SAVE LAMU

November 12 2015

Via Electronic Mail

The Director Compliance and Enforcement,
National Environment and Management Authority
Popo Road, South C, off Mombasa Road
P.O.BOX 67839-00200, Nairobi

Re: Environment Project Report for the Proposed Coal Power Plant in Lamu Kenya

Dear Sir or Madam:

We are a community-based umbrella organization, working with Lamu-based communities and representing over 35 organizations in Lamu County, Kenya. We write to submitour concerns about the recently released Environment Project Report Study for the Proposed 1050MW Coal Power Plant in Lamu (EPR). We understand that under the law various stakeholders are allowed to submit written comments within **twenty-one** days from the date of the EPR. We received the EPR from the National Environmental Management Authority (NEMA) on the 22nd of October 2015, hence the stipulated period ends today. We strongly urge you to consider our views as you deliberate on the EPR, whether this project will significantly affect the environment and whether it discloses sufficient mitigation measures.

In the comments attached, we provide comprehensive feedback on aspects in which the EPR fails to adequately assess project impacts and/or fails to propose adequate mitigation measures. We argue that NEMA should not issue the proponent, Amu Power, with an EIA license without a full Environmental and Social Impacts Assessments (ESIA) being undertaken. By way of summary, our key concerns are that:

1. The EPR improperly excludes from further consideration project alternatives based on renewable energy (e.g. wind, solar and natural gas). There is a growing body of evidence that renewable sources can cost-effectively meet baseload energy requirements. Further assessment of renewable energy systems is necessary.
2. Critical aspects of the plant design are uncertain. Without suchinformation, environmental and social impacts and mitigation measures cannot be duly addressed.
3. The EPR states, inadequately and unjustifiably, that the plant will utilize less efficient, higher polluting, coal technology than is currently available. This is unacceptable. More efficient technology requires further investigation as part of an ESIA.
4. The EPR fails to provide necessary details or timeframes for a number of critical engineering, geotechnical, and environmental and social baseline studies that are yet to be completed. Their absence reinforces the need for a comprehensive ESIA. The Terms of Reference (TOR) for that ESIA will also need to incorporate adequate time to undertake these investigations. For example, the EPR itself concedes that it has insufficient

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baseline data to conduct a responsible assessment of the predicted impact of the project on coastal and marine resources. A robust ecological baseline study requires a significant amount of time, usually at least one year, to implement because of the inherent difficulty of ascertaining the abundance and distribution of coastal and marine species, which can vary from season to season. The potential severity of the project's impacts on the marine environment requires a robust baseline study as part of a comprehensive ESIA. The TOR for the ESIA must allow adequate time for this study.

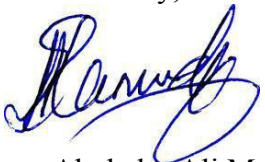
5. The EPR fails to properly assess, or propose mitigation measures for, a number of potentially significant environmental impacts. For example, the EPR does not adequately address the impacts of drawing massive quantities of seawater from the ocean or of discharging desalinated wastewater back into the ocean. The EPR also identifies potential chemical pollution of land, sea and groundwater by wastewater, but does not propose any detailed mitigation measures. The EPR itself acknowledges that an ESIA is required to assess and propose mitigation measures for these impacts.
6. The EPR fails to identify and assess the full range of social impacts of the project, including impacts on livelihoods, resettlement, vulnerable communities, health, safety, and cultural property. The coal plant is likely to have significant impacts on the livelihoods of local fishermen, farmers and their families; community health impacts from air and land pollution; and cultural impacts through damage to culturally important sites and damage to intangible cultural heritage. A Resettlement Action Plan (RAP) is yet to be finalized and communities currently have minimal information about its likely content. These impacts require comprehensive assessment and mitigation measures.
7. Finally, the ESIA and RAP can only be finalized after informed community consultation. To date, community consultation has been inadequate. Based on sessions that we attended, information sessions were not preceded by important project information. Project representatives were not able to answer questions about project design or potential impacts. Where they did answer these concerns, they shallowly and lightly addressed grave concerns on the potentially negative impacts the project is likely to have.

Accordingly, a comprehensive ESIA is required for this project under EIA Regulations (7-10). The impacts of the project on the environment during the project's construction and operations are likely to be significant and the mitigation measures cited in this EPR are insufficient to address those impacts.

The TOR for the ESIA should expressly address the gaps identified and allow sufficient time for robust investigation of project impacts and for meaningful community consultation. In developing the TOR, we request you to take into account all the matters raised in our comments on the EPR while adhering to best international standards, including the United States Environmental Protection Agency's EIA Guidelines for TORs for Coal Power Plants.

Please find our comments and views attached to this letter.

Sincerely,



AbubakarAli Mohamed
Chairperson, Save Lamu

In accordance to Section 43(a) of the Environmental Management and Coordination (Amendment) Act, 2015, Section 58 of the Environmental Management and Coordination Act, 1999, and Part II (The Project Report) of The Environmental (Impact Assessment and Audit) Regulations, 2003, particularly Regulations 7, 8, 9 and 10, we hereby submit our comments on the following report:

ENVIRONMENT PROJECT REPORT STUDY FOR THE PROPOSED 1050MW COAL POWER PLAN, LAMU COUNTY, KENYA

Project Proponent: Amu Power Company Limited

Environmental Consultant and Lead Expert: Kurrent Technologies Limited

Internal Report No: KT/4085/EPR/00

Date: September 2015

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SAVE LAMU

I. Introduction

We write in response to the Environmental Project Report Study for the Proposed 1050MW Coal Power Plant, Lamu County Kenya (EPR), shared with us by the National Environmental Management Authority (NEMA) Officer in Lamu County, Mr. Cliff Barrketch, on Thursday, October 22 2015. As a relevant stakeholder representing various individuals and organizations likely to be impacted and affected by the Lamu Coal Powered Plant at Kwasasi, Save Lamu takes this opportunity to submit comments on the EPR.

We have undertaken a review of the EPR and hereby submit comments on the key issues with respect to the general concerns we have with the study; various shortcomings within the EPR that touch on technical information on the project's design, the mitigation measures cited, and the environmental, health and social impacts; and the manner in which stakeholders were involved during its development. The main concern we advocate for is a comprehensively conducted Environmental and Social Impact Assessment Study (ESIA) with clear Terms of Reference (ToRs) for the experts undertaking it, taking the concerns we raise in our comments into proper account. The environmental and social impacts anticipated within the EPR are extensive and significant while the limited mitigation measures cited by the proponent fall short of addressing these impacts sufficiently.

The EPR states that an Environmental and Social Impact Assessment Study (ESIA) has already started,[1] yet the Environmental Management and Coordination Act 1999 (EMCA) states that NEMA is only to green light an ESIA process after the project report is submitted.[2] This decision by NEMA is guided by whether the impacts from the project are likely to be significant on the environment. The proponent recognizes that an ESIA must happen and identifies a need for specialist environmental studies targeted to the potential *significant impacts* of the project.[3] This acknowledgement buttresses the point that only these studies can generate proper data to rely on when crafting mitigation measures to lessen negative impacts as a result of this project.

The EPR states that a Resettlement Action Plan will be developed and implemented by the National Land Commission (NLC) in conjunction with Ministry of Energy, County Government Lamu, National Administration and Amu Power. We demand that the ESIA be completed so that the RAP is developed based on a comprehensive assessment of the project's impacts to local people, as per the NEMA regulations. Granting a license based on the EPR jeopardizes the reliability of the RAP and participants believe that the project proponents will relax and do a mediocre job of developing a RAP as they already have the EIA license.

"Scoping" is defined in the EPR as "[a] procedure for determining the extent of and approach to an ESIA, used to focus the ESIA to ensure that only the *significant* issues and *reasonable* alternatives are examined in detail" [emphasis added]. The purpose of the scoping phase is at one point in the EPR identified as being "to identify key project issues and alternatives through consultation with stakeholder associated with the project"[4] and at another to "[i]n accordance with the Kenyan EIA/EA Regulations […] focus the environmental assessment in order to ensure that only potentially significant issues and reasonable and feasible alternatives are examined in the detailed ESIA phase"[5]. Under Kenyan law, the scoping exercise is when the terms of reference (ToRs) are developed;[6] however, the EPR clearly notes that the development of the ToRs will occur after the present EPR process[7]. It is clear in the relevant law that the project report (whether or not defined as the Scoping Report[8]) is meant to cover more than what this document does (i.e., details of all

[1] Sec. 3.7 EPR.
[2] See Section 58(2) of EMCA.
[3] Sec. 6 EPR.
[4] Sec. 6 EPR
[5] Sec. 5.1 EPR
[6] Reg. 11(1) EIA Regulations
[7] Secs. 6 (Figure 3), 16.2 EPR
[8] Sec. 2 EPR (p. 20)

planned mitigation measures, detailed discussion of all economic and socio-cultural impacts, etc).[9] And the EPR itself, in its stated claims,[10] clearly assumes that an ESIA will follow, despite language in other sections that frames this not as the definite way forward but merely as an option[11] with the inclusion of a wire transfer for the EIA License fee[12].

