

Social Outcomes from Fossil Fuel Extraction: Examining the Impact of Modern Projects in Africa:

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Abstract: This paper investigates historic trends of financing for fossil fuels in Africa. Several case study analyses are performed, overviewing leading financiers and recent projects across the oil, gas and LNG sectors. Each study highlights international, domestic, and civilian perspectives on the economic, social, and environmental ramifications and benefits of each project. An analysis of literature relevant to each topic collectively finds that there are benefits to fossil fuel projects both proposed and realized. However, many of these positive externalities can be achieved through cleaner, alternative sources of energy generation and do not outweigh the reported downsides.

Introduction:

Increased global awareness of climate change has promoted the goals set forth by the Paris Climate Agreement of reducing GHG emissions and remaining 1.5°C below pre-industrial temperatures. Yet, African countries remain an epicenter of several internationally funded fossil fuel development projects. In fact, between the commencement of the Paris Climate Agreements in 2016 until 2021, roughly 900 fossil fuel projects were either under construction or in operation across 38 countries within the continent (Banktrack). Projects during this period of rampant fossil fuel development were financed by primarily (61%) non-African private companies and public governments (Banktrack). Their involvement extends to various project categories including coal, gas, and oil extraction as well as infrastructure development.

Despite such projects being majority owned and financed by non-African corporations, the millions of people living in extraction regions disproportionately bear the consequences of sustained fossil fuel generation and still suffer from high levels of energy poverty as approximately 80% and 45% of crude oil and natural gas are exported instead of re-invested domestically(Baskaran). The extent of this domestic energy poverty is underscored by the 43% (600 million) of the global population who suffer from insufficient access to electricity(IEA).

Regardless of these socio-economic shortfalls, foreign governments, corporations, and developmental institutions often rationalize continued financing based on the goal of promoting local African development through the creation of jobs and improved energy access. Thus, ambiguities about the net local benefit or downsides of such projects must be clarified before future investments (or divestments) follow.

Thus, by examining 4 distinct projects between 2016 and 2021, this paper will explore the pros and cons of fossil fuel development projects in predominantly West, East and Southern Africa, assessing the impact of several spillover effects such as the creation or dissolution of jobs, immediate environmental impacts, and how fossil fuel projects and their subsidies impact the progression of renewable energy efforts on the continent. Specifically, we also plan to assess scholarly discourse on currently financed and operational projects and those proposed but awaiting approval. By investigating competing narratives and findings on distinct projects, our analysis will help determine whether there exist any benefits to the people living in countries where fossil fuel investments are taking place. The following sections will first contain a brief, macro-level financial overview to better contextualize the scale of fossil fuel investments in Africa. Subsequently, isolated case study overviews of these 4 keys projects, with particular

focus on the country in which they are located, its primary sources of funding, and an overview of economic, social, and environmental outcomes. The paper will then pivot to briefly comparing the extent of differences between economic, social, and environmental impacts between countries. Furthermore, this comparative analysis will assess local government policy and management responses to some of the potentially adverse impacts these projects have had. Using these findings and arguments, a discussion of the sustainability and ethics of these projects will follow, including recommendations for alternative, renewable energy transitions in Africa.

Financial Overview:

Between 2016 and June of 2021, \$49.8 billion has been invested into 58 separate fossil fuel projects. \$20.7 billion was funded by mostly Asian, European, and North American banks (Banktrack). Interestingly, the amount of private-sector project financing from African Banks is on the lower side; only \$29.1 billion of funds was sourced from private-sector financing and of this amount, \$4.3 billion was provided by multilateral, predominantly African developmental banks, such as the African Development Bank. The remaining \$24.8 billion originates from a mix of public and private national financial institutions.

