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6 Project alternatives

This chapter provides a description of the alternatives considered for the proposed 1,050MW coal fired power plant to be built and operated in the Kwasasi area of Hindi division, Lamu County, Kenya.

The following alternative aspects are ordinarily considered for proposed developments:

- Location – what is the best site for a proposed development and any infrastructure associated with it?
- Scheduling – relates to project development and potential time constraints.
- Energy supply – relates to the different energy mixes that can supply the same amount of power as the proposed project;
- Technology – relates to improved efficiencies in an operation, e.g. sub-critical, super-critical and ultra-super-critical.
- No-go option – implications of not proceeding with the project.

6.1 Location alternatives

The location of the proposed coal power plant was determined by the Government of Kenya (through the Ministry of Energy and Petroleum-MoEP) who are responsible for providing land to establish the power plant. It is understood that the MoEP identified the proposed coal power plant location based on technical, environmental and operational criteria which includes transportation of coal in bulk. One of the criteria was to have the coal power plant site located away from populated areas as well as away from other LAPSSET project activities as the site will probably be designated under the Protected Areas Act.

The proposed 1,050MW coal fired power plant will consume about 3.6 million tons of coal per annum or about 10,000 tons per day. Quantities such as these can be delivered cost effectively either by rail or sea.

Based on the cost of the Standard Gauge Railway in Kenya (~US$8 Million/km), a rail line from Kitui (where the Kenyan coal discoveries have been made) to Lamu would cost over US$2.8 Billion (assuming a distance of ~350km). This is a prohibitive cost at this time and therefore the rail option can be discarded for now. The other option is to import the coal and have it delivered to Kenya to a port. Unfortunately, the port of Mombasa is densely built up and congested; consequently, large coal tankers would cause detrimental coal dust impacts within the port.

The only option for a port site for receiving coal in bulk therefore was Lamu and this site was selected as it is the genesis of the LAPSSET where other projects are envisaged to be built. Lamu is a coastal location and has a natural deep harbor. Based on the above requirements, it was established that the power plant should be located within Manda Bay.

Three options shown in Figure 6-1 were identified within the Manda Bay and could be used as the site of the power plant. All three locations provide viable transport routes for supply of coal in bulk.

Figure 6-1 : Alternative locations for the power plant site

Alternative 1 was a location recommended in the 2011 LAPSSET Study, where the proposed coal power plant was to be situated on Shindakazi Island (part of Pate Island). A sub-sea transmission line was envisaged from this location across Manda Bay to the mainland and then to Nairobi. This location was excluded for the following reasons:

a) The area is soggy and the cost of constructing the power plant infrastructure would be enormous;

b) It is a difficult location as it would be extremely difficult for construction plant and equipment to access the site;

c) If the sub-sea transmission line was accidentally severed, the entire country would suffer a major blackout;

d) There could be potential adverse visual impacts as the power plant would be conspicuously visible from the tourist location of Shela and north of Manda Island.

Alternative 2 is a location immediately after the proposed 32 berths. The size of land available was ~205 Ha (500 acres) and was rectangular in shape-2km x 1km. This land had a buffer zone of 500m all-round the main plot size for security purposes. This alternative was not selected as its boundaries were outside the port area in Manda Bay which and it was a requirement that the power plant site should be within the port area.

Alternative 3 is a location that is ~363 Ha (880 acres) and is in the shape of an inverted "L". This site has been identified as the most appropriate out of the three as it falls within the port area in Manda Bay. The frontage of the site is ~3.7km long facing the Manda Bay and the width is ~800m. The final size and shape will be confirmed once all baseline geotechnical studies have been completed by the designers of the project in China.

Of the three alternatives, the County Assembly and the County Government of Lamu has approved Alternative 3 for the construction of the 1,050MW coal power plant.

6.2 Energy supply alternatives

This section discusses and evaluates alternative energy sources that can be considered for achieving the same objectives as the proposed 1,050MW coal fired power plant (such as nuclear, hydropower, geothermal, wind and solar); additionally, this section evaluates the advantages and disadvantages of each type of energy source that was considered.