At the end of the EPR,[13] the proponent does not rule out the possibility of getting an EIA License without conducting a full ESIA, stating that 'NEMA can either approve the EPR Study and issue an EIA License or ask the Proponent to develop a Terms of Reference (ToR) for the detailed ESIA Study'. Since by its own admission the EPR does not contain any site-specific information about the impacts of the proposed project, then it would be impossible for NEMA to make a rationally-informed decision (from the EPR alone) about whether the project has a significant effect on the environment. Therefore, if it ever wishes to issue Amu Power with an EIA license, then it must require an ESIA. We strongly urge NEMA to require the proponent to carry out a full ESIA Study for the coal power plant for the following reasons.

Firstly, African countries around us have made it general practice to require projects of such a magnitude to undergo ESIAs before the commencement of construction. Strong indicators exist that show how African countries are requiring proponents of coal power plants to conduct a full ESIA process. In Botswana, the law requires any construction of facilities for electricity generation to undergo an ESIA.[14] South of Kenya in Tanzania, all thermal power development, which includes coal plants, must be subjected to an ESIA.[15] Our western neighbour, Uganda, requires all electricity generation plants to adhere to the same requirements.[16] Finally, in Zambia, all electricity generating stations must undergo an ESIA too.[17]

In addition, there is a decision from India that criticized a power company's attempt to sidestep EIA requirements by preparing a less detailed, "rapid" assessment. The National Green Tribunal quashed the environmental clearance issued for a coal-fired power plant for failure to prepare an adequate cumulative impact assessment (a component of an ESIA). The "rapid" assessment submitted by the power company did not provide a comprehensive view of the impacts.[18]

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[9] See Sec, 11.8.2 EPR (promising to provide critical information **in the future** about impacts on air quality (presumably as part of ESIA) according to a particular methodology) and p. 97 EPR ("The project area **will be** surveyed to identify habitats, protected species and mammals as part of the detailed ESIA phase").

[10] Sec. 5.2 EPR

[11] Sec. 16.2

[12] Sec. 15 EPR

[13] Sec. 16.2 EPR.

[14] Environmental Impact Assessment Regulations, Schedule 1, Section 5(1) (Available here).

[15] Environmental Impact Assessment and Audit Regulations, First Schedule, Section 7(iii) (Available here)

[16] National Environment Act, Third Schedule, Section 10(a) (Available here).

[17] The Environmental Protection and Pollution Control (Environmental Impact Assessment) Regulations, 1997, Second Schedule, Section 8(a) (Available here).

[18] The Tribunal explained the concept of cumulative impact assessment, noting it is "not the impact of any project in isolation but it is a total impact resulting from the interaction of the project with other project activities around it- past, present and those to come up in future. It is a comprehensive view of the impacts resulting from all the projects- past, present or planned ones on the environment. Cumulative Impact may be same or different and those arising out of individual activities and tend to be larger, long lasting and spread over a greater area within the individual impact." T. Muruganandam v. Ministry of Environment & Forests, Appeal No. 50/2012 (10 November 2014), Para. 41 (*available at* <http://edigest.elaw.org/sites/default/files/in.ilfs_.pdf>). The Tribunal described the many flaws with the rapid cumulative impact assessment, including the exclusion of many existing industries, a failure to model the combined impact of future projects, reference to outdated air quality standards, and missing data. Paras. 45-51. It also found that the Expert Appraisal Committee failed to apply its mind when it reviewed the study. Para. 63.

Secondly, the conditions laid out in the EIA Regulations for bypassing a full ESIA have not been met in this case. The EIA Regulations state that if NEMA is satisfied based on the EPR that the project will have no significant impact on the environment, or that the project report discloses sufficient mitigation measures, the authority may issue it with an EIA License.[19] Additionally, there are a number of other factors that must be included in the EPR, which the EIA Regulations clearly stipulate.[20]

These comments will show, in line with the EIA Regulations (7-10) that these conditions have not been met because:

(1) the impacts of the project on the environment during the project's construction and operations are likely to be significant, and
(2) the mitigation measures cited in this EPR are insufficient to address the significant impacts on the environment.

Coal-fired power plants located in coastal areas have the potential to impact coastal and marine resources in numerous ways, both during the construction phase (e.g the construction of the coal jetty, and trenches for pipelines for the intake and discharge of cooling water) and during the operation phase (losses of marine life because of entrainment of cooling water; impacts to marine life because of thermal discharges).

II. General Issues

In this section, we speak to general issues in the EPR that require addressing as they raise questions about how the report was developed.

A. Technical Issues

The section examines technical issues about the actual preparation of the document, the responsibility of one's reliance on the information given in the report, and whether all the ESIA Experts are qualified to be engaged in this process.

Section in the EPR	Issue of Concern	Comments
2nd Page of Document	Signature by Amu CEO	Mr. Francis Njogu, the proponent's CEO has not signed on the first page. Is this indeed the final version of the EPR that has been submitted to all parties required? Failure to include his signature may also indicate that Amu Power has not formally endorsed the EPR as submitted to NEMA.

[19] Reg. 10(2).

[20] Under the Reg. 7(1), the EPR must contain each of the following factors:
1. The nature of the project;
2. The location of the project including the physical area that may be affected by the project's activities;
3. The activities that shall be undertaken during the project's construction, operation and decommissioning phases;
4. The design of the project;
5. The materials to be used, products and by-products, including waste to be generated by the project and the methods of their disposal;
6. The potential environmental impacts of the project and the mitigation measures to be taken during and after implementation of the project;
7. An action plan for the prevention and management of the possible accidents during the project cycle;
8. A plan to ensure the health and safety of the workers and neighbouring communities;
9. The economic and socio-cultural impacts to the local community and the nation in general; and,
10. The project budget.

Disclaimer at 11th Page of Document	Responsibility for inaccuracies	What redress is available given Kurrent's disclaimer noting that it is not responsible for any inaccuracies in data supplied by the "Proponent, Owner's Engineer, Owner's Financial Advisor, ECP Contractor and any other party"? Also, the EPR is not for the sole use of the Proponent, as the Disclaimer states, it is required by law to be shared with NEMA, lead agencies and committees of different levels.[21]
Sec. 1	Composition of the ESIA team	The project report itself must be prepared by an environmental impact assessment expert, which includes a lead expert and associate expert.[22] While Mr. Sanjay Gandhi and SGS Kenya Limited are clearly registered,[23] the identification of who is serving as an associate expert is not clear with the other specialist contributors listed.

B. Credibility of Sources and Inadequate Analysis of Key Issues

The EPR is quite a detailed document spanning 136 pages with numerous facts, figures, statements and findings reported within it. However, the sources relied on during the development of the EPR are not made clear, calling into question certain conclusions reached in the report. This sector discusses certain assumptions made on the use of coal as a source of power; the unclear reasons provided as to how the amount of land for the project was arrived at; and a failure to specifically cite sources for each claim (aside from the References section at the end).

Section in the EPR	**Issue of Concern**	**Comments**
Sec. 9.2	Insufficient consideration of project alternatives	The EPR excludes from further consideration project alternatives based on renewable energy (e.g. wind and/or solar) based on the questionable assumption that these sources of energy cannot provide baseload power: "Apart from geothermal energy, the other renewable energy sources cannot provide baseload capacity for the country." The EPR cites no authority for the assumption that renewable energy power plants cannot meet baseload energy requirements. **However, a growing body of evidence, based on emerging technologies to overcome the 'intermittency' of renewable energy power plants, show that renewable sources could indeed meet baseload energy requirements**. For example, a recently published study by scientists with Imperial College (London), Stellenbosch University, ETH Zurich, and the International Institute for Applied Systems Analysis on the potential for solar energy to meet baseload energy requirements states: "Previous studies have demonstrated the possibility of maintaining a reliable electric power system with high shares of renewables, but only assuming the deployment of specific technologies in precise ratios, careful demand-side management, or grid-scale storage technologies. Any scalable renewable technology that could provide either baseload or dispatchable power would allow greater flexibility in planning a balanced system, and therefore would be especially valuable. Many analysts have suggested that concentrating solar power (CSP) could do just that. Here we systematically test this proposition for the first time. We simulate the operation of CSP plant networks incorporating

[21] Regs. 8, 9(1) EIA Regulations
[22] Reg. 7(3) EIA Regulations
[23] NEMA List of Licenses Experts (September 2015) Available on NEMA's Website here.

		thermal storage in four world regions where CSP is already being deployed, and optimize their siting, operation and sizing to satisfy a set of realistic demand scenarios. In all four regions, we show that with an optimally designed and operated system, it is possible to guarantee up to half of peak capacity before CSP plant costs substantially increase."[24] Another study published by scientists with the Hydrogen Research Institute, the University of Delaware and Stanford University on the potential for wind energy to meet baseload energy requirements states: "This study evaluates two wind models that are designed to replace baseload coal plants and thereby reduce CO2 emissions: (1) traditional method, in which wind power is supported by electricity supplied by natural gas combined-cycle power plants (Wind-NGCC); and (2) storage method, in which wind power is supported by electricity from compressed air energy storage (Wind-CAES). These two wind models are compared against baseload coal power plants when relevant. Descriptions of the models are presented below. "In both Wind-NGCC and Wind-CAES models, the electricity supplied by wind combined with either NGCC or CAES must have the same level of reliability as conventional fossil fuel or nuclear baseload power plants. In addition, capacity specifications are designed to supply a pre-determined quantity of electricity (400 MW) 90% of the hours in a year and 100% of the hours during summer and winter peak load periods. As such, both designs can effectively be considered baseload systems. "In the Wind-CAES model (Fig. 5b), the wind farms supply the maximum 400 MW of power 49% of the year, and the CAES plant is supplying its maximum output only 3% of the year. The wind farm supplies 80% of total electricity, and the CAES plant supplies 20%. The Wind-CAES model supplies 400 MW of power to the local grid 94.9% of the hours in a year. With scheduled CAES maintenance downtime in low-demand Spring and Fall months, which are periods of the year when the wind resource is generally high, the wind farms are able to supply 400 MW of power for about half of the CAES plant scheduled maintenance downtime. Therefore, the actual annual capacity factor for the Wind-CAES model exceeds the 90% requirement. "From a short-term policy perspective with blinders in regards to future natural gas and CO2 emissions reduction policy, it is easy to discard the Wind-CAES model. On the other hand, from a long-term policy perspective taking into account future natural gas supply/demand dynamics and CO2 emissions reduction policy, it is much harder to reject the Wind-CAES model. The strength of the Wind-CAES model is the very low aggregate fuel consumption rate and the corresponding low CO2 emissions rate. The Wind-CAES model is a sure means of insulating future electricity prices from natural gas price volatility and achieving a >80% reduction in power plant CO2 emissions by 2050 to mitigate climate change."[25]

[24] Pfenninger, S., Gauché, P., Lilliestam, J., Damerau, K., Wagner, F., & Patt, A. (2014). Potential for concentrating solar power to provide baseload and dispatchable power. *Nature Climate Change*, *4*(8), 689-692.

