

## COMMENT 1 – A LACK OF PUBLIC PARTICIPATION DURING THE EIA STUDY AS REQUIRED BY THE LAW

### Public Consultation held as part of the Environmental Project Report (“EPR”) only

According to the Environmental (Impact Assessment and Audit) Regulations, 2013 (“**EIA Regulations**”),<sup>1</sup> a project proponent conducting an environmental impact assessment study is to seek the views of the people being affected by the project.<sup>2</sup> Under this law, the process of seeking the public’s views is to take place *after the approval* of the Environmental Project Report (“**EPR**”) submitted prior to commencing the study by the National Environmental Management Authority (“**NEMA**”). Any consultation done before the approval of the EPR by NEMA does not amount to public consultation, according to Regulation 17(2).

The Environmental Impact Assessment Study Report (“**EIA Report**” or “**ESIA Report**”) submitted by Amu Power Company Limited (“**APCL**”) to NEMA, a number of meetings were held with various stakeholders in Lamu during the first half of 2015.<sup>3</sup> The minutes annexed to the EIA Report indicate that the meetings served as an opportunity for APCL to share basic information about the project. According to the APCL, the last meeting took place on the 25<sup>th</sup> of June 2015 on Pate Island. Thereafter, and in accordance with Section 58 of the Environmental Management and Coordination (Amendment) Act, 2015<sup>4</sup> (“**EMCA**”) APCL submitted their EPR to NEMA for approval in September 2015. Nothing in the EIA indicates that any meetings took place after June 25<sup>th</sup> 2015.

- Failure to have a minimum of at least three meetings with affected people and other concerned parties after approval of the EPR by NEMA is a clear violation of the EMCA Regulations.

Further, the Terms of Reference (“**TORs**”) for this project specifically require that public participation occur. The failure to hold public participation meetings after the finalization of the TORs again indicates a violation of EMCA Regulations.

- There are strong reasons why the EIA Regulations direct public participation to occur *after* the completion of the EPR.

An EPR can be clearly distinguished from an EIA Study. The EPR assists the project proponent and NEMA form an understanding on the projects likely impacts. This “summary statement”<sup>5</sup> then forms the basis of TORs for an EIA

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<sup>1</sup> Legal Notice 101.

<sup>2</sup> Regulation 17(1).

<sup>3</sup> EIA Report, Section 9, pp. 2-4.

<sup>4</sup> CAP 387.

<sup>5</sup> Section 2, Interpretations.

Study's "systematic examination"<sup>6</sup> and guides project design. Therefore, it is likely a project proponent would not have formed a thorough understanding on the "adverse impacts on the environment"<sup>7</sup> and, thus, the projects design to appropriately mitigate those impacts.

The EIA Study's public meetings under Regulation 17(2)(b) require the project proponent to "...explain the project and its effects, and to receive [the affected parties] oral and written comments." We submit that it was not possible for APCL to sufficiently explain the project and its effects at the EPR stage and then receive comments on the same.

For example:

- In early 2015, the information given about the transportation of coal from the Lamu Port to Kwasasi, was that it would be done by barges, which would carry it along Manda Bay. However, the EIA Report reveals that conveyor belts from the Lamu Port will now transport the coal across a 15km mini-corridor to the project site. During the meetings APCL held, this was never discussed because it had not yet been decided given that the EIA Study had not commenced and TORs were only granted to APCL in January 2016.
- Another challenge of not having the meetings after NEMA approved the EPR and TORs was that given the preliminary and premature meetings APCL decided to have in early 2015, project information was limited. In Appendix 9B (Social Impact Assessment Study Appendices) APCL fails to share sufficient information, citing a need for further studies or designs – a clear indication that the purpose of the meetings was not being met given that vital questions raised by the participants could not be answered. The aforementioned appendix is rife with such examples.
- In attempting to answer questions by a resident named Raya Famau on mitigation measures in place and also by Arif Bakar on the impacts the project would have on traditional medicine, Sanjay Gandhi fails to answer the question and notes that they will be exhaustively elaborated once the expert reports are concluded.<sup>8</sup> Another example of this occurs when Bule Shee from Mtangawanda asks how the negative impacts the project will affect the fishing community and whether they will be addressed. Again, Sanjay Gandhi cited studies that are still ongoing on this, insufficiently addressing the question raised by this resident.<sup>9</sup> The same is evidenced when Abdi Omari, a businessman, asks what impacts will take place in the marine environment. Sanjay Gandhi repeats the same reply, citing thermal plume studies that are ongoing and once the studies are complete they shall be shared once the report

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<sup>6</sup> Ibid at 5

<sup>7</sup> Ibid at 5.

<sup>8</sup> Appendix 09B, p. 13 and 14, Items 18 and 20.

<sup>9</sup> Appendix 09B, p. 111, Item 11.

is complete.<sup>10</sup> A thorough examination of the meeting minutes reveals numerous more examples of this nature.

- The EIA Report reveals that not all the information above is examined in detail, or at all. For example, the concerns by Bule Shee on the negative impacts on the fishing community are not fully considered (this will be elaborated on below in Comment 9 – Negative Impacts on Livelihoods). Arif Bakar’s request on the impacts the project will have on traditional medicine does not come up anywhere in the EIA Report – revealing a gap in how the meetings took place. This reveals some of the shortcomings a premature consultation process during the EIA Study has and the gaps manifested in not conducting it at the lawfully mandated period.

These examples highlight significant impacts on the environment and therefore affected parties must be informed and provided an opportunity to comment. We also submit that it is not possible to expect affected parties to now provide comments on the abovementioned examples through the EIA’s written comments process only. A large number of affected parties may be unable to provide written comments given inaccessibility to the Internet and low levels of literacy – particularly in English - that exist within the affected population.

***Public participation in environmental decisions must be real and not illusionary and we submit that there is a substantial risk of injustice should this violation of the EMCA Regulations be permitted.***

## **COMMENT 2 - CONCERNS RELATED TO THE RESETTLEMENT ACTION PLAN AND ALLOCATION OF LAND ARE NOT ADDRESSED**

### **Failure to Complete a Resettlement Action Plan**

Compulsory acquisition of land in Kenya is governed by Part VIII of the Land Act and applies when the government is satisfied that it may be necessary to acquire some particular land.<sup>11</sup> Where land is to be compulsorily acquired, just compensation shall be paid promptly in full to all persons whose interest in the land have been determined.<sup>12</sup> Additionally, Communities have been promised for months that a Resettlement Action Plan (“**RAP**”) would be forthcoming, and indications had been made that the extreme delay in releasing the EIA Report was due in part to delays in developing a RAP. Despite this, the EIA Report includes no RAP, forced resettlement impacts are not assessed anywhere else in the EIA, and the document does not indicate when a RAP will be released.

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<sup>10</sup> Appendix 09B, p. 125, Item 8.

<sup>11</sup> Land Act, Section 107(1).

<sup>12</sup> Section 111(1).

***NEMA should not grant a license until a full and complete RAP is carried out. In the event that a license is granted, one of its conditions is that no construction should commence until the RAP is completed.***

### **Misallocation of Environmentally Sensitive Public Land**

The allocation of land for a large section of the project site by granting APCL any rights over the land, violates the law on the allocation of public land. This is premised on the fact that the land is located in, and directly adjacent to, an environmentally and ecologically sensitive area rich in biodiversity meriting a reconsideration of the allocation which the Government of Kenya and particularly NEMA. As the state authority whose mandate is to supervise and coordinate all matter relating to the environment and as the principal Governmental instrument responsible for the implementation of policies related to the environment, NEMA has a responsibility to ensure the allocation process does not violate the law.<sup>13</sup>

According to Section 11 of the Land Act, this land cannot be allocated. Allocation is defined as '*the legal process of granting rights to land*' under the law.<sup>14</sup> It is also one of the methods title can be acquired under Kenyan law.<sup>15</sup> The Land Act goes on to specify that one of the roles that the government plays is to ensure that public land that has been identified for allocation does not fall within the following categories of public land that:<sup>16</sup>

- falls within mangroves;
- falls within wetlands, riparian and the territorial sea;
- consists of natural, cultural and historical features of exceptional national value;
- is along beaches; and,
- falls within environmentally sensitive areas.

The law on the allocation of public land strongly states that certain land should not be allocated, particularly if it falls under any of the above categories, which shall be examined in detail below.

Additionally, the same statute categorically states, with a certain appreciable clarity, the following:

**The [Government] shall take appropriate action to maintain public land that has endangered or endemic species of flora or fauna, critical habitats or protected areas.<sup>17</sup>**

It goes on to add three additional obligations for State the by adding:

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<sup>13</sup> Section 9(1).

<sup>14</sup> Section 2 (Interpretation) of the Land Act.

<sup>15</sup> Section 7(a).

<sup>16</sup> Section 12(2).

<sup>17</sup> Section 11(1) of the Land Act.

**The [Government] shall identify ecologically sensitive areas that are within public lands and demarcate or take any other justified action on those areas and act to prevent environmental degradation and climate change.**

The Land Act places the conservation of ecologically sensitive areas as a priority that the Government should identify, maintain, protect, demarcate, and take any other action necessary to prevent environmental degradation and climate change.

The following assumptions can then be made based on the above analysis of the Land Act:

1. That the public land to be allocated for purposes of the project is situated in Kwasasi, which is an area with a likelihood of being “environmentally and ecologically sensitive” and thus incapable of allocation for the intended purpose.
2. That the areas proximate and adjacent to the specific public land to be allocated, particularly on the side nearer to the ocean, contain definite environmentally and ecological sensitive areas in the form of mangroves, beaches, tidal areas, the territorial sea, and other life present between the eastern border of the Project area and the sea.
3. That the Project, during construction and operations, will engage in an activity (power generation through the combustion of pulverized coal) that is likely to impact the sensitive environment within the land to be allocated and the territory proximate and adjacent to the Project in a way that threatens the ecological and environmental systems within the demarcated land and its vicinity.

The above reasons strongly indicate that the Land and the areas adjacent are ecologically sensitive areas with endangered and endemic species, which the State has a duty to protect by not allocating to any individual. Additionally, the Government also bears a responsibility to take the necessary justified action required to prevent environmental degradation and climate change, which the Project’s proponent’s are of the view the coal power plant is likely to bring about. Were the Government to allocate this land, it would be tantamount to a violation of the law expressly indicating that certain categories of land are not to be allocated – particularly where the area is environmentally sensitive. A failure to prevent this by NEMA, given the mandate under Section 9 of EMCA, will defeat the purpose and objects of the Authority.

***NEMA should ensure that no public land that should not be allocated for environmental reasons (i.e. proximity to mangroves) is transferred to the Project proponent.***

## **100% Utilization of Fly Ash**

Approximately one third of the project site will be utilized to dispose dry ash (as opposed to the more environmentally friendly wet ash), with roughly 100 hectares being used for this purpose.<sup>18</sup> This is a fairly significant environmental footprint. Whatever ecological value the site of the ash disposal area had, such ecological value would be more or less permanently lost.

The project proponent should incorporate a 100% utilization of fly ash, which would dramatically reduce the footprint of the project. Repeatedly through the EIA Report, APCL claim the project will adhere to ‘internationally accepted best practice’. Given they are relying on best standards, it would be prudent to share an example of one such best practice. For over a decade and since the mid-2000s, India has required new coal power plants to operate on the basis of 100% fly ash utilization after four years from commissioning.<sup>19</sup>

***NEMA should make it a condition of the license to APCL that they must utilize 100% of the fly ash and not leave the large 100-hectare environmental footprint, which will likely be irreversible upon decommissioning 25 years in the future.***

## **COMMENT 3 – EFFECTS OF THERMAL EFFLUENT DISCHARGE AND ON THE MARINE ENVIRONMENT AND CRITICISM OF THE COOLING SYSTEM TECHNOLOGY**

According to the Environmental Management and Coordination (Water Quality) Regulations, 2006 (“**Water Quality Regulations**”) no person is allowed to use water for industrial undertaking unless such person complies with established standards.<sup>20</sup> Furthermore, no person shall discharge any pollutants into the aquatic environment unless such discharge of the pollutant complies with the Third Schedule of the Water Quality Regulations.<sup>21</sup> According to the Third Schedule of the Water Quality Regulations titled *Standards for Effluent Discharge into the Environment*, the discharge of effluent back into a water source, such as the sea, should not exceed a difference of 3 degrees Celsius.<sup>22</sup>

### **The project would allow a deleterious and impermissible rise of the temperature of seawater in Manda Bay**

Manda Bay is both coastal water and an estuary, possessing water of intermediate salinity yet still subject to tidal influence. Estuaries such as

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<sup>18</sup> EIA Report, Section 04, p. 20.

<sup>19</sup> Utilization of Fly Ash from Coal or Lignite Based Thermal Power Plants (Notifications under the Environment (Protection) Act, 1986. 14<sup>th</sup> September 1999. The full notice was accessed on 27<sup>th</sup> August 2016 at <http://ospboard.org/ckeditor/CKFiles/02-Jan-2015Utilisation%20of%20flyash%20from%20coal%20or%20lignite%20Based%20Thermal%20Power%20Plant.pdf>.

<sup>20</sup> Regulation 10(1).

<sup>21</sup> Regulation 11.

<sup>22</sup> Table in Third Schedule of Water Quality Regulations.

Manda Bay are extraordinarily productive marine resources because of these qualities. However, slight temperature increases can cause deleterious impacts in complex aquatic systems.