In Kenya, firm load (base load) power plants can be developed using nuclear, hydro-power, geothermal and coal based technologies. Non-firm load power plants include wind, solar and mini-hydro power plants. Kenya has set itself a target of adding an additional 5000+MW of power generation capacity using a diverse energy mix by the end of 2017. It is therefore important to evaluate energy supply alternatives which satisfy technical, commercial, environmental and social criteria. These are discussed below.

6.2.1 Nuclear power

A nuclear power plant is a viable alternative to the proposed project and can provide firm load electricity. Kenya is progressing the development of nuclear energy and according to the Kenya Nuclear Energy Board (KNEB) website (accessed on November 13, 2015), the country envisages to have its first nuclear power plant operational by 2025.

The advantages of a nuclear power plant are that:

- Generation of electricity is considered clean as it doesn't generate greenhouse gas emissions;

- It requires less fuel and offers more energy, that is, it represents a significant saving on raw materials, transport, handling and extraction of nuclear fuel. The cost of nuclear fuel (overall uranium) is about 20% of the cost of energy generated;
- The production of electrical energy is continuous. The load factor of a nuclear power plant is almost 90% of annual time and subsequently, reduces the price volatility in tariffs that would otherwise be associated with other liquid fuels.

The disadvantages of nuclear power plants include:

- The capacity to develop a nuclear power plant in Kenya is at least 10 – 15 years away and Kenya's energy demand is increasing rapidly;
- One of the main disadvantages is the difficulty of managing nuclear waste. It takes many years to eliminate its radioactivity and risks associated with it. Kenya lacks the competencies and know-how on management of nuclear wastes;
- It has a guaranteed take structure which may not work in Kenya;
- The site selection criteria must include a sufficient supply of cooling water and the power plant should be sited away from populations;
- The minimum size of a nuclear power plant is about 1000MW and with a load factor of 90%, will lock out other sources of power generation from the energy mix;
- Nuclear plants have a limited life. The investment for the construction of a nuclear plant is very high and must be recovered as soon as possible, so it raises the cost of electricity generated. In other words, the energy generated is cheap compared to the cost of fuel, but the recovery of its construction is much more expensive.

Given the above, nuclear power cannot be considered an option for the existing 5000+MW power generation program being promoted by the Kenya Government.

6.2.2 Large hydro power

According to data from the Energy Regulatory Commission, Kenya's installed hydropower electricity generation at the end of 2014 was 821MW (38.7% of the total power generation). Most of the hydropower generated in the country emanates from the Tana and Athi catchment areas in central Kenya which has better hydrology than other parts of the country. However, due to the changing climatic conditions, there is an increased competition for water between human population increases and that required for power generation. Until the fourth quarter of 2014, hydropower traditionally provided base load electricity to the national grid, however, this has now been overtaken by geothermal energy. Further, the country has no plans of developing a hydropower project in the 1000MW range that is currently required.

The advantages of hydropower generation plants include:

- They are a renewable source of energy;
- During the operational phase, it does not cause pollution in the form of greenhouse gas emissions like fossil fuel power plants;
- Hydropower is generally a reliable source of energy as long as there is sufficient water in the dam;
- It is a flexible source of energy as adjusting the water flow and output electricity is easy;
- Compared to fossil fuel and nuclear energy plants, it is much safer as no fuel involved.

The disadvantages of large scale hydropower plants are:

- They require large tracts of land that get inundated with water behind the dame walls;
- There would be massive displacement of people for such a project;
- The siting of such plants requires physical features similar to gorges where the walls can be erected;
- Good hydrology is necessary for building up water storage. Currently, there is competition for water between the increasing population in central Kenya and water storage in the dams;
- Kenya has minimal potential for a large scale hydropower plant;
- There are localized climatic change environmental health impacts to communities where such power plants are built;
- The development cycle for such plants is about 10 years and it would take another 4 – 6 years to reach the Commercial Operations Date; and
- The load factor for a hydropower plant is about 40%.

6.2.3 Geothermal power

According to the ERC statistics, the total installed capacity of geothermal power plants in Kenya was 593.5MW contributing 27.3% of total power generation in the country. Geothermal power is firm power, clean and renewable and the Kenya Government is progressing the development of this type of power in the 5000+MW program.