[25] Mason, J. E., & Archer, C. L. (2012). Baseload electricity from wind via compressed air energy storage (CAES). *Renewable and Sustainable Energy Reviews*, *16*(2), 1099-1109. <https://www.researchgate.net/profile/James_Mason12/publication/228451679_Baseload_electricity_from_wind_via_compressed_air_energy_storage_%28CAES%29/links/542f37110cf277d58e91ef3a.pdf>

		Whether to build a coal-fired power plant in Lamu County or supply energy from a renewable source of energy (e,g. solar and/or wind) is a decision the consequences of which will affect Kenyan citizens for decades. As discussed above, the EPR seems to foreclose any further consideration of using renewable sources of energy to meet the project's purpose on the questionable assumption that these sources of energy cannot provide baseload power. Moreover, on a $/Kw-h basis the cost of energy from wind and solar are starting to approach, if not fall below, the cost of energy from coal. This is primarily because of implementation of technological advances that lower the costs of energy from wind and solar. By comparison, because coal-fired power plants are mature technologies, no comparable reduction in the cost of energy from this source is expected.[26] **In the way forward, NEMA should specifically require the project proponent to require a thorough examination of whether renewable energy systems can meet "baseload" energy requirements.** Since the authors of the EPR (Kurrent Technologies, Ltd.) have put forward the questionable assumption that these sources of energy cannot provide baseload power, it may be they lack the familiarity with new evidence demonstrating the contrary. We would specifically recommend that independent scientists specializing in the design of renewable energy generation to meet baseload energy requirements be added to the ESIA team contemplated on page 134 of the EPR so that this critical issue is not short-changed.
Sec. 2	Failure to consider the Ministry of Energy's Petroleum Sector Master Plan by PriceWaterhouse-Coopers from June 2015	The EPR relied on the Draft National Energy and Petroleum Policy, January 2015, the leading document on what strategy the country intends to pursue in this sector. However, it makes no mention of *Towards a Petroleum Sector Master Plan for Kenya June 2015* (PwC Report),[27] which was developed by the PricewaterhouseCoopers Consortium for the benefit of the Government of Kenya's Ministry of Energy & Petroleum through World Bank Funding. The report states that indigenous natural gas, which Kenya has sufficient reserves of, is a much cheaper and better option for Kenya than coal. The PwC Report states that there is a greater need for the plans in the power sector to better harmonize, noting that the "**ongoing plans for procuring coal power generation plants may run the risk of excluding gas power plants following production of gas as there may not be sufficient demand for uptake**." It goes on to further highlight that Kenya lacks a comprehensive Power Sector Master Plan which can play a crucial role in guiding the government's larger power capacity expansion initiatives. **The Report calls for the Government to**

[26] See U.S. Energy Information Administration Levelized Cost and Levelized Avoided Cost of New Generation Resources in the Annual Energy Outlook 2015 where a detailed table shows an estimated levelized cost of electricity (LCOE) for new generation resources, 2020.

See, also, New York Times (November 23, 2014) "Solar and Wind Energy Start to Win on Price vs. Conventional Fuels."

See, also, Devabhaktuni, V., Alam, M., Depuru, S. S. S. R., Green, R. C., Nims, D., & Near, C. (2013). Solar energy: Trends and enabling technologies. Renewable and Sustainable Energy Reviews, 19, 555-564.

[27] Click here for the full report on the Ministry of Energy and Petroleum's website.

		suspend planned coal generation projects until such a plan is developed, as commissioning them may deny indigenous gas plants the market required to attract investment. Finally, the PwC report debunks the myth that indigenous coal (which will only come into the picture after extraction commences in the Mui Basin) is cheap, stating that "**indigenous gas demonstrates considerable price advantages over either imported or indigenous coal on a whole project cost basis.**" The implications of the current project on Kenya's current/potential indigenous gas market should be thoroughly addressed in a future ESIA.
Sec. 9	Alternative sites and the necessary amount of land required for the project	The contradictory nature of saying Option 2[28] has not been eliminated yet the project proponents have already set up beacons and started acting on Option 3[29] is an inaccuracy. Community members are aggrieved that no alternative sites outside of Lamu County were identified and examined. They demand that alternative sites outside of Lamu County are provided in order for a real comparison to be made. Moreover, NEMA is strongly urged to consult with the Ministry of Energy and Petroleum to fully understand their reasoning for selecting Lamu. In Kwasasi, the channel is to shallow for large coal ships to be delivering coal, thus the economic factor does not make sense. It would be more feasible to have the coal brought to the Mombasa port where it can be offloaded as compared to Lamu where it will be handled twice over water before it reaches its destination.[30] The EPR is silent as to why there a big disparity in the size of the land needed for the plant. While Option 2 only requires 500 acres, Option 3 needs almost 175% of the previous size at 870 acres. Various researches indicate that similar coal power plants (1000MW) usually require about 350-400 acres at average.[31] Additionally, half of the land is dedicated to ash ponds, which we can loosely estimate at 400acres. In other coal power plants of the same size, the ash ponds only require 30 acres of the land; hence the reason for a 400acre ash pond section raises a lot of questions the proponents do not answer in the EPR.[32] NEMA ought to properly consider this issue given that one of the largest environmental impacts will be from the waste in the ash ponds, hence the larger

[28] Option 2 is defined in the EPR as 'a location immediately after the proposed 32 berths. The size of land available was 205Ha (500 acres) and was 2km long by 1km wide. This land had a buffer zone of 500m all-round the main plot size for security purposes. This option was a good option and has not been completely eliminated."

[29] Option 3 is defined in the EPR as 'a location that is 360ha (870 acres) and is in the shape of an inverted "L". This site has been identified as the most ideal out of the three as it allows for future expansion of the power plant. The frontage of the site is about 3.7km long facing the Manda Bay and the depth is about 800m."

[30] Community consultation by Save Lamu on 9th November 2015 in Shela Village, Lamu County where representatives from the youth, women leaders, religious leaders, members of Beach Management Units and fishermen. All representatives are from both Lamu East and Lamu West sub-counties. This meeting will collectively referred to as the "9th November 2015 Community".

[31] Look at this source here where David Gates in *Energy and Ecology* as cited by Paul Gipe in *Wind Energy Comes of Age* states that a 1,000 MW coal powered plant requires 140ha/350acres.

[32] For the Tata Orissa Power Plant in India, of similar output size (1000mw) the ash ponds take a mere 30 acres of the land (see EIA here).

		these ponds are, the more likely risk of impacts will occur, needing urgent addressing. **A detailed ESIA study needs to examine whether it is necessary to have such a behemoth sized piece of land for the project's ash pond facilities is required.**
Sec. 5.3	Disclosure of all information that went into the EPR	While a list of key activities is provided in the EPR, **sources are not cited throughout so that the authority and weight of seemingly factual statements cannot be evaluated.**[33]

III. <u>Missing Information</u>

Section in the EPR	Issue of Concern	Comments
Sec. 9.4.1	Power plant technology	The EPR states that the plant will utilize supercritical technology, despite recognizing the greater efficiency of ultra supercritical technology. **We strongly urge NEMA to require the plant to be ultra supercritical with a concomitant low heat rate. This is a must.** One of the biggest gains in using ultra supercritical technology is that the plant will utilize less coal per megawatt hour, resulting in less water usage, lower emissions (including CO_2 and mercury), reduced solid waste products (i.e. fly ash), higher efficiency and lower fuel costs per megawatt.[34] The EPR fails to cite why the proponents have not opted to use ultra supercritical technology, leaving one to wonder what justification guided them to utilize a less efficient and greater emission prone form of technology. This question should be addressed in a future ESIA. Once environmental impacts have been fully assessed, reasons should be provided to justify the decision not to use ultra supercritical technology to reduce those impacts.
See comments	Pending studies that need to be done	The EPR fails to provide necessary details or timeframe for a number of critical investigations that are yet to be completed. Their absence reinforces the need for a comprehensive ESIA. The TOR for that ESIA will also need to incorporate adequate time to undertake these investigations. For example, the EPR notes that "the exact location of the jetty will be known during the detailed engineering design phase of the project", that the location of the borrow pit(s) "will be determined during the detailed engineering design phase of the project", that foundations will be excavated mechanically "to the structural engineer's detail", and that "no specific construction details or possible locations of major ancillary activity sites are available at this stage [so that] the anticipated noise from various types of construction activities cannot be calculated accurately". It also states "An assessment will be done to establish the extent of development planning permission required after receipt of detailed engineering designs of the project to ensure that any adverse impacts on land use are kept to a minimum and that mitigation measures maximize the potential for any benefits arising from the scheme." The community is interested in knowing the "exact site and boundaries of the project site",[35] and this EPR does not provide this information.