According to the Natural Resources Defense Council in the United States of America:

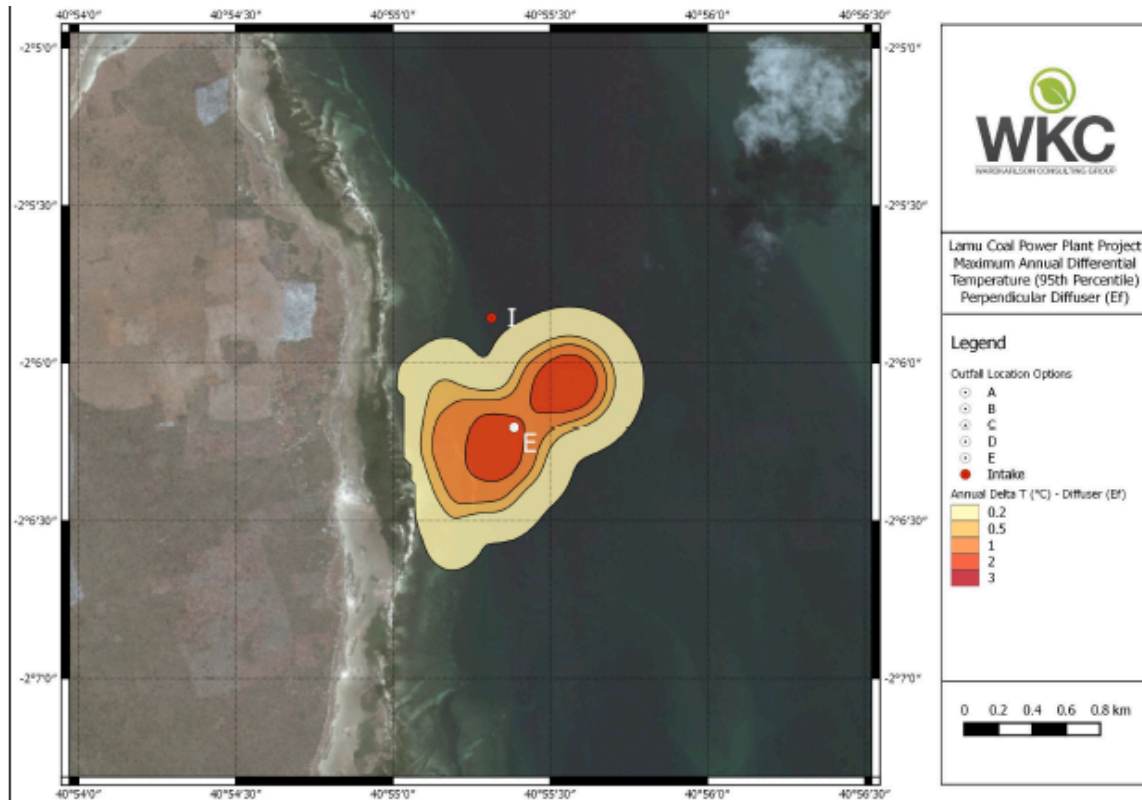
**The presence of dissolved oxygen in water is critical to the survival and abundance of organisms in aquatic ecosystems. Elevated temperatures typically decrease the level of dissolved oxygen; this is one way in which discharging warmer water back to its original source can harm aquatic life. Moreover, thermal pollution may increase the metabolic rates of aquatic animals, causing these species to consume more food than they normally would in an unchanged environment. Thus, an increased metabolic rate may lead to food shortages, thereby resulting in the migration of organisms to other, more suitable habitats. In addition to forced migration, temperature changes may also cause immigration of fish and other aquatic organisms that normally live in warmer waters elsewhere. The latter scenario would lead to greater competition for fewer resources and the more adapted organisms moving in might have an advantage over native organisms that are not used to the warmer temperature. All of these ecological impacts associated with thermal pollution can give rise to significant changes in aquatic biodiversity.<sup>23</sup>**

The seawater of Manda Bay is already relatively warm and may not have the capacity to absorb any additional heat. Table 5-15: Water quality measurements for Coastal wetlands, boreholes and marine on page 30 of Chapter 8 of the ESIA shows that the existing seawater temperature of Manda Bay in the vicinity of the proposed coal-fired power plant is 28 degrees Celsius (equivalent to 82.4 degrees Fahrenheit).

Appendix 1 of the ESIA (1050MW Coal Fired Power Plant Hydrodynamic Modelling Report) provides computer model predictions of how the discharge of cooling-water from the proposed power plant would increase the temperature of seawater in Manda Bay.

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<sup>23</sup> NRDC Issue Brief "Power Plant Cooling and Associated Impacts: The Need to Modernize U.S. Power Plants and Protect Our Water Resources and Aquatic Ecosystems." <https://www.nrdc.org/sites/default/files/power-plant-cooling-IB.pdf>



The model predicts an increase of more than 2 degrees Celsius of the temperature of seawater in Manda Bay if the cooling water discharge point employs a uni-directional perpendicular diffuser at location E: the project proponent's proposed mitigation measure. The area of a temperature increase of more than 2 degrees Celsius is approximately 140,000 square meters (combining to circular areas of a radius of approximately 150 meters).

Section 8.4.1 ESIA deems that this area of a temperature increase would be an impact of minor magnitude because the increase is compliant with IFC regulations for the discharge of thermal effluent. Page 30 of Chapter 8 of the ESIA states:

**The results of the PLUME 3D modeling indicated that the selected discharge design, a uni-directional perpendicular diffuser, is anticipated to meet IFC requirements within the near-field mixing zone, and therefore a significant increase in temperature of greater than 3°C is not anticipated to extend beyond the effluent jet issuing from the diffuser openings. Therefore, the selected outfall design and location are anticipated to comply with the strictest definition of IFC requirements.**

However, this conclusion is invalid because it is based on an apples-to-oranges comparison: The IFC requirements *are technology-based standards* representing what power plants can achieve if they use adequate technology (for the discharge of cooling water). The IFC requirements are *not water-quality based standards* representing what is necessary for the protection of aquatic life in sensitive environments, such as coastal waters and marine



environments.<sup>24</sup> A predicted temperature increase of more than 2 degrees Celsius over approximately 140,000 square meters of Manda Bay needs to be compared to relevant water-quality based standards, not technology-based standards. These are the standards that the Water Quality Regulations also require.

Using relevant water-quality based standards, the predicted temperature increase of more than 2 degrees Celsius over approximately 140,000 square meters of Manda Bay should be rejected as impermissible. The Proposed 1050MW Coal Fired Power Plant should be rejected because it: 1) increases water temperature at the surface of coastal waters more than 2 Celsius degrees over that which existed before the addition of heat of artificial origin; and 2) it would increase at least 50 percent of the cross sectional area and/or volume of the flow of the Manda Bay estuary (including a minimum of one-third of the surface as measured from water edge to water edge at any stage of tide) to a temperature above 83 degrees Fahrenheit (28.33 degrees Celsius).

### **Impingement and Entrainment of Marine Organisms**

One of the major impacts of coal-fired power plants located in a coastal environment is the loss of marine life because of the entrainment of marine organisms. As the U.S. EPA describes:

Thousands of industrial facilities use large volumes of cooling water from lakes, rivers, estuaries or oceans to cool their plants. Cooling water intake structures cause adverse environmental impact by pulling large numbers of fish and shellfish or their eggs into a power plant's or factory's cooling system. There, the organisms may be killed or injured by heat, physical stress, or by chemicals used to clean the cooling system. Larger organisms may be killed or injured when they are trapped against screens at the front of an intake structure."<sup>25</sup>

One study from the Official Journal of International Coal Industry states that:

**Once Through Cooling (OTC) is not without environmental impact issues. Withdrawal of water can cause impingement and/or entrapment and mortality of fish and shellfish on intake screens, while smaller organisms (e.g., small eggs, larvae, juvenile fish, and shellfish) can pass through intake screens and enter a plant's**

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<sup>24</sup> Page 22 of Chapter 8 of the ESIA admits that increases of less than 3 degrees Celsius can have potentially devastating consequences for coastal waters, stating: "The Lamu coal power plant will require about 42,000m<sup>3</sup>/hour of seawater to cool the combustion systems. Water for cooling the systems will be obtained directly from the sea, used for cooling then released back into the sea; at the discharge point, the temperature differential of the ambient and discharged water will be about 9°C. Without adequate mitigation measures, waters with such elevated temperature differentials can potentially be harmful to sensitive habitats such as coral species. For instance, the 1997–1998 El Niño weather phenomenon in East Africa **resulted in a sea temperature rise of 1–2°C in March–April 1998, resulting in widespread coral bleaching and mortality in the region (Obura 2001).**

<sup>25</sup> Cooling Water Intakes <http://water.epa.gov/lawsregs/lawsguidance/cwa/316b/>

**cooling system, where they can experience a high mortality rate due to the thermal and physical stresses. The discharge of heated water can also lead to negative environmental impacts on the aquatic community, including habitat.** <sup>26</sup>

Page 54 of Chapter 8 contains the following information:

**During the operational phase, there may be impacts associated with the cooling water system associated with the seawater intake and outfall locations.**

**A potential impact associated with the sea water intake is impingement and entrainment of organisms. Impingement occurs when marine organisms are trapped against intake screens by the velocity and force of water flowing through them. The fate of impinged organisms differs between intake designs and among marine life species, age, and water conditions. Some hardy species may be able to survive impingement and be returned to the sea, but the 24-hour survival rate of less robust species and/or juvenile fish may be less than 15%.**

**Entrainment occurs when smaller organisms pass through an intake screen and into the process equipment. Organisms entrained into process equipment are generally considered to have a mortality rate of 100%.**

**The number of affected organisms will vary considerably with the volume and velocity of feed water and the use of mitigation measures developed to minimize their impact. If intake velocities are sufficiently low, fish may be able swim away to avoid impingement or entrainment. The swimming performance for different species of fish can predict the types and ages most vulnerable, however, even large fish are frequently caught on intake screens, indicating that swimming ability is not the only factor in impingement. Cold temperatures or seasonal variations in age-selective migrations or growth are also factors.**

Alarming as this statement is, it is generic, rather than site-specific because it does not identify the specific fisheries that would be impacted by the project and the extent of such impacts. Because this material is generic, it defeats the purpose of providing decision-makers with an understanding of impingement and entrainment losses on fisheries specifically in Manda Bay, which are described as the second largest driver of the Lamu economy (on page 57 of Chapter 5).

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<sup>26</sup> <http://cornerstonemag.net/advanced-cooling-technologies-for-water-savings-at-coal-fired-power-plants/>

**Fishing is the second largest driver of the Lamu economy. The County produces over 1,500 metric tons of fish annually valued at KShs111.8 million. 75% is from marine fishing and 25% from fish pond programmes on the main land and ox-bow lakes and water masses along the Tana River delta.**

Guidance is available for how to quantify entrainment losses as part of an assessment of the adverse environmental impact of a cooling water intake of a proposed coal-fired power plant.<sup>27</sup>

The ESIA recognizes the loss of marine life that will occur through entrainment but lacking is a base line study to identify species that will be affected, modeled statistics of fatalities to be expected taking into consideration seasons and migration patterns of some of the species affected. This lack of specifics falls dramatically short of fulfilling the requirements for mitigation. The ESIA describes mitigation as 'measures to avoid, reduce or manage impacts consistent with best practice.'<sup>28</sup>

### **Use of old and environmentally unfriendly cooling systems is harmful to the environment**

Thermal effluence, a waste product of the cooling system, is widely recognized as harmful to the environment and results in significant water loss, which scientists today realize is a major concern. With the advent of new technology for burning coal, new cooling systems have been designed to lower these hazards associated with cooling systems and to make coal more competitive environmentally. The once through cooling system is the most basic and scientists acknowledge that there are considerable environmental costs attached to it.

These hazards are the reason that the coal industry is today using different designs in cooling systems. The re-circulated wet cooling, dry cooling, and hybrid cooling systems are closed cooling systems that utilize either tanks or towers to cool the heated water and then this water is re-cycled and is used to cool the turbines. There is less water loss, no thermal effluence dumped in the ocean and fish and other marine life are not sucked into the cooling system.

Very few new power plants use once-through cooling, however, because of the disruptions such systems cause to local ecosystems from the significant water withdrawals.<sup>29</sup> The cost of the newer and more efficient technology is higher. That makes it less desirable for companies who are looking for the largest return on their investment. Often it is regulatory agencies, like NEMA, who must advocate and even demand more efficient designs to protect

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<sup>27</sup> Assessing Power Plant Cooling Water Intake System Entrainment Impacts" (2007)  
<http://www.energy.ca.gov/2007publications/CEC-700-2007-010/CEC-700-2007-010.PDF>. See: Guidelines for Entrainment Impact Assessment starting at page 94.

<sup>28</sup> EIA Report, Chapter 7, p. 6.

<sup>29</sup> [http://www.ucsusa.org/clean\\_energy/our-energy-choices/energy-and-water-use/water-energy-electricity-cooling-power-plant.html#.V8LiRf197rc](http://www.ucsusa.org/clean_energy/our-energy-choices/energy-and-water-use/water-energy-electricity-cooling-power-plant.html#.V8LiRf197rc)

human and environmental hazards that are easily prevented by using technological advances that have statistics to prove their efficacy.

Instead, APCL has determined that it will use the OTC system by stating that:

**Based on technical feasibility studies carried out, the proposed Lamu coal fired power plant will be designed based on the once-through cooling system as it provides the highest efficiency for cooling using the supercritical boiler technology.**

The above statement lacks clarity as to the technical feasibility study that has been carried out and no further information is provided. It also describes the once-through cooling system as providing the “highest efficiency for cooling”. The terminology is vague and shrouds the unpleasant hazards that are clearly not factored in their equation of “efficiency”.

***NEMA has the responsibility to make sure that all precautions are made to protect our environment. A once through cooling system is unacceptable given the fact that other models exist, such as closed forms of cooling, which reduce impacts and are consistent with best practices.***

#### **COMMENT 4 – POOR ANALYSIS OF ALTERNATIVES AND ECONOMIC JUSTIFICATION**

##### **Erroneous Assessment of Alternative Options**

The EIA Report presents an erroneous assessment of whether the purpose and need for the project could be met by options superior to construction of a 1,050MW coal -fired power plant.

The requirement for a thorough, unbiased and transparent assessment of investment alternatives from an environmental and social perspective is expressed in legislation and policies that apply to the project proposal under consideration. Under the EIA Regulations:<sup>30</sup>

**An environmental impact assessment study prepared under these Regulations shall take into account environmental, social, cultural, economic, and legal considerations, and shall... identify and analyze alternatives to the proposed project;**

Moreover, a proponent is required submit to the Authority, an environmental contents of impact assessment study report incorporating but not limited to the environmental following information:<sup>31</sup>

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<sup>30</sup> Regulation 16.

<sup>31</sup> Regulations 18(1)(i) and (j).

**Alternative technologies and processes available and reasons for preferring the chosen technology and processes; and**

**An analysis of alternatives including project site, design and technologies and reasons for preferring the proposed site, design and technologies.**

Alternatives are therefore a vital part of the EIA Study.