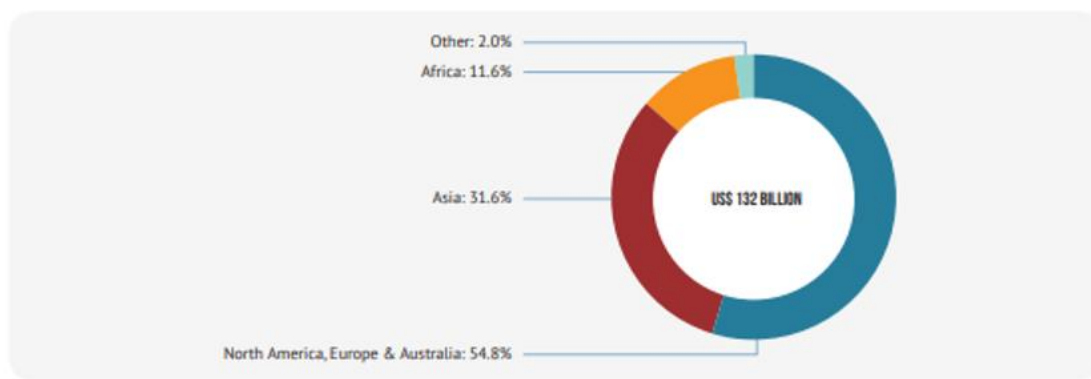
By continent, Asia dominates the public sector, constituting 57.2% of financing, with Europe and North America jointly coming second at 25.7% (Banktrack). This finding is evident when investigating the specific companies involved and seeing most of both the commercial banking financing and private-sector financing are indeed Asian institutions. Some popular companies include the Bank of China, and the Japan Bank for International Cooperation.

When looking at the specific allocation of funds, \$82.5 billion has been directed to general-purpose corporate loans and underwriting bond issuances for fossil fuel companies

compared to specific projected focused financing (\$49.8 billion). This form of financing is dominated by European, North American, and Australian institutions like JPMorgan Chase and Barclays who comprise \$56.8 billion or around 68.8% of this \$82.5 billion spent from 2016 to 2021(Banktrack). Asia takes up the next most amount with African institutions coming in third.

Table 1:¹

FIGURE 14: OVERALL PROJECT & CORPORATE FINANCE BY REGION BETWEEN 2016 - JUNE 2021
FOR 58 PROJECTS AND 24 COMPANIES SELECTED FOR THIS REPORT



Looking holistically at financing since the Paris Climate Agreement, combining direct project financing (\$49.8 billion) and general corporate financing (\$82.5 billion) shows that \$132.3 billion has been given to fossil fuel companies and projects in African regions. Furthermore, much of this financing for fossil fuels in Africa comes from the Global North. Even though the China Development Bank is the top financing institution, North American, European and Australian institutions still take up 54.8% of all project and corporate financing between 2016 and June 2021.

Case Studies:

¹ Banktrack. "Fossil Fuel Financing in Africa." Banktrack, ©2023 BankTrack, www.banktrack.org/download/locked_out_of_a_just_transition_fossil_fuel_financing_in_africa/07_md_banktrack_fossil_fuels_africa_rpt_hr_1.pdf. Accessed 10 May 2024.

Project 1: Medupi Coal Plant

One important project in Africa is the Medupi Coal Plant Station. Based in South Africa's province of Limpopo, this plant serves as the fourth largest coal-fired plant in the world and the world's biggest dry-cooled, coal-fired power station (Medupi). Originally built by Eskom, South Africa's nationally funded electricity supply commission, the station possesses 6 units that together generate 4.8 GW of electricity. This ongoing project was driven by South Africa's historical precedent of power outages in the mid 2000s, leading to construction beginning in 2007 and reaching full operational capacity in 2021. Moreover, its location on Naauwontkome farm is motivated by the 40% of all South Africa's coal deposits being found in the surrounding Waterberg district. To date, the plant has costs over roughly \$8.7 billion dollars, and original investors included the World Bank, and the African Development Bank contributed a total of \$3.05 billion and \$2.6 billion respectively (Sguazzin,). Furthermore, in 2009, the AFDB approved a \$1.1 billion loan for the acquisition and installation of boilers and turbo generators which at time was the largest sanctioned loan in South Africa and was accompanied with a sovereign guarantee from the South African government (Medupi). 1.5 billion of the World Bank's funding consisted of a 2010 loan 29-year which included the stipulation of adopting cleaner technologies.

Though a publicly developed project, the Medupi's construction and operation has been managed privately, in the form of two contracts award to Hitachi Power Europe and Alstom Power South Africa, international and domestic energy infrastructure companies. Many smaller scale subsidiary manufactures and energy companies were also involved however, these two specific contracts were the largest recorded in Eskom's history totaling over \$1.78 billion USD and represent the largest overall contribution to its current form (Medupi). On one hand, Hitachi

was responsible for off-site plant design, the supply of high-grade, vital components, and plant supervision. On the other hand, Alstom's (now a subsidiary of GE) contract was awarded to supply medium-voltage switchgear units² for the plant. Alstom are also responsible for integrating steam turbine and turbogenerator packages for the plant.