The advantages of geothermal power generation are:

- It is a reliable source of energy (has a load factor of about 95%) unlike solar and wind and is good for meeting the base load energy demand;
- Geothermal resource comes from the earth's crust and is naturally replenished through rainfall;
- It is considered environmentally friendly with minimal emissions of greenhouse gases;
- Harnessing geothermal energy does not involve any fuels, which means less cost fluctuations and stable electricity prices;
- Geothermal energy is available everywhere, although only some resources are profitably exploitable.

The disadvantages of geothermal power generation are:

- There are heavy upfront costs associated with geothermal exploration which has a high risks associated with it, a typical geothermal exploration well costs about US$7 Million/well which locks out private developers;
- The average yield for each well is about 5MW and there needs to be a 20% reserve steam or about 6MW;
- The development time from the exploration phase to commercial operation date (COD) is at least 7 years;
- It would be difficult for Kenya to currently afford a large scale geothermal power plant of 1000MW capacity given the following development estimated costs:
    - Resource cost = US$7 million/well assuming 100% success rate. If each successful well yields 5MW, the resource cost is US$1.4 million/MW;
    - Steam gathering system cost ~US$1.5 million/MW;

- The power plant cost ~ US$2 million/MW;
- From the foregoing, the total estimated cost/MW of a 1000MW geothermal power plant would be ~US$4.9 billion which is extremely expensive.

- According to the Ministry of Energy and Petroleum (MoEP) Feed in Tariff (FiT) 2012, the tariff for a geothermal plant starts at US¢8.80/kWhour and the percentage escalable portion is 20% in the first 12 years and 15% thereafter; and
- It is not easy to shut a well once it starts producing power.

6.2.4 Natural gas power

Natural gas is being used in a number of countries around the world for heating and power generation. For example, in the USA, natural gas power generation accounted for 27% of the total power generation in 2014. For Kenya to economically produce power using natural gas as a fuel source, commercial discoveries of the commodity need to be discovered. Secondly, a natural gas fired power plant need to be closely located near the source of the gas for it to be economical.

The advantages of using natural gas in producing power include:

- A power plant that utilizes natural gas is quick to set up with a development period being about 24 months;
- Natural gas power plants operate at a load factor of about 85% and have the lowest project cost at about US$1 – 1.2 million/MW (this cost excludes import and regasification);
- It's considered a cleaner fuel than other fossil fuels but still emits carbon dioxide;
- Natural Gas can provide electricity 24 hours, 7 days a week unlike other sources of renewable energy;

The disadvantages of natural gas fired power plants include:

- The liquefied natural gas (LNG) import terminal and regasification facility is expensive to build and takes over 24 months to establish;
- A floating storage regasification facility (FSRU) is the most expensive supply option for natural gas to a power plant; the FSRU itself requires parasitic load to operate it;
- While it is a cleaner fuel, natural gas power plants emit carbon dioxide emissions into the environment;
- Term contracts for LNG are between US$10 – US$12/million British thermal units (Btu); this implies that the levelised cost of electricity would be in the range of US¢ 11 – 12/kWh.

6.2.5 Coal fired power

Coal is one of the most important sources of energy for mankind providing an easy way to generate energy in a cheap manner. The relative abundance and low costs of using coal has made it the first choice of fuel for building power plants in the world. In the USA, coal fired power plants accounted for 39% of total electricity generated in 2014. In South Africa, coal fired power generation accounts for about 94% of the total electricity generated.

The proposed project will be Kenya's first coal fired power plant. The advantages of a coal fired power plant include:

- It is fairly quick to set up a coal power plant; for example, the proposed 1,050MW coal fired power plant in Lamu will take about 36 months to develop and construct;
- Coal fired power plants can generate electricity continuously, predictably and reliably unlike other forms of renewable energy like wind and solar that are intermittent in nature;
- The capital investment required for coal fired power plants is relatively less at $1-2/watt of thermal capacity; wind energy is slightly higher while solar is even higher;
- The coal prices are steady and in the long term they are predicted to reduce;
- 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;
- Coal power plants have high load factors in excess of 85%. They can generate power almost 24/7 and only need to be shutdown for periodic maintenance;
- There have been efficiency improvements in types of coal fired power plants from sub-critical technology to super-critical to ultra-super critical;
- Generally, coal fired plants are considered safer than nuclear power plants. A coal power plant's failure is certainly not likely to cause catastrophic events such as a nuclear meltdown would. Additionally, the welfare and productivity of coal industry employees has greatly improved over the years. In fact, injuries, time lost, and fatalities have decreased significantly in the past years.