Additionally, the Environmental Impact Assessment Guidelines and Administrative Procedures, 2002 (“**EIA Guidelines**”) state that an EIA Study should aim to assess the relative importance of the impacts of project alternatives with regard to plans, designs, sites, capital and operating costs, technology, suitability under local conditions, monitoring requirements, as well as present information on the environmental impacts.<sup>32</sup> While assessing project alternative impacts, the study should indicate the impacts that are irreversible, unavoidable, and those that can be mitigated.<sup>33</sup> Alternatives should include ‘no project’ alternative in order to demonstrate environmental conditions without it.<sup>34</sup> This evaluation will aid in comparing impacts of different options in order to facilitate selection of the best option.<sup>35</sup>

To understand this better, it is important to look at best practices, including those relied on by APCL – the World Bank. According to the World Bank:

**Since the introduction of the EA process and subsequent development of EA methodologies and legislative provisions, the analysis of alternatives has been one of the main tenets of EA policy and procedures. Indeed, a thorough, unbiased and transparent assessment of investment alternatives from an environmental and social perspective (as well as a technical and economic standpoint) is one of the most important contributions EA can make to improving decision-making.**<sup>36</sup>

The proposed 1,050MW Coal Fired Power Plant, Lamu County, Kenya is a greenfield development. According the Guidance Note 1 for Performance Standard 1 of the International Finance Corporation (IFC): Assessment and Management of Environmental and Social Risks and Impacts, which APCL rely on in the EIA Report:

**GN25. For greenfield developments, the EIA includes an examination of technically and financially feasible alternatives to the source of such impacts, and documentation of the rationale**

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<sup>32</sup> Environmental Impact Assessment Guidelines and Administrative Procedures 6

<sup>33</sup> Environmental Impact Assessment Guidelines and Administrative Procedures 11.

<sup>34</sup> Environmental Impact Assessment Guidelines and Administrative Procedures 11.

<sup>35</sup> Environmental Impact Assessment Guidelines and Administrative Procedures 15.

<sup>36</sup> World Bank (December 1996) 'Analysis of alternatives in environmental assessment'  
<http://siteresources.worldbank.org/INTSAFEPOL/1142947-1116495579739/20507390/Update17AnalysisOfAlternativesInEADDecember1996.pdf>

for selecting the particular course of action proposed. The purpose of the alternatives analysis is to improve decisions on project design, construction, and operation based on feasible alternatives to the proposed project. This analysis may facilitate the consideration of environmental and social criteria at the early stages of development and decision-making based on the differences between real choices. The alternatives analysis should be conducted as early as possible in the process and examine feasible alternatives; alternative project locations, designs, or operational processes; or alternative ways of dealing with environmental and social impacts.<sup>37</sup>

A starting point for the thorough, unbiased and transparent assessment of investment alternatives to the project proposal is its statement purpose, which is provided in Chapter 3 of the EIA – Need for the Project.

**This sub-section discusses the purpose and need for the proposed 1,050MW coal fired power plant to power Kenya's economic growth. In principle, Kenya needs an additional 5000+MW of power generation capacity by September 2018. According to the Draft National Energy and Petroleum Policy dated January 20, 2015, the above 5000+MW is envisaged to be developed from a variety of energy sources including geothermal (1,646MW), wind (630MW) and coal (1,920MW) through Independent Power Producers (IPPs) under the Public Private Partnership (PPP) framework.**

If the purpose of the project is to “*power Kenya's economic growth*,” then all feasible alternatives that achieve the same purpose must be considered in order to ensure that investments are made in the best option, from a social and environmental perspective, or meeting the purpose. When the purpose of a project is to fulfill a country's need for energy, additional legislation and policies that apply to the project proposal must be considered.

The EIA Regulations urge NEMA, when considering whether to grant an EIA License to take into account:

**...the validity of the environmental impact assessment study report...with emphasis on the economic...impacts of the project.**

According to the World Bank, whose standards the project proponents rely on:

**Identifying the alternatives. For energy or water supply projects, an evaluation of the potential for demand-side and supply-side efficiencies should be incorporated at an early stage, which may lead to a refinement of project objectives and consequently the**

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<sup>37</sup> [http://www.ifc.org/wps/wcm/connect/b29a4600498009cfa7fcf7336b93d75f/Updated\\_GN1-2012.pdf?MOD=AJPERES](http://www.ifc.org/wps/wcm/connect/b29a4600498009cfa7fcf7336b93d75f/Updated_GN1-2012.pdf?MOD=AJPERES)

development proposal. However, while demand-side management and supply-side-management measures complement power supply expansion programs by attenuating electricity demand, they usually are not a substitute for generation capacity expansion in developing countries with rapidly increasing demands.<sup>38</sup>

According to the IFC:

**In addition to the resource efficiency measures described above, the client will consider alternatives and implement technically and financially feasible and cost-effective options to reduce project-related GHG emissions during the design and operation of the project. These options may include, but are not limited to, alternative project locations, adoption of renewable or low carbon energy sources, sustainable agricultural, forestry and livestock management practices, the reduction of fugitive emissions and the reduction of gas flaring.**<sup>39</sup>

As discussed below:

- The EIA for the 1,050MW Coal Fired Power Plant, Lamu County, Kenya, contains no assessment of demand-side management alternatives
- The EIA for the 1,050MW Coal Fired Power Plant, Lamu County, Kenya contains an assessment of meeting the need for the project by adoption of renewable or low carbon energy sources. However, the assessment is cursory and its conclusion that a 1,050MW is the superior option rests on false and discredited claims.

We examine both of these issues below.

### **No Assessment of Demand-Side Management Alternatives**

Construction of the Lamu Coal-Fired Power Plant would cost roughly \$2 billion and would take nearly 2 years (21 months) before any electricity is generated.<sup>40</sup>

Therefore, an essential question to ask is whether Kenyans would not be getting a better deal – in terms of cost and speed – if \$2 billion were invested in demand-side management projects, rather than new supply. A MW of power conserved through efficiency enhancements provides the same benefit

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<sup>38</sup> World Bank (December 1996) 'Analysis of alternatives in environmental assessment'  
<http://siteresources.worldbank.org/INTSAFEPOL/1142947-1116495579739/20507390/Update17AnalysisOfAlternativesInEADDecember1996.pdf>

<sup>39</sup> IFC (2012) Performance Standard 3: Resource Efficiency and Pollution Prevention.  
[http://www.ifc.org/wps/wcm/connect/25356f8049a78eeeb804faa8c6a8312a/PS3\\_English\\_2012.pdf?MOD=AJPERES](http://www.ifc.org/wps/wcm/connect/25356f8049a78eeeb804faa8c6a8312a/PS3_English_2012.pdf?MOD=AJPERES)

<sup>40</sup> [http://www.sourcewatch.org/index.php/Lamu\\_Power\\_Project](http://www.sourcewatch.org/index.php/Lamu_Power_Project)

as a MW of new supply, and does so faster, less expensively, and without the pollution – especially in a country such as Kenya where the energy infrastructure may be in need of investment.

According to recent data, more than 17% (1,329 Gigawatt-hours (GWh) of 7670 GWh) of energy that is purchased per year in Kenya is lost without being consumed, primarily on account of electric power transmission and distribution losses.<sup>41</sup> Therefore, without first improving on efficiency, at least 17% of the energy generated by the proposed project would go to waste. This raises the question of whether Kenya must first improve efficiency before investing in more supply.

The EIA Report does not address this critical question.

### **False and Discredited Statements on the Alternatives by APCL**

The cursory assessment of the alternatives of meeting the need for the project by investing in renewable energy generation (solar and wind) rests on false and discredited claims.

The following cursory assessment of meeting the need for the project by investing in renewable energy generation (solar and wind) is provided in Chapter 6 of the EIA:

#### **The advantages of solar power plants include:**

- **Solar power plants (solar PV) are quick to establish (<12 months);**
- **Solar power does not lead to any major mining activity, does not lead to significant GHG emissions and does not lead to health hazards;**
- **Solar power does not require fuel like wind energy and the Operation and Maintenance costs are extremely low;**
- **Solar power plants do not lead to pollution disasters; and**
- **Solar power potential is almost infinite compared to the limited and peak features of other forms of energy like wind, geothermal, oil, gas and others.**

#### **The disadvantages of solar power plants are as follows:**

- **One of the biggest problems of solar power (solar PV) is that it is intermittent in nature as it generates energy only when the sun shines. Consequently, solar power generation in Kenya should not exceed 10% of the average electricity demand due**

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<sup>41</sup> Kenya Power (2013) Energy Efficiency: A Kenya power perspective - presentations [http://www.slideshare.net/ACX\\_Africa/energy-efficiency-a-kenya-power-perspective](http://www.slideshare.net/ACX_Africa/energy-efficiency-a-kenya-power-perspective)



to the variable nature of power generation, otherwise the grid may become unstable;

- The cost of a solar power plant is about US\$ 1 – 1.4 million/MW and the load factor is 25%;
- According to the 2012 Feed in Tariff, the tariff in Kenya for solar power is US¢12/kWhour which is relatively higher than other fuel sources;
- The land requirements for solar power plants are high about 4 hectares/MW which implies that for a 1000MW solar power plant, about 4000 hectares would be required; and
- As solar power is not firm power, it cannot be stored and used as base load especially since peak electrical demand in Kenya is between 5:00pm and 10:00pm and the solar map of Kenya shows that the maximum solar power can be generated between 9:00am and 3:00pm;

**The advantages of wind energy are:**

- Unlike other forms of electrical generation where fuel is shipped to a processing plant, wind energy generates electricity at the source of fuel, which is free;
- The price of electricity from fossil fuels and nuclear power can fluctuate greatly due to highly variable mining and transportation costs. Wind can help buffer these costs because the price of fuel is fixed and free;
- The development time for a wind farm is about 24 – 30 months.

**The disadvantages of wind power plants include the following:**

- Wind is a variable resource and the turbines produce electricity only when the wind blows. Just like solar energy, wind power generation in Kenya should not exceed 10% of average electricity demand otherwise the grid could become unstable due to the variable nature of power generation;
- As it is a variable resource, the power generated by a wind farm is non-firm and therefore cannot be depended upon as a base load power producer;
- Under the Feed in Tariff of 2012, the tariff for wind power is US¢11/kWhour with an escalable percentage portion of 12% which makes this a relatively expensive power generation technology;
- The visual impact and aesthetics created by a wind farm makes people consider wind turbines to have an undesirable experience;
- Wind farms are suited to particular regions of a country where coastal or hilly areas are present;

- **Though wind energy is non-polluting, the turbines may create a lot of noise especially the low frequency type which can adversely impact sleep;**
- **Wind farms create shadow flicker which has potential environmental health impacts associated with epilepsy in some people.**

However, each one of the “disadvantages” of solar power plants and wind energy listed in Chapter 6 of the EIA rests on false information and discredited claims, as discussed below.

The intermittency of solar and wind power is no barrier to being a firm supply of energy because of affordable technologies involving energy storage. **Countries can meet 100% of their energy needs by using a combination of wind, hydro and solar without experiencing any grid instability.**

According to a recent study published by scientists with Stanford University:

**Worldwide, the development of wind, water, and solar (WWS) energy is expanding rapidly because it is sustainable, clean, safe, widely available, and, in many cases, already economical. However, utilities and grid operators often argue that today’s power systems cannot accommodate significant variable wind and solar supplies without failure (1). Several studies have addressed some of the grid reliability issues with high WWS penetrations (2–21), but no study has analyzed a system that provides the maximum possible long-term environmental and social benefits, namely supplying all energy end uses with only WWS power (no natural gas, biofuels, or nuclear power), with no load loss at reasonable cost. This paper fills this gap. It describes the ability of WWS installations, determined consistently over each of the 48 contiguous United States (CONUS) and with wind and solar power output predicted in time and space with a 3D climate/weather model, accounting for extreme variability, to provide time-dependent load reliably and at low cost when combined with storage and demand response (DR) for the period 2050–2055, when a 100% WWS world may exist.**

**The large-scale conversion to 100% wind, water, and solar (WWS) power for all purposes (electricity, transportation, heating/cooling, and industry) is currently inhibited by a fear of grid instability and high cost due to the variability and uncertainty of wind and solar. This paper couples numerical simulation of time- and space-dependent weather with simulation of time-dependent power demand, storage, and demand response to provide low-cost solutions to the grid reliability problem with 100% penetration of WWS across all energy sectors in the continental United States between 2050 and 2055. Solutions are**

obtained without higher-cost stationary battery storage by prioritizing storage of heat in soil and water; cold in water and ice; and electricity in phase-change materials, pumped hydro, hydropower, and hydrogen.

In sum, an all-sector WWS energy economy can run with no load loss over at least 6 y, at low cost. As discussed in SI Appendix, Section S1.L, this zero load loss exceeds electric-utility industry standards for reliability. The key elements are as follows: (i) UTES to store heat and electricity converted to heat; (ii) PCM-CSP to store heat for later electricity use; (iii) pumped hydropower to store electricity for later use; (iv) H<sub>2</sub> to convert electricity to motion and heat; (v) ice and water to convert electricity to later cooling or heating; (vi) hydropower as last-resort electricity storage; and (vii) DR. These results hold over a wide range of conditions (e.g., storage charge/discharge rates, capacities, and efficiencies; long-distance transmission need; hours of DR; quantity of solar thermal) (SI Appendix, Table S3 and Figs. S7–S19), suggesting that this approach can lead to low-cost, reliable, 100% WWS systems many places worldwide.<sup>42</sup>

Similarly, a study published in 2012 by scientists principally with the University of Delaware found that solar and wind power alone can reliably supply power to a large energy grid (covering one-fifth of the United States) 99.9% of the time, with the remaining 0.1% of power coming from energy storage.

