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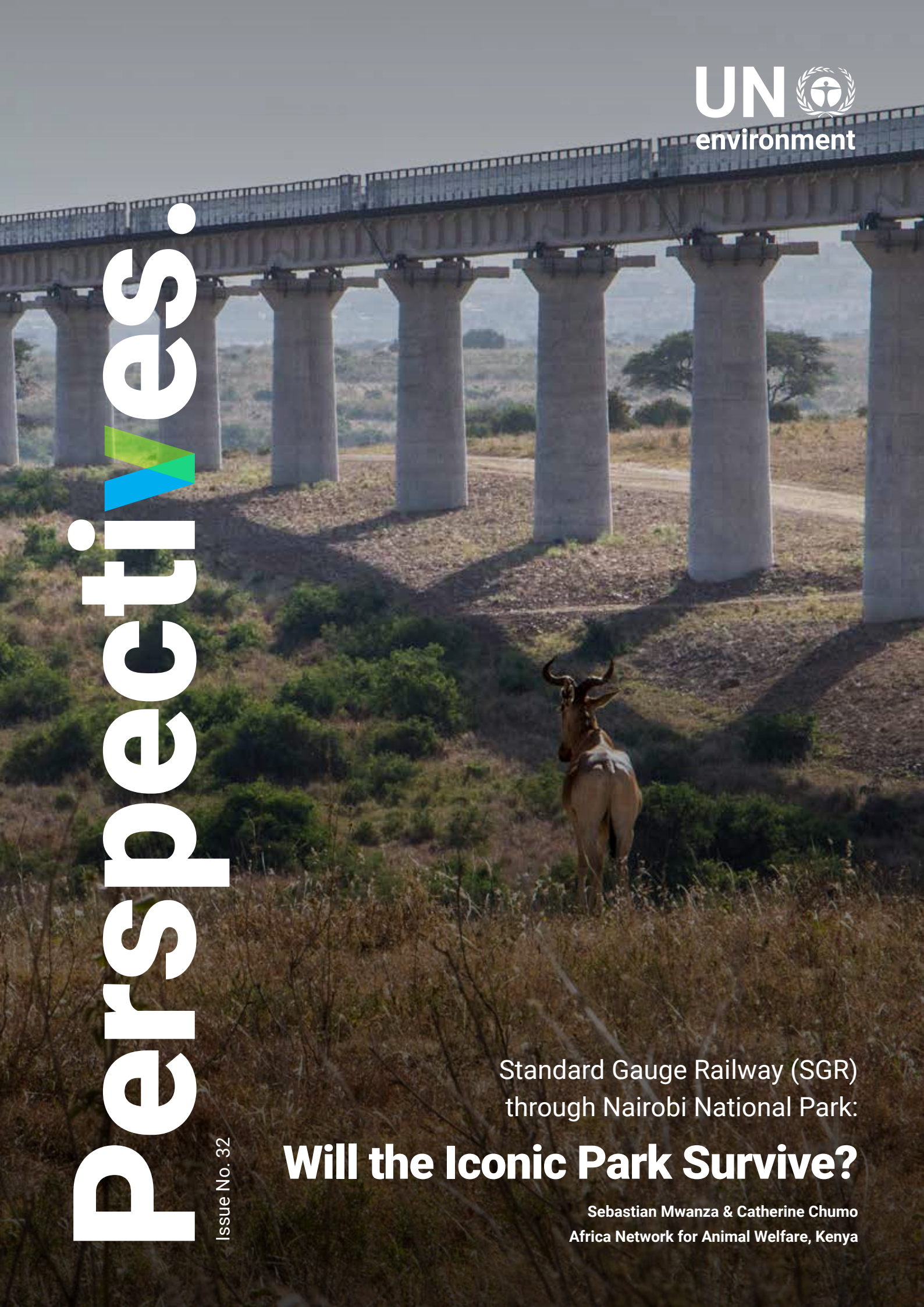

Standard Gauge Railway (SGR) through Nairobi National Park:

Will the Iconic Park Survive?

