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A different Wind of Change – harnessing Africa’s largest wind project for climate action

By Fiona Imbali on 29 January 2020

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After commencing only in 2015, the Lake Turkana Wind Power Project (LTWP) in Kenya has rapidly become the largest such initiative in Africa, and Kenya’s single largest investment in the country’s history. It began generating



electricity in 2018 and was fully inaugurated in 2019. For that reason, its lessons are being scrutinised for the technology’s wider regional potential.

One of the biggest factors is how large projects relate to local communities and politics. Profits from the LTWP are now being used to build infrastructure in a region that has traditionally been seen as a battle zone for cattle rustlers, which has a rural community that has been too often overlooked. Steady winds blow across the Turkana region, making it a perfect site for generating wind power. The challenge is to make this a project that returns benefit to the communities around it, as well as providing much needed power to the grid.

The LTWP has committed to invest a portion of its operating revenues in its Corporate Social Responsibility (CSR) arm, a foundation called Winds of Change (WoC), which aims to improve the livelihoods of adjacent communities. This will include social programmes and transport infrastructure; health and education, with over 250 million of investment. Over the project period of 20 years, the LTWP foundation is expected to contribute over 1 billion (€10 million) on social projects.

The land is communally owned by the Rendille, Samburu, Turkana and El Molo indigenous and pastoralist communities, and the local authorities hold the land in trust for these communities. LTWP leases the land from Marsabit County for a period of 33 years with an option to extend twice up to 99 years. The entire concession area is 150,000 acres, though the actual wind power project site comprises just 40,000 acres. The project has worked hard to align itself with nearly all the Sustainable Development Goals (SDGs). This kind of large project brings a huge range of economic activities to the nearby town, which has grown exponentially as a result. The project comprises 365 wind turbines (each with a capacity of 850 kW), which seeks to add 310MW low cost, reliable wind power to Kenya’s national grid – enough electricity for over one million Kenyans. It is a

private/public partnership structure, in which the government and partners together invested approximately Kshs 70 billion (USD 675,542,000).

The project began supplying power to the national grid on 24 September 2018 and so far has generated over 1,216,489,509kwh. It is expected to increase the supply of electricity by 13 per cent and help insulate the country from supply constraints. The government collaborated with the Africa Development Bank (AfDB) to construct a 438 kilometre transmission line connecting the power station to the grid – the single largest private financing in Kenya. The country's Vision 2030 national development project is expected to make foreign currency savings of USD 150 million annually by displacing fuel costs.

Wider relevance

This example shows how a low-carbon project has been rolled out, generating wealth for some, as well as technological changes. Recognising the importance of technology transfer to the reduction of carbon globally, the 2010 Conference of Parties (COP) established a Technology Mechanism which consists of the Climate Technology Centre and Network (CTCN) and the Technology Executive Committee (TEC) to encourage learning across borders. The network works to facilitate the transfer of climate technologies by providing technical assistance, creating access to information and fostering collaboration for developing countries to accelerate the transfer of environmentally sound technologies for climate resilience development. The committee is the policy body that provides recommendations for national efforts on climate technology development and transfer.

Intellectual Property Rights can prove a barrier to prevent cutting edge technology from being accessed by developing countries such as Kenya. The United Nations United Nations Framework Convention on Climate Change (UNFCCC) continues to urge for processes that

promote climate technology development and transfer to developing countries.

The Kenyan government is keen to promote initiatives for a ‘Green Economy’ that will reduce carbon emissions, use natural resources efficiently and enable sustainable livelihoods to develop. The country will need to move away from energy obtained from the combustion of fossil fuels. As Kenya seeks to define its future in terms of the low carbon economy, it will be important to understand the roles played by different actors, institutions and interests.



President Uhuru Kenyatta (Middle) with other dignitaries during the opening of the Lake Turkana Wind Project. Photo Credit: Lake Turkana Wind Project <https://ltwp.co.ke/>

Green initiatives have been embraced across the spectrum, with both private and public sectors keen to reduce carbon footprints. The Kenya National Cleaner Production Centre, for instance, seeks to promote eco-friendly technologies that enable production facilities to increase capacity while minimizing waste – both of raw materials and of waste generation at source.