This study concludes:

**We model many combinations of renewable electricity sources (inland wind, offshore wind, and photovoltaics) with electrochemical storage (batteries and fuel cells), incorporated into a large grid system (72 GW). The purpose is twofold: 1) although a single renewable generator at one site produces intermittent power, we seek combinations of diverse renewables at diverse sites, with storage, that are not intermittent and satisfy need a given fraction of hours. And 2) we seek minimal cost, calculating true cost of electricity without subsidies and with inclusion of external costs. Our model evaluated over 28 billion combinations of renewables and storage, each tested over 35,040 h (four years) of load and weather data. We find that the least cost solutions yield seemingly-excessive generation capacity at times, almost three times the electricity needed to meet electrical load. This is because diverse renewable generation and the excess capacity together meet electric load with less storage, lowering**

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<sup>42</sup> Jacobson, M. Z., Delucchi, M. A., Cameron, M. A., & Frew, B. A. (2015). Low-cost solution to the grid reliability problem with 100% penetration of intermittent wind, water, and solar for all purposes. *Proceedings of the National Academy of Sciences*, 112(49), 15060-15065. <http://www.pnas.org/content/112/49/15060.full>

**total system cost. At 2030 technology costs and with excess electricity displacing natural gas, we find that the electric system can be powered 90%e99.9% of hours entirely on renewable electricity, at costs comparable to today's but only if we optimize the mix of generation and storage technologies.**<sup>43</sup>

Furthermore, reality disproves the claim in the EIA that “*Just like solar energy, wind power generation in Kenya should not exceed 10% of average electricity demand otherwise the grid could become unstable due to the variable nature of power generation.*” As long ago as 2008, Denmark's power grid received 40 percent of its supply from wind during some months, on its way to meeting a government target of 50% by 2020.<sup>44</sup>

The cost of electricity generated from solar and wind power is steadily declining and is **likely the better economic choice** compared to a 1,050MW Coal Fired Power Plant, Lamu (even without factoring in environmental costs).

Page 8 of Chapter 6 of the EIA Study contains the following claim about the levelized cost of electricity from the proposed project:

**Coal is one of the cheapest forms of energy making it the energy of choice in developing countries like Kenya. The proposed coal fired power plant in Lamu has the lowest levelised cost of electricity (LCOE) at US¢7.52/kWhour;**

If true, then these claimed costs compare very unfavorably to the levelized cost of electricity from utility-scale solar and wind. According to a 2013 publication of the Lawrence Berkeley National Laboratory (Utility-Scale Solar 2012 An Empirical Analysis of Project Cost, Performance, and Pricing Trends in the United States):

**Driven primarily by lower installed PV project prices (which, in turn, have been driven primarily by declining module prices), as well as expectations for further cost reductions in future years, levelized PPA prices have fallen dramatically over time, by \$25/MWh per year on average. Some of the most-recent PPAs (for PV projects) in the West have levelized PPA prices as low as \$50-60/MWh (in 2012 dollars), which, in some cases, is competitive with wind power projects in that same region. Solar appears to be**

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<sup>43</sup> Budischak, C., Sewell, D., Thomson, H., Mach, L., Veron, D. E., & Kempton, W. (2013). Cost-minimized combinations of wind power, solar power and electrochemical storage, powering the grid up to 99.9% of the time. *Journal of Power Sources*, 225, 60-74.  
<http://www.edleaver.com/homepage/Archives/2013/06/pdf/CostMinimizedCombinationsOfWindSolarAndElectrochemicalStorage.pdf>

<sup>44</sup> Sovacool, B. K. (2009). The intermittency of wind, solar, and renewable electricity generators: Technical barrier or rhetorical excuse?. *Utilities Policy*, 17(3), 288-296.  
[https://www.researchgate.net/profile/Benjamin\\_Sovacool/publication/46495038\\_The\\_intermittency\\_of\\_wind\\_solar\\_and\\_renewable\\_electricity\\_generators\\_Technical\\_barrier\\_or\\_rhetorical\\_excuse/links/00b7d526620ca159ea000000.pdf](https://www.researchgate.net/profile/Benjamin_Sovacool/publication/46495038_The_intermittency_of_wind_solar_and_renewable_electricity_generators_Technical_barrier_or_rhetorical_excuse/links/00b7d526620ca159ea000000.pdf)

particularly competitive when considering its time-of-delivery pricing advantage over wind (roughly \$25/MWh in California at current levels of penetration).<sup>45</sup>

The following figure from the publication clearly illustrates the dramatic decline in the levelized cost of electricity from utility-scale solar installations, to a point where, in 2013, power purchase agreements were averaging \$50-60/MWh (5-6 cents/KWh).

To provide a clearer look at the time trend, Figure 16 simply levelizes the price streams shown in Figure 15. Based on this sample, levelized PPA prices for utility-scale solar projects have fallen by roughly \$25/MWh per year on average over this period.

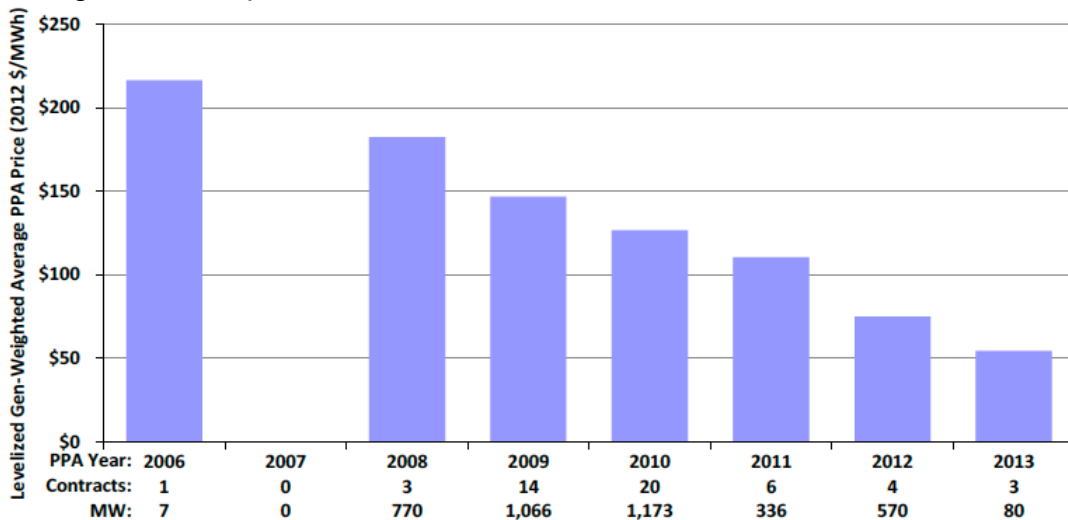


Figure 16. Levelized Generation-Weighted Average PPA Prices by Contract Vintage

A levelized cost of electricity of \$50-60/MWh (5-6 cents/KWh) from utility-scale solar is **20-33% lower than** the levelized cost of electricity the proposed coal fired power plant in Lamu as claimed in the EIA. Additional technological advances will further reduce the levelized cost of electricity from utility-scale solar (and wind) in a manner that is not possible with coal, considering that it is a mature (outdated) technology.

Other claims in the EIA regarding the disadvantages of solar and wind range from irrelevant to absurd.

For example, it is true that “the land requirements for solar power plants are high about 4 hectares/MW which implies that for a 1000MW solar power plant, about 4000 hectares would be required.” However, it is also true that the proposed coal fired power plant in Lamu would also have a large footprint (for example, over 100 hectares for the proposed coal ash disposal area). More importantly, there are far fewer logistical constraints for siting a 1000MW solar

<sup>45</sup> Bolinger, M. (2014). Utility-Scale Solar 2012: An Empirical Analysis of Project Cost, Performance, and Pricing Trends in the United States. <http://escholarship.org/uc/item/3cf3876s.pdf>

power plant, since it need not be near a facility for the import of coal. For example, a 1000MW solar power plant could be sited in arid, unpopulated areas, avoiding the problem of forced resettlement, and a 1000MW solar power plant need not be confined to a single area but divided into smaller components depending on what best fits local circumstances.

The claims that “though wind energy is non-polluting, the turbines may create a lot of noise especially the low frequency type which can adversely impact sleep” and that “wind farms create shadow flicker which has potential environmental health impacts associated with epilepsy in some people” border on absurdity. There is no evidence at all in the scientific literature that a single person has lost a night’s sleep or suffered an epileptic seizure because of a utility-scale wind power plant.<sup>46</sup> Of more concern is why the authors of the EIA Report included these absurd claims, since it indicates either ignorance of or bias against utility-scale wind power, possibly clouded by a vested interest in a particular outcome coal-fired power plant.

***The EIA Regulations require that a proponent undertake a proper analysis of the alternatives to the project type, design, and form. APCL have failed to undertake this full and comprehensive analysis, thus breaching the law. Therefore, NEMA should not grant an EIA license until a complete analysis of alternatives is undertaken and considered.***

## **COMMENT 5 - SEGMENTATION OF THE SCOPE OF THE EIA UNDERSTATES THE FULL IMPACT OF THE PROJECT**

It is a fundamental principle of EIA law that all related actions (project components) must be assessed in a single, comprehensive EIA rather than segmented into separate EIAs of narrow scope. If components of the project are assessed separately, then the separate assessments will necessary understate the full impact of the complete project.

The EIA Regulations require the EIA Report submitted by APCL to contain information about:

- Any other relevant information related to the project;<sup>47</sup>
- A description of the potentially affected environment;<sup>48</sup>
- The environmental effects of the project including...the direct, indirect, cumulative, irreversible, short term and long term effects anticipated,<sup>49</sup> and,

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<sup>46</sup> Copes, R., & Rideout, K. (2009). Wind turbines and health: A review of evidence. Ontario Agency for Health Protection and Promotion. [http://extranet.ontario-sea.org/Storage/41/3245\\_Wind\\_Turbines\\_and\\_Health\\_-\\_A\\_Review\\_of\\_Evidence\\_Wind\\_Turbines\\_-\\_10-09-2009.pdf](http://extranet.ontario-sea.org/Storage/41/3245_Wind_Turbines_and_Health_-_A_Review_of_Evidence_Wind_Turbines_-_10-09-2009.pdf)

<sup>47</sup> Regulation 18(1)(c).

<sup>48</sup> Regulation 18(1)(g).

<sup>49</sup> Regulation 18(1)(h).

- An environmental management plan proposing the measures for mitigating adverse impacts on the environment; including the cost, time frame and responsibility to implement the measures.

From the requirements listed above that must form part of an EIA Report, it is clear that any relevant information should be assessed, with a proper description of the environment likely to be affected conducted as well. Moreover, all the potential effects, be they direct or indirect, short or long term, must be considered too, with the environmental management plan proposing measures on how to mitigate these negative impacts.

According to IFC Performance Standard 1 – which APCL relies on in the EIA Report:

**8. Where the project involves specifically identified physical elements, aspects, and facilities that are likely to generate impacts, environmental and social risks and impacts will be identified in the context of the project’s area of influence. This area of influence encompasses, as appropriate:**

**The area likely to be affected by:**

- (i) the project and the client’s activities and facilities that are directly owned, operated or managed (including by contractors) and that are a component of the project;**
- (ii) impacts from unplanned but predictable developments caused by the project that may occur later or at a different location; or**
- (iii) indirect project impacts on biodiversity or on ecosystem services upon which Affected Communities’ livelihoods are dependent.**

**Associated facilities, which are facilities that are not funded as part of the project and that would not have been constructed or expanded if the project did not exist and without which the project would not be viable.**

**Cumulative impacts that result from the incremental impact, on areas or resources used or directly impacted by the project, from other existing, planned or reasonably defined developments at the time the risks and impacts identification process is conducted.”**

According to the Guidance Notes for IFC Performance Standard 1:

**GN21. Where the project involves specifically identified physical elements, aspects and facilities that are likely to generate**

impacts, it should identify the extent and complexity of potential adverse impacts and risks in the context of the project's entire area of influence, which is the total area likely to be affected by both on-site and off-site impacts from project activities, assets and facilities, including associated facilities.

**GN24. The ESIA process predicts and assesses the project's potential adverse impacts and risks, in quantitative terms to the extent possible. It evaluates environmental and social risks and impacts from associated facilities and other third party activities.**"

It is clear that the EIA for the project is not complete, but leaves out two major associated facilities. Contrary to the above regulations, guidelines and performance standards, the EIA Report has vital components of the project design segmented. First, in the details of the proposed power plant, the EIA Report cites a coal receiving system that includes a coal berth, coal handling equipment and a conveyor system approximately 15kms long.<sup>50</sup>

Page 14 of Chapter 4.6.1.2 (Coal delivery to the project site) of the EIA states:

**Initially, the design of the project included a purpose built coal jetty for receiving coal in bulk. However, this changed in January 2016 when the Ministry of Energy and Petroleum (MOEP) directed that coal for the power plant be imported using one of the three berths currently under construction by the Central Government in the Kililana area. An approximate location of the coal unloading berth and coal conveyor routing is shown in Figure 4-2. The design of the coal conveyor system is currently in the design phase and was unavailable at the time of undertaking this ESIA Study and consequently, no environmental and social impacts have been identified or assessed.**

**In general, coal will be unloaded from the coal carrier by the ship's unloading gear to a hopper and transferred to a conveyor system. Through a series of transfer towers, the coal will be transhipped to the coal stockyard within the proposed power plant. The project is designed with the option of receiving coal via rail if and when the Kenyan coal becomes available."**

The 'berths currently under construction by the Central Government in the Kililana area' and the "coal conveyor system ... currently in the design phase and ... unavailable at the time of undertaking this ESIA Study" are associated facilities that must be considered in a single, comprehensive ESIA. Moreover, when the Government did the EIA Study for the Kililana Port in 2013, the question of receiving coal through one of the berths was never assessed.<sup>51</sup>

<sup>50</sup> EIA Report, Section 04, Description of Project, p. 11.

<sup>51</sup> Heztech Engineering Services. 2013. Environmental and Social Impact Assessment Study Report for Construction of the First Three Berths of the Proposed Lamu Port and Associated Infrastructure.



Thus, APCL cannot claim that an EIA for the berth was already done – the facts have significantly change.

Second, the project has been granted a concession of 2,000 acres for limestone mining in Witu that shall be transported via sea to the project site for wet flue gas desulfurization.<sup>52</sup> Once more, this associated facility that is a vital component of the project is not assessed in the EIA Report.

Chapter 10.2 (Spatial and temporal boundaries) of the EIA is titled Cumulative Impact Assessment, but the assessment is very limited - including only the power plant and associated transmission line, and hence excludes consideration of the related coal import berth, coal conveyor system and the limestone mine.

The spatial boundaries for this cumulative impact assessment is the immediate area around the Lamu coal power plant and associated transmission line within Lamu County. The assessment of cumulative effects on the natural and social environment therefore includes activities directly and indirectly related to the project.