[33] See above, e.g., Sec.9.2.("Apart from geothermal energy, the other renewable energy sources cannot provide Baseload capacity for the country.")

[34] Ultra-supercritical generation: increased efficiency with improved environmental performance (2011) American Electric Power Factsheet available here.

[35] See 7.3 (Table 5), p. 51 EPR

		The same excuse for not being able to provide details is given in the case of "all baseline geotechnical studies [which are to be] completed by the designers of the project in China" (with no specification of who these designers are or when they will be done),[36] similar to the construction and commissioning of the power plant.[37] The scoping of social impacts is also to be done by an entity in China and will include the following: "details of the technical and ancillary infrastructure; the site footprint; and the proposed timeframes for construction and operation. Information on the transportation of equipment to site is also required. In addition, estimated inputs during all phases is required and this includes labor (and level of skills); materials and their source; and services and their source [as well as a]ny commitment of the developer towards training and skills development is also key information."[38] The EPR notes that impacts on water quality will depend on the quality of the water discharged and the assimilative capacity of the receiving water, but that baseline water quality sampling and analysis will be undertaken at various locations with no time qualification.[39] **The EPR acknowledges that numerous studies have not been completed.** The importance of these studies, it states, will give information on the project's design, location, how the proponent will engage various stakeholders, and various impacts. **The following specialist studies are listed as not yet complete**: 1. Bathymetric survey and geotechnical investigation of sea bed floor (length of jetty) - (3.3.3) 2. Coal study (size of barges able to off-loading coal at the jetty) (3.3.5) 3. Geotechnical survey, topographical survey, site survey, and other surveys (3.4.1) 4. Stakeholder Engagement Plan (SEP) (7.4 and 14.3.4) 5. Baseline Geological Studies which give details on the final size and shape of plant (9.1) 6. Air dispersion modeling study (11.2.2.2) 7. Detailed engineering designs of the project which are still with the Chinese engineers (11.6.2) 8. Noise model to predict sound pressure levels at boundaries of project (11.7.2) 9. Cultural Heritage Impact Assessment Report by the by the National Museums of Kenya done in Feb 2015 (11.9.2) 10. Thermal plume modeling studies (14.2) 11. Air dispersion modeling studies (14.2) 12. Visual Impacts studies (14.2) 13. Ecological Impact Assessment (14.2)

[36] Sec. 9.1 EPR
[37] Sec. 13.1 EPR
[38] Sec.14.2 EPR
[39] Sec.11.5.6 EPR

		One of the requirements in the EIA Regulations is that the EPR must address the design of the project[40] and the potential environmental impacts of project and mitigation measures to be taken during and after the project.[41] A majority of the pending studies address these questions of design and the impacts, particularly the impacts on air quality. Without their completion, the EPR cannot be said to meet the requirements in the EIA Regulations. Furthermore, only a more detailed ESIA study that takes the above studies into the process will answer more of the questions raised by gaps identified through the failure to complete the above studies.
Sec. 15	Absence of a full budget	The EPR gives a total sum figure of USD 1,234,567,891 for the project. However, it fails to give any details about how this figure was arrived at. The EIA Regulations require a detailed project budget, which they fail to provide, thus making it impossible to question the figure given.

[40] Reg. 7(1)(d)
[41] Reg. 7(1)(f)

IV. Environmental Impacts

Section in the EPR	Issue of Concern	Comments
Sec. 8	Inadequate characterization of the environmental baseline	**The EPR itself admits the information it includes is an insufficient characterization of the environmental baseline with respect to coastal and marine resources to allow for a responsible assessment of the predicted impact of the project on these resources.** Specifically, page 97 of the EPR states: "The project area will be surveyed to identify habitats, protected species and mammals as part of the detailed ESIA phase. The surveys will be undertaken using standard methodologies to identify any protected species." Any "standard methodologies" for characterizing the ecological baseline require an adequate amount of time, usually at least one year, to implement because of the inherent difficulty of ascertaining the abundance and distribution of rare and endangered species, which can vary from season to season, as well as marine life that is important to local communities (e.g. fisheries). The Conference of the Parties to the Convention on Biological Diversity (which binds Kenya under Article 2(6) of the Constitution) in its voluntary guidelines on biodiversity-inclusive environmental impact assessment states: "31. A number of practical lessons with respect to the study process have emerged including that the assessment should: "(a) Allow for enough survey time to take seasonal features into account, where confidence levels in predicting the significance of impacts are low without such survey;"[42] In this respect, it is of concern that page 36 of the EPR envisions only three months from submission of the EPR study to NEMA, and the submission of the ESIA study to NEMA. Unless field surveys to characterize the ecological baseline for coastal and marine resources have already begun several months ago, **then three months' time between submission of the EPR, and submission of the ESIA, would be inadequate time to thoroughly characterize the spatial and temporal extent of resources the project is likely to impact**. For example, three months to conduct of field surveys would fail to take into account any seasonable variability of these resources and lead to uncertain validity of the project's predicted impact.
Secs. 9.4.2 and 11.5.2	Disposal of wastewater with impurities	In an effort to reduce the amount of impurities and pollutants in the environment, the EPR suggests that various clean coal technologies will be used to achieve this goal. One of the techniques would be through chemically washing minerals and impurities from the coal. **However, nowhere in the EPR does it mention where this wastewater will go, the envisaged wastewater treatment plant cites that it may dispose 'grey water' into Manda Bay and potentially cause pollution of groundwater due to the porous sandy terrain.** However, no other section in the EPR speaks to how this water will be disposed of. The potential chemical pollution of land, sea and groundwater is a potentially devastating environmental impact and requires detailed evaluation and

[42] <https://www.cbd.int/decision/cop/?id=11042>

		mitigation plans. The EPR's analysis of, and purported mitigation measures to address, this significant impact are grossly insufficient.
Secs. 3.3.1. and 11.5.3	Impacts related to water abstraction	Given that the turbine generators are steam driven, an excessive amount of water will be used. The significance of this impact cannot be downplayed. The power plant will require 1,008,000m^3 of water per day, which shall be used during operations and returned to the sea as fresh water (without salt or other minerals) at a higher temperature with the risk of cleaning solvents in it. The impact to marine life and the ecological system around the power plant is likely to be significant. **The EPR fails to touch on how the impacts above from this massive use of ocean water will be addressed and thus states that an ESIA ought to look further into it.** Indicating further examination must take place and cite measures of mitigation necessary to address how these impacts shall be handled. The quantities of water required (42,168m_3 per hour) are not sourced from any information that is shared in the EPR, it is unclear as to how the proponent arrived at these figures. Given the scarcity of water and potential impact this excessive use of water requires, it is important to critically assess the quantity relied upon.
Secs. 3.3.4, 3.4.9, 10.5, 10.6.6.1	Removal of temporary structures, rehabilitation	The EPR states that modular housing and buildings will be removed from the power plant site following completion of construction, but it is not mentioned where they will be moved. The potential for their conversion to permanent use is briefly mentioned but with no commitment that this will be definitely attempted to manage the amount of waste generated from the project, not to mention the potential need to re-establish construction worker housing if the coal plant is expanded in the future (see below). The EPR also states that "the site will be rehabilitated where practical and reasonable", which is far from a strong commitment and does not specify the time frame for this process. **The requirement that the site shall be cleaned fully lacks critical details and therefore is an insufficient mitigation measure for a significant impact.**[43]

[43] Sec.10.5 EPR

Secs. 3.3.4, 3.3.6, 3.4.11, 10.6.6.1	Insufficient info on the recycling and disposal of waste	The EPR only states that waste generated during construction activities will be recycled "to the extent practical", which is far from a commitment as to what these measures will entail. The location of both the offsite NEMA-licensed landfill and solid waste disposal facility are not identified. No information is given as to whether they will they be new or existing ones. The impacts associated with this will be potentially significant, yet the mitigation measure raise questions worth pursuing further.
Sec. 11.3.1	Impacts on birds not sufficiently addressed	The proposed site is located in a region with various near threatened, vulnerable and endangered birds. Some of the birds consist of migratory groups of birds from the Middle East that use Lamu as a preferred habitat in the winter. During construction impacts are likely to entail the loss of habitat, the introduction of invasive species, noise and vibration, and collision and electrocution as a result of the smoke stack and transmission lines. **The section on birds cites impacts, but does so shallowly**. **The EPR fails to examine direct and indirect, acute or chronic, and individual or cumulative effects.** For example, the EPR fails to indicate that one of the major impacts on birds will be the effects that pollutants such as sulfur oxides, nitrogen oxides, carbon dioxide and other particulate matter will have on the health of birds. The true impact of this is not sufficiently addressed with mitigation measures are inadequate.
Sec. 11.4	Insufficient measures to curb negative effects in the wetlands and marine environment	One of the biggest impacts likely to occur due to the construction of the plant is that to the marine environment. The impact on air quality through pollutants is likely to contribute to acid rain. Additionally, the elevation of temperature in water returned into the ocean after being used for cooling purposes and waste management such as fly ash that will be stored in close proximity to the ocean puts the marine ecological system at risk. A huge impact that is partially addressed (simply by stating that the CORMIX mathematical model will be used)[44] by the proponent still leaves gaps about what measures it will take to mitigate these negatives effects: • How will the proponent ensure that the water outlet into the ocean after the abstraction of cooling water remains as low as possible (suggested 3 degree Celsius according to WB standards for thermal power plants)? • What measures will be taken to limit the negative impacts on marine life, particularly endangered species that will be affected by this change in temperature? • What measures will be taken to lessen the modified hormonal responses amphibians and reptiles are to have due to pollutants in the marine environment that would impact their health, their breeding patterns and their offspring? Marine ecosystem such as mangroves function at an optimum temperature and an increase of the temperature, even slight, will affect their normal behavior thus their growth will also be affected. Therefore, the community members are concerned that the loss of marine life will increase yet there is little information in the EPR. They demand a full ESIA to provide the gaps in the information of the EPR.[45]

[44] Sec. 11.5.6.