Wind power offers one of the lowest environmental impacts of any source of electricity generation, whilst also saving billions of gallons of water per year. When turbines generate electricity, they produce zero carbon emissions and cut substantial amounts of sulphur dioxide (SO₂) and nitrogen oxides (NO_x) – air pollutants that create smog and trigger asthma attacks. The cost of wind has been reducing by ten percent every decade. Turbines have also been getting larger with taller towers and a lighter construction, making it now the most affordable form of electricity. After installation, wind turbines can provide electricity for over 20 years before they are recycled. They occupy comparatively less space than solar systems and it is sometimes possible to farm and graze around them. Early turbines were said to be unreliable when wind is low, but a recent article in The Guardian points out that new turbines have bigger rotors, higher towers and lighter blades, making them a more stable grid, particularly in collaboration with other renewable energy sources.

Context and background

Wind energy is seen as an important technology in cutting people's reliance on fossil fuels. Kenya's Intended Nationally Determined Contributions (INDC) sets out an ambitious mitigation plan to reduce Greenhouse gas emissions (GHGs) by 30 per cent by 2030 relative to the business as usual scenario.

As climate change continues to impact the world, the Intergovernmental Panel on Climate Change (IPCC) projects carbon dioxide concentrations to rise to between 540 parts per million (ppm) and 970 ppm, resulting in global surface temperatures rising to between 1.4°C and 5.8°C. These effects will vary in different locations, but those people most at risk will be the poorest and mostly in developing countries, where survival can depend on having a healthy and natural environment. Even with the hope of stabilizing the increase in GHGs, future risks may include low-lying coastal areas being at risk due to rising sea levels; desertification is bound to be experienced in Sub-Saharan Africa; and there will be increased

pressure on sources of fresh water as well as on vulnerable ecosystems such as coastal wetlands and coral reefs. Over 7,000 natural disasters – including droughts; floods and cyclones – occurred between 1980-2005, affecting ecosystems and human habitats. Millions of lives were lost in these events.

Although it is not a panacea, technology can make a contribution to solving problems, depending on how it is used and who is involved in developing it. In 2016, technology billionaire, Bill Gates, launched a fund to invest in technological responses to climate change. World Bank estimates show that investments in clean technology in 145 countries are expected to exceed \$6.4 trillion over the next decade, with a quarter of that market accessible to small and medium enterprises. Energy storage technology that seeks to ensure renewables are dependable for electricity grids is a critical sector for the future of clean technology.

There is increased debate on the urgency to decarbonise energy systems, and especially on the supply of electricity, driven by plummeting costs of wind and solar technology. For instance in the US, data from the Energy Information Administration shows that electricity generated through renewable energy (mostly wind and solar) has doubled in the past decade and this trend is bound to continue in the near future.

Despite the lack of globally binding climate agreements, wind power is being taken up rapidly, with global rates of expansion estimated to range from 10 to 40 per cent each year. Wind energy technology has been seen as having the best potential to enable fast, substantive reductions in CO2 emissions. Countries continue to pour investment into wind energy, which is seen as a free and inexhaustible source of boundless kinetic energy – in contrast to fossil fuels like oil and coal that often are extracted from the earth at great environmental cost. Despite its potential, current installations have barely scratched the surface of its potential, which it is estimated could easily provide over 2,000 GW of new capacity by 2030. In Africa, wind installation capacity is growing fast, but is still minimal and the local industry

needs help to develop. African manufacturers of wind turbines are small in number and require support from governments and development partners if they are to build a sustainable manufacturing industry. The industry has also been confronted the difficulties of who benefits or loses out from large scale wind projects, and the conflicts that can arise.

Enabling factors

For decades, Kenya largely relied on hydro-electric power generation to satisfy its green energy development. But changing climatic conditions with prolonged drought, have led to low water levels in dams affecting power generation and resulting in frequent rationing. If the country wishes to achieve its aim of becoming an emerging economy by 2030, the adoption of green initiatives in the energy sector are increasingly seen as vital.

Efforts to diversify electricity supply in Kenya are driven by both economic and political factors. For instance, Kenya’s reliance on hydropower proved expensive due to its vulnerability to drought, which forced the government to use emergency diesel when the water ran out. This exposed the country to unpredictable oil prices as well as currency fluctuations. Kenyans have the highest access in East Africa to electricity – through either grid and off-grid solutions – according to a recent Multi-Tier Framework Energy Access Survey Report. The current population with access to electricity stands at 75 per cent – almost triple that of Uganda at 22 per cent. Tanzania stands at 32.8 per cent and Rwanda at 34.1 per cent. This rate is increasing annually by an estimated 6.4 per cent according to the World Bank. About 18 million people are yet to be connected and the government aims to provide universal access to electricity by 2022. This is a lot of extra people to supply at a time when the world is trying to divert away from fossil fuels.