***NEMA should not grant a license to this project given that a full EIA Study has not been completed for three key components – the coal conveyor system, the coal import berth and the limestone mine.***

## **COMMENT 6 - CLIMATE CHANGE IMPACTS UNDERMINED AND INCONSISTENT WITH KENYA'S COMMITMENTS**

**The ESIA does not analyse whether the proposed project is consistent with Kenya's climate change commitments**

The ESIA states that:

**Current generation from the Lamu Power Plant Facility is anticipated to be approximately 1,050 MW of electricity per year (~8.8 GWh) using 3 600 000 tonnes of coal per annum. It must be noted that all but the parasitic load will be distributed via national grid to local electricity demand. Excluding the emissions from transport of coal, transmission losses and downstream combustion of this electricity will result in the emission of approximately ~ 8.8MtCO<sub>2</sub>e per year – a 0.024% increase in global emissions (World Total: 36 131 MtCO<sub>2</sub>).<sup>53</sup>**

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<sup>52</sup> EIA Report, Section 04, Description of Project, p. 4 and 5.

<sup>53</sup> Kurrent Technologies "Assessment of Social and Environmental Impacts" in *ESIA Study for 1,050MW Coal Fired Power Plant, Lamu County, Kenya Assessment of Potential Environmental and Social Impacts* (2016) 38

In 2013, Kenya issued its National Climate Change Action Plan 2013 – 2017 (Vision 2030), stating the Need for Low Carbon Climate Resilient Development. This Plan states that:

**Transitioning to a low carbon climate resilient development pathway is important for our country. Climate change poses a real threat to development prospects and livelihoods, and can undermine investments made to meet Vision 2030 goals...average temperatures are rising, rainfall patterns are changing and the incidence and intensity of extreme weather events such as droughts and floods is increasing. Droughts and floods have devastating consequences on the economy, environment and society, causing food insecurity, malnutrition, damage to infrastructure and loss of life. Some studies have estimated the cost of droughts and flooding to Kenya at about 2.6 percent of GDP per year.<sup>54</sup>**

**Our population is vulnerable to climate risks due to the high dependency on natural resources for food, fuel and shelter. IISD's report on climate risk and vulnerability in Kenya indicates that water availability is especially critical as we live in one of the most water scarce countries in Africa. Access to this basic resource is likely to become more difficult due to population growth, economic expansion, unsustainable management of water and forest resources, and changes in rainfall patterns. At the same time water is the core input for most economic activities: irrigated and rain-fed agriculture, hydroelectric power that constitutes over half the installed capacity of electric power, sanitation and provision of drinking water.<sup>55</sup>**

To make this possible, the plan identifies priority actions for transitioning to a Low Carbon Climate Resilient Development Pathway. It states that:

**A low carbon climate resilient pathway prioritises renewable energy systems, which increase reliability of the electricity supply by reducing reliance on hydropower, which is vulnerable to climate change-induced variations in rainfall patterns. Development of Kenya's geothermal energy potential will arguably be the powerhouse for renewable energy development. This low carbon option has the largest abatement potential in the electricity generation sector at approximately 14 MtCO<sub>2</sub>e a year by 2030. Other low carbon options include the expansion of wind and hydropower-based electricity generation with an abatement potential of 2.5 MtCO<sub>2</sub>e by 2030."<sup>56</sup>**

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<sup>54</sup> RoK National Climate Change Action Plan (2013-2017) 28.

<sup>55</sup> National Climate Change Action Plan (2013-2017) 29.

<sup>56</sup> National Climate Change Action Plan (2013-2017) 36.

Based on this, there is no analysis, either in the ESIA or in the Climate Change and GHG Specialist Study, of whether the proposed project is consistent with National Climate Change Action Plan that emphasizes the need for achieving a low carbon climate resilient pathway. A cursory analysis of the project and its likely emissions and climate change impacts indicates that it is in contravention of the Plan.

Additionally, Kenya submitted its Intended Nationally Determined Contribution (INDC) under the United Nations Framework Convention on Climate Change (UNFCCC) in 2015. The INDC included the following commitment:

**Kenya seeks to undertake an ambitious mitigation contribution towards the 2015 Agreement. Kenya therefore seeks to abate its GHG emissions by 30% by 2030 relative to the BAU scenario of 143 MtCO<sub>2</sub>eq; and in line with its sustainable development agenda. This is also subject to international support in the form of finance, investment, technology development and transfer, and capacity building.<sup>57</sup>**

Although the EIA approximates the amount of CO<sub>2</sub> emission, there is no analysis, either in the ESIA or in the Climate Change and GHG Specialist Study, of whether the proposed project, which would add 8.8 million tons of CO<sub>2</sub>eq per year in 2030, is consistent with Kenya's commitment under the UNFCCC.

### **The ESIA presents an incomplete and misleading assessment of the project's climate impact**

The ESIA states that:

**The greenhouse effect occurs on a global basis and the point source of emissions is irrelevant when considering the future impact on the climate. It is not possible to link emissions from a single source - such as the Lamu Power Plant facility - to particular impacts in the broader study area.<sup>58</sup>**

By justifying the project on the basis that it might be of relatively small significance on a global scale, the proponent fails to investigate alternative forms of energy that emit no CO<sub>2</sub>. In addition, the proponent also fails to consider the impacts of climate change in the broader study area in terms of costs. The social cost of CO<sub>2</sub> emissions is defined as "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

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<sup>57</sup> Ministry of Environment and Natural Resources *Kenya's Intended Nationally Determined Contribution (INDC) (2015) 2 and FCCC/CP/2015/L.9/Rev.1.*

<sup>58</sup> EIA Report, Section 8.5.3, p. 36.

increased costs for air conditioning. However, given current modeling and data limitations, it does not include all important damages.<sup>59</sup> Estimates are available of the social cost of CO<sub>2</sub>e emissions, and are as high as \$152 per ton in the year 2030.<sup>60</sup>

The ESIA therefore fails to inform decision-makers of the full cost of the project, which includes associated climate change damages, and may be as high as \$1.3 billion per year (8.8 million tons of CO<sub>2</sub>eq per year x \$152/ton of CO<sub>2</sub>eq).

Given its global nature, the proponent proposes the following mitigation measures:

**Consider the development of a man-made mangrove for the treatment of sewerage in order to sequester carbon.**

However, the proponent is not clear what land the mangrove would be created. It is not clear whether this development will involve the destruction of another type of habitat, which may be valuable in its own right.

APCL also proposes the following:

**Explore options for providing local communities with electricity to offset deforestation.**

This is an odd suggestion given that deforestation would result in release of fossil fuel GHG emission.

The fact that the ESIA presents an erroneous assessment of whether the purpose and need for the project could be met by demand-side management or utility-scale solar and wind power plants takes on dramatic significance considering the outsized contribution coal-fired power makes to the risk of catastrophic climate change, and that once built, coal-fired power plants can remain an unwanted part of a country's energy portfolio for decades. According to the most recent (Fifth Assessment) of the Intergovernmental Panel on Climate Change:<sup>61</sup>

**Infrastructure developments and long-lived products that lock societies into GHG-intensive emissions pathways may be difficult**

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<sup>59</sup> U.S. EPA "The Social Cost of Carbon" Technical Update of the Social Cost of Carbon for Regulatory Impact Analysis Under Executive Order 12866 (May 2013, Revised July 2015) <https://www3.epa.gov/climatechange/EPAactivities/economics/scc.html>

<sup>60</sup> Ibid.

<sup>61</sup> IPCC, 2014: Summary for Policymakers, In: Climate Change 2014, Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Edenhofer, O., R. Pichs-Madruga, Y. Sokona, E. Farahani, S. Kadner, K. Seyboth, A. Adler, I. Baum, S. Brunner, P. Eickemeier, B. Kriemann, J. Savolainen, S. Schlömer, C. von Stechow, T. Zwickel and J.C. Minx (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA. [https://www.ipcc.ch/pdf/assessment-report/ar5/wg3/ipcc\\_wg3\\_ar5\\_summary-for-policymakers.pdf](https://www.ipcc.ch/pdf/assessment-report/ar5/wg3/ipcc_wg3_ar5_summary-for-policymakers.pdf)

or very costly to change, reinforcing the importance of early action for ambitious mitigation (robust evidence, high agreement). This lock-in risk is compounded by the lifetime of the infrastructure, by the difference in emissions associated with alternatives, and the magnitude of the investment cost. As a result, lock-in related to infrastructure and spatial planning is the most difficult to reduce. ...

In the baseline scenarios assessed in AR5, direct CO<sub>2</sub> emissions from the energy supply sector are projected to almost double or even triple by 2050 compared to the level of 14.4 GtCO<sub>2</sub> / year in 2010, unless energy intensity improvements can be significantly accelerated beyond the historical development (medium evidence, medium agreement). In the last decade, the main contributors to emission growth were a growing energy demand and an increase of the share of coal in the global fuel mix. The availability of fossil fuels alone will not be sufficient to limit CO<sub>2</sub>eq concentration to levels such as 450 ppm, 550 ppm, or 650 ppm. [6.3.4, 7.2, 7.3, Figures 6.15, TS.15, SPM.7]

Decarbonizing (i. e. reducing the carbon intensity of) electricity generation is a key component of cost-effective mitigation strategies in achieving low-stabilization levels (430 – 530 ppm CO<sub>2</sub>eq); in most integrated modelling scenarios, decarbonization happens more rapidly in electricity generation than in the industry, buildings, and transport sectors (medium evidence, high agreement) (Figure SPM.7). In the majority of low-stabilization scenarios, the share of low-carbon electricity supply (comprising renewable energy (RE), nuclear and CCS) increases from the current share of approximately 30 % to more than 80 % by 2050, and fossil fuel power generation without CCS is phased out almost entirely by 2100 (Figure SPM. 7). [6.8, 7.11, Figures 7.14, TS.18]”

However, going forward with the proposed 1050 MW coal fired power plant in Lamu is exactly the type of infrastructure development that would lock societies into GHG-intensive emissions pathways that may be difficult or very costly to change. Going forward with the proposed 1050 MW coal fired power plant in Lamu would be counter to the decarbonization of electricity generation that is a key component of cost-effective mitigation strategies in achieving low-stabilization levels (430 – 530 ppm CO<sub>2</sub>eq) and will allow humanity the possibility of avoiding the catastrophic impacts of climate change.

NEMA, as the authority responsible for protecting the environment of which issues of climate fall under, should require a more thorough study of the climate change impacts likely to arise as a result of the emissions this project will generate for 25 to 50 years. A cursory examination of Kenya’s obligations

nationally and under international law indicates that the project may result in a number of violations.

***Therefore, no EIA License should be granted on the basis that this project violates local and international commitments the Kenyan government has made.***

## **COMMENT 7 - AIR AND NOISE QUALITY COMPROMISED AND NO MITIGATION CITED**

### **Air Quality to be impacted by Emissions**

The text proudly cites “advanced air modeling” and “predictive air dispersion modeling” but then gives no data about expected ambient air quality or about exposures to harmful pollutants.<sup>62</sup> The text says the operator will satisfy this and that requirement and standard, implying that doing so will eliminate all negative impacts. This is absurd. The standards do nothing more than reduce the impacts below what they would be without the standards.

Elsewhere in the EIA Report, there is a single mention in the text that comes even close to describing the potential emissions stating that 95% of emissions would be eliminated.<sup>63</sup> However, the remaining 5% will be harmful to human health, animals and marine life. Yet, the section is dedicated to examining the impacts on birds alone. No detailed description of the impacts of mercury on humans, fish, wildlife, and livestock is given. This is a glaring gap that must be addressed.

***NEMA should not grant APCL an EIA License until mitigation measures of how APCL will manage emissions harmful to human, fish and animal health are provided in detail.***

### **Noise Quality to be impacted by Operations**

The Environmental Management and Coordination (Noise and Excessive Vibration Pollution Control) Regulations, 2009 (“**Noise Regulations**”) state that any person wishing to engage in any industrial activity, which is likely to emit noise or excessive vibrations, shall carry out the activity within the relevant levels prescribed in the Noise Regulations.<sup>64</sup> According to the law, the maximum limits for industrial activity are as follows:

- Daytime Maximum Limit: **60dB(A)**
- Nighttime Maximum Limit: **35dB(A)**

According to the First Schedule of the Noise Regulations, there is no explicit category for industrial activity. However, what the law requires is for anyone

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<sup>62</sup> EIA Report, Section 8.2.2, p. 11-14.

<sup>63</sup> EIA Report, Section 8.10.3, p. 64.

<sup>64</sup> Regulation 11(1)(b).

engaged in industrial activity, like the operation of a coal power plant, to adhere to these limits. Unfortunately, these limits will be exceeded if APCL proceeds with the proposed project in accordance to the manner set out in the EIA Report. While the operational noise limits are not exceeded during the day (most noise is below the 60dB(A), the case is not the same for at night.

The nighttime noise levels range from lows of 38dB(A) to a high of 53dB(A) – all these exceed the most generous limits in the First Schedule of the Noise Regulations. Though APCL argues that the exceeding nature of the noise levels are at best conservative given that this is an industrial area, they provide no proof or evidence to show it is industrial. The physical plans that have been developed for the area as of last year do not categorize the Kwasasi area as industrial – hence the area can be categorized as residential or agricultural. APCL relies on misinformation and less stringent standards to evade complying with the Noise Regulations, something, which should worry NEMA in a great way.

***NEMA should not grant an EIA License to APCL as the noise limits in the EIA Report indicate that they will exceed lawfully stipulated limits and cause harm to the people who live in this residential (not industrial) area.***

## **COMMENT 8 - NEGATIVE IMPACT ON LIVELIHOODS**

### **Inadequate assessment of and measures to avoid and mitigate impacts on local livelihoods**

The ESIA recognizes that the local community currently benefits from a range of ecosystem services that could be impacted by the project, including fishing, water abstraction and medicinal plants. It also notes that fishing is the second largest driver of the Lamu economy,<sup>65</sup> and tourism is another key contributor, with tourists drawn to the area in part by Lamu’s diverse flora and fauna, local national historical monuments and reserves and sandy beach coastline.<sup>66</sup>

The ESIA notes that some of these services may be eliminated or reduced as a result of the project, but it does not take the further required step of assessing which services qualify as the type of “priority ecosystem services” that must be protected through adequate mitigation measures. Neither does the ESIA adequately assess or mitigate the specific impacts on ecosystem services that are likely to result.