There are vastly differing perspectives about the net impact of the Medupi Coal Plant. To best understand its impact, an analysis of socioeconomic, as well as environmental outcomes are necessary. Due to limited data availability about these types of projects, reaching conclusions about this project's impact involves looking closely at intended and actual outcomes, by relying on historical records, the perspectives of civilians in the neighboring areas, as well as the companies who spearhead the plants development.

The construction of Medupi has resulted in a mix of locally positive and negative impacts in the short and long-term. Because Lephalale, the region in which Medupi is located is largely rural, they were many perceived benefits of its construction, not only because of increased access to electricity globally, but also due to the positive externalities that come with rural development. Nyembe et al underscores sentiment from supporters of the plant, highlighting how Wayne Derken, the President of Lephalale's Chamber of Commerce, projected the plant to trigger an economic boom of roughly 30 years at the time of its approval, which was expected in the form of creation of 17,000 jobs. The implications of these expected effects were significant as energy

² “Electrical [switchgear](#) regulates, protects, and isolates a power system with a variety of controls housed in a metal enclosure. It's a vital system in industries that experience electrical faults or those that need to regularly de-energize equipment for maintenance, such as industrial environments and electrical utilities”(What).

poverty, which was already prevalent in much of South Africa, tends to disproportionately affect rural regions where electricity infrastructure is far less developed.

Moreover, there was significant infrastructure development in Lephalale, primarily in the form of rapidly developed consumption infrastructure including a \$170 million shopping mall, banks, and car dealers. Aside from commercial real-estate development, there was also significant residential real estate development, heavily prompted by the rise in urban-rural migration. In fact, in Lephalale alone, Medupi supported the construction of “25,000 houses to the value of R2 billion that were constructed over a period of 3 and half years”. Additionally accompanied by their construction was the creation of local businesses to facilitate residential life including “catering, laundry, transportation and labor camp accommodation” (Nyembe). However, there is evidence that residential infrastructure has not been able to keep up with influx of new residents, primarily shown through rental properties whose prices had increased to over \$1,080 USD for houses and nearly 500 USD, for properties on informal settlements (Nyembe).

But despite these optimistic expectations, we find that such externalities did not ultimately extend to all people in the region. In a report by Faku et al., we find that while a boost in employment takes place, an unsatisfactory number of these positions were being filled by locals. This sentiment is expressed in a 2017 anonymous interview with local business owners in Lephalale who shared a common sentiment that, “business opportunities and key positions presented by Medupi were grasped by outsiders rather than the local residents of Lephalale” (Interview). Here, the influx of new businesses effectively leads to the sentiment that pre-existing local companies did not possess the reputation and skills that contractors from multi-national companies had. Thus, the construction of Medupi was expected to incite partnership

between existing small companies, and larger new companies, resulting in the transfer of skills and human capital needed for locals to succeed in this new economy. However, there was rather an increase in competition for these opportunities, and local companies were rarely granted employment contracts after persistent protesting. More evidence of an economic boom is exemplified through rising short term municipal rates. Historically, short-term growth is characterized by long-term debts and public debts after mega events. In Lephalale's case, we observe that the estimated budget deficit in 2018 was \$210 million, compared to the \$75 million surplus approximated only three years prior in 2016(Interview as cited in Nyembe).

Besides the economic costs associated with the plant, there are also social and environmental costs argued by advocates of clean energy. It is estimated that it causes “364 deaths per year, as well as 453 cases of chronic bronchitis among adults and 1,552 among children and therefore considered Eskom’s most lethal power station(Banktrack). Even with increased electricity generation from the plant, there are still power shortages that the plant has not been able to help. Furthermore, environmentally, the plant places more pressure on water resources in a region that is already scarce in water supply and as a result, it is reported that it will have negative impacts on local agricultural activities. Also, an estimated 30 million tons of CO₂ will be released into the atmosphere from this plan as reported in Banktrack.