The disadvantages of coal fired power plants are:

- They use coal as a fuel source which is non-renewable;
- They release carbon dioxide which had been sequestered for millions of years in the dead bodies of plant and animals. This transfers the carbon from within the earth to the environment leading to global warming; and
- Thermal plants like coal fired plants emit harmful substances to the environment. These include mercury, sulfur dioxide, carbon monoxide, mercury, selenium, and arsenic.

6.2.6 Medium speed diesel power

Kenya has a number of medium speed diesel (MSD) fired power plants in the coast region, Nairobi, Athi River and Thika among other locations. As at December 2014, MSD power plants accounted for 26.7% of total power generation in Kenya or 579.5MW. There are a number of advantages and disadvantages of such plants which are outlined below.

The advantages of MSD power plants include:

- They have a quick development cycle (about 12 months);
- They require a low capital expenditure to develop (about US$1 million/MW);
- They are flexible plants for base loads and peaking loads;
- They require smaller footprints than other types of power generation technologies; and
- They have a load factor of about 85%.

The disadvantages of MSD fired power plants include:

- They emit carbon dioxide, sulfur dioxide and nitrous oxides into the environment;

- As MSD power plants utilize liquid fuels as the energy source, their levelised cost of electricity (LCOE) is one of the highest at about US¢20/kWhour;
- The variability of liquid fossil fuels prices makes the tariff largely variable.

6.2.7 Solar power

Solar Power is a form of energy whose costs are continuously declining compared to other forms of energy. In Kenya, utility scale solar power plants are currently in the development stage. It will take a while before such power plants reach commercial operations date (COD).

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 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;

6.2.8 Wind power

Wind Power has become the biggest source of renewable energy in the world after nuclear energy (if nuclear is considered to be renewable energy). The reason for the huge increase in wind energy has been the sharply falling costs which have roughly become equivalent to gas fired energy. While solar energy costs are still falling, they are still way above the costs of fossil fuel energy.

Kenya is progressing the development of wind energy as part of the energy mix. There are a number of wind energy projects in the pipeline and a 300MW wind farm is currently under construction in Lake Turkana.

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.

6.2.9 Summary of firm options for energy supply alternatives

Kenya requires least cost steady state power plants in order to actualize the Government's initiative to add 5000+MW of new power generation capacity by the end of 2017. Additionally, the firm power must be developed on a least cost basis in order to reduce the consumer prices; currently, this can only be achieved through a coal power plant. Subsequently, the benefits of developing the proposed 1,050MW coal fired power plant in Lamu are given below.

- Given the current electricity supply options and consumer cost, the proposed coal fired power plant is the most viable option as it has the lowest levelised cost of electricity (LCOE) of US¢7.52/kWhour;
- The proposed coal fired power plant has a relative quick development timeline to the commercial operations date (COD) and is second to a natural gas fired power plant;
- The technology for coal fired power plants is proven over several years and continuous improvements are being made in order to make them more efficient and environmentally sustainable;
- There are easily available professionals available globally that can build and operate coal fired power plants unlike say, nuclear power plants which require highly specialized skills set not available everywhere; and

- Due to its LCOE, the coal fired power plant goes to the top of the merit order for power generation.

6.3 Scheduling alternatives

Scheduling alternatives relates to the timing of developing the proposed coal fired power plant and time constraints for establishing it.

Since the devolution to County Governments, numerous economic activities are beginning to spring up which require electricity. The increased demand for power is arising from activities such as mining, production of iron and steel products from local iron ore deposits, irrigation of large tracts of land for food security and agro-based industry. Other energy intensive activities that require power include; operation of petroleum pipelines for both crude and refined fuel oils, petrochemicals production including urea, steel products based manufacturing such as motor vehicle body parts and earth moving equipment, electrification of designated rail lines, installation of escalators at shopping malls and airports, and new economic zones. Without adequate and cost effective electricity, the above activities will be constrained.