Table 8-33 in the ESIA purports to assess ecosystem service impacts from the construction and operation of the project, but it is significantly too general to be effective. The table does not specify which ecosystem services are being assessed or how each of these services will be affected by the project. For example, as described above, marine organisms are likely to be

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<sup>65</sup> ESIA 5.11.7.3.

<sup>66</sup> ESIA at 5.11.3.7.

significantly impacted by aspects of the coal plant's design which are not yet fully understood, including the disbursement of warmer used cooling water into the surrounding marine environment, and the potential entrainment of organisms into cooling water intake systems. These processes may all have an impact on local fish and shellfish populations, and therefore on local fishing livelihoods, but these ecosystem services impacts are not specifically assessed, and it is not clear whether such impacts were considered in the brief, single-page coverage of ecosystem services in the ESIA. The ESIA's assessment is inadequate to provide a true understanding of the potential impacts from this project on key ecosystem services.

Only two mitigation measures are listed: support initiatives to create alternative sources of livelihoods for the local community; and support the enforcement of fishery laws to prevent overfishing or fishing in protected areas.<sup>67</sup> Both of these measures are too general to be effective. No detail is provided regarding how the project will support livelihoods initiatives, nor is there any analysis of whether this list of alternative livelihoods would serve as adequate substitutes for the community's current livelihoods.

Further, neither of these mitigation measures entails the restoration of ecosystem services for local people. Instead, they both indicate a strategy to end or reduce traditional fishing practices around the project site. This approach to mitigation is out of line with the mitigation hierarchy envisioned by NEMA, which requires avoidance of impacts to be prioritized, with other options such as compensation or offsets to be used only as a last resort. In this case, the Resettlement Action Plan (RAP) is not available and thus negates review of the loss of ecosystem services that may or may not be incorporated. However, generally the RAP serves landowners only and does not identify those, like fishermen and foragers, who utilize the marine and terrestrial resources of the general area that will be impacted by the coal plant. Their rights are not addressed to provide effective mitigation to the loss of their livelihoods.

In Chap 8.11, of the ESIA the proponents briefly examine the socio-economical cultural environment of the coal plant and suggest that the creation of jobs will alleviate poverty. They ignore the fact that a local economy exists involving fishing, honey gathering and other traditional methods. The belief that creating low skill temporary jobs at the site will bring about economic development for those who are currently engaged in traditional livelihoods is unjustified and arrogant. The Bill of Rights (article 42 and 44) as well as Article 70 of the Constitution guarantee their rights to cultural traditions and practices and a clean environment for their families.

### **Compensation for loss**

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<sup>67</sup>ESIA § 8 at 8.10.1, Table 8-33.



The Resettlement Action Plan is not provided in the ESIA, however, the ESIA does provide information as to how it should be conducted and what information needs to be provided. Below are key points made in the ESIA as describing the development of the RAP:

**As part of the resettlement planning, the Government and APCL should carry out a comprehensive socioeconomic survey that will include:**

- **A population census and an inventory of assets, including natural assets upon which the affected people may depend upon for the whole of or a portion of their livelihoods"**

**The Government and APCL should ensure that affected people are compensated for all their losses at full replacement costs.**

**The Government and APCL should ensure that the living standards, income-earning capacity, production levels and overall means of livelihood of the displaced persons are improved beyond pre-project levels.**

**...displaced people are entitled to compensation or resettlement assistance for loss of land or other assets taken for project purposes.<sup>68</sup>**

As described above, the RAP must critically examine resettlement for loss of land *and other assets* taken for project purposes. This includes fishing grounds, fishermen's landing sites, foraging territories, mangrove harvesting and conservation sites, honey harvesting areas, sacred sites, among others. The RAP should not consist of merely cash for land and buildings as the project will deprive people of different types of assets.

Each affected family's standard of living derives from the interactions among these types of capital:

- **Land**
- **Buildings and other improvements** (corrals, irrigation systems, etc.)
- **Human assets**, i.e., knowledge and skills. Some of these are specific to the existing location and not transferrable. A farmer might know which parts of the land are more or less susceptible to flooding, for example, or a woman might know where to obtain safe drinking water. When a family is relocated, they will not have this knowledge specific to the now location and should, therefore, receive compensation, e.g., an on-going payment for a few years until they acquire the replacement knowledge. A family might now have access to a good school or to a good Extension service. The relocation/compensation program should ensure that it has access to equivalent (or better) education services.

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<sup>68</sup> ESIA Chap 9, section 4, page 8-9.

- **Social assets**, i.e., the interactions with different individuals and institutions that make life easier and more efficient. A farmer might now be able to acquire seed from the local vendor based only on a handshake. In the new location, this might not be possible, because the vendor does not know him. Or a farmer might currently work smoothly with neighbors to cooperatively manage livestock, water, etc. Or a family might live near grandparents but relocation will leave them a long distance away, so that, to maintain the same close relationship, they will have to travel long distances. Each of these losses should qualify for compensation. Another aspect of social capital: compensation should cover not just the assets of an individual or individual family, but also the assets of the community. The assets of a well-functioning community are greater than the sum of the assets of each family and individual within the community.
- **Cultural assets**, i.e., the beliefs, behaviors, places, and icons that help define an individual, family, and group. Some cultural losses, e.g., desecration of ancestral burial sites, cannot be valued using market prices. Sociologists/anthropologists/economists strongly recommend that compensation can be arrived at only through appropriate, respectful negotiation with a family and/or community.
- **Common-resource assets**. Table 9.2 seems to focus on privately owned assets. But, as we saw when we met with the fishermen on Pate Island, each one has widely recognized rights to common lands and waters. They should receive compensation for the loss of these rights. Compensation to these groups should make them whole for the loss of future net income, subsistence foods and materials, medicines, shelter, access to family and community, and the land's spiritual and heritage values.

Table 9.2 also states:

**The project team should also make deliberate effort to provide opportunities to the affected people to derive appropriate development benefits from the project.**

This statement has several problems:

- It is not enough to provide opportunities. Opportunities do not always yield the desired outcomes, even if the relocated individual/family does everything perfectly to take advantage of the opportunities presented. **The relocation programs should include some insurance component so that, if things don't work out, regardless of the opportunities, the individual/family is not penalized.**
- It is important to carefully define "appropriate development benefits from the project." Often this means that the project will offer a relocated individual a job opportunity. However, a job is not a benefit. The individual receives money, yes, but to do so, s/he must spend the whole day working (and traveling to/from work). The wage is

compensation for the work. To receive true benefits, the individual/family must share some of the net earnings from the project. For example, the project may compensate a farmer for the value of forgone maize crops over the next three years. Then, it will take the land and earn profits from incorporating it into the project. The land might be worth KShs100 as farm land, but as industrial land it might be worth Ksh1,000. The question is, why should the project owners realize the increase in value, Ksh 900? The benefit should be shared.

Without engaging in an adequate representation of the assets of families affected by the coal plant, including fishermen, mangrove harvesters, farmers, foragers, honey harvesters, etc, a narrow and inequitable compensation will create greater poverty among those who should be the beneficiaries of the project. For this reason, NEMA should demand that the RAP be part and parcel of the ESIA and be provided for review and public comment. This document is key to local communities for it provides information as to their benefits or losses.

### **Impacts on fishermen not fully taken into account**

The fishing industry in Lamu generates an annual fish landing weight of 10,000 metric tons valued at KES 1.5 billion.<sup>69</sup> In addition to this, mangroves, which house crabs and other crustaceans, amount to a landing of 40,000kgs annually valued at over KES 200m. Lobster is big in Lamu's fishing industry with a landing of 150,000kgs per year that is valued at KES 450m. Fishery clearly generates a lot of value for the fishermen in Lamu, by significantly impacting positively on the household of fishermen to ensure steady incomes and improved lifestyles.

Research done by the Department of Fisheries and the Beach Management Units (“**BMU**”) reveal that the project will have a major impact spanning several kilometers on both land and sea. The approximate number of fishermen likely to be affected is 5,500 from a total of 9 BMUs. These BMUs usually focus on prawn seining, crab captures, beach seining for fin-fish, long lines, gill netting and sea cucumbers. These fishermen are likely to suffer the following impacts:

- Loss of fishing grounds;
- Loss of nursery and feeding grounds;
- Marine biodiversity loss;
- Marine water pollution;
- Disappearance of priority species;
- Siltation;

The ESIA Report does not take these livelihood impacts into full account and

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<sup>69</sup> Department of Fisheries, Livestock and Cooperative Development, Lamu County (January 2016) *Fisheries resource valuation, compensation and tradeoffs: a report for consideration by the Amu Power coal plant power generation in Lamu*, p. 4.

any measures to mitigate these negative impacts are not cited in detail.

***NEMA should not issue an EIA License to APCL since the EIA Study did not take the full breadth of livelihood concerns into account, particularly the loss of ecosystem services that is likely to be suffered by communities in Lamu. The project proponent must repeat this process comprehensively.***

***Additionally, this comments period is crippled by the lack of a RAP, which would help members of the public and communities understand what the mitigation measures to address the livelihood concerns are.***

### **COMMENT 9 - INCONSISTENT AND INADEQUATE INFORMATION**

According to the EIA Regulations, NEMA has the power to not give a license to a project proponent where it is established that the information given by the proponent in support of his application for an EIA License was false or incorrect.<sup>70</sup> The EIA Report serves as a tool to inform NEMA on whether to grant a license and what conditions to impose on the project proponent, all in the interest of protecting the environment. Therefore, any incorrect or misleading information will affect NEMA's ability to effectively make the correct decision.

The EIA Report is peppered with a number of inconsistencies and may amount to incorrect information used for the purpose of applying for an EIA License on APCL's part.

- **The exact amount of land required for the project is inconsistent.** Throughout the EIA Report reference is made to the size of land required for the project, which is listed at **880** acres.<sup>71</sup> However, in another part of the EIA Report, the land required for the project is listed as **975** acres – almost an increase of 100 acres, which is not a small size<sup>72</sup>. Furthermore, the uncertainty is compounded even more by statements in the EIA Report that indicate that the project is unsure of how much land will be required.<sup>73</sup>
- **The exact amount of cubic liters of water per hour required to cool the plant is inconsistent.** Under continuous maximum conditions, the project will use 126,504 cubic meters per hour of seawater for cooling the plant.<sup>74</sup> However, in September 2015 when APCL submitted its EPR, the amount of water required for the same purpose and from the same source was three times less at 42,168 cubic meters per hour.<sup>75</sup> Besides from the fact that these are excessive amounts of seawater being used to cool the plant per hour (from

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<sup>70</sup> Regulation 28(2)(d).

<sup>71</sup> EIA Report, Section 4, p. 4.

<sup>72</sup> EIA Report, Section 8.11.6, p. 94.

<sup>73</sup> EIA Report, Section 6.1, p. 4.

<sup>74</sup> EIA Report, Section 4.10.2.5, p. 47.

<sup>75</sup> Environmental Project Report (September 2015) Section 3.3.7 and 11.5.3.

42,000,000 liters to 126,000,000 liters), this information is inconsistent. The EIA Report does not give any reason for the threefold increase in water usage and thus, raises a number of questions on the impact this will have on the marine life and the livelihoods dependent on it.

***NEMA, in accordance to Regulation 28(2)(d) should not grant a license until clarity on the land required for the project and amount of seawater for cooling the plant is ascertained.***

## **COMMENT 10 – INSUFFICIENT PUBLIC HEARING THAT WAS NOT COMPLIANT WITH THE LAW OR BEST PRACTICES**

### **The Law on Public Hearings**

EMCA and the EIA Regulations state that a public hearing can only happen upon receipt of both oral and written comments for an EIA Report.<sup>76</sup> The Comments for the EIA Report submitted by APCL were due to NEMA on the 29<sup>th</sup> of August 2016, which is the thirty-day period from when the notice was in the Government Gazette. The EIA Regulations also provide that the public hearing shall be conducted at a venue *convenient* and *accessible* to people who are likely to be affected by the Project.<sup>77</sup>

### **The Date of Hearing did not comply with Regulations**

NEMA published a notice on the 19<sup>th</sup> of August 2016 in the Daily Nation for public hearing on the 26<sup>th</sup> of August 2016 for the project. The notice proposes for a public hearing at the proposed site within Kwasasi area, Hindi, Magongoni sub-county, Lamu County. The date that public hearing was held was well within the period for submitting comments to the on the EIA Report and therefore is clearly in contravention of the aforementioned Regulations.

That the date of the public hearing on the 26<sup>th</sup> of August 2016 falls on a Friday, which is the primary day of worship in the Islam faith. A good portion of affected stakeholders in Lamu are of the Islam faith and thus, a failure by the National Environment Management Authority to take this into account in selecting a date and time shows a lack of consideration of the right to freedom of religion held by Lamu's Islamic population according to Article 32 of Kenya's Constitution.

### **The Venue of the Hearing did not comply with Regulations**

The venue, which was selected for the public hearing within the proposed site in Kwasasi area, Hindi, Magongoni sub-county, Lamu County, is not convenient for other, affected stakeholders. The majority of the farmers and fishermen likely to be affected by the proposed project are residents of other islands, such as Pate and Lamu.

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<sup>76</sup> Sections 59 and 60 of EMCA and Regulation 22(1) of the EIA Regulations.

<sup>77</sup> Regulation 22(4).

Kwasasi is a remote area and not convenient nor easily accessible to a majority of the affected people. No public means of transportation are available all the way to Kwasasi either by boat or road. As a result, private means have to be used, with the need to privately hire cars or *boda bodas* or boats at a high cost. This is a major prohibitive factor, undermining the true accessibility of the stakeholders likely to be affected by this large energy project. Further, a majority of those affected may be unable to provide written comments given the low levels of literacy that exist within the affected population and hence are reliant solely on the public hearing to express comments.

The large majority of those who did attend the public hearing were farmers who will be compensated for the acquisition of their land for the project. There is a clear conflict if the only public hearing is held in an area accessible to those set to directly benefit from the project but not those who will be negatively impacted by the project.

By its choice of venue, NEMA excluded key affected stakeholders and representatives – thus severely limiting public participation in contravention of Article 10 of the Constitution and the regulations cited above.

