfl et al. 2015). A significant reason for this were the growing critiques of such large, top-down infrastructure projects including increasing evidence of their economic costs and serious questions over their ability to deliver promised gains (McCully 2001; Khagram 2004; Adams 1992). This precipitated major funders like the World Bank and US ExIm Bank to withdraw, whilst a global enquiry, the World Commission on Dams (WCD), was instigated to assess the infrastructure's record (Scudder 2005; Everard 2013; Schulz and Adams 2019). Meanwhile movements in America and Europe campaigning to pull dams down gained momentum (Lowry 2003).

In contrast, the 21st century has seen the return of dam planning and building (World Energy Council 2015; Zarfl et al. 2015). What, then, is driving the dam-building resurgence? Why has infrastructure turned to now as a key technology of development? This article uses the detailed case studies of Rwanda and Tanzania to demonstrate the intersecting ideological and strategic drivers pushing the dam-building drive. It details the role of an evolved high modernist ideology, incorporating past principles of dam planning with contemporary reforms. This focus on ideology addresses a bias in the existing literature towards strategic and economic factors and demonstrates the way modernist development ideas are evolving. There is substantive evidence that economic enablers for dam building have improved, with 'Southern' powers like China, India and Brazil supporting the financing and construction of infrastructure in Africa (Hwang, Bräutigam, and Wang 2015; Verhoeven 2016; Siciliano and Urban 2018; Dye 2021a; Dye 2022). Less advertised has been the return of the World Bank to dam financing, and the role of American and European donors in supporting hydropower projects (Rex et al. 2014; Baird, Shoemaker, and Manorum 2015; Chen and Landry 2018). Additionally, the global commodity boom of 2003–2014 markedly improved fiscal conditions for state-led development and infrastructure building (Carmody 2011; Jepson 2019). Dams and their water and electricity supply services increase the state's capability and geographical presence whilst delivering amenities, and sometimes lucrative contracts, to key political constituencies, both individuals and sectors of society.

However, this leaves questions that are central to this special issue about the ideas influencing governments to return to dam building, specifically, and choose this technology and the particular projects that form their state-led programmes of development. In Africa, the resurgence of dam building is concentrated in politically illiberal countries, which are the subject of this special issue. We define them as states with the veneer of democracy, due to elections, parliaments, nominally independent judiciary and media, but characterised by de-facto centralised, dominant control by the ruling part of the state, economy, military and wider society, through informal and formal mechanisms. For example, the last 15 years have seen new large dams<sup>1</sup> in Sudan (Verhoeven 2015), Cameroon (Chen and Landry 2018), Ethiopia (Kraak 2012; Cuesta-Fernández 2015), Uganda (Gore 2017), Angola (Soares de Oliveira 2015), Rwanda and Tanzania. In the twentieth century, more authoritarian and illiberal governments were most associated with high modernist development missions featuring dams. That the dam resurgence is again concentrated in these countries with strident programmes of development underlines the importance of analysing ideological rationales.

This article departs from the limited, existing literature on the contemporary role of ideology in the 21st century dam resurgence. The case studies of Rwanda and Tanzania suggest that rather than a straightforward resurrection of high modernist ideas and policies, as suggested by literature on Sudan and Ethiopia, an important evolution of high modernist ideas has occurred. Rather than emphasising the infrastructure's symbolism and a focus on dams themselves as the harbingers of development, as was typical historically, both states dropped ideological symbolism and pursued dams as part of wider missions to install megawatts; electricity was the focus, not the dam. Moreover, both states have incorporated rhetoric and policies seeking to reform dam building. This involves some recognition of dams' vulnerability to the climate. Additionally, the private sector is now regarded as a key planner, builder and owner of infrastructure. Dam building in its resurgence consequently has a different constellation of rationales and policies to past twentieth-century high modernism.

That this new modernist ideological bricolage appears relatively similarly in both Rwanda and Tanzania presents a puzzle. The countries have markedly different post-colonial histories, with Tanzania's stability and political-party continuity contrasting with Rwanda's conflicts, including the genocide and its fast-paced, development-focused regime. Yet, this article demonstrates that both governments have a similar understanding of modernity and have adopted a similar set of rationalising ideas. This evidence, therefore, contributes to the special issues' purpose of detailing the ideology of a raft of illiberal states in Africa who have pursued strident programmes of transformative state-led development. This article uses dams as a tool to show that contemporary modernisation ideas form part of an evolved modernist ideology with important differences to the past, something captured in the introduction to the special issue and its *Illiberal Moderniser's Manifesto*.

The article traces this shift by treating ideologies with specificity. Analysis, following well-established scholars such as Freedon (1994), treats high modernism as involving identifiable core principles and applied policy ideas which can evolve over time. Again, this differs from the established literature on the dam resurgence that does not analyse ideologies with such specificity and precision. Therefore, as well as demonstrating the importance of ideological drivers behind major policy changes, the article asserts the usefulness of analysing specific idea-practices as this shows where they are, and are not, influential. Starting with a wider overview of the dam resurgence in Africa, the article draws on cases of Rwanda from 2003 and Tanzania, particularly under President Kikwete (2005–2015). The article begins by analysing high modernism and its influence on dam building and planning. Here, it makes an important advance as, although there are many studies connecting Scott's work to the infrastructure (Scott 2006; Kraak 2012; Isaacman and Isaacman 2013; Tischler 2013; Verhoeven 2015), none theoretically interrogate high

modernism as an ideology with core and applied ideas linked to specific dam-building practices. This theoretical understanding helps address some of the concerns with Scott's work, allowing a more specific assessment of high modernism's role and its co-existence with other strategic rationales. The article then analyses Africa's contemporary dam resurgence, particularly drawing on research in Rwanda and Tanzania. Whilst analysis here could have examined ideas of modernisation from below, its focus on the rationales for planning and building dams means that empirical material concerns national government and its ruling elites. Research involved over 100 interviews in Rwanda and Tanzania, primarily between 2013 and 2017 alongside reviews of policies, governmental reports and news articles. Interviews were held with government ministers and civil servants in ministries, energy utilities and state implementing agencies, alongside consultants, donor officials, the constructing dam-engineering companies and international financiers from the World Bank, and Indian and Brazilian governments. All interviews followed a semi-structured format and are anonymised here to institutional affiliation.