Project 2: the Offshore Cape Three Points (OCTP):

The Offshore Cape Three Points (OCTP) project is an integrated oil and gas project off the coast of Ghana. It has a significant impact as its reserves are expected to “meet the demands of Ghana’s thermal power plants for the next 20 years”(Offshore). And in fact, OCTP is the largest contributor of thermal power in Ghana. In a country where 98% of all thermal power is

generated by gas, 50% in 2021 was generated by OCTP. The project costs ~\$7.3 billion USD with funding (in the form of debt-financing and foreign direct investment) from a collection of European and Asian institutions and commercial banks such as UK Export Finance, the International Finance Corporation (IFC) and the Bank of China. Outside of debt-financing, Italy's ENI, holds a majority stake in these projects. Moreover, the project is intended to fuel over 1000 megawatts of electricity. The project was prompted by the discovery of gas reserves in Cape Three Points Peninsula, and the development of fields to support this project began in 2015. Subsequently, oil production began in 2017 and peaked at 80,000 barrels per day in 2019. Like Medupi, operational activities, and supervision of systems of production were carried out by privately-owned energy infrastructure companies. Specifically, the FPSO vessel was leased to Yinson Holdings in 2021 for a value of 2.5 billion dollars for a contract over a 15-year time span. While understanding the impacts of the Medupi coal plant was heavily reliant on individual testimonials, separate papers by Daniel Manu and Debrah et al. employ a theoretical framework to best quantify the impacts of the Offshore Cape Three Point. While their research and ultimate determinations of these oil projects are extensive, this paper will be focusing on 3 key characteristics to best capture economic, social, and environmental impacts. To preface, these papers include a variety of methodologies for data collection including, field Notetaking, observations, questionnaires, seminar participation and documentary analysis. Their overall findings can be summarized to be negative, mainly due to the concept of the "resource-curse", or declining national standards due to dependency on a single natural resource and reducing investments in other sectors such as investments or manufacturing. Preliminary econometric findings from Debrah's study showed that as oil rents increased after 2016, when OCTP began operations, there was also a related increase in GDP: "The appreciation in GDP growth is

attributed to the patterns of changes in the percentage share of oil rents accruing to the economy of Ghana” (Debrah).

However, when examining the impact on local communities it is hard to deny to an immediate impact on the lucrativeness of fishing. Manu notes that after a fishing ban on exclusive zones now being used for oil extraction for OCTP, there was a net value decrease in assets a fisherman owned. 20% of questionnaire respondents reported before than ban reported owning at least \$10,000 Cedi of assets, but after the ban, this metric dropped to 8%. The interviewed fishermen explained that they had to sell some of their assets to make a living thus making fishing a less rewarding career in the Cape Three Points region.

Table 2: Value of Fishermen Assets³:

Value of total assets (in Ghana Cedi)	Respondents		Percentage difference
	Before ban on fishing	After ban on fishing	
1,000-3,000	4 (16%)	7 (28%)	12%
4,000-6,000	9 (36%)	12 (48%)	12%
7,000-9,000	7 (28%)	4 (16%)	12%
Above 10,000	5 (20%)	2 (8%)	16%
Total	25 100%	25 100%	

Furthermore, according to field surveys, the authors found that 36% of respondent fisherman had a net income of between 7,000 and 9,000 cedis, but that after the ban, only 8% of local fisherman recorded incomes in this range. Rather, there was a shift in incomes in the 1000

³ Manu, Daniel Arnold Kwesi. “The Emerging Oil Industry in Ghana : Socio-Economic and Environmental Impact on the People of Cape Three Points.” *Brage NMBU*, Norwegian University of Life Sciences, Ås, 28 Sept. 2011, nmbu.brage.unit.no/nmbu-xmlui/handle/11250/187747?show=full.

to 3000 Cedis range of about 8% to 48%. Given that 44% of fisherman self-finance their fishing expeditions, these reductions in wealth imply that they will be less equipped to successfully fish in the future.

Table 3⁴: Net Income Changes for Fishermen

Net income (in Ghana Cedi)	Respondents		Percentage difference
	Before ban on fishing	After ban on fishing	
1,000-3,000	2 (8%)	12 (48%)	40%
4,000-6,000	7 (28%)	11 (44%)	16%
7,000-9,000	9 (36%)	2 (8%)	28%
Above 10,000	7 (28%)	- -	-
Total	25 (100%)	25 (100%)	

Finally, the effects of OCTP have extended beyond fishing to the allocation of land ownership near the coast of Ghana. Manu reports that during the aftermath of the OCTP and other neighboring oil projects, 44% of local respondents elected to sell their land to the government (Manu).

Table 4: Land Management⁵

Land administration within the communities	Responses	Percentage (%)
Land acquired by government from local people	11	44
Maintained land	9	36
Sold Land to would-be investors	5	20
Total	25	100

Economically, Banktrack further reiterates some of these findings and overall negative sentiment behind this project's complicated effects, especially the excess supply of gas and oil. Combined with most of Ghana's energy projects being greenlit without an accurate estimate for

⁴ ibid

⁵ ibid

future energy demands, there has been a rapid rise in debts in the drop of gas prices because of the lack of long-term plans that have financially exposed lots of energy companies and their projects(Banktrack). The project always has had a socio-economic impact because of the large areas of land the project has acquired. Because of the land acquisitions, some regions have faced restrictions on sea fishing and as a result, social tensions have risen for those who rely on sea fishing for providing alternative livelihoods. Whether or not the land is available, fish being caught has declined, resulting in a loss of income because of these oil vessels.