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Cover photo: Marco Pruiksma

Beyond a fenced strip that snakes across Nairobi National Park (NNP), construction work is under way for a multi-pillared structure being built by the China Road and Bridge Corporation (CRBC). In the middle of the 117 km^2 of wilderness, large swathes of land are being cleared; the ground vibrates as long drills penetrate the earth and rocks are blasted. The line of more than 200 workers and tall cranes lifting tons of cement and sand dominate the landscape. The loud noise of trucks moving to and fro provides a stark contrast to the surrounding serenity. This is the bird's-eye view of the Nairobi National Park today. The view of the ongoing construction speaks volumes about the environmental concerns it raises.

The debate around this project has largely been characterized by endless cloak and dagger politics. Few government projects in the recent past have attracted such intense media coverage. Phase 2A through the Nairobi National Park has been a subject of heated discussion among conservationists and environmentalists, as the effects of the construction on the park and its biodiversity become apparent.

The Nairobi National Park (NNP)

The well-maintained main entrance gives way to dusty roads that open out into the wide grassland and beautiful savannah dotted with acacia trees and wild grazing animals. On a drive through the park it is possible to spot giraffes, zebras, wildebeests, hartebeests, rhinos, lions, buffalos, impalas, grants gazelles, Thompsons gazelles, ostriches, hippos, dik-diks and elands, hiding behind bushes, in the grasslands, in dams, jumping over fences and crossing the dusty roads.

More than 100 species of mammals, over 60 species of reptiles and amphibians, and more than 500 species of plants and birds live in the park today. The NNP covers an area of 117 km^2 and is an important source of revenue for both Nairobi and the country. It is one of the few protected areas in the world that houses such a diversity of species. As East Africa's oldest park, Nairobi National Park is experiencing the

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Human developments overshadowing our "natural" environments. Photo: Marco Pruiksma

greatest rate of encroachment since its inception in 1946. A modern railway now winds through the middle of the iconic park. The park acts as a carbon sink and provides critical ecosystem services. The beautiful landscapes within the park consist of savannah, woodlands, gorges, wetlands and forests.

Located in the northern-most part of the Athi-Kapiti ecosystem, the world's greatest city park is located seven kms from the central business district of Nairobi. Nairobi National Park is home to four of the 'Big Five' — lions, leopards, rhinoceros and buffalos. Only the elephant is missing; they were relocated to reduce human-wildlife conflict and because the park is too small to support a population of elephants. A game count, conducted by Friends of Nairobi National Park in February 2018, found 18 lions, 396 buffalos, 1 leopard and several rhinos. Due to the rhino's endangered status, the number remains undisclosed. It is one of the top five most-visited parks in Kenya, attracting over 150,000 visitors a year. Indeed, it is the second most-popular destination for school visits, after the Maasai Mara National Reserve, and is a valuable resource for educational purposes and for generating much-needed income for the Kenya Wildlife Service (KWS) and the country.

Standard Gauge Railway — The China-funded modern railway to replace the 100-year 'Lunatic Express'

To spur economic growth within the East African region, the Governments of Kenya, Uganda, Rwanda and South Sudan have agreed to construct a modern railway to serve the four countries; they have committed to providing a high-capacity, cost-effective railway transport network within the northern corridor — a multimodal trade route linking the landlocked economies of Uganda, Rwanda, Burundi and Eastern DRC, as well as a route between South Sudan and the Kenyan maritime seaport of Mombasa.

The Governments of Kenya, Uganda, Rwanda and South Sudan have committed to providing a high-capacity, cost-effective railway transport network within the northern corridor.

In pursuit of this goal, the Governments of Kenya and Uganda signed a memorandum of understanding (MoU) in October 2009 to construct a new railway from Mombasa to Kampala. A tripartite agreement was then signed by the Governments of Kenya, Uganda and Rwanda in August 2013 to fast-track the development of

the railway to their respective capital cities.

The four countries then resolved to expedite construction of a high-capacity, high-speed Standard Gauge Railway (SGR) for passenger and freight transportation. They signed and ratified a protocol for the development of the SGR connecting the port of Mombasa to Kampala, Kigali and Juba. Each country is to develop the section of the railway line within its own borders.