## **High modernism and its entanglement with dams**

### ***What does high modernism mean?***

James Scott (1998) coined the ideology of high modernism stating that it involves the simplified ordering of nature and society, informed by a self-confidence about the ability to rationally design development through scientific, technological processes. The ideology also includes a capable, interventionist authoritarian state and an accompanying prostrate civil society. Thus, for Scott, high modernism not only involved ideas about how to do 'development' but saw the rendering of development as apolitical, and the empowerment of science, rather a political act requiring the centralisation of power and ability to overcome democratic/civil-society pressures. This is particularly true when such 'development from above', occurring without the consent and inclusion of its subjects, entails at least short-term, detrimental impacts such as displacement or the reorganisation of populations and their livelihoods.

However, Scott's conceptualisation has been frequently criticised as too generalising. It tends to present the state as a monolithic and inflexible entity driven by one, internally uncontested view. In contrast, numerous case studies of grand development projects show significant degrees of reactivity and negotiation within the state and between the state and other interest groups and societal actors (Bähre and Lecocq 2007; Schneider 2014; Loo 2016). Moreover, although high modernist justifications may be present, this does not mean that the experience of a dam will singularly follow Scott's thesis. In the case of Ghana's Akosombo, project planners also inaugurated a substantive research programme whereby social scientists, ecologists and engineers were invited to research the impacts of the project, its reservoir and displacement of people (Miescher 2022). In addition, high modernist analyses tend towards an antagonistic view of the state versus the people. Conversely, numerous analyses (e.g. Ferguson 1999) demonstrate that many citizens have, at varying times, accepted their state's visions of progress and modernity by joining the celebration of large dams, for instance (Miescher and Tsikata 2009).

Such evidence calls for a more nuanced and precise theorisation of high modernism as a political ideology rather than a general experience of development. In this article, an ideology is understood as a set of conscious or unconscious idea-practices which collectively create a 'thought edifice' (Freedman 1994, 140) that legitimatises the 'doing of development' (Goodwin 2014, 28). In such definitions, ideology is understood to constitute specific beliefs and practices, the expression of which in discourse and action are understood to vary from person to person, and over time. Moreover, ideologies are not asserted as the sole explainer for policies or government actions. Rather, strategic factors such as personal enrichment or the maintenance of political

power are also important influences. This approach takes the ontological position that ideas do influence policymaking<sup>2</sup> whilst attempting to move beyond debates pitting idealist and materialist perspectives; it is more fruitful to ask how they co-exist, interact and change to shape individual policies, not describe experiences of development.

Working from Scott and other development theorists during high modernism's mid-twentieth century zenith (e.g. Lerner 1958; Rostow 1960; Pye 1976), this article conceptualises the ideology as involving two core ideas. In brief, the first core idea asserts a binary between the 'modern' and 'pre-modern', or 'traditional'. Modernity referred to industrialised societies where rational and secular culture triumphed over superstition, whilst the traditional society was primordial, following communitarian, religious and irrational cultures and behaviours. The second core idea expresses a triumphalist belief in science and *the expert*, implicitly situated in a state, to derive solutions for development. Thus, 'it was possible to conceive of an artificially engineered society designed, not by custom and historical accident, but according to conscious, rational and even scientific criteria' (Scott 2006, 6).

Stemming from these core principles sit an adjunct set of ideas that actors varyingly adopt, thereby, reflecting the diversity of an ideology's expression; not everyone espousing it will express it in exactly the same way. One adjunct idea can be summarised as 'modernisation as spectacle' (Bloom, Miescher, and Manuh 2014), the importance of aesthetically expressing the values of modernity, industrial technology and order. Thus, 'projects did not so much need to be efficient or modern, they had to look efficient and modern according to a legible structure' (Bähre and Lecocq 2007, 2). Another key idea is the assertion of development as linear, externally induced and teleological: countries will advance, primarily due to externally induced change derived by expert knowledge. Technology, meaning infrastructure and devices conceived in industrialised countries, become the main agent of change (Scott 1998; Mitchell 2002, 14–15; Gilman 2003, 39, 71). Modernisation theory proselytised by Rostow's stage growth model (Rostow 1960) is a prime exemplar, applying this linear thinking about progress to a proposed capitalist consumer endpoint. Taking this top-down, statist conceptualisation of high modernist ideology, the article turns to its application to dam building in the twentieth century.