Project 3: Nigeria LNG Limited Train 7 Expansion (NLNG):

Projects in Africa also include liquified natural gas production sites as can be seen with the Nigeria LNG Limited Train 7 Expansion project. The NLNG terminal became operational in 1999 but is undergoing a 10-billion-dollar expansion. It is currently equipped with six processing units and six gas pipelines that span 110 communities. Taking place in Bonny Island, the project itself is an expansion to a 7th processing unit (train) which would increase annual natural gas production to over 30 million tons per year and is looking to increase the capacity of the existing 6 trains by 3.4 million tons per year(cite).

NLNG is a shared ventured between Nigerian National Petroleum Corporation (NNPC), Shell Gas, Total, and Eni. Banks such as BNP Paribas, Bank of China, and Deutsche Bank who are financing loans for the project have allocated roughly 2.27 billion in debt financing to fund it. The project is motivated due to the government's eagerness to expand a perceived untapped gas sector in which they hold ~38% of all gas reserves in Africa but attract only 5% of investment in the oil and gas sector(Nigeria).

Because this expansion project is only 52% completed, analyzing the impact of the pipeline mainly involves evaluating the impact of NLNG pre-expansion, as well as examining potential socioeconomic costs at a local level for residents of Bonny Island. Akintoye highlights the impact of this pipeline to the extent that it fulfills or detracts from community development as well as Corporate Social Responsibility, goals that have always been a point of criticism for Nigeria.

The authors use a combination of primary and secondary sources (via open-ended questions, checklists, focused group discussions, Key Informant Interviews (KII) and NLNG publications) to argue that the discovery of oil and gas generally, has “helped to diversify the socio-economic activities of the people and improved the economic and administrative importance of the island” (Akintoye). Specifically, this study references employment of civil servants that work for the Natural Gas Processing Plant on the Island, as well as an influx of approximately 17,500 construction workers at the peak of the pipeline’s development.

Locally, they report that NLNG and its affiliates have helped provide numerous social programs on Bonny Island, both separately and in conjunction with the Joint Industry of Companies (JIC). The authors further exemplify the NLNG’s acts of CSR through provisions of ECG machines to local hospitals, contributions to HIV/AIDS prevention programs, as well as the construction of small businesses often funded by contract workers (Akintoye).

Though the environmental downsides of carbon emissions are implicit with every fossil fuel project, the effect on local communities is ambiguous and not as well documented. Interviewers in Akintoye’s paper mention perceived decreases in water supply and occasional sickness that they believe is attributed to the proximity of the plant. However, there is not sufficient evidence to make such a conclusion on a local level and is thus not incorporated into

this study. However, in a survey of 1980 respondents, the most common negative consequences perceived by households include increases in rent and household involvement in violent demonstrations.

S/N	Type of impact	Yes		No		Not sure		Total	
		Freq.	%	Freq.	%	Freq.	%	Freq.	%
1	Increased Inflation of household commodities price	121	6.11	674	34.04	1185	59.85	1980	100
2	Increase in marital relations breakdown of indigenes/non indigenes	23	1.16	833	42.07	1124	56.77	1980	100
3	Increase in house rent	734	37.07	453	22.88	793	40.05	1980	100
4	Increased threat to family cohesion	193	9.75	956	48.28	831	41.97	1980	100
5	Increase in pressure on existing residential household facilities by non-indigenous NLNG staff	202	10.20	377	19.04	1401	0.76	1980	100
6	Introduction of alien ideas and cultures to household members	323	16.31	845	42.68	812	41.01	1980	100
7	Increase in household waste generation by immigrants	212	10.71	882	44.55	886	44.75	1980	100
8	Increased household members involvement in violent Demonstration	779	39.34	237	11.97	964	48.69	1980	100
9	Increased household members involvement in criminal activities	12	0.61	1423	71.87	45	27.53	1980	
10	Household members involvement in prostitution	1171	59.14	235	11.87	574	28.99	1980	100
	Total	3770	-	6915	-	9115	-	19800	100
	Average	377	19.04	691.5	34.92	911.5	46.04	1980	100