The justification for Kenya's SGR

In the 2000s, Kenya's colonial-era metre-gauge railways deteriorated due to lack of maintenance of the tracks, trains and wagons. By 2016, passenger trains were taking 24 hours to travel from Nairobi to Mombasa, a far cry from the 12-hour journey of the early 1990s. Freight transported from the port of Mombasa fell from 4.8 million tons in the 1980s to 1.5 million tons in 2012. In 2014, the Rift Valley Railways Consortium, the railway operator in Kenya and Uganda, reported a loss of US$1.5 million. By 2017, only half of Kenya's metre-gauge railways remained in operation. As a result, there is an urgent need for a modern railway to transport passengers safely and rapidly to their destinations and get freight off the road.

A World Bank report in 2013 suggested four ways of upgrading the railway: three options for revamping the current track, and a fourth more expensive option to build a new one. Kenya decided on the latter.

It remains the largest and the most expensive infrastructure project in Kenya since independence in 1964. Financing was finalized in May 2014, with the Exim Bank of China extending a loan for up to 90 per cent of the project costs and the remaining 10 per cent coming from the Kenyan Government.

At the same time, the Chinese Government was funding railway constructions in other African countries. In 2011, Kenya signed a MoU with the CRBC to build the controversial SGR from Mombasa to Nairobi. The mega project, a flagship of Kenya's Vision 2030 development agenda, would cost the country a whopping $3.6 billion (at least) upon completion. It remains the largest and the most expensive infrastructure project in Kenya since independence in 1964.

Financing was finalized in May 2014, with the Exim Bank of China extending a loan for up to 90 per cent of the project costs and the remaining 10 per cent coming from the Kenyan Government. For economic, social and political reasons, it was decided that more than 30,000 Kenyans would be hired to work on the railway.

It was agreed the train would use a diesel engine, with the possibility of upgrading to an electrified system in the future. Multiple unit passenger trains will have a capacity of 960 passengers and are expected to travel at an average speed of 120 km/h, while the cargo trains will travel at 80 km/h.

The Kenyan part of the modern rail network is to be constructed from Mombasa to Malaba, some **962 km** apart, in two phases:

Phase 1: (**472 km**): Mombasa – Nairobi

Phase 2: (**490 km**): Nairobi – Malaba; further divided into three sub-phases:

- Phase 2A: (**120 km**): Nairobi –Naivasha
- Phase 2B: (**262 km**): Naivasha – Kisumu
- Phase 2C: (**107 km**): Kisumu –Malaba

The first phase is complete and is now operational; it was officially inaugurated by Kenya's President, Uhuru Kenyatta, on May 30-31, 2017, for both freight and passenger services.

The new rail has shortened passenger travel times from Mombasa to Nairobi from more than ten hours to a little over four hours. Freight trains now complete the journey in less than eight hours.

The ambitious plan will see a railway network spanning the whole of Kenya, from the Indian Ocean port of Mombasa to the capital of Nairobi, and onwards to Uganda, Rwanda and South Sudan — connecting the region's economies.

The problematic Phase 2

Phase 1 is complete; but it is the ongoing Phase 2, from Nairobi to the Ugandan border town of Malaba, that has attracted controversy for its proposed route through the NNP.

Nairobi, Kenya's capital city, is one of the continent's fastest growing cities. The proximity of the NNP to the capital has subjected the park to intense pressure from infrastructural development, with encroachment from all sides: roads, railways, factories and houses.

The plan to route the railway through a slice of the park, first leaked in December 2015, caused a huge outcry on social media. The Kenya Railways Corporation (KRC) backtracked on that particular route, but it never ruled out a path through the park altogether. It subsequently allowed the plan to go ahead.

The Kenyan Government came under intense criticism for allowing the railway to pass through the iconic park. Kenya's Ministry of Transport, through the KRC, contracted a firm to conduct an Environmental and Social Impact Assessment

At no point were any options that completely avoided the NNP ever considered, contradicting Environmental and Social Impact Assessment (ESIA) global best practices. This is a fundamental flaw in the ESIA — all alignment options would have an impact on the park and its wildlife.