### ***Justifying dam building in the twentieth century***

A rich literature examines the political power of dams and their intertwined role in particular states' formation. This stems from an understanding of the hydrosocial cycle and the inherent connections to, and centrality of, water to human society, whether through drinking water, hygiene, floods, transport, agriculture or power provision (Linton and Budds 2014). Although containing longer roots, (see on India Mosse and Sivan 2003), the literature primarily focuses on the twentieth century emergence of dams as a nation-building technology (Menga and Swyngedouw 2018). This includes dams' ability to increase the material power of the state through the act of building infrastructure in often peripheral areas and through dams' provision of drinking water, power generation and industrial and agricultural services (Kraak 2012; Swyngedouw 2015; Fantini and Puddu 2016;). It also features in a dam's ability to re-shape a country's geography through the provision of electricity and water. Swyngedouw (2015), for instance, demonstrates the role of dams in underpinning the economy of southern Spain and symbolically increasing the power of the state by connecting the nation through centralised infrastructure for the first time. These type of abilities can lend legitimacy to dam builders (Swyngedouw 2015; Menga and Swyngedouw 2018). Additionally, dams can bring financial advantages and provide services to various sectors of society. This evokes the so-called Iron Triangle of interests that mutually benefit from dam building (Ribeiro 1994). Verhoeven (2015, 265–266) describes this as an 'alliance between a hydraulic bureaucracy, which derives its prestige, power and



budget from the dams-as-development ideology, and powerful interests, ranging from capital-intensive farming interests and construction conglomerates to international financial institutions'. The increasing number of privately-owned dams boosts the materialist element of this triangle, as Atkins (2019) shows with Brazil's Belo Monte Dam that was implicated in the large federal government corruption scandal, Lavo Jato.

However, rather than seeing dams as exclusively driven by strategic interests, we can also examine ideological drivers for the infrastructure's construction. High modernism is typically associated with dams. They entail a scale of externally-induced change to biophysical systems that can enable high modernist visions for the complete reshaping of society on a blank slate (Scott 2006). Moreover, dams embody the aesthetic ideals of high modernism. Hydro-electricity personifies technological modernity whilst enacting the human-nature separation, 'man's superiority over nature' (Everard 2013, 60). Egypt's first, colonial-era Aswan Dam, described by Mitchell (2002), captures this in a near metaphor. Its initial purpose was electricity generation primarily for fertiliser production, but simultaneously, the dam curtailed the fertilising annual flood which also counters coastal erosion of the agriculturally rich Nile delta. High modernist ideas, therefore, rationalise the equation of a dam with development. As Everard (2013, 12) summarises '[dam] construction, in the eyes of many became synonymous with development and economic progress'.

### ***High modernist rationales and practices in dam building***

However, dams are not inherently modernist. Rather we need a detailed theorisation of what they involve. To this end, this section outlines specific idea-practices that justify dams.

#### *Imbuing dams themselves with development*

Dams' material and symbolic power allows advocates to assert that they are, in and of themselves developmental, capable of technologically inducing linear economic process towards modern, end-point society.

#### *Emphasising the spectacle*

The celebration of dams as the embodiment of development often results in the beautifying of dams (as in Greece's marble-clad Marathon dam [Kaika 2006]), their rhetorical praising (as in Nehru's 'temples of modernity' speech) and grand ceremonial openings, not to mention deliberate increases in their height (Menga 2015).

#### *Processes of dam building: Invisiblising impacts and empowering experts*

Whilst not the article's main focus, high modernism also rationalises a set of dam planning and construction practices. An explicit preference for industrial technology and human-made environments results in a narrow focus on a dam's generation of electricity and engineered water and irrigation services. Thus, a river's pre-existing services to rural livelihoods and ecologies are overlooked with such systems disregarded as backward and irrational. An integral element of this *invisiblising* involves empowering experts to undertake development with the presumption that their universally applicable apolitical knowledge could produce the best development path. Typically, dam-building states in the twentieth century, therefore, empowered a *technician's realms* (Dye 2020a), exclusively expert bureaucratic enclaves that are tasked with planning and constructing large-scale dams.



High modernism, therefore, creates a set of rationales for why states place dams at the centre of their development programmes, imbuing them with the power to establish new economies, societies and even citizens.<sup>3</sup> In Africa, there is a history of such high modernist rationales for dam building. Whilst first evident in colonial projects, such as Rhodesia's Kariba Dam (Tischler 2013) or Sudan's Nile agricultural schemes (Barnett 1977), high modernist dam building reached its zenith post-independence when a number of liberated countries believed that dams would cement their newfound freedom and achieve modernisation. Perhaps the preeminent example here is Ghana's Akosombo Dam, the pet project of independence-leader, President Kwame Nkrumah. He believed Akosombo's electricity would found an aluminium industry,<sup>4</sup> electrify the country and even support regional independence by providing power for neighbouring countries to develop (Miescher 2022). As Miescher writes (2014, 343), 'building the Akosombo Dam, Nkrumah sought to realize his dream of creating a modern ... African nation that would join the industrialised world shaped by the parameters of science and technology'. These examples, therefore, demonstrate how high modernism rationalised dams as the enablers of linear, technologically-induced transformation to an industrialised society.

### **An ideology for the dam resurgence?**

Notably some of the justifications from illiberal modernising countries in Africa for resurgence-era dams appear to follow this high-modernist mould. Ethiopia, especially between 2002 and 2015, was the premier 21st century dam builder in Africa, with the government viewing the infrastructure as central to its development plan (Kraak 2012): 'dams tangibly reaffirm the presence of the Ethiopian State ... its performance in terms of economic development and reconfiguring rural society' (Fantini and Puddu 2016, 108). The infrastructure is believed to be capable of underpinning the country's total transformation to an industrialised, high-income state and regional hegemon,<sup>5</sup> through cheap, bountiful domestic and internationally-traded electricity. The Grand Ethiopian Renaissance Dam (GERD) has featured heavily in government propaganda. As its name suggests, it is a key symbol for Ethiopia's future and often features beside former visionary, Prime Minister Meles Zenawi, in government posters (Cuesta-Fernández 2015). Moreover, Ethiopia completed, or is constructing, the large Gibe III and Gibe IV Dams, the Tana-Beles scheme and Africa's tallest dam, the Tekeze Dam. The regime, therefore, appears to focus on dams themselves as the transformative technology, capable of leapfrogging the country into a modern future in the style of key twentieth-century projects like Akosombo or Cahora Basa Dams (Isaacman and Isaacman 2013).