### **The Form of the Public Hearing was not Conducive to Participation**

A public hearing is a form of participation in which people likely to be affected by the project and proponent are brought together in a forum to express their opinions and offer suggestions on a proposed undertaking in order to influence the decision-making process. It is usually organised by NEMA only after written and oral comments on the EIA Report are submitted. According to the law, NEMA has the mandate to appoint a presiding officer who determines the hearing's rules of procedure. According to best practice for such hearing from the United Nations Environmental Program (“UNEP”) on EIAs for developing countries, the procedure adopted during public hearings includes the following steps:<sup>78</sup>

1. the introduction of panelists, traditional leaders, government department staff, representatives of all community groups, non governmental organisations and individuals;
2. the purpose and objectives of the public hearing are then made clear to the participants;
3. the proponent is then given an opportunity to make a presentation on the project EIA. This must be done in the local language to facilitate better understanding of issues and should pay particular attention to those issues that are likely to affect the local community directly (the presentation should include a summary of the project proposal, outline

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<sup>78</sup> Appah-Sampong, E. *Public Hearing within the environmental impact assessment review process*. UNEP EIA Training Resource Material for Developing Countries; p. 86.

- of the main benefits and negative effects of the project to the local people, district and the nation, and an indication of how the key negative impacts would be mitigated);
4. representatives of the affected communities, and other stakeholders, also present their opinions and concerns about the proposal;
  5. the proponent is then given the opportunity to react to the substantive issues and concerns raised; and,
  6. the panel members collate all the concerns raised and make their findings and recommendations known to the forum and then to the environmental authority.

The EIA Regulations are silent on the exact procedure the process should follow, however, best international standards from the UNEP, as cited above, can provide valuable guidance. Aside from the failure to follow the procedure with respect to the date and venue of the public hearing as outlined above, the form in which it was conducted did not present best practice as well.

For example:

The project proponent did not present information on project design and impacts during the meeting. The consequence of this was to limit conversation to “for” or “against” the project. This, in fact, was reinforced by the hearings Presiding Officer who arranged the agenda to “hear from those who *oppose* the project and then from those who were *for* the project”. Such an approach completely undermines the intention of a public hearing on the EIA.

Various structural impediments served to defeat the purpose of the public hearing as envisioned under EMCA, the EIA Regulations and best international practices. These amounted to violations of law and best practices – as identified above – and ought to be rectified by annulling and repeating, where possible.

***NEMA should hold another public hearing after the comments are submitted at a venue accessible by all potential affected people and on a date not in conflict with religious or other rights. It should also ensure that the public hearing is conducted in line with best international practice and focuses on the EIA Report’s content and not political rhetoric intended to misguide the process.***

## **COMMENT 11 - VIOLATION OF AFDB SAFEGUARDS**

The following is an analysis of the ESIA Project against the requirements of the African Development Bank (“AfDB” or “Bank”) Integrated Safeguards System.<sup>79</sup> The AfDB is considering providing a partial risk guarantee for

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<sup>79</sup> Including the Integrated Safeguards System Policy Statement and Operational Safeguards; the Environmental and Social Assessment Procedures; and the Integrated Environmental and Social Impact Assessment Guidance Notes.

Kenya Power and Lighting Company's obligations under a 25-year Power Purchase Agreement: a key component of the Project. The Kenyan Ministry of Finance is listed as the implementing agency for that proposed agreement,<sup>80</sup> and any AfDB Safeguards obligations that fall to the Bank's Client should fall to that Government entity. It is understood that the present ESIA released by APCL aims to fulfill those obligations, but that the Government of Kenya remains obligated to ensure that all AfDB Safeguards standards are respected in the planning, construction and operation of the coal plant.

Additionally, it is important to note that the ESIA itself incorrectly states that two of the AfDB's safeguards documents – the Environmental and Social Assessment Procedures (“**ESAP**”) and the Integrated ESIA Guidance Notes (“**IESIA**”) – have not yet been released,<sup>81</sup> suggesting that those requirements were not considered in the development of this ESIA. Those documents were released at least seven months prior to the ESIA's release and their requirements should apply to this project.<sup>82</sup> This assessment compares the Project ESIA to all AfDB Safeguards requirements, including those of the ESAP and IESIA.

Overall, the ESIA falls short of compliance with the AfDB Safeguards in numerous respects:

- The ESIA omits critical aspects of the project from its impact assessment;
- Affected people were not adequately identified or consulted in Project planning, including in the development of the ESIA;
- The assessment of biodiversity impacts and development of related mitigation measures are inadequate;
- Provisions to protect and maintain ecosystem services that support local livelihoods must be improved;
- The assessment of pollution impacts and development of mitigation measures are inadequate; and
- The ESIA does not include adequate measures to ensure benefit sharing for resettled people.

### **The ESIA must be revised to include all aspects of the Project in its impact analysis**

The ESIA contains critical omissions that render it incomplete and ineffective. According to AfDB Operational Safeguard 1, the environmental and social assessment of a project must include the project's area of influence, which includes “the area likely to be directly affected by the project and related

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<sup>80</sup> Project information, Lamu Coal Power Plant Partial Risk Guarantee, <http://www.afdb.org/en/projects-and-operations/project-portfolio/project/p-ke-f00-006/>.

<sup>81</sup> ESIA § 2.5.1.4.

<sup>82</sup> See <http://www.afdb.org/en/news-and-events/article/afdb-launches-revised-version-of-its-environmental-and-social-assessment-procedures-for-2015-15013/>. The released IESIA Volumes 1-3



facilities that the project proponent develops or controls (e.g. power transmission corridors, ... borrow and disposal areas, construction camps), and additional areas in which aspects of the environment could conceivably experience significant impacts.”<sup>83</sup> It also includes “areas potentially affected by related or associated facilities dependent on the project and that would not have been implemented if the project did not exist, but that are not funded by the project.”<sup>84</sup>

As described below, the ESIA does not assess the impacts of all project components and related facilities, leaving out important aspects of the impact assessment including the coal conveyor system, limestone mining activities, and resettlement action plan. The omitted components are likely to bring significant additional impacts, yet the ESIA shows no sign that they were considered in any part of the impact assessment, or in the development of any project avoidance or mitigation measures. It is imperative that these impacts be assessed early in the project cycle to ensure that adequate avoidance and mitigation measures are developed before project construction begins.

Perhaps even more important is the need for a holistic approach to social and environmental impact assessment within the ESIA. The ESIA cannot be considered complete until after all key project components have been assessed, to ensure that the assessment of impacts and development of mitigation measures take into account all aspects of a project. If components of the project are assessed separately, then the separate assessments will necessarily understate the full impact of the complete project and the end result would not serve the basic objectives of the ESIA process.<sup>85</sup> Further, the scoping stage of the project should have involved collecting baseline data on all project components.<sup>86</sup> Even if certain components are not fully assessed in the ESIA impact assessment, they should at minimum be fully addressed in the annexed studies that form the Project’s baseline assessment.

### Coal Conveyor

The ESIA lists a coal conveyor system as one of the key components of the proposed project.<sup>87</sup> It is briefly described as a 15km long coal conveyor system with transfer towers that will connect the coalreceiving berth at the Kililana port to the coal stock-yard within the project site.<sup>88</sup> The coal conveyor is being built only for the purpose of transporting coal to the project site. It will be developed and controlled by the project proponent, APCL, and therefore falls within the project’s Area of Influence. However, the ESIA does not

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<sup>83</sup> Operational Safeguard 1, African Development Bank Group Integrated Safeguard System, p. 22 (2013); IESIA vol. 1 at 18.

<sup>84</sup> IESIA vol. 1 at 18.

<sup>85</sup> These goals include promoting sustainable development in the region and mainstreaming social and environmental considerations. OS 1 at 21.

<sup>86</sup> IESIA vol. 1 at 20.

<sup>87</sup> ESIA § 1.3

<sup>88</sup> ESIA § 1.3.

include any impact assessment for the coal conveyor, as stated earlier in these comments. The ESIA reasons that “[t]he design of the coal conveyor system is currently in the design phase and was unavailable at the time of undertaking this ESIA Study and consequently, no environmental and social impacts have been identified or assessed.”<sup>89</sup> The AfDB requirements regarding scope of an ESIA do not contain any exception for project components whose design is “unavailable” at the time the ESIA is produced.<sup>90</sup> This rationale is therefore unacceptable to justify the omission of such a critical project component from consideration in the ESIA.

### Limestone mining in Witu

Similarly, the ESIA excludes any assessment of the impacts of limestone mining operations in Witu. The ESIA makes clear that limestone mining will be part of the project, and a potentially critical one.<sup>91</sup> A limestone receiving system and gypsum handling system are listed as key project components, yet there is no discussion of limestone mining activities, their impacts, or planned mitigation measures anywhere in the ESIA.<sup>92</sup> The ESIA does not provide any reason for this omission, nor does it identify limestone mining as an activity to be carried out by a third party or treated as a cumulative impact. The omission of this project component from the ESIA fails to comply with the AfDB’s basic policy provisions requiring assessment of project impacts and development of appropriate mitigation measures.

### Resettlement Action Plan

Communities have been promised for months that a Resettlement Action Plan would be forthcoming, and indications had been made that the extreme delay in releasing the ESIA was due in part to delays in developing a RAP. Despite this, the ESIA includes no RAP, forced resettlement impacts are not assessed anywhere else in the ESIA, and the document does not indicate when a RAP will be released.

The AfDB requires that any individuals who will be displaced by a project must be provided with targeted resettlement assistance to ensure that their standards of living, income-earning capacity, production levels and overall livelihoods are improved beyond pre-project levels.<sup>93</sup> Preference should be given to land-based resettlement strategies and land-for-land compensation over case compensation.<sup>94</sup> Every effort must be made to ensure that

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<sup>89</sup> ESIA § 4.6.1.2.

<sup>90</sup> See OS 1 at p. 22.

<sup>91</sup> A concession of 2000 acres was granted by the County Assembly (presumably to APCL) for limestone mining in Witu. ESIA at sec. 4.2. See *also* ESIA 4.3, describing the need for limestone for the wet flue desulfurization system.

<sup>92</sup> In discussing cumulative impacts on traffic and transportation, the ESIA does mention potential impacts of transportation of limestone from “identified quarries” to the coal plant site. ESIA sec. 10.3.14. However, the impacts of the limestone mining itself are not referenced anywhere in the ESIA.

<sup>93</sup> OS 2 at 35.

<sup>94</sup> OS 2 at 35.

resettled people will have the opportunity to share in project benefits,<sup>95</sup> and alternative project designs should be considered to avoid or minimize physical or economic displacement.<sup>96</sup> Finally, the AfDB requires a Full Resettlement Action Plan (**FRAP**) for projects that involve resettlement of more than 200 people or that are likely to adversely impact vulnerable groups.<sup>97</sup> This document must be released to the public at least 120 days before the proposed project is presented to the AfDB Board of Directors for approval.<sup>98</sup>

The ESIA states that the project will require the acquisition of 880 acres of land, which “may result in the resettlement of landowners.”<sup>99</sup> No further assessment is provided regarding the scope or degree of this impact, or the number of people who will be resettlement. The ESIA does not provide sufficient information to ensure that resettled people will be provided the type and quality of resettlement benefits required by AfDB policy. Not only is the RAP itself missing from the ESIA, but the remainder of the document does not provide adequate assessment of resettlement impacts in its consideration of project impacts and mitigation measures or its assessment of alternatives.

Per the AfDB’s requirements, the FRAP may be released in a timely manner as a “supplement” to the ESIA documents. However, even if the FRAP in its final form is released as a separate document after the ESIA, consideration of resettlement impacts and the costs of resettlement must be incorporated into all aspects of project planning.<sup>100</sup> Resettlement considerations should factor into the overall assessment of project impacts, the alternatives assessment and stakeholder engagement planning, among other aspects of project planning. Further, the baseline assessment should have included information necessary to prepare the RAP – such as the number of landowners and land users who will be forcibly resettled by the project.

When the FRAP is released, it is imperative that sufficient time is allowed for full public consultations on that document. Per the AfDB requirements, the project cannot be sent to the AfDB Board of Directors for approval until 120 days after the FRAP has been publicly released. This time period is necessary to ensure that affected people may be adequately consulted about the proposed resettlement plan after they have access to adequate information about the proposed plan.

### **Affected people must be adequately identified and consulted in Project plans**

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<sup>95</sup> OS 2 at 35.

<sup>96</sup> OS 2 at 32.

<sup>97</sup> OS 2 at 34.

<sup>98</sup> OS 2 at 35.

<sup>99</sup> ESIA § 9.4.

<sup>100</sup> For example, AfDB policy requires that considerations of total project cost include the full cost of all resettlement activities, factoring in the loss of livelihood and earning potential among the affected population. The “total economic cost” of the project should also take into account the social, health, environmental and psychological impacts of displacement, which may disrupt productivity and social cohesion. OS 2 at 35.

The process of identifying and consulting with affected people during the preparation of the ESIA has been flawed in a number of ways. The AfDB requires a thorough, inclusive Stakeholder Mapping Analysis, which should aim “to capture all affected communities and other relevant stakeholders.”<sup>101</sup> This process is considered necessary to enable adequate engagement and consultation and should be carried out before initiating the ESIA.<sup>102</sup>

The AfDB also requires that clients provide “evidence of meaningful consultation [...] with communities likely to be affected by the environmental and social impacts”.<sup>103</sup> A key facet of the AfDB’s definition of “meaningful” consultation is “that all groups are given the capacity to express their views with the knowledge that these views will be properly considered.”<sup>104</sup> Communities likely to be affected by a project should be consulted meaningfully, meaning: (1) that they are given the opportunity to “express their doubts, concerns and opinions on the project”; and (2) those opinions and concerns are “fed back into the decision-making process”.<sup>105</sup>

#### Directly affected groups have been left out of the consultation process

The listed project stakeholders do not include all groups known to be directly impacted by the project. For example, the list of Project Stakeholders does not include Witu residents,<sup>106</sup> even though the ESIA Project Description affirms that a large land concession in Witu was granted as part of the Project approval process, specifically for the purpose of limestone mining.<sup>107</sup> As discussed above, impacts of limestone mining in Witu have been completely omitted from the ESIA. This unjustified and unreasonable omission is also linked to a failure to appropriately identify or consult with Witu residents about how the Project may directly impact them.

Additionally, some identified groups were not given an adequate opportunity to express their views in community meetings during the preparation of the ESIA. We understand that no individualized consultation meetings were held with fisherfolk or the Beach Management Units. This is significant because there are significant impacts to fisherfolk from the project, for which appropriate mitigation measures have not been developed.

#### Concerns expressed in consultations have not been meaningfully integrated

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<sup>101</sup> IESIA, Vol. II at 6.