[45] 9 November 2015 Community Consultation.

		The EPR identifies chemical threats have been highlighted such as arsenic, mercury, selenium, cadmium and chromium. These are all heavy metals with high impacts affecting living organisms and especially marine animals such as fish and crustaceans, as well as algae and seaweed, which the community depends on for their livelihood. These chemicals can also affect human beings through the leaking of these chemicals into water and affecting valuable food chains. Further research needs to be conducted on what amount of these chemicals will be emitted to the environment and how are they going to human beings. No mitigation measures have been mentioned in the EPR, which should be provided with cost well identified. **As the EPR itself acknowledges,[46] an ESIA must be conducted in order to fully assess these impacts on the marine environment and to propose detailed and effective mitigation measures. This investigation of marine impacts and effective mitigation measures ought to be expressly included in the ToRs within which the ESIA is carried out.**
Sec. 11.2.2.1	Destruction and loss of habitat unmitigated	The EPR acknowledges that the project's footprint area will be cleared of natural vegetation to pave way for the plant, which will lead to the loss of plant communities, breading and nesting areas. The EPR fails to cite any measures to mitigate this impact and cites no further plans to investigate potential mitigation measures to address it.
Sec. 11.2.2.2	Interference of pollution on vegetation and insects	The EPR states that contaminants such as sulfur oxides, nitrous oxides and particulate matter are likely to cover vegetation and have adverse consequences on insects in the area that feed on it. The EPR fails to cite any measures to mitigate this impact and cites no further plans to investigate potential mitigation measures to address it
Secs. 11.2.3 and 11.2.4	Insufficient mitigation measures to curb impacts on mammals, reptiles and amphibians	The EPR mentions how mammals, reptiles and amphibians will be affected through the habitation alteration, the disturbance of their movement and behavior, the excavation of soil, the risk of spillages and the introduction of new species. A number of these species are endangered, threatened or unique to Kenya's northern coast alone. **Yet, the EPR fails to state how these impacts will be mitigated and lessened to protect these animals, which draw tourists to Lamu and play a key role in maintaining equilibrium in the area's ecosystem.**

V. Human Health and Well-Being

Section in the EPR	Issue of Concern	Comments
Glossary	Impacts on human health and well-being	"Environment" is defined in such a way that effects on human health and well-being are included, but these are not discussed at length in the EPR. **The ESIA should place greater emphasis on the human health impacts by conducting a**

[46] Sec. 11.4.2.

		comprehensive Health Impact Assessment examining the likely effects that the plant will have on the communities around the project site and the Lamu region. Coal is associated with potentially severe human health impacts. Those impacts must be assessed and mitigated.

A. Air Pollution

Section in the EPR	Issue of Concern	Comments
Secs. 11.8, 11.8.1 and 11.8.2	Absence of a health impact assessment related to air quality	Air quality at the project site is currently excellent, given the lack of industrial activities and a rich ecological system, which emits some of the highest amounts of carbon into the atmosphere. With the coal plant, various air contaminants are likely to enter the atmosphere – sulfur oxides, nitrous oxides and particulate matter – likely to impact the health and well-being of local communities as well as contribute to global climate change. The EPR states that proper mitigation and control devices will be employed to minimize potential environmental effects, particularly through the deployment of 'proper mitigation and control devices' – however; the specifics of what these measures and devices are not addressed. The manner in which the assessment of air quality as a result of the emission of air contaminants will comprise of compiling emission inventories, establishing baseline standards and conducting dispersion modeling assessments during the operational phase. Sadly, this is merely monitoring. **Nothing is cited as to how any mitigation measures will be undertaken to use air quality monitoring data to reduce emissions.** The proponent needs to further consider this and, in a detailed manner, address how air quality shall not only be monitored, but maintained to the best possible extent by limiting the number of contaminants dispersed into the atmosphere. Page 106 of the EPR for the Proposed 1050MW Coal Power Plant, Lamu County, Kenya, promises that the ESIA for the project will contain an air quality impact assessment. An air quality impact assessment is certainly an essential component of an ESIA for a proposed coal-fired power plant, but it is not by itself sufficient to inform decision-makers of the *health impact* of the project's impact on air quality, which requires site-specific demographic information (e.g. the number of persons affected by increased concentrations of air pollutants), **and** a recognition that for many pollutants, such as very fine particulate matter, there is no threshold below which increased concentrations are not associated with significant health effects, including increased rates of mortality. Therefore, a comparison of predicted air pollutant concentrations to "Kenyan air quality standards and in their absence, the World Health Organization (WHO) guidelines" is not an adequate basis for preparing a health impact assessment of a proposed project. What is required instead is use of dose-response coefficients that can provide quantitative information about the health impacts of the Proposed 1050MW Coal Power Plant, Lamu County, Kenya, even if air pollutant levels are not predicted to

		exceed Kenyan air quality standards and in their absence, the World Health Organization (WHO) guidelines. There are recent real-world examples (from South Africa) where such a health impact assessment was made using dose-response coefficients.[47]
	Climate change	In putting forward the argument that the ESIA for the Proposed 1050MW Coal Power Plant, Lamu County, **Kenya, should assess the impact of the project on climate**, we can cite a recent real-world example (from South Africa) where such an assessment was made: The Environmental Impact Assessment (EIA) report for the proposed construction of a 600 MW Independent Power Producer (IPP) coal fired power plant and associated infrastructure for KiPower (Pty) Ltd near Delmas in the Mpumalanga Province.[48] The interesting finding of this document is that the proposed coal-fired power plant would be uneconomical on a global basis if the impacts of greenhouse gas emissions are fully internalized. The document states: "Considering the total economic costs and benefits of the Power plant over a 50 year period, the conclusion is that the Project will potentially incur net economic costs. This is due to the high external costs from greenhouse gas (specifically CO2) emissions related to the Project. Since CO2 is not limited to the country where it is emitted, the full incidence of the cost will not be national but also global."[49] The ESIA for the Proposed 1050MW Coal Power Plant, Lamu County, Kenya, should

[47] For example, the Airports Company South Africa submitted an EIA for its proposal to re-align the existing primary runway at Cape Town International Airport. See, also, in March 2015, consultants for the project issued air quality studies (find Part 1 and Part 2 here) that employed the following methodologies to quantitatively assess the health impact of increased air pollution from the proposed project.

"2.6.2 Health Effects Quantification

"2.6.2.1 Short-term Exposure Health Effect

"For the short- and long-term health effects, the coefficients specified by the Committee on the Medical Effects of Air Pollutants (COMEAP) were used. COMEAP is an expert Committee that provides advice to the UK Department of Health's Chief Medical Officer, on all matters concerning the effects of air pollutants on health. The above-mentioned recommended coefficients for quantifying short-term exposure to PM10, SO2 and NO2, utilised in the present study are outlined below (COMEAP, 1998).

"2.6.2.2 Long-term Exposure Health Effect

"In various international studies, it has been indicated that there is insufficient evidence to quantify the health effects of long-term exposure to SO2, NO2 and O3 (COMEAP, 2009). However, the evidence regarding the effects of long-term exposure to particulate matter has increased in recent years. Based on new evidence and quantitative estimates of the impact of the long-term effects of particulate pollution on mortality, COMEAP has published coefficients linking mortality to long-term exposure to PM2.5. These are summarised in Table 2-8. "

The ESIA for the Proposed 1050MW Coal Power Plant, Lamu County, Kenya, should contain a health impact assessment of the predicted air quality impacts of the project using the same methodology as the EIA for the proposal to re-align the existing primary runway at Cape Town International Airport.