Dams take on a similar role for particular figures within the ruling Al-Ingez Sudanese regime. According to Verhoeven (2015), certain ideologues within the government imbue dams with state-building potential. Their electricity and irrigation functions are assumed capable of producing a new economic heartland and regime-supporting middle class. Focusing on dams themselves as the embodiment of development and capable of transformation seems to directly follow the high-modernist dam textbook. Not only are the dams *imbued with developmental potential*, but their *spectacle* is seized upon as demonstrative of progress, acting as flagships for the government's ambition. Ideological rationales are not alone, however. Verhoeven also analyses how dams fulfil Sudan's strategy of extraversion as elites use the infrastructure to solicit international investment, particularly from the Gulf States, using construction contracts to enrich themselves and their political supporters (Verhoeven 2016). Other illiberal modernisers are also prominent dam builders. For example, Angola has embarked on a large dam rehabilitation and construction programme as part of its wider infrastructure boom.<sup>6</sup> The flagship here is the Lauca Dam of 2096MW, one of Africa's largest-capacity electricity plants.

Not least, given the historical lineage of many project, the literature suggests that we could be seeing uniform repetition of the twentieth century's dam-building rationales and a reaffirmed belief in dams as simply equalling development. However, this article demonstrates that Rwanda and Tanzania complicate a simple assertion of high modernism's return. Despite important, and historically embedded differences between the countries, they place modernising power in electricity, rather than the dam, and largely overlook the infrastructure's transformative potential and ability to manipulate water. Furthermore, they have adopted a new idea of modernity, cloaked in the planning reforms, the notion of sustainable development and centrality of the private sector.

## **Rwanda and Tanzania's depoliticised 'drive for electricity, not dams'<sup>7</sup>**

### ***Rwanda's dam building in the megawatt mission***

A key focus for Rwanda's current regime is energy generation. Overall, on-grid capacity increased from 39.95 MW in 2003,<sup>8</sup> to over 200 MW today.<sup>9</sup> Hydropower is the most significant contributor to this energy-generation drive. Standing at an installed capacity of 41.95 MW until 2006, peak generation from dams reached 113.69 MW in 2020,<sup>10</sup> making hydropower the largest technology by installed capacity. The larger projects pursued by Rwanda originated in the twentieth century, with feasibility and design studies for Nyabarongo and Rukarara I Dams conducted in the 1980s, whilst Rusumo Falls Dam's first studies date from the 1960s (Mbaziira, Senfuma, and McDonnell 2005). After stalling or being shelved in the 1990s, the Rwandan Patriotic Front resurrected these projects. Following the first post-genocide election in 2003, the dams were the earliest projects to feature in the country's longer-term electricity plans (Minister of State in Charge of Energy and Communications and Government of Rwanda 2007; Rwanda and Infrastructure 2009). From 2009, Rwanda also pursued construction of dozens of micro-hydro projects.<sup>11</sup> After initially financing dams through the national budget, the Rwandan government received support from the World Bank, UNIDO<sup>12</sup> and European donors<sup>13</sup> to subsidise and de-risk micro-hydro plants' construction by private companies.<sup>14</sup> This involved signing Power Purchase Agreements between Rwanda's Energy Utility<sup>15</sup> and private investors, sometimes underwritten by the Ministry of Infrastructure (Mininfra). As a result, 43 hydropower projects are either under development or have been completed by 30 Rwandese and international companies (Government of Rwanda, REG, and GIZ 2016). Collectively this demonstrates a marked programme of large and small dam building by the Rwandan state and the placement of the private sector as a key actor implementing this programme.

This transformative development agenda in the electricity sector stemmed from Rwanda's grand ambition. In the 2000s, Vision 2020 and other 'master plans' envisaged an urbanised, economic hub in Kigali, with clean infrastructure and shiny skyscrapers evocative of Dubai. Fibre optic cables will connect the country with the future whilst technology and ordered farms and villages will develop rural life (Ansoms 2009; Reyntjens 2013). Albeit with historic roots, this arguably constitutes an updated 21st-century idea of modernity; the country will grow into a business hub, with high-skilled workers in gleaming urban spaces serving global corporates' East and Central African operations. Crucial to achieving this modernity is electricity: 'energy was one of the pillars' identified to achieve Vision 2020, explained a key official.<sup>16</sup> This is partly practical, stemming from a deficiency of energy generation. However, Rwanda's ambitions in constructing electricity generation far exceed existing or even future demand.<sup>17</sup> This is demonstrated by the 2012 'supply led, demand forecasts'<sup>18</sup> that asserted Rwanda would need 1000 MW by 2017. Although later revised to a mere 563MW, these aims are rooted in ideas that energy itself can create development, and will produce this imagined

progress. This was also demonstrated by the 2009 national policy asserting a causal relationship between energy and development (Rwanda and Infrastructure 2009, 3). The thinking here appears to follow a version of Say's Law: build electricity and demand will follow.