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On the other hand, a case study by Banktrack claims that, environmentally, the site itself already directly contributes to CO₂ emissions and has led to significant deforestation. Here, the 2022 reports reason that expansion project would only contribute to this impact as up to 31 additional hectares would need to be cleared. This is not ideal given that the Niger Delta, where

⁶ Akintoye, O. , Eyong, A. , Agada, P. , Digba, O. and Okibe, O. (2016) Socio-Economic Implication of Nigeria Liquefied Natural Gas (NLNG) Project in Bonny Local Government Area, Rivers State, Nigeria. *Journal of Geoscience and Environment Protection*, **4**, 63-79. doi: [10.4236/gep.2016.45007](https://doi.org/10.4236/gep.2016.45007).

the site is located, is already one of the most polluted bodies of water in the world with frequent gas flaring causing acid rain and pollution of the air, rivers, streams, and agricultural land.

Further, they argue that Nigeria's major opportunity to begin investment in renewable energy is hindered by projects such as the NLNG Expansion which increases the country's dependency on fossil fuels. The industry is also full of corruption which only perpetuates the fossil fuel problem and keeps the transition to renewable fuels from happening.

Project 4: Mozambique LNG:

We now explore impacts of the Mozambique LNG project located in the Cabo Delgado region which plans to extract, liquify, and transport gas from offshore gas fields in the northern region of the country. Unlike many of the projects mentioned thus far, this project is still in its funding and planning stage and currently has not been constructed and is not simply an augmentation of an already existing pipeline. Despite gas reserves having been found off the coast of northern Mozambique since 2010, stakeholders only reached a terminal value investment decision of \$20 million USD in 2019 and today it is expected to cost roughly \$24.1 million USD including capital expenditures and financing (AfDB). Despite this steep cost, it has nonetheless generated significant interest and an expansive international ownership structure including TotalEnergies in France (26.5% ownership), Mitsui in Japan (20% ownership) and OVL based in India (16% ownership). Major senior debt financiers are expected to include the AfDB, U.S. Exim(3.75bn), the Japanese Bank for International Cooperation(3bn), and Nippon Export and Investment Insurance (2bn) (AfDB).

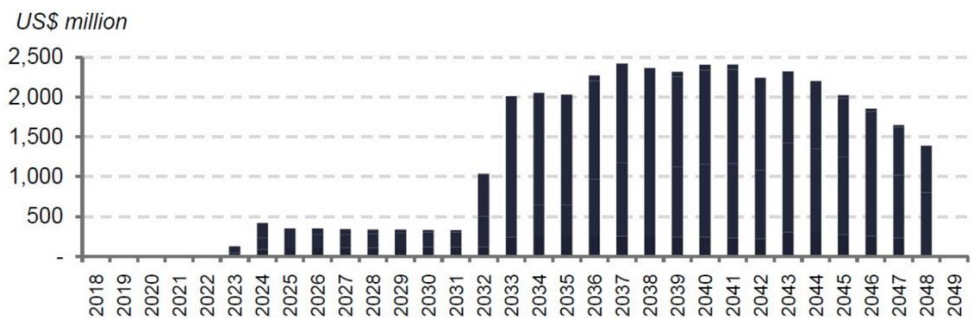
Due to the novel, undeveloped nature of this pipeline, a cost benefit analysis must involve comparing outcome predictions based largely on the local region of its construction, arguments

about job creation, from both advocates and opponents, rather than an overview of how it has already impacted that region. Thus, we consider two relatively opposing pieces of literature offering polarized perspectives on the net impact of Mozambique LNG. The African Development Bank offers an optimistic justification that frames the construction of the pipeline as necessary. On the hand, the International Institute for Sustainable Development primarily highlights risks to the country from LNG export projects.

The AfDB's joint Environmental Impact Assessment with TotalEnergies offers an optimistic outlook on the global and domestic impact of the pipeline as reasoning for its significant lead involvement role in the project's financing. Specifically, the assessment highlights both domestic and global advantages of the project such as "substantial tax and profit-sharing revenues" that will contribute to GDP growth, and "significant foreign exchange income from external markets and gas supplies for industrial and domestic development" (Environmental). Beyond these points, the AfDB also emphasizes opportunities for long term technology transfer and increased foreign direct investment. Without going into details about specific environmental implications, they provide surface-level acknowledgement of the environmental risks of the operation but argue that while the "No-Go Alternative" is a net neutral environmental solution, contradicts the government's growth strategy attained via "royalty, tax and equity gas rights" (AfDB). They justify that such economic developments would enable the country to improve other government-assisted programs such as healthcare and education. This stance held by the AfDB aligns with common rational about LNG projects: economic benefits brought about by access to a lucrative premium trade market addresses problems that supersede contemporary environmental concerns.