[48] <http://www.jaws.co.za/public-review-documents/ki-power-ipp-project/>

[49] Comparative Economic Assessment of Kipower's Proposed Power Generation Plant in the Delmas Area and a No-Project Option (February 2015) *available at* <http://www.jaws.co.za/C182%20EIR%20Addendum/D485%20Flexilube%20DEIR/D382%20Environmental%20Authorisation/KiPower%20Final%20Addendum/C182_DraftAddendum_AppendixB1.pdf>

See, also, US EPA's Social Cost of Carbon: "A comprehensive estimate of climate change damages and includes changes in net agricultural productivity, human health, property damages from increased flood risk, and changes in energy system costs, such as reduced costs for heating and increased costs for air conditioning)" *available at* <http://www3.epa.gov/climatechange/EPAactivities/economics/scc.html>.

		contain as good an analysis of the project's impact as that provided in the recent EIA Report for the KiPower Project in South Africa.
Sec. 3.3.2, 9.4.2 and 11.8.2	Insufficient details on the air pollution control systems	**The EPR refers to Continuous Emissions Monitoring Systems (CEMS) but fails to give details about (1) what these CEMS are, (2) how the data collected will be used and reported to the relevant authorities, (3) whether CO_2 will be measures; (4) how continuous and at what intervals the operation of CEMS will run (5, 10, 15, 20, 30 minutes, hourly).** It also fails to properly address what exact measures the 'emission control equipment' will use to prevent various pollutants from seeping through into the atmosphere through the stacks. While it acknowledges that a reduction in these pollutants will take place, we are not informed by how much this will be done. Given that air pollution is a major consequence of coal power production, the impacts that can arise from pollution in human health through inhaling of particulate matter (2.5) are dire and need to be addressed further. Additionally, the air pollution control mechanisms should have Selective Catalytic Reduction for nitrous oxide control. The EPR does not state it as being compulsory yet it makes mention that the proponent will make room to add this in the future. It is unclear how and when will happen. Additionally, it is unclear what trigger this will be based on. We also recommend that the plant should utilize fabric filters instead of Electrostatic Precipitators (ESP) for particulate matter controls. ESPs do not control PM over the entire range of unit operations, such as startup/shutdown when there can be large emissions of PM, which fabric filters are better at.[50] The proponents make mention of scrubbers to control SO2 emissions, however, no efficiency for the scrubber is proposed. We recommend that it should be a 99% removal of the inlet SO2 from the boiler. Finally, the unit should have some sort of mercury control measures, such as activated carbon injection to limit the emission of this toxin.
Secs. 3.3.2 and 11.6.1	Failure to fully consider the World Bank Group's 2008 air emission guidelines	The EPR states that the project will meet all the required international air quality limits such as the World Bank Group's (WBG's) 2008 Environment, Health and Safety (EHS) Guidelines on thermal power plants.[51] However, the following are the most relevant portions of the *EHS Guidelines for Thermal Power Plants* that are not directly addressed in the EPR:[52] • Use of the cleanest fuel economically available (natural gas is preferable to oil, which is preferable to coal) if consistent with the overall energy and environmental policy of the country where the plant is proposed – as noted above the PwC Report report for the Ministry of Energy & Petroleum notes that natural gas is a better and cheaper option for Kenya; • When burning coal, giving preference to high-heat-content, low-ash, and low-sulfur coal – there is no mention of giving this kind of coal preference; • Considering beneficiation to reduce ash content, especially for high ash coal[53] –

[50] P.W. Bowden, M.J. Neate, B.M. Currell, and M. Geriakos (2006) Fabric Filters for Coal Fired Power Stations (ICESP X, Austratlia) Paper 6C1 available here.

[51] Sec.2, p. 19 EPR

[52] EHS Guidelines for Thermal Power Plants, p. 3.

		there is no mention of this in the EPR, although it takes about ash disposal;[54] • Designing stack heights according to Good International Industry Practice (GIIP) to avoid excessive ground level concentrations and minimize impacts, including acid deposition – while the stack height is identified, it is not justified as adhering to GIIP or designed to minimize impacts;[55] • Considering use of combined heat and power (CHP, or co- generation) facilities; and • Emissions from a single project should not contribute more than 25% of the applicable ambient air quality standards to allow additional, future sustainable development in the same airshed – while it is stated that the ESIA study will consider the impact on ambient air quality, it is not qualified further in line with these guidelines. These are only the general guidelines, and there are additional specific guidelines related to specific chemicals, effluents, solid wastes, hazardous materials, occupational health and safety, and community health and safety (including water consumption and traffic safety). These should be mentioned specifically when these subjects are discussed within the EPR. The cases in which standards are cited but are not integrated clearly into the design of the project are problematic.[56]
Sec. 3.4.8	Start-up, commissioning, and testing	Towards the end of the project's construction, steam blowouts are carried out to clear any debris that could damage the turbine blades during construction. This process usually emits debris in various forms into the atmosphere (see here for a video of a steam blowout in Java, Indonesia for a 815MW power plant). The EPR fails to address how this significant impact will be addressed.

B. Dust Pollution

Section in the EPR	Issue of Concern	Comments
Secs. 3.3.6 and 11.5.2	Plans to utilize improper method of coal storage	Information in the EPR shows that the project proponent contemplates the use of a wet impoundment for the permanent storage of coal ash. Wet storage impoundments for coal ash create extraordinary risk to the environment if the walls of the storage impoundments were to fail, a risk that would be substantial in a location, such as Lamu, that experiences episodic heavy rains. For this reason, more countries around the world require that new coal-fired power plants avoid the use of wet storage impoundments and arrange for the beneficial use of dry coal ash by manufacturers of cement and other aggregates, or as backfill. For example, in India, all new coal-fired power plants are to achieve 100% utilization of the fly ash they generate within three years of commencing operation.[57]

[53] See Sec.11.4.1, p. 96 EPR

[54] Secs. 3.3.6, 16.1 EPR

[55] Sec. 3.3.2 EPR. See Sec.11.6.1 EPR (discussing visual impact)

[56] See, e.g., Sec.9.4 EPR ("Using such technologies, the EPC contractor will be able to comply with the World Bank Group's latest (2008) stack emissions standards for thermal power plants. If required in future, an SCR unit can be added to manage the nitrous oxide emissions")

[57] Ministry of Environment and Forests, Notification S.O. 2623 (E), *available at* <http://envfor.nic.in/legis/hsm/2623.htm>.

		The EPR fails to adequately assess the potential impacts of ash storage. An ESIA is necessary to assess those impacts and ensure effective mitigation. The ESIA should require, consistent with international best-practice, that no wet impoundment for the permanent storage of coal ash be created.
Secs 3.3.3 and 10.6.2	Unclear measures of mitigating the negative effects associated with coal unloading, storage and handling	**The EPR's dust suppression systems fail to address how coal dust will be minimized during the operations**. Coal unloading and transportation to the stack yards is an activity likely to be highly prone to coal dust escaping, hence dust suppression is important. The EPR, fails to specify what these dust suppression systems will be like given that many dust suppression systems tend to have numerous shortcomings. The EPR needs to particularly address (1) whether they are going to be dry or wet dust suppression systems; (2) what wetting agents will be used given that the unloading will take place in the marine environment; (3) the size of water droplets (micron size) as compared to the anticipated respirable dust, etc.[58] The disposal of this water used to suppress the dust (assuming wet is used) is not cited in the wastewater treatment portions of the EPR as well. This mitigation measure needs further addressing. **Additionally, the EPR fails to state whether the coal storage yards and conveyor belts responsible for transporting the coal will be covered or not – this will help with dust suppression and pollution control.** The mitigation cited that 'the conveyors would be designed to minimize dust emissions' falls short of giving details about how this will be done and achieved.

C. Noise Pollution

Section in the EPR	Issue of Concern	Comments
Sec 11.7.2	Noise impact assessment	The impact that noise will have during the construction of the plant cannot be understated. The EPR acknowledges that the main source of noise is likely to be from traffic flows. Elsewhere in the EPR, the talk of the Mokowe-Hindi-Bargoni road being expanded for heavier vehicles transporting goods acknowledges that traffic is likely to increase along the almost 20km stretch. Along the way a hospital at Hindi and a school (Bobo Primary School) will be next to the area of construction. The EPR's mentions that construction will take place 24 hours a day for 7 days a week,[59] yet the Environmental Management and Coordination Act (Noise and Excessive Vibration Regulations 2009) prohibits noise beyond 35 decibels (the sound of a casual conversation in close proximity to each other) after 6:00pm in residential areas, educational or health facilities.[60]

[58] Jarvis, J.M., Babel, P.J., and Vieira, A.T. (2004) Advances in power plant steam blow cleaning analyses. *American Society of Mechanical* Engineers Turbo Expo 2004: Power for Land, Sea and Air, Vienna Austria June 14-17, 2004.

[59] Sec. 11.7.1.

[60] See the Second Schedule of the Regulations.

		No measures are cited in the EPR as to how the traffic flows, which are likely to be responsible for increased noise, will be enforced to adhere to lawful noise standards. The mention of an Environmental Management System (EMS) to mitigate the noise is cited, but not in detail, hence leaving much to speculation as to how the impact of noise will be reduced.