Rwanda's resource-poor, landlocked status led to the government's resolve to develop all potential resources, from highly-polluting peat fuel, to the world's first lake-methane plant. By 2017, Rwanda had installed 15 MW of solar, and 30.2 MW of gas,<sup>19</sup> 12.08 MW of peat and 57.8 MW of liquid-fuelled plants.<sup>20</sup> Additionally, under-construction plants will take installed peat generation to 95 MW and gas to 161 MW. As one Utility official stated, they had a 'mandate to look for power ... whatever resources are available'.<sup>21</sup> Therefore, the mere viability of hydropower sites became key to their inclusion in the country's national development ambitions. Rwanda, therefore, appears to express a depoliticised development consensus: more generation capacity is essential for development and justifies the pursuit of extreme targets needing all domestic power sources. Thus, the merits and impacts of generation technologies are relatively inconsequential. For instance, dams' ability to control water was incidental to the planning of Nyabarongo and Rusumo Dams (Dye 2016, 2020a). Thus, the government did not frame its dam building through an ideological lens that emphasised the infrastructure's spectacle, imbuing it with the power to leapfrog development or sculpt new modern landscapes through its control of water and generation of hydropower. This is illustrated by the Nyabarongo Dam's commissioning speech that principally focused on Rwanda's electricity-generation mission: President Paul Kagame presented the dam as a contributor to energy-sector aims, imbuing electricity, rather than the dam, with development.<sup>22</sup>

In contrast to cases of twentieth-century dams in Africa, high modernism, while present in Rwanda's wider development vision, plays an indirect role in justifying dams. It rationalises an understanding of development as linear, directly stemming from technology, in this case electricity. It is also present in the well-documented centralisation of key decision-making powers in the country (Reyntjens 2013; Jones 2014; Chemouni 2014; Behuria 2015), with a vanguard setting targets and experts empowered to deliver them. Rather, only its electricity potential was important. The lowered status of dams is further demonstrated by officials' assertion of hydropower technologies' limitations. This is particularly clear in references to dams providing reliable, all-year power. Planners stated that hydropower 'depends on the season',<sup>23</sup> or that '[in the dry seasons] some rivers close and some are useless'.<sup>24</sup> Officials even pointed out that this is exaggerated in run-of-river<sup>25</sup> designs that constitute the vast majority of the country's new or planned dams. For instance, the CEO of Utility consequently stated a preference for the weather-independent Kivu methane plant.<sup>26</sup> Although this did not stop the state's pursuit of dams, as generation was always the priority, it reinforced dams' lower symbolic status. Another important difference in Rwanda's dam resurgence is the state's adoption of the rhetoric, and some policies, of sustainable development. Firstly, this involved the creation of environmental regulation. The Rwandan Environmental Management Authority (REMA) officially began in 2005 but its establishment took time. It was only by 2010 that all infrastructure projects in Rwanda needed REMA clearance. One former senior Utility official asserted that 'it is tough ... even on a government priority project ... they want you to have ABC ... to show you are addressing [all their environmental requirements]'.<sup>27</sup> While this never prevented a project, it suggests Rwanda's intention to include some form of impact measurement and that minimal standards should be adhered to. In addition, the state asserts the importance of involving the community and practised this in the case of the Nyabarongo Dam whose early implementation stages included village meetings organised by local governments.

Overall, this suggests that the resurgence of dam building has new substance, even if those policies did not necessarily translate into fundamentally improved outcomes for the affected local livelihoods or ecologies. Such policies demonstrate engagement with international

policy discussions seeking to reform dam-building processes. Indeed, this is reflected in the policy for private firms to plan and own hydropower plants. These policies contrast with the state-led approach to planning and ownership in the high modernist twentieth-century era. Reasons for this could be ideational, due to a belief that these policies are the best way for Rwanda to achieve development. Alternatively, they could stem from strategic interests. Appearing to adopt international best practice helps Rwanda position itself as a ‘good-governance’ state, attracting international investors and maintaining good relations with Western donors.<sup>28</sup> Consequently, the discourse in Rwanda’s dam resurgence contrasts with the past dam era. This does not mean that Rwanda has adopted the full-scale of reforms advocated by the World Commission on Dams, or markedly reduced socio-environmental impacts. In fact, research by the author suggests the opposite (Dye 2016, 2020a). However, it is significant in demonstrating the presence of a different type of modernising ideology and a more nuanced, adaptive state engaged in international policy norms.

### *Tanzania’s electricity drive and return to dam planning*

Tanzania differs from Rwanda in many ways. The country has a prominent history of high modernism. Founding President Nyerere was world-renowned for asserting an African socialist ideology, *Ujamaa*. The original conception of *Ujamaa* celebrated smallholder agriculture, village-level cooperation and valued informally-codified local knowledge (Schneider 2014). However, whilst adopting these ideas, Nyerere’s government also pursued a programme of rapid, large-scale modernisation featuring mega-infrastructure projects, the introduction of technology and sweeping socio-economic reorganisation exemplified by the villagisation policy (Coulson 2013; Schneider 2014). Moreover, in the field of infrastructure, the Tanzanian government adopted many of the key tenants of high modernism, not least through the construction of large dams, most notably the Great Ruaha Hydropower Project which was hailed as a deliverer of development (Hoag and Öhman 2008). However, Nyerere’s party (now Cha Cha Mapinduzi, originally Tanganyika African National Union) continues to rule today.

Thus, Tanzania has not had a recent ‘blank slate’ moment like Rwanda where, after a violent rupture, an incoming regime arrived in power with near-total political control and with a consequent ability to re-make society and the economy. This moment is also seen as key to the ruling parties’ ability to dominate politics and bend countries to the pursuit of transformative development in Ethiopia and Angola (Terrefe, Buire 2022). Moreover, after the socialist, modernising agenda of Nyerere, the CCM moved to implement pro-market economic reforms in line with the 1980s structural adjustment programmes (Coulson 2013). This transition to capitalism also simultaneously involved a reduction of rules separating politicians from business ventures and accruing private wealth (Lofchie 2014, 199). As Gray (2018) analyses, this fuelled contests between rival factions within the ruling party for control over parts of the state, given the patronage, corruption and embezzlement opportunities such political power entailed. By the Presidency of Kikwete (2005–2015), a fragmented ruling elite had become the status quo, which in turn accelerated the ‘rusting’ of government institutions and decreased the state’s effectiveness and coordination of timely decision making (Gray 2018; Pedersen, Jacob, and Bofin 2020).