Recognizing the above, the Government of Kenya initiated a 40-month program commencing in September 2013 to install 5000+MW of new power generation projects from the following sources to meet the growing electricity demands in the country:

- Geothermal: 1646MW
- Natural gas: 1,050MW
- Wind: 630MW
- Coal: 1920MW

Currently, there is minimal activity in meeting electricity demands from natural gas; the other two renewable sources (geothermal and wind) are at various stages of early development. The only new geothermal capacity which has been injected into the grid out of the 1646MW is 280MW (5% of the 5000+MW). The proposed coal power plant will provide about 20% of the 5000+MW program at the most cost effective tariff to the consumer.

From a scheduling perspective, the Government needs to accelerate power generation from coal in order to supply baseload electricity to the numerous activities that are springing up in the counties.

6.4 Technology alternatives

Technology alternatives considered for the proposed 1,050MW coal fired power plant project include:

- Fuel combustion technologies; and
- Cooling system technologies.

6.4.1 Fuel combustion technologies

There are two types of fuel combustion technologies namely, conventional pulverized coal fired or circulating fluidized bed technology. A basic description of the two types of technologies is given below.

Circulating fluidized bed boiler technology. Fluidized bed combustion (FBC) is a technology used in power plants. There are different designs of FBCs namely, atmospheric systems (FBC) and pressurized systems (PFBC) and within these there are two minor groups namely bubbling (BFB) and circulating fluidized bed (CFB).

Fluidized beds suspend solid fuel (coal) on upward blowing jets of air during the combustion process which results in a turbulent mixing of gas and solids. The tumbling action much like a bubbling fluid, provides effective chemical reactions and heat transfer. The CFB has a cyclone filter to separate solid material from hot flue gases which leave the exhaust of the furnace. The solids from the filter are re-circulated into the bed.

Pulverized coal fired boiler technology. In this type of technology, electricity is produced by burning pulverized coal and air in a boiler which heats water to produce steam that drives a generator. There are three types of pulverized coal boilers namely, subcritical, supercritical and ultra-supercritical. The steam flows through a series of steam turbines which spin an electrical generator to produce electricity. The exhaust steam from the turbines is cooled, condensed back into water and returned to the steam generator to start the process over. These types of technologies provide most of the electrical energy used in many countries.

Through technical feasibility studies undertaken for the project by the developer, **supercritical pulverized coal fired boiler technology** has been selected as the preferred solution for the implementation of the Lamu coal fired power plant. This is the alternative assessed within this ESIA Study.

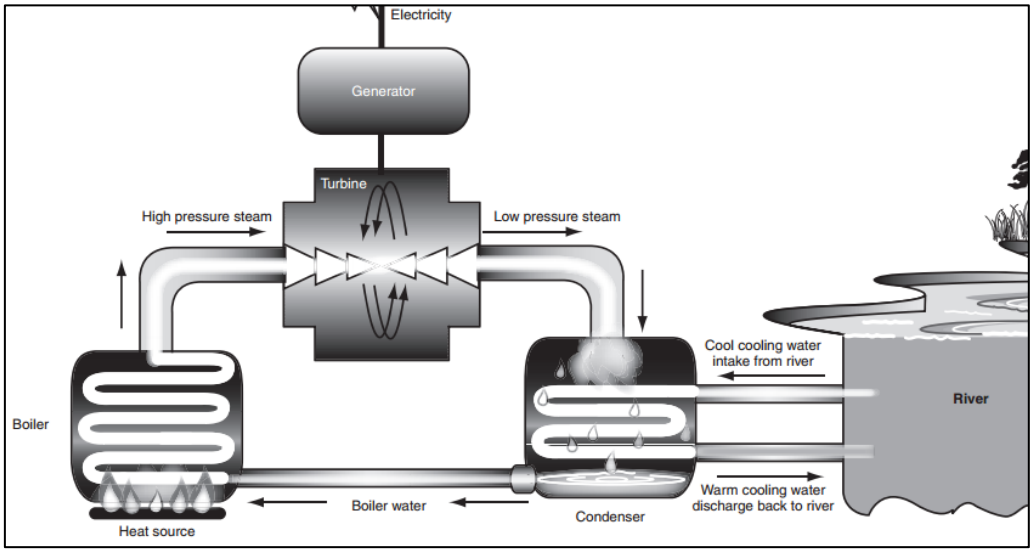
6.5 Cooling system technologies

Currently, there are four types of cooling systems for steam-electric power plants that are commonly used around the world namely (i) once-through cooling, (ii) closed-cycle wet cooling, (iii) dry-cooling, and (iv) hybrid cooling. Each of them is described below.