Financing is important for any major infrastructure development. Here, the private and public partnership was key to the project’s success, as was government goodwill. The process has not been

without its challenges; allegations of land grabbing, violation of indigenous and customary land rights, and corporate negligence have all been reported. There have also been numerous court cases to settle claims against land acquisition. In 2014, local communities went to court complaining of not being engaged from the onset of the project. These concerns led to the formation of various community groups agitating to stop the project. Turkana communities then filed cases demanding back their title deeds and arguing that the land belonged to the community. The World Bank decided to withdraw its support, but the project continued, with 2000 young people being hired to work locally.

From its inception, the project has worked with 17 community groups, 13 financiers, 5 different construction partners, 7 equity investors, over 2500 employees, 8 government departments and the project reports that it has benefited approximately 200,000 beneficiaries. 98 per cent of its permanent employees are locals, with representatives from all the various surrounding communities. The project has brought large amounts of funding into the area, and expects this to continue. But the rapid privatisation of land on a large-scale alongside infrastructural development seems to have produced some contradictory effects: while some locals have benefited from the project, there have also been complaints that others have been excluded – often from employment and other opportunities arising indirectly as a result of the project.

When the project was being prepared in 2014, there was no infrastructural development. Since then a 208 kilometre road costing Kshs 3.2 billion was constructed to the wind farm, which improved the possibilities for local people to trade more widely. Fishing communities have benefitted from donations of cooler boxes by the German donor GIZ, ensuring that they get better prices for their fish by keeping it fresh for longer. Funding has also been put towards new classrooms and equipment for laboratories. The county government opened the Loiyangalani Polytechnic to enhance technical skills in local communities, and boreholes have been constructed, with the aim of reducing conflict over water points. The

investment has brought supplies of water, hospitals and electricity to the area, as well as jobs.

Scope and evidence

- 2005 – Initial discussions on the possibility of a wind project – the LTWP project was born.
- 2006 – The Kenyan government partnered with Anset Africa Limited and Kp&P company. Extensive wind assessment and environmental field work was undertaken. LTWP Limited is the company in charge of the project and it consists of several equity partners, including banks, development banks and governments across Africa and Europe.
- 2014 – Local communities went to court complaining of not being engaged from the onset of the project. These concerns led to the formation of various community groups agitating to stop the project. Turkana communities filed cases demanding back their title deeds arguing that the land belonged to the community. The World Bank also withdrew its support arguing that the production was likely to outweigh demand.
- 2015 – The project commences despite the World Bank pulling out. 2000 young people were hired and the project is estimated to contribute about 3 billion annually in tax revenue over a period of 20 years whilst also providing up to 20 per cent of Kenya's power grid capacity to absorb wind energy.
- July 19th 2019 – President Uhuru Kenyatta officially inaugurates the project and the 438 km Loiyangalani-Suswa transmission line connecting the wind farm to the national grid.
- The project prides itself on building strong relationships through collaborative approaches. From inception, the project has worked with 17 community groups, 13 financiers, 5 different construction partners, 7 equity investors, over 2500 employees, 8 government departments and the project has largely benefitted approximately 200,000 beneficiaries. Ninety-eight per cent of permanent employees are locals, with representatives from the various communities.

- The project has been controversial, with winners and losers from the development, and impacts on community relationships, activities of pastoralists in the area, and even relocations of some local people.
- Lake Turkana Wind Power Project (LTWP) is the largest wind-power project in Africa and Kenya's single largest investment in the country's history.

This story was written by Alliance member- the [Africa Sustainability Hub \(ASH\)](#).

Lessons for rapid transition

1. Political goodwill is key in the development and uptake of low carbon renewable technologies. Progressive policies for a green economy are needed that advocate for efficient use of natural resources for sustainable futures.
2. There's a need to incentivise the private sector to invest in clean technologies as well as to support local manufacturing and enable the subsequent spread of these innovations.
3. Technology uptake can work well via effective public private partnerships that truly put community benefit at their heart. However, if communities are targeted for development, they should be engaged from the outset to ensure that their understanding of what they view as beneficial is incorporated, and also to avert incidences of court cases and subsequent project delays.

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Fiona Imbali

Fiona is the part of the Secretariat for the Africa Sustainability Hub, which focuses on transformative, evidence-based, and action-oriented research that will generate the basis for

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