Despite these contrasts with Rwanda, Tanzania embraced a modernist state-building mission in the 2000s that shares characteristics with this volume’s *illiberal modernisers*. Underpinned by a favourable period of economic growth, President Jakaya Kikwete’s government (2005–2015) started a development programme that grew in his second term. This involved economically interventionist efforts aimed at driving industrialisation (Gray 2018, 181–185), including ambitious corridor development schemes where grand infrastructure projects, including roads, new and extended railways and an oil pipeline, were key tenants of development (Ministry of Industry

and Trade 2011; Enns and Bersaglio 2020; Sulle 2020; Dye, Schindler, and Rwehumbiza 2021). Such ambitious visions for development and attempts to instil a centralised implementation culture were furthered by the 2012–2015 Big Results Now initiative. The energy sector was a key focus where substantive effort was put into electrification, orchestrated by the new Rural Energy Agency, a relatively effective enclave somewhat insulated from government ministries and political disruptions. It has a ring-fenced budget from fuel taxes that is topped up by donors and government (Kapika and Eberhard 2013; Muhongo 2016).

Additionally, under Kikwete, there was a return to planning large-scale state interventions and the construction of energy generation. Power Sector Master Plans (PSMPs), starting in 2009, and updated in 2012 and 2016, demonstrate a return to long-term planning and large-scale ambition. They involved the resurrection of a raft of formerly stalled dams, conceived to be privately financed through a build-own-operate model. A river basin organisation created in the height of the past-era's dam-building boom, Rufiji Basin Development Authority (Rubada), secured MoUs to build Iringa (K-Water 2013), Mpanga (Sinohydro Corporation Ltd. and United Republic of Tanzania 2010) and Mnyera Dams (Construtora Queiroz Galvão 2012). These companies completed further studies on feasibility, design and impact assessment. Rubada also resurrected the flagship Stiegler's Gorge Dam, which at 2100MW would have made it the joint-largest dam in Africa by installed capacity.<sup>29</sup> With the appointment of a new chairman of Rubada in 2006 and high-level diplomacy by the Tanzanian government with Brazil,<sup>30</sup> an MoU deal was eventually secured with Odebrecht in 2012. Odebrecht then furthered the project preparation with a feasibility study and an initial EIA (Odebrecht 2013). The Ministry of Energy and Minerals (MEM) also pursued the 358MW Ruhudji Dam, with negotiations nearing final approval in 2012.<sup>31</sup> MEM also advertised the Rumakali Dam (525MW) and paid for design studies by Studio Pietrangeli.<sup>32</sup> Rusumo Falls Dam, signed-off by national governments in 2012, achieved World Bank funding in 2013 and started construction in 2016 (Dye 2020a). Funding from the US-led Millennium Challenge Corporation brought the Malagarasi Dam close to implementation. However, evidence that the dam would cause the extinction of a snail species delayed construction (Hovland, Bingham, and Nash 2010). Finally, the Kakono Dam (87MW) won African Development Bank finance in 2016. The majority of these dams were first identified in the 1980s, although Stigler's has earlier roots in the colonial period (Hoag and Öhman 2008).

These efforts accelerated with the late President John P. Magufuli (2015–2021), whose rule involved increasingly centralised power that was used to increase the resources of the state and coordinate its spending on a raft of grand infrastructure projects, from railway lines, gas pipelines, industrial factories and bridges (Collord 2018; Enns and Bersaglio 2020; Paget 2020; Pedersen, Jacob, and Bofin 2020). For Magufuli, the central energy project was the Stiegler's Gorge Dam, which was renamed the Nyerere Dam and embarked on as a state-led project, apparently without international financing. Given that the dam should cost between \$6 and 10 billion, depending on adopted mitigation measures and overruns, it is uncertain whether Tanzania has the budget to complete the dam (Hartmann 2019). However, abandoning earlier plans for private ownership and pursuing this and other megaprojects demonstrates the degree of centralised power and coordination that President Magufuli was increasingly able to deploy during his tenure.

However, like Rwanda, hydropower was not the only pursued energy-generation technology. Gas-fired power plants were Tanzania's primary turned-to energy source, especially under Kikwete, and gas-fuelled turbines were the only large power plants to be bought online in the last decade. New gas plants include the privately-owned Songas<sup>33</sup> and government-owned plants at Ubungo and Kinyerezi (Kapika and Eberhard 2013; Pedersen, Jacob, and Bofin 2020; Dye 2021b). Beyond gas, Tanzania established agreements to develop its coal reserve.



Plans envisaged two government-owned power stations at Kiwira and two public-private partnerships (Jacob 2017). Collectively, this financing, planning and deal-making represents a significant change in state direction of the energy sector, reversing the deterioration experienced under the structural-adjustment austerity between 1995 and 2005.

Significantly though, the range of energy projects pursued demonstrates that, unlike in Tanzania's history, dams are not the sole turned-to electricity-generation technology. Moreover, as in Rwanda, their symbolism, or claims to unique modernising potential, were not trumpeted, at least not under President Kikwete.<sup>34</sup> Dams were again rendered a tool to achieve megawatts. Officials recognised that 'attention (on the energy sector) very high (there was) ... a serious focus on power generation in the country'.<sup>35</sup> Therefore, the 2009 PSMP and its updates 'include everything that is possible, all the resources we have'.<sup>36</sup> With such ambition, dams are seen as an inevitable inclusion. As two senior Ministry officials stated, 'if you have 4.7 gigawatts of hydropower and these targets, up to 10,000MW, have to include hydropower'.<sup>37</sup> The focus was, therefore, on increasing generation capacity. In the mid-2000s, this stood at around 500MW but the 2009 PSMP called for an increase of 4380MW in two decades, which increased to ~7500MW in a 2012 update. Moreover, the Big Results Now programme outlined a 10,000MW target by 2025, a figure which officials at the Utility, Tanesco, and Ministry of Energy and Minerals (MEM) frequently cited in interviews.<sup>38</sup> Like Rwanda, the ambitiousness of these targets indicates an imbuing of electricity with developmental power. They go far beyond the amounts needed to attract investors or prevent dry-season power failures. Indeed, many interviewees espoused high modernist rationales to justify the targets, claiming that economic development and, thus, energy would inexorably follow increases in electricity. Equating development and electricity, one senior official stated, 'you can't talk of development without power', even quoting Lenin's 'communism equals soviet power plus electricity' maxim.<sup>39</sup>