VI. Social Impacts

A. Livelihoods

Section in the EPR	Issue of Concern	Comments
Secs. 3.4.5 and 8.2.6.3	Livelihoods are not given prominent consideration in the EPR	The EPR states that a significant amount of the parts for the power plant will arrive by sea. The Manda Bay area is a rich and popular fishing ground and transportation juncture between the Lamu archipelago. The section on livelihoods fails to sufficiently address the impacts the project is likely to have on the economic wellbeing of residents. It's unclear what sources were used to collect these views, but more of an effort needs to be made to build this information. The EPR fails to address what impact the heavy traffic caused by ships and barges passing within Manda Bay and headed to Kwasasi with equipment for the plant will have on fisherfolk, boat operators and community transportation in the area. A focus only on their cold storage needs lightly deals with an issue worth taking into account with greater concern. **The coal plant and its related activities will affect fishermen and their families, numbering more than half of Lamu's population, yet their loss of livelihood is not addressed in the EPR nor are they discussed for compensation.** The EPR also does not address the negative impacts for the marine resources on which they depend - this impact is not sufficiently addressed. **Additionally, the measures to be taken to safeguard the ability of mangrove cutters to access the mangroves on and around the project area as needs be are not cited.**
Sec. 14	Unclear mitigation measures to curb losses in the tourism sector	Community members expressed concern that their natural and cultural resources will be negatively impacted by the power plant. **The EPR fails to provide adequate information about mitigation measures to be employed in safeguarding the communities and their culture from negative effects.** Mitigation measures should be identified, timetables drawn up, costs explained and monitoring methods made clear to address the impacts that industrial pollution will have on tourism. An economic study should be done to show the amount of revenue expected to be lost through tourism and measures to offset

		this loss. The EPR lacks the depth to initiate valuable discussion about these challenges. [61]

B. Worker-related Issues

Section in the EPR	Issue of Concern	Comments
Sec. 3.3.4.	Worker's housing	The construction of the plant will require 3000 workers, at most, on the site, with a significant number of them being provided with accommodation both on and offsite. 1,000 of the workers are guaranteed accommodation onsite, the remaining 2000 workers will be offsite. **Nothing is mentioned about the offsite workers and the socio/environmental impacts they will have.** The EPR also does not describe this permanent colony sufficiently, e.g., the infrastructure that will be required and boreholes for water supply. Also, the consequences of a possible proliferation of vermin[62] is not explored in the EPR, nor are the health consequences of possible fecal contamination in the water supply that is noted.[63] Potential future plans of expansion for the power plant mean that the impacts are likely to increase over a period of time. **The EPR fails to take these additional impacts associated with the intent to expand the plant into account**. As expected, Kenya's appetite for energy is likely to grow with the shift towards industrialization, the current 1050MW power plant should be seen as a first step towards greater significant environmental impacts in the Lamu region, coupled with LAPSSET, in future.
Secs. 3.4.5.1, 3.4.10, 3.3.7, 10.2.1, 11.4.1	Strain on Local Resources not fully taken into account	The EPR breezes past the potential overexploitation of wood fuel and charcoal, medicinal plants and wild fruits, which may be a serious issue given the number of people who will be introduced into the area with the project.[64] The EPR notes that water is a scarce commodity and then goes on to say that water will be abstracted from boreholes. It also notes that the desalination plant may create boreholes or source water from existing ones. **The requirement that all abstraction points for existing boreholes or shallow wells be more than 1 km away from any school or hospital does not seem to consider water usage for farming or households in the area.[65]** Also of significance is the fact that boreholes are the major sources of water for domestic use and livestock in the area.[66] The EPR already notes that Lamu's water supply is threatened by seawater intrusion,[67] and so the added stress on the local water resources may just speed this up and prove too much to handle. Table 2 also notes the approximate demand from various project sources, but the

[61] 9th November 2015 Community Consultation.
[62] Sec.11.2.4.3.3 EPR
[63] Sec.11.5.1 EPR
[64] See Sec.11.2.1 (Table 11), p. 86 EPR
[65] Sec.10.2.1 EPR
[66] Sec.11.4.1 EPR
[67] See Sec.11.5 EPR

		demand from fire protection is not included. A future ESIA should include a more thorough assessment of the project's impacts on local resources, including community resources and water sources.
Sec. 14.3.3	Potentially discriminatory addressed economical change processes	One of the change processes likely to result due to the introduction of development is creation of employment during the construction and operation of the plant. **The EPR notes that vulnerable groups are expected to compete with more appropriately qualified applicants for the jobs to be availed at the coal plant, however, most of the required skills will not be available in Kwasasi or Lamu county, meaning that this skills will be imported, causing a reduction in the job and income opportunities available to Lamu County residents.** The impact this is likely to have on the community and the lofty expectations touted by the belief instilled upon them by the proponent that jobs will be available for locals will be significant. Moreover, the proponent fails to address how this reality will be addressed to ensure that locals develop the necessary skills to be retained at the plant during its at minimum 25 year timeline. The measure identified at to train 1000 youth with the National Youth Service is noble,[68] however, it does not solve the long term problems facing a vulnerable people not equipped with the skills necessary to work at the plant. Proper means to address this social impact ought to be entailed more in terms of how high value skilled labourers will be trained and retained at the plant, particularly during the operation phase.

[68] Sec. 10.2.7.

C. Resettlement

Section in the EPR	Issue of Concern	Comments
Secs. 4.1.1, 4.1.2, 4.2, 6, 11.6	Failure to examine the domestic and international regulatory requirements surrounding resettlement in depth	As noted above, the EPR does not delve deeper to demonstrate the projects compliance with the AfDB's Operational Safeguard guidelines, which require that the project company "consult in a meaningful way with all stakeholders, particularly the people affected and the host communities, and involve them at all stages of the project cycle in a clear and transparent manner—in designing, planning, implementing, monitoring, and evaluating the Resettlement Action Plan".[69] In addition, "[a]s early as possible in the resettlement process, [the borrower should work with] … vulnerable communities to establish a culturally appropriate and accessible grievance and redress mechanisms to resolve, in an impartial and timely manner, any disputes arising from the resettlement process and procedures."[70] The EPR states that Amu Power will lease land from the Kenya Ports Authority (KPA) for the construction of the coal power plant. The community has traditional ownership of this land, identified as Kwasasi, for the purposes of farming. Community members have demanded that compensation and resettlement plans be elaborated and agreed upon, further adding that this EPR should not be used for licensing the coal plant.[71] An ESIA must be conducted to ensure proper consideration of resettlement and livelihood impacts, and the TOR for that ESIA must include meaningful consultation and participation by affected communities in the design of any Resettlement Action Plan.
Secs. 3.4.5 and 11.6.1	Need to expand what is included in the Resettlement Action Program (RAP)	The access roads to the project site are 2.5m wide, which are not sufficient for the heavy haulage expected once construction and operations begin. For the clearage of 12-15m, those with farms next to the road near the entire 14km stretch on the Hindi-Bargoni road will need to be compensated or incorporated into the RAP.

D. Culture

Section in the EPR	Issue of Concern	Comments
Secs. 8.2.6, 8.2.6.1, 11.4.1	Insufficient protections of archeology and cultural heritage	The archeological reports indicated that some iron age sites (ruins, tombs and pottery) were located near the site. **The EPR fails to mention how it shall ensure that these areas are not affected by the project upon the commencement of its construction and operations.** The acknowledged influx of outsiders to Lamu due to the plant's construction is likely to dilute the intangible heritage, however, no measures are cited about what measures, if any, the proponent will take to lessen these impacts by the 2,000+ workers likely to be from outside Lamu.

[69] African Development Bank Group's Integrated Safeguards, p. 33.
[70] *Id.,* p. 34.
[71] 9th November 2015 Community Consultation.

		Moreover, despite the EPR's recognition that Lamu Town is an UNESCO World Heritage Site,[72] special protections are not discussed, e.g., how to protect historical buildings and architecture from corrosion and acid rain due to the higher concentrations of SO_2 and NO_x in the area.[73] **Community members also have indicated that the EPR fails to indicate detailed research about the archaeology of the area. One of the missing documents is a study by the National Museums of Kenya conducted earlier this year, which must be shared**. Similarly, the communities are concerned that Pate Island and its century old villages bearing unique features and traditional culture are not identified or discussed in the EPR, yet the impacts here will be of relevance. Thus, it is crucial that the ESIA cover these areas comprehensibly.[74]

VII. <u>Stakeholder Engagement</u>

A. Community

Section in the EPR	Issue of Concern	Comments
Glossary, Secs. 5.1, 7.1, 8.2.2.6, 11.7.2	Lack of clarity surrounding identification of stakeholders to be consulted	"Public Participation Process" is defined in the EPR Glossary as a process involving the "public", but who is included is not entirely clear. **The EPR identifies the "local community living in the project area" as key stakeholders, but what this actually means for consultation is highlighted by the stakeholders' concern noted in the EPR regarding how genuine project affected persons (PAPs) will be identified for resettlement and compensation.[75]** The terms PAPs,[76] "area of influence"[77] and "zone of influence"[78] are used interchangeably throughout the document. While the EPR does list some factors,[79] it does not discuss related public consultation requirements, e.g., whether all of these stakeholders will need to be consulted to the same degree, and when and how.
Secs. 5.4, 6, 7, 7.1	Lack of clarity and inconsistencies surrounding public consultations required by law as part of the ESIA process	**The elements necessary for a gathering to be considered a "public stakeholder consultation" are not discussed in the EPR.** The EPR cites Reg. 17(2)(b) EIA Regulations seemingly to argue that it has met Kenya's public participation requirements, but this section of the law states that the proponent shall "hold at least three public meetings with the affected parties and communities to explain the project and its effects, and to receive their oral or written comments".