6.5.1 Once-Through Cooling

Once-through systems withdraw water from a natural source (typically a lake, river, or ocean), use it to extract waste heat from the steam cycle, and then return it to the water body at a slightly elevated temperature (see schematic in Figure 6-2). The system consists of a steam condenser, typically of the shell-and-tube type, circulating water pumps, circulating water lines, intake and discharge structures, and in most cases, some water treatment equipment, typically chlorination for biofouling control.

Figure 6-2: Illustration of once-through cooling water system

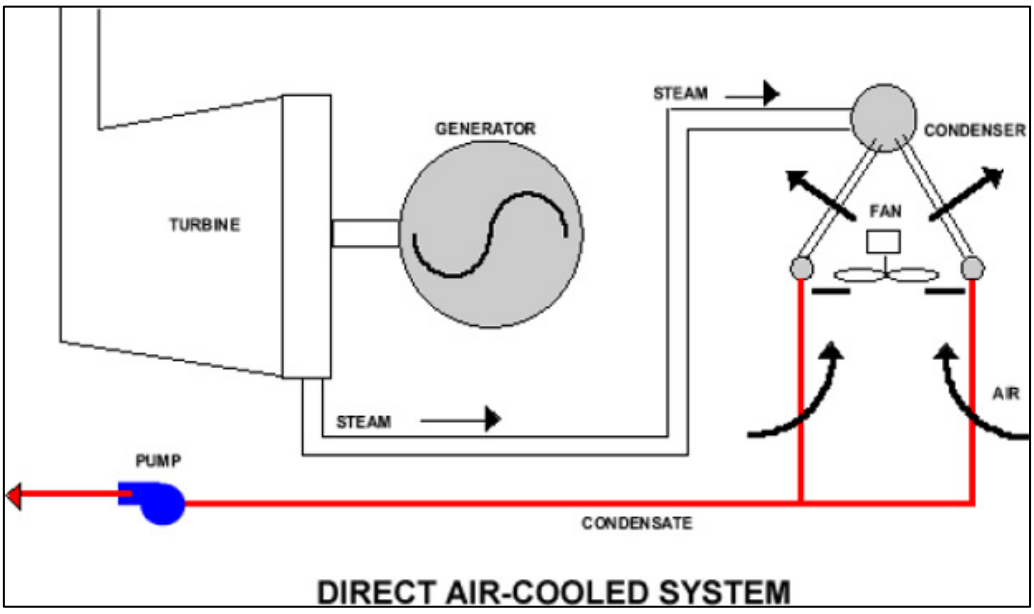


6.5.2 Direct dry cooling

Dry cooling systems reject the heat of condensation directly to the atmosphere with no consumptive use of cooling water. Systems are of two types: direct and indirect dry cooling.

In this system (Figure 6-3), the steam from the turbines goes to the dry-cooling element or heat exchanger. Fans are used to blow air over the condenser causing water vapour to change into liquid. The liquid (water) is pumped back to the boiler for reuse. No cooling towers are required for this system; therefore water loss by evaporation is prevented. Issues associated with this technology include increased noise levels as a result of additional fans required.