This is significant, given the financial risks involved with such an ambitious programme. The targets worried donor officials and external consultants as their analysis suggested electricity demand would not materialise to meet newly installed generation, something that entails significant debt and/or capacity charges. As one official stated, the Energy Ministry 'has a strong focus on megaprojects. We are trying to describe a more realistic approach'.<sup>40</sup> This included lobbying the Tanzanian government to accept a lower demand figure of 2260MW by 2020 as was initially predicted by the 2016 PSMP model. However, Tanzanian officials reportedly refused to back down, causing, 'additional demand factors' to be added, changing 4889 to 5176MW.<sup>41</sup> This episode underlines Tanzania's apparent faith in electricity to create demand, something underpinned by high modernist rationales imbuing technology with development and assuming a linear idea of demand creating supply. This also suggests consensus among politicians and civil servants about what modernisation means in Tanzania where electricity is a central generator of the country's modern future. The role of citizens here is only as consumers of the state's electrification and development policy. They may be direct or indirect 'project affected people' but even then, they are not given a political say.

However, as with Rwanda, Tanzania adopted new reformist policies, especially under President Kikwete, which differ from its high modernist past. One example of this are the new environmental management institutions. As of 2004, impact assessments are mandatory and examined by the National Environmental Management Council (NEMC) that, for large hydropower, require consideration of upstream and downstream impacts and, unlike Rwanda, a public hearing with relevant stakeholders.<sup>42</sup> This allows officials to assert that dam-construction follows international norms, accounting for negative socio-economic impacts. Additionally, Tanzania's Water Ministry adopted a new institutional structure of water-basin committees made up of government officials and water users. This implicitly recognises that, far from the consensus of imposed high modernism, water infrastructure decisions ignite politics. To some extent, this is

embedded in the Integrated Water Management policy discourse heralded at events like Africa Water Week, hosted by Tanzania in 2016. These policies entailed limited change to dam planning and implementation as downstream changes were not considered. For instance, President Magufuli pursued the Julius Nyerere Dam despite international warnings of its effect on livelihoods and the Selous World Heritage Site. However, that these institutions and discourses exist contrasts with twentieth-century high modernist dam-building as it considers mitigation measures and compensation, therefore, implicitly validating the lives of smallholder farmers. Additionally in Kikwete's tenure and during the first years of Magufuli's presidency, a number of Tanzanian politicians, particularly the Minister of Energy, Sospeter Muhongo, between 2005 and 2016, expressed strong public criticisms of dams (Makoye 2015).<sup>43</sup> Pre-2017, interviewed officials frequently reported a 'focus on generation from natural gas',<sup>44</sup> as it 'does not depend on the weather'.<sup>45</sup> The 2015 National Energy Policy (United Republic of Tanzania 2015) states: 'challenges in developing hydro systems include vulnerability to hydrology and climate change; capital intensive; relocation and resettlement of affected persons; long lead times; inadequate hydrological data; and conflicting and competing land and water uses between various sub-sectors of the economy' (United Republic of Tanzania 2015, 12).

Thus, in the last decade, critiques of dams have at times become mainstream. In another contrast to the twentieth century, under President Kikwete, international private companies were the designated planners, builders and owners of most new hydropower projects. As with Rwanda, these reforms are partly adopted because of the country's aid dependence (Coulson 2013; Lofchie 2014), but also because of the beliefs of politicians and civil servants who are engaged in global debates about the environment and private sector in development. As one senior official explained '[dam] projects are not working in a vacuum. [There are] standards, international standards you have to meet ... if you want to develop a project, you have to think about [social and environmental areas]' (United Republic of Tanzania 2015, 12). Overall, although there are contrasts between the Kikwete and Magufuli periods, this evidences a departure from past high modernism. For many senior politicians ruling the country over the last two decades, dams are not considered capable of bringing development themselves, but rather that power has transferred to electricity. Equally, to varying extents, more critical discourses have become mainstream, and policies of mitigation, compensation and environmental management exist.

### **The role of high modernism in the dam resurgence and the ideology of the illiberal state builders**

In conclusion, this analysis generates two primary contributions. Both are based on the analytical premise that ideology should be treated with specificity. Conceptualising an ideology's core and applied ideas enables detailed understanding of where it is, and is not, present, but also illustrates how they evolve over time and amongst different actors. This more precise treatment of ideology also supports analysis of the equifinality of ideas with strategic interests, clarifying that ideologies influence policies, rationales and beliefs, rather than describing experiences. Furthermore, especially with the case of Tanzania, the article demonstrates that the state should not be treated monolithically as it can encompass disagreements and contradictions.