[72] See Lamu Town, World Heritage List, UNESCO, *available at* <http://whc.unesco.org/en/list/1055>.
[73] Sec. 11.4.1, p. 96 EPR.
[74] 9th November 2015 Community Consultation.
[75] Sec.7.3 (Table 5) EPR (p. 51).
[76] Sec.14.3.2 EPR
[77] Secs. 11.7.2, 11.8.2, 14.1, 16.2.
[78] Sec.8.2.2.6 EPR
[79] See Sec.7.1 EPR

		The breakdown of meetings listed in the EPR was spread throughout the area, and no meetings took place in the affected area more than once. Moreover, the EPR states they took place between January 24-30, 2015, but then lists additional "workshops" and "introductory meetings" in *Table 4: Scoping phase public engagement log*.[80] It notes that minutes were taken at each meeting and that issues raised will be addressed in the ESIA Study, in line with the EPR's earlier note that potential environmental impacts "must be considered, investigated, assessed and reported to NEMA"[81]. The EPR states that the project intends to comply with IFC Performance Standards, but its requirements for Informed Consultation and Participation are not discussed. These standards reflect international best practice, and require "a more in-depth exchange of views and information, and an organized and iterative consultation, leading to the client's incorporating into their decision-making process the views of the Affected Communities on matters that affect them directly."[82] Such consultations must "be based on the prior disclosure and dissemination of relevant, transparent, objective, meaningful and easily accessible information which is in a culturally appropriate local language(s) and format and is understandable to Affected Communities."[83] Based on information sessions that we have attended as community representatives, we do not believe that the requirements of informed consultation and participation have been met. Project representatives at those meetings did not provide attendees with any detailed project information and were unable to answer questions about critical project components. Stakeholders generally call for the ESIA process to be transparent.[84] While the EPR notes that local leaders were invited to public meetings, their attendance is not confirmed. **Despite the EPR's assertion, we understand that no Background Information Documents have indeed been disseminated to community members**. Further details about the purported "consultations" are necessary to determine consistency with the law, as is clarifying whether the "disclosure meetings" listed are being counted as public consultation meetings.[85]

B. County Government

Section in the EPR	Issue of Concern	Comments
Secs. 11.6, 11.6.2, 14.1	Lack of inclusion of the county	The EPR notes that the County Government of Lamu has yet to develop a land use master plan for the County, but does not say that the proponent is working

[80] Sec.7.2 EPR.
[81] Sec.4.1.2 EPR.
[82] IFC Performance Standards, ¶ 31 (2012), *available at*: http://www.ifc.org/performancestandards.
[83] *Id*. at ¶ 30.
[84] See Sec.7.3 (Table 5), p. 52 EPR
[85] Sec.7.2 EPR

	government in the development of the project	with them to ensure that the power plant complies with any ideas currently being discussed. In a seemingly inconsistency statement, the EPR at another point notes that the authors have reviewed the existing Lamu County Integrated Development Plan.[86] The EPR notes that the County Assembly will need to consider the proposed design of the power plant, while also asserting that the extent of development planning permission required will have to be assessed after detailed engineering designs are received, which will include mitigation measures to assure that adverse impacts are minimized.[87] **As a detailed design has not been submitted to the Lamu County Assembly (given that the Chinese engineers are still in possession of it in its development stage) and only a general description of the project has been given, nothing can progress until this happens.**

VIII. Transparency

Following are a list of documents we ask be provided to key stakeholders, including communities to be affected by the project, so as to determine the true impact of the coal plant on the area, including all of its components:

Section in the EPR	Documents we request be made public
Sec. 3.3.2	Continuous Emissions Monitoring System
Sec. 3.3.3	Information on planned coal loading and unloading: • types of cranes to be used to unload coal • frequency of water sprays for dust suppression during coal storage • types of conveyor systems for transporting coal
Sec. 3.3.6	Water quality monitoring system
Secs. 3.3.3, 3.3.5, 3.4.5, 3.4.6, 3.3.8, 9.1, 11.5.6, 11.6.2, 11.7.2, 13.1	All baseline studies and information surrounding the design of the project: • all baseline geotechnical studies by Chinese designers[88] • bathymetric study and geotechnical investigation of the sea bed floor • coal study to determine the size of barges that will be off-loading coal at the jetty exact site and boundaries of the project site[89] • exact location of the jetty • exact location of the borrow pit(s) • how the foundations will be excavated mechanically • specific construction details or possible locations of major ancillary activity sites to accurately calculate the anticipated noise from various types of construction activities • scoping of social impacts to be done by Chinese entity, including details of the technical and ancillary infrastructure, the site footprint, the proposed timeframes for construction and operation, information on the transportation of equipment to site, estimated inputs during all phases (including labor (and level of skills), materials and their source, and services and their source, as well as any commitment of the developer towards training and skills development is also key information[90]

[86] Sec.14.1 EPR
[87] Sec.11.6.2 EPR
[88] Sec. 9.1 EPR
[89] See 7.3 (Table 5), p. 51 EPR
[90] Sec.14.2 EPR

	• baseline water quality sampling and analysis
Sec. 3.4	Construction Activities timeline*
Sec. 3.4.1	Pre-construction surveys (including geotechnical, topographical, bathymetric and site surveys) to confirm the exact location and size of the plot required for the project
Secs. 5.4, 6, 7, 7.1	Public Consultation information, including: • minutes from public consultation meetings • specialist environmental studies[91] • stakeholder database[92] • Background Information Document, invitation letters, public meeting notices, stakeholder registration logs and PowerPoint presentations of the proposed project[93] • issues and response reports (IRR)[94]
Sec. 7.4	Stakeholder Engagement Plan, Grievance Management procedure
Sec. 10.6.5	Sourcing of materials, i.e., the sites/locations from which materials will be sourced
Sec. 10.6.10	Emergency response protocol
Sec. 11.4.2	Potential mitigation measures
Sec. 11.5.1	Environmental Management Plan
Sec. 11.7.2	Baseline noise survey, Environmental Management System
Sec. 11.8.2	Air quality impact assessment
Sec. 11.9.2	Cultural heritage impact assessment
Secs. 12 and 13	Health, Safety and Environment information, including: • Accident prevention plans, including • incident prevention plan, safety and health risk assessment, responsibilities with regard to safety, safety procedures, fire and emergency procedures and security procedures • Health, Safety and Environment (HSE) management system/plan (including the HSE performance measurement system) • emergency response plan • safety guidelines and rules of operation, personal protective equipment program, occupational health action plan, medical and health program, record keeping requirements, sanitation and health inspections, construction and management plan, environmental procedures for construction, environmental reviews by external environmental auditors, soil conservation and erosion mitigation plan, waste management plan, spill response procedure, HSE reports, early warning system, contingency plans, noise management procedures and noise control measures, and traffic management procedures
Sec. 14.3.1	Resettlement Action Plan

[91] Sec.6 EPR.
[92] Sec.7.1 EPR
[93] Sec.7.2 EPR
[94] Sec.7.3 EPR

IX. Terms of Reference for the ESIA Study

Use of the United States Environmental Protection Agency ToR Guidelines for the ESIA

Perhaps the most complete, generic ToR for a proposed coal-fired power plant can be found in the USEPA document: USEPA: EIA Technical Review Guidelines: Energy Generation and Transmission.[95] The ToR for Thermal/Combustion Power Generation Projects is found on pages 3-28 of volume 1, part 2 of this document. We strongly urge NEMA to rely on these Guidelines when developing the ToRs for the ESIA for the Proposed 1050MW Coal Power Plant in Lamu. NEMA should require no less information than what the USEPA would generally require for this project.

An SESA for the Coal Sector

Furthermore, in line with the recent changes incorporated in the Environmental Management and Coordination (Amendment) Act (2015),[96] we request that NEMA require the entire coal sector to undergo a Strategic Environmental Assessment,[97] which will result in a formal and systemic process to analyze and address the environmental effects of policies, plans, programs and other strategic initiatives within the coal sector – of which power generation is one.

AfDB's Operational Safeguards

As noted above, the AfDB's Operational Safeguard guidelines require that "stakeholders should be consulted to obtain their input into the preparation of the draft TORs of the EISA and similar documents.[98] We request that the ToR for the ESIA be developed with the contributions of the community and other stakeholders.

[95] CAFTA-DR, USEPA, USAID, EPA/315R11001, 2011, *available a*t: <http://www2.epa.gov/international-cooperation/eia-technical-review-guidelines-energy-sector>

[96] Enacted in June 2015.

[97] The Environmental Management and Coordination (Amendment) Act, 2015, requires SESA's under Section 57A.

[98] African Development Bank Group's Integrated Safeguards System: Policy Statement and Operational Safeguards, Safeguards and Sustainability Series, Vol. 1, Issue 1 (Dec 2013), p. 27.

We, the undersigned community organizations, endorse the Save Lamu review comments of the Environment Project Report submitted by Amu Power to

1. _____
Save Lamu Organization
Abubakar Mohamed Ali

2. _____ WANAHARAKATI UKOA LAMU FORUM FOR SALVATION OF LAMU P. O. BOX 128-80500 LAMU, KENYA
Wanaharakati Okoa Lamu

3. _____ LAMU YOUTH ALLIANCE P. O. BOX 55-80500 LAMU
Walid Ahmed Ali
Lamu Youth Alliance

4. _____
Umulkher Ahmed
Muslims for Human Rights

5. _____ KENYA MARINE FORUM ZONE P. O. Box 74 LAMU
Mohamed Athman Bakar
Kenya Marine Forum- Lamu

6. M. Famau. _____
LAMU EAST VISIWANI COMMUNITY ORGANISATION
Lamu East Visiwani Community Organization

7. _____
Raya Famau
Sauti ya Wanawake

8. _____
Hindu Suleiman
Maendeleo ya Wanawake

9. ~~Khadya~~ _____
Khadija Shakuwe
Lamu Residents Initiative

10. for Kirsty Miji _____
Lamu Tourism Association

11. _____
~~Somo M. Somo~~ Mohamed M Bwana
~~Beach Management unit~~ Shungwaya Welfare

12. _____
Omar Mohamed Elmawi
Voice of Justice