Conversely, the IISD centers their own impact report around the risks and problems of LNG. Here, they comprehensively outline economic, social, and environmental impacts, while also raising concern for risks to sovereignty. Economically, they stress stark discrepancies between renewable energy funding and public investments for fossil fuels which were noted as 60X the former. Moreover, Halsey et al. explains how this level of funding is problematic given that only 31% of the population had access to electricity in Mozambique in 2022, despite the known prevalence of fossil fuel resources for multiple decades. Furthermore, given that an energy project of such scale has not been undertaken prior in the country, many of the revenue projections are estimations based on an assortment of long-term assumptions. Specifically, based on the Ministry of Finance's initial proposal, the structure of earning-streams allocates most revenues in early years to stakeholders to recoup initial investments. Thus, government revenues are mainly dependent on the LNG market projections from 2030.

Table 6: Government revenue estimates for Area 1 (Mozambique LNG project)⁷



Environmentally, the site of the project is at a unique risk because of the significant ecosystem damage to important biodiverse regions like the mangrove forests, coral reefs, and seagrass beds that the location houses. Onshore fossil fuel activities have already contributed to the destruction of forests and shorelines, thereby disrupting “floral and flora” distribution (Halsey). Animals and plants are at risk of losing their habitats and threatened species themselves are also at risk of being negatively impacted. There are also more impacts extensive climate impacts like the projects estimated 12.9 million tons of additional CO₂ production per year.

The project is expected to increase economic growth in Mozambique, but 95% of the gas from the project will be shipped abroad and certain tax-free accounts being set up in foreign countries are expected to cause \$5.3 billion in revenue loss for Mozambique (Halsey). Given that

⁷ Halsey, Richard, et al. “Navigating-Decisions-LNG-Exports-Risks-Mozambique. ...” International Institute for Sustainable Development., 2023 International Institute for Sustainable Development , www.iisd.org/system/files/2023-12/navigating-decisions-lng-exports-risks-mozambique.pdf. Accessed 10 May 2024.

this project will also slow the realization of Mozambique's renewable energy potential, there is no guarantee of any defined positive economic impact of this project.

Finally, Cabo Delgado has intermittently transformed into a site of violent conflict throughout its poorer communities which has been denied the profits of their land's resources by corporations and political elites (Banktrack). Strict tensions between the government and civilians even matriculated into a 2017 insurgency in Cabo Delgado over the project's final round of approval (Halsey). As a result, the development of this project has increased tensions as over the displacement of 550 people have been displaced. Reports also cite problems with the compensation process (Banktrack).

Comparative Analysis:

A common theme amongst these 4 projects is economic promotion as a rationale for investment. However, there are clear differences in the specific avenues project for economic development. Specifically, the Medupi Coal plant is far more concerned with local and domestic improvement, while the Mozambique and Nigerian LNG projects highlight untapped access to a rewarding global market via export. These projects also tend to attract a greater breadth of foreign direct investment. With regards to acknowledgment of future carbon emissions, the Medupi coal plant seems to more openly discuss strategies for carbon mitigation, while the other projects seemingly contend that the issues addressed by these projects are of more immediate significance than climate policy. In their objective for the development of the plant in 2010, the World Bank sets out to "enhance power supply and energy security in an efficient and sustainable manner so as to support both economic growth objectives and South Africa's

long-term carbon mitigation strategy.” (Qu). Furthermore, when juxtaposing the Medupi Coal Plant and OCTP, negative accounts of detriments to standard of living are more generalized in Lephalale’s case in which occupational and residential dissatisfactions are made clear. However, the highlighted downside of OCTP are losses in income via fishing opportunity for fisherman.