This theoretical foundation underpins the analysis showing the evolution of high modernism. The two diverse case studies show that, rather than focusing on dam infrastructure itself as transformative, as happened in the twentieth century, ruling elites tend to see electricity as the prime policy goal. Dams' functions in controlling water and transforming valleys were largely overlooked, with the infrastructure reduced to the status of one of many technologies fulfilling megawatt missions that seek to increase power generation. High modernism, therefore, played a more



indirect role in justifying the resurrection of dams in the 21st, rather than the 20th, century. They inspired a broader national vision of leapfrogging into a developed, urban future, produced linearly by electricity. Evolution in both state's modernist ideology is further demonstrated by the incorporation of critiques about dam's developmental efficacy, their vulnerability to drought, and negative impacts. Ideas about sustainable development that implicitly value the livelihoods of smallholder farmers are now also mainstream: people previously dismissed as backward and in need of transformation are now given compensation, or even support for re-establishing their livelihoods. Moreover, the use of private-sector infrastructure models indicates a change in the envisioned role of the state in delivering development, with companies becoming increasingly key to delivering state-led development missions, including dams. Overall, this suggests a different ideological drive to the 21st century dam resurgence, with evolved high modernist ideas standing alongside more reformist policies. However, this change is not universal. Discussion of Ethiopia's dam building above, for instance, shows a far stronger aggrandisement of mega-dams in the state's propaganda.

This leads to the second major contribution of the article, which works with the special issue to conceptualise the ideology involved in 21st century modernising programmes of state building. Analysis here fleshes out the overview of the *illiberal modernisers'* development ideology, outlined in the introduction of the special issue. It strengthens that introductions' case by detailing two different regimes with contrasting histories and periods of markedly different governmental characteristics, involving fragmented versus pyramidally-centralised power.<sup>46</sup> This 'manifesto' of ideas has a strong historical lineage, with ideas as well as projects, resurrected from the past. In particular, these include a belief in the ability of technology to linearly bring progress following Say's law: build it and demand will come. Here, this logic rationalised the discounting of empirically led demand predictions and the full-scale pursuit of all available power-generation technologies. Additionally, citizens are treated by the state as passive recipients, with technicians taking a central role in policy design and implementation. The article also demonstrates the contemporary nature of Rwanda and Tanzania's modernisation programmes, with both governments embracing more recent norms around sustainability and the empowerment of the private sector, which chimes with donors but also global policy fora that both countries' ruling elites actively engage in. Thus, electricity takes centre stage in visions of the future, with progress often delivered by the private sector to (at least publicly) declare standards of 'sustainability'. Consequently, whilst acknowledging the twentieth-century history of contemporary dam building and modernising ideologies, the case studies of Rwanda and Tanzania demonstrate an evolved version of high modernism that rationalises dam resurgence and informs visions and implementation of strident illiberal development programmes today.

## Notes

1. Meaning dams with walls of over 15 or impounding over three million cubic metres.
2. Demarking this study from psychological exercise of finding 'what people really think'.
3. Examples include Mozambique and Rhodesia (Isaacman and Isaacman 2013; Tischler 2013).
4. Imagined, essentially, linearly, depicted in propaganda films like 'a river creates an industry' (Miescher 2014).
5. Through regional electricity-trade.
6. Described by (Soares de Oliveira 2015) or Bure (*this issue*).
7. Paraphrased, Interview, Dam Engineer, Rwanda 2015.
8. Although the majority was non-functional.
9. Taken from official Rwanda Energy Group statistics.
10. Author's calculation using government statistics.

11. Micro-hydro being defined in Rwanda as under 10MW.
12. United Nations Industrial Development Organisation.
13. Belgian and German.
14. Supporting 20 of the 39 hydropower projects under the RPF (Government of Rwanda, REG, and GIZ 2016).
15. Eventually called Rwanda Energy Group.
16. Interview, Senior Politician, Rwanda, 2016.
17. The author demonstrates this more extensively elsewhere (Dye 2020b).
18. Interview, Consultant, Rwanda, 2016: Implying economic demand did not factor only economic ambition.
19. From Lake Kivu.
20. Author's calculation based on official government statistics.
21. Interview, Utility Official, Rwanda, 2015
22. Published by Kigali Today; accessed in 2017 ([https://www.youtube.com/watch?v=hE-WFyl4Opg&ab\\_channel=KigaliToday](https://www.youtube.com/watch?v=hE-WFyl4Opg&ab_channel=KigaliToday))
23. Interview, Former Senior Official, Mininfra, 2016.
24. Interview, Official, Utility, 2015–2016.
25. Because run-of-river designs do not include storage capacity.
26. Interview, CEO, Utility, 2016.
27. Interview, Former Senior Official, Mininfra, 2016.
28. Key given Rwanda's ongoing aid dependence (Reyntjens 2013).
29. Alongside Aswan and Lauca Dams.
30. Involving visits by the Tanzanian Foreign Minister, Prime Minister, Minister of MEM and President and Brazilian Ambassador, Minister of Energy and President.
31. Interview, Senior Official, Dam Construction Company, 2015.
32. According to their website, they conducted a ESIA and Feasibility Design (Studio Pietrangeli 2018).
33. Songas started generation in 2004, expanding in 2006 and 2007.
34. President Magufuli has emphasised the Stiegler's Gorge more singularly.
35. Interview, former senior CCM official, Tanzania, 2016.
36. Interview, senior official, MEM, 2016.
37. Interview, senior officials, MEM, 2016 and reflected in interviews with Tanesco, 2015–2016.
38. Interviews, MEM; Tanesco, 2015–2016.
39. Interview, Tanesco, 2015.
40. Interview, donor involved in PSMP, 2016.
41. Interview, Tanzania, 2016.
42. Interviews, Junior and Senior Officials, NEMC, 2016.
43. Sospeter Muhongo, Inaugural Speech, Sustainable Energy for All Launch Event, July 2016; Interview with Donor Agency Official (2016) and private-sector officials interviewed in London, Dar-es-Salaam, Brasilia and Kigali, (2015–2016).
44. Interview, Senior Official, Tanesco, 2015.
45. Interview, Officials, MEM, 2016.
46. At least under President Kikwete's tenure.

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