<sup>102</sup> IESIA, Vol. I at 19.

<sup>103</sup> OS 1 at 27. See also ESAP 3.4(a): “Affected communities (including vulnerable groups) and other stakeholders shall be meaningfully consulted during the preparation of the SESA / ESIA and ESMP (and where applicable the FRAP / ARAP). The borrower shall follow and monitor the SESA / ESIA and ESMP (and where applicable the FRAP / ARAP) progress closely, particularly when consultants are involved.”

<sup>104</sup> IESIA, Vol. II at 5.

<sup>105</sup> IESIA, Vol. II at 7.

<sup>106</sup> ESIA Appendix 10 at pp. 32-34.

<sup>107</sup> ESIA § 4.2. The list of project stakeholders was developed based on an initial mapping analysis done in 2014.

Based on the Project plans expressed in the ESIA, there is no evidence that the opinions and concerns expressed during community consultations have been fed back into the decision-making process. Project stakeholders and community groups have repeatedly raised concerns regarding the lack of an adequate alternatives assessment to justify developing the project as a coal plant. They have raised concerns with the choice to develop the project using less than optimal coal technology, with the potential impacts of the cooling water intake process, and with the chosen location of the project on Manda Bay, along mangroves and beaches.<sup>108</sup> Despite these and other concerns having been raised repeatedly by affected people and other local stakeholders, the Project design in the ESIA is nearly identical to that in the informational brochure distributed during introductory meetings.<sup>109</sup>

#### Project information has not been timely disseminated to allow for meaningful consultation

The AfDB Safeguards require that consultations be based on the prior disclosure and dissemination of relevant, transparent, objective, meaningful and easily accessible information that is in a culturally appropriate language and format and is understandable to affected communities.<sup>110</sup> Consultation meetings held to date have not satisfied these requirements. Meetings to date have not been preceded by adequate disclosure and dissemination of detailed, meaningful information about the project and its impacts. The EPR, released in late 2015, lacked essential details and analysis, including any information about the design or impacts of the coal conveyor system, the location of borrow pits, or any detailed engineering designs. As described above, even the current ESIA reflects some of these same omissions.

Further, we understand that attendees of some meetings received a brief project information brochure, but that this brochure lacked necessary details about project components and only briefly referred to negative impacts. This high-level treatment of project impacts is inadequate to allow communities to develop an informed opinion of the proposed project. Critical components, like the hazardous storage facility, were not included in these documents, and descriptions of coal storage and transport systems were too vague to enable a meaningful understanding of these components. At other meetings, no project materials were provided.

Because of this lack of information, many comments from community members focused on requesting additional information, rather than being able to comment meaningfully on specific project designs. The inadequate level of information provided in advance of ESIA consultation meetings prevented them from meeting AfDB requirements to provide communities an opportunity to express their doubts, concerns and opinions about the project through meaningful consultation.

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<sup>108</sup> See Save Lamu letter tAPCL (13 March 2016).

<sup>109</sup> ESIA Appendix 9B, section 1.1 (Project Brochure).

<sup>110</sup> OS 1 at 27.

## **Biodiversity and Conservation**

The AfDB requires that projects “not cause significant modification of natural habitats.”<sup>111</sup> If modification of natural habitats cannot be avoided, the AfDB requires the development of mitigation measures to achieve either net benefit, or at minimum, no net loss, of biodiversity.<sup>112</sup> Implicit in these requirements is the obligation to conduct a sufficiently thorough assessment of impacts to establish the nature, degree and scope of the project’s expected impacts on natural habitats.

The assessment of environmental impacts in the ESIA indicates that natural habitats will be modified, but it does not provide sufficient detail to establish the degree of these impacts. As discussed below, the ESIA does not provide adequate information on the impacts of dredging during project construction; entrainment of marine organisms in cooling water intake systems; or the planned discharge of elevated temperatures of water into the surrounding marine environment.

Without this information, the AfDB requirement to establish no net loss of biodiversity from the project’s impacts on natural habitats likewise cannot be met. Development of measures to avoid biodiversity loss, or of appropriate and effective mitigation measures, or measures to minimize this loss, is not possible without an accurate understanding of project impacts, which has not been established with regard to the below issues.

### **Impacts from dredging**

The ESIA states that “dredging activities during the construction phase are projected to cause significant and serious damage to the neighboring mangroves, sea grasses and coral reefs habitats.”<sup>113</sup> However, the assessment itself notes that many significant factors were not considered in the ESIA assessment, preventing any specific prediction of the nature, degree and scope of impacts from this Project. The assessment does not take into consideration the specific design of intake and discharge structures, the construction of which “may include” offshore dredging.<sup>114</sup> The amount of material that will be dredged is not known.<sup>115</sup> While the ESIA notes that sedimentation resulting from dredging is a serious concern, it does not provide information on the likely sedimentation impacts in this case. Changes in availability of nutrients and dispersion of contaminants during dredging and disposal are mentioned as theoretical impacts of dredging but the ESIA

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<sup>111</sup> OS 3 at 41.

<sup>112</sup> OS 3 at 41.

<sup>113</sup> ESIA § 8.9.1 at 53.

<sup>114</sup> ESIA § 8.9.1 at 52.

<sup>115</sup> The ESIA merely states that it “may be on the order of several hundred thousand m<sup>3</sup>.” ESIA § 8.9.1 at 52.

provides no information or assessment of how these impacts are likely to manifest at this Project site.<sup>116</sup>

With so much basic information on the impacts of dredging missing from the ESIA, it is impossible to conclude that the stated mitigation measures are adequate to ensure no net loss in biodiversity. Mitigation measures include recommendations to “consider the timing of the dredging” based on knowledge of local hydrodynamics and tidal patterns in order to minimize sediment dispersion, and to identify an access route for the dredger and barges that will avoid damaging coral reefs. These and other listed measures are under-developed and inadequate. Without further analysis, it is difficult to believe that minor changes to timing and route will be sufficient to avoid the admittedly significant and serious effects of dredging on delicate marine habitats.

#### Impacts from entrainment and impingement of marine organisms

The ESIA states that organisms may become caught (entrained) in the coal plant’s cooling water intake systems and/or caught on the outer screen of the intake valve (impinged). It notes that both scenarios may result in the death of local marine organisms,<sup>117</sup> but it provides no assessment of how many organisms are likely to succumb to this fate in this Project context. Nor are the potential secondary impacts on marine habitats at this Project site assessed. Not a single avoidance or mitigation measure is proposed to address these impacts.

#### Impacts from the rise in water temperatures

Project plans indicate that used cooling water will be released back into the sea, at an elevated temperature of 9 degrees Celsius higher than the ambient water temperature. The ESIA predicts that the impacts from this can change the distribution and composition of marine organisms in an area, but it does not provide any site-specific analysis of impacts in this particular environment.<sup>118</sup> The ESIA states that 3D modeling was conducted of proposed water discharge and that it “will be utilized to determine potential impacts on environmentally sensitive habitats within the estuary,” but it does not include such an analysis in the Chapter 8 assessment environmental impacts.<sup>119</sup> The complete absence of any impact analysis for a design component with such potentially significant and broad-ranging implications for local marine habitats does not meet the standards set by AfDB Operational Safeguard 3.

#### **Inadequate assessment of and measures to avoid and mitigate impacts on local livelihoods**

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<sup>116</sup> ESIA § 8.9.1 at 53

<sup>117</sup> ESIA § 8.9.2 at 54.

<sup>118</sup> ESIA § 8.4.1 at 23.

<sup>119</sup> ESIA § 8.4.1 at 30.

The AfDB's Operational Safeguard 3 also includes requirements to protect and maintain the services that an ecosystem provides to the local population. Ecosystem services are defined as benefits that people derive from ecosystems, including products and services produced by them.<sup>120</sup> The project impact assessment must identify "priority ecosystem services" based on their value to local livelihoods, to the project, or at the landscape/seascape level.<sup>121</sup> This assessment should be done in consultation with local communities and resources managers, and those services identified as "priority" should be protected through the biodiversity mitigation hierarchy, meaning avoidance of impacts must be avoided over mitigation measures.<sup>122</sup> Measures such as compensation or offsets should only be considered as a last resort.<sup>123</sup>

The ESIA recognizes that the local community currently benefits from a range of ecosystem services that could be impacted by the project, including fishing, water abstraction and medicinal plants. It does not take the further required step of analyzing which services should be considered "priority" and therefore subject to the protections outlined in the AfDB Safeguards. However, it notes that fishing is the second largest driver of the Lamu economy,<sup>124</sup> and that tourism is another key contributor, with tourists drawn to the area in part by Lamu's diverse flora and fauna, local national reserves and sandy beach coastline.<sup>125</sup>

According to the ESIA, some of these services may be eliminated or reduced as a result of the project, yet it does not include a specific assessment of the degree or scope of these impacts, as envisioned in the OS 3. Table 8-33 in the ESIA purports to assess ecosystem service impacts from the Project, but it is considerably too general to be effective. It does not specify which ecosystem services are being assessed or how each of these services will be affected by the Project.

For example, as described above, marine organisms are likely to be significantly impacted by aspects of the coal plant's design which are not yet fully understood, including the disbursement of warmer used cooling water into the surrounding marine environment, and the potential entrainment of organisms into cooling water intake systems. These processes may all have an impact on local fish and shellfish populations, and therefore on local fishing livelihoods, but these risks are not specifically assessed, and it is not clear whether such impacts were considered in the ESIA's brief, single-page coverage of the topic of ecosystem services. The ESIA's assessment is inadequate to provide a true understanding of the potential impacts of the Project on key services.

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<sup>120</sup> See OS 3 at 39, fn 20 for full definition.

<sup>121</sup> OS 3 at 43.

<sup>122</sup> OS 3 at 43.

<sup>123</sup> OS 3 at 40.

<sup>124</sup> ESIA § 5.11.7.3.

<sup>125</sup> ESIA § 5.11.3.7.



Further, the table only lists two mitigation measures: support initiatives to create alternative sources of livelihoods for the local community; and support the enforcement of fishery laws to prevent overfishing or fishing in protected areas.<sup>126</sup> Both of these measures are too general to be effective. No detail is provided regarding how the project will support livelihoods initiatives, nor is there any analysis of whether the listed alternative livelihoods would serve as adequate substitutes for fishing and other currently livelihood activities.

Further, neither of these mitigation measures entails the restoration of ecosystem services for local people. Instead, they both indicate a strategy to end or reduce traditional fishing practices around the project site. This approach to mitigation is out of line with the mitigation hierarchy envisioned by the AfDB policies, which requires avoidance of impacts to be prioritized, with other options such as compensation or offsets to be used only as a last resort. Finally, the ESIA's approach to mitigation measures does not serve the intended purpose of OS 3, which is to "respect, conserve and maintain [the] knowledge, innovations and practices of indigenous and local communities... [and] to protect and encourage customary use of biological resources in accordance with traditional cultural practices that are compatible with conservation or sustainable use requirements."<sup>127</sup>

## **Pollution**

Operational Safeguard 4 (Pollution Prevention and Control) requires that a project manage and reduce pollutants in a way that does not threaten human health or the environment. The first obligation is to prevent discharge of pollutants into the air, surface water and groundwater, land and soil. If prevention is not feasible, the Safeguard requires specific actions to reduce or minimize the effluents or volume of discharges.<sup>128</sup>

The ESIA identifies fugitive emissions from leaching of gasses from coal stored in the coal yards as a concern, yet it does not include an assessment of the potential impacts of this pollutant discharge, stating simply that such analysis was excluded "due to insufficient information and lack of quantifiable data."<sup>129</sup> Given that the ESIA states that up to 420,000 metric tons of coal will be stored at site,<sup>130</sup> the assertion that fugitive emissions are unquantifiable does not appear justified. The ESIA's failure to assess this potentially significant pollutant impact is out of compliance with the requirements of OS 4.

## **Inadequate measures to ensure benefit sharing for resettled people**

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<sup>126</sup> ESIA § 8 at 8.10.1, Table 8-33.

<sup>127</sup> ISS at 10.

<sup>128</sup> OS 4 at 44-48.

<sup>129</sup> ESIA Appendix 4 at 49.

<sup>130</sup> ESIA § 4 at 15.

AfDB Operational Safeguard 2 requires clients to make “every effort to provide opportunities to the affected people to derive appropriate development benefits from the project that involves their resettlement.”<sup>131</sup> Based on indications in the ESIA, it does not appear that such efforts have been made, or that any plan is in place to promote benefit sharing.

The ESIA states that "the purpose of the proposed 1,050MW coal fired power plant is to provide Kenyans with electricity at a cost effective price in order to grow the economy, and lists "increased affordability, reliability and stability of electricity supply" as one of the project's primary social impacts.<sup>132</sup> As discussed above, the ESIA does not include a FRAP, and the issue of benefit sharing for resettled people is not otherwise addressed in the ESIA. However, based on discussions in prior community consultations, it does not appear that APCL has made every effort to ensure that communities resettled by the project will be able to share in the project's primary potential benefit. As mentioned in the community consultation notes, many affected households do not have an electricity connection.<sup>133</sup> APCL has responded to this concern in community meetings only by explaining that it is outside of their power to promise power hook-ups to communities in Lamu, as only KPLC has this mandate.<sup>134</sup> Even if APCL does not have the mandate to provide electricity hook-ups itself, their responsibility under the AfDB Safeguards nonetheless requires further efforts to ensure benefits for resettled people. Further, such efforts seem entirely possible given the Government of Kenya's role in commissioning this Project. The ESIA does not indicate whether obvious steps have been taken, such as arranging with KPLC to cover the costs of local electricity hook-ups through the Project budget. Further discussion of the issue of benefit sharing must be included in a revised ESIA and in a FRAP before this AfDB requirement will be met.

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<sup>131</sup> OS 2 at 35.

<sup>132</sup> ESIA § 8.11.1 at 85. However, other statements in the ESIA call into question this point. For example, ESIA § 1.5 states that the power that will be generated by the project is already earmarked for reasonably foreseeable energy intensive industrial projects, such as a railway, Konza City Technopolis, other LAPSSSET projects in Lamu, and the steel smelting and manufacturing sector.

<sup>133</sup> Community Consultation Notes, ESIA Appendix 9B at 216.

<sup>134</sup> Community Consultation Notes, ESIA Appendix 9B at 157.