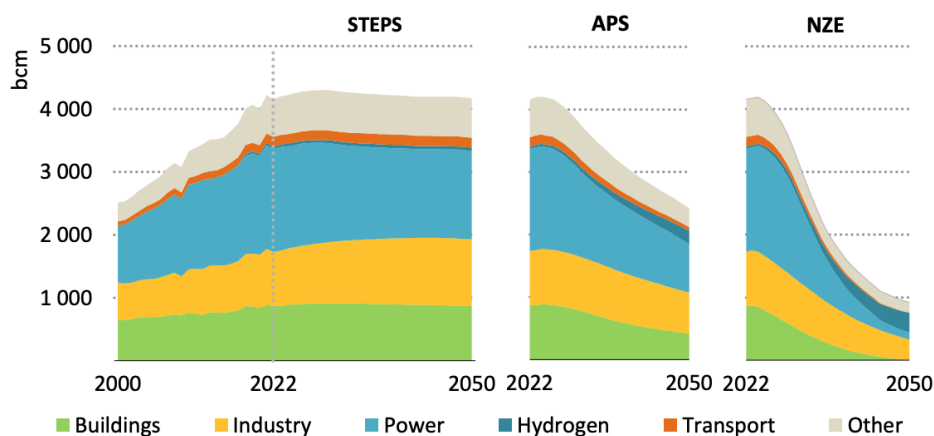
Discussion:

After careful, granular analysis of the projects presented above, it is evident that each fossil fuel development project offers its own unique set of benefits and harms to the domestic and global communities in which they are involved. While it is important to note that projected harms and benefits are often subjective to the individual or governing body assessing the impact of the project, by evaluating a diverse set of literature, we hope to offer an informed multi-faceted perspective of each project. Thus, it is apparent that there is at least a marginally significant level of economic and social benefit to each project. While the size of the impact is often overestimated by the governing bodies sponsoring or proposing them, in select cases we observe that such positive externalities are actualized to some extent, either in the form of job creation, infrastructure development, or improved energy and resource access. However, we contend that these projects are more harmful than beneficial, especially to the local communities.

Many of the proposed benefits of these projects are not unique to fossil fuels, but rather are indicative of any major energy production and infrastructure development project. Thus, the same economic boom brought through increases in population due to contract workers, an expansion of residential and commercial infrastructure, as well as opportunities of blue-collar and administrative employment at development sites can all be achieved through a renewable energy transition.

Alternative energy project proposals are disadvantaged as they face steep upfront costs and do not enjoy same pool of global funding as fossil fuels historically have. For the most part, this is often attributed to the non-exportable nature of renewables thus inciting less interest from wealthy multinational corporations. However, global policy setting new targets for renewable will likely cause a downward shift in the demand for fossil fuels. Specifically, the EU's newly fixed target of 42.5% renewable use by 2035 is primed to counteract fossil fuel energy demand which is expected to peak in 2030(IEA).

Table 7: Gas Demand by Sector - Billion cubic meters of natural gas⁸



Conclusion:

This paper investigates the extent of funding for fossil fuel projects in Africa. With particular focus on the years 2016-2021, our analysis evaluates actualized and estimated impacts of 4 distinct fossil fuel projects across the continent. We evaluate major financiers in the fossil

⁸ "IEA: Electric Cars, Clean Energy Policies to Drive Peak Fossil Fuel Demand by 2030." *World Economic Forum*, World Economic Forum, 24 Oct. 2023, [www.weforum.org/agenda/2023/10/iea-energy-peak-fossil-fuel-demand-by-2030/#:~:text=SDG%2007%3A%20Affordable%20and%20Clean%20Energy,-Follow&text=The%20International%20Energy%20Agency%20\(IEA,temperatures%20to%201.5%C2%B0C](https://www.weforum.org/agenda/2023/10/iea-energy-peak-fossil-fuel-demand-by-2030/#:~:text=SDG%2007%3A%20Affordable%20and%20Clean%20Energy,-Follow&text=The%20International%20Energy%20Agency%20(IEA,temperatures%20to%201.5%C2%B0C).

fuel industry, underscore their explanations and goals for involvement all to better understand their long-term intentions. By evaluating qualitative and quantitative historical accounts of each coal, oil, and LNG project, this analysis reveals discrepancies between multi-national interpretation of a project's effect compared to the opinions of locals. Furthermore, though statistical findings are often crucial in making definitive conclusions about certain phenomena, anonymous, individual testimonials are incorporated to not discredit the experience of citizens most directly impacted by fossil fuel infrastructure. We find evidence that fossil fuels do indeed have the potential to bring about positive economic development, either via profiting from the global market, or by economically expanding and granting new opportunities to previously rural sparsely populated regions. Despite these findings, many mentioned positive externalities are not unique to fossil fuel infrastructure and can be achieved to a similar extent through renewable energy investment. Though renewables do not attract similar levels of foreign direct investment today, recent policies will trigger an upward trend in demand for this form of energy in the future.

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