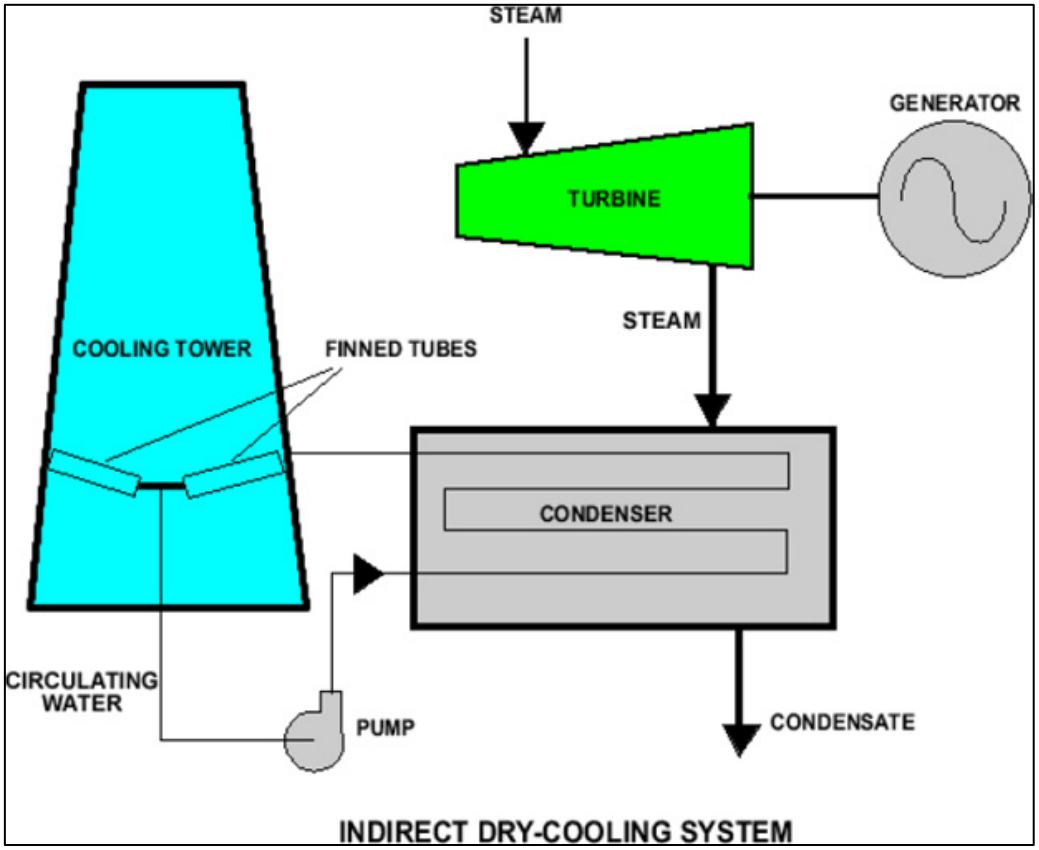
Figure 6-3 : Direct dry cooling system illustration



6.5.3 Indirect dry cooling

This method is illustrated in Figure 6-4. A cooling tower and cooling water (from a water resource) is required. Warm water from the condenser is pumped to cooling towers. Within the cooling tower, bundles of cooling elements are arranged in rings. Cooling water is sent into the elements and cooled water returns to the condenser for reuse. The system prevents water loss by evaporation, as it is a closed system. Associated issues include additional visual impacts associated with large cooling towers required. Indirect systems are more costly and less efficient than direct dry cooling system, because of the two-step heat transfer path to the atmosphere, the circulating water pumping power requirement, and the temperature rise of the cooling water as an additional temperature difference between the ambient air and the steam condensing temperature.

Figure 6-4: Indirect dry cooling system ilustration



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. This is the alternative addressed in this ESIA Study.

6.6 Operational alternatives – pollution control

Due to potential environmental and health impacts associated with the operation of the coal power plant, methods are considered for ash management and air emissions control.

6.6.1 Ash management

The ash management system at the proposed power plant will use dry ashing (no water used). Wet ashing utilizes large amounts of water and is therefore not considered suitable for this location.

Above ground ash dumping (where ash is stacked in an ash yard within the power station and the ash dump is rehabilitated using topsoil and vegetation) will be utilized. The ash yard will be designed with three layers of protection namely an (i) an in-situ compacted clay layer about 1.5m thick complete with perimeter retainer walls, (ii) an impermeable liner to prevent leachate entering the subsurface and groundwater, and (iii) a 0.15m thick sand layer.

Wastewater generated at the power plant will be treated and utilized for dust suppression as the ash dump.

6.6.2 Air emission control

Burning of coal releases CO_2, SO_x, NO_x and particulates into the atmosphere. The proposed Lamu coal power project will utilize the latest clean coal technologies available including electrostatic precipitators, wet flue gas desulfurization units and low nitrous oxide burners to minimize the air emission impacts.

6.7 The "do-nothing" alternative

The do-nothing alternative is the option of not constructing the proposed 1,050MW coal power plant. This alternative would result in no environmental or social impacts in the project area.

However, not undertaking the project will also mean that Kenya will be unable to produce the electricity that it needs under the 5000+MW program which could have adverse socio-economic impacts.