(ESIA), as required by Kenyan law. It was upon the release of this report that criticism by civil society and environmentalists broke out. There was a public outcry all over the country and from abroad, urging the National Environment Management Authority (NEMA) — the licensing authority — not to issue the Kenya Railway Corporation with a licence to build the SGR through the park. The findings and recommendations of the report where described by ESIA experts as dubious and 'cooked', giving in to pressure to opt for the predetermined route through the park.

Environmental protests

While the importance of the SGR to Kenya's economy is widely recognized, many individuals and conservation groups argued that, regardless of any proposed mitigations in the ESIA report to reduce the negative impact on wildlife, the SGR should not have been allowed to cross the Nairobi National Park in the first place.

Indeed, thousands of Kenyans from all walks of life (children, community leaders, experts, engineers, industrialists, residents of Nairobi, international organizations and even funding partners) protested against the proposal for the construction of the SGR through the Nairobi National Park when it was first announced. These groups challenged the decision in the Kenyan courts and marched through the streets to express their disapproval. Some protestors chained themselves to the park gates, while others delivered petitions to the President, Parliament, the Chinese Embassy, KRC, NEMA and KWS. Local and international media was awash with reports of the proposed development.

Petitioners' concerns

1. The park is a protected area, gazetted on December 6, 1946 and as such, the railway should give way to the park, not the other way around. It ought to have first been degazetted as the constitution prescribes.

2. The project sets a bad precedent that will affect all of Kenya's parks and reserves, forests and other areas of national heritage. Furthermore, these developments will affect other African countries, who look up to Kenya as a positive role model for wildlife preservation and environmental conservation.

3. Kenya has lobbied internationally for global support for the conservation of wildlife, the environment and a halt to climate change. This proposal would significantly damage Kenya's international image as one of the world leaders in conservation.

4. Conservationists and concerned organizations mooted alternative routes for the SGR, one of which involved re-routing the railway via Konza or the Athi River, south of the park. If adopted, it would define Kenya as a leading conservationist in Africa: a country that achieves development while protecting the environment. While it would have cost more money, it would have saved the park from the looming destruction.

5. Tourists visit the NNP to view wildlife and enjoy the outdoor experience. One of the main attractions of the park is that it is within easy access from Nairobi. The construction and operation of the railway threatens the future of tourism within the park. The relatively small size of the NNP means that many of the visitors to the park would likely pass under or near the railway, detracting from the experience of being in the wild. Furthermore, the potential decline of wildlife populations and possible extinction of some species would further reduce the number of visitors to the NNP, who would likely choose to visit other parks elsewhere in Kenya or Africa.

Environmental and Social Impact Assessment (ESIA) Report

The Kenyan Government commissioned an ESIA of the proposed railway, which considered seven different alignment options from Nairobi, all of which impacted the nearby NNP to some extent.

Five options, as shown in the map, pass through the NNP, while 1 and 7 pass along its perimeter, but still within the park. The ESIA did not consider any options that bypassed the park completely.

Furthermore, the ESIA correctly identified the significant risk of the railway to the biodiversity and conservation efforts within the NNP and highlighted the critical need to ensure that the railway does not impact on the park or its wildlife. Each of the alignments was evaluated for

This proposal would significantly damage Kenya's international image as one of the world leaders in conservation.

their impacts and a preferred alignment was selected.

In the end, alignment/option four was selected. At no point were any options that completely avoided the NNP ever considered, contradicting ESIA global best practices. This is a fundamental flaw in the ESIA — all alignment options would have an impact on the park and its wildlife.

For the Government's preferred route – the modified savannah route (Option 4) — the proposed design was a single line bridge 18 metres above the ground, across the entire 6kms of the park. It would begin 8 metres from the park edge at the northern gate and continue for 41 kms on exiting the park to the south. The foundations, built on pillars 4 by 4 metres wide, would be dug deep into the ground to reduce vibrations from the trains as they pass over the bridge. The design, according to the contractor, would also include deflectors to reduce the impact of noise pollution.

ESIA report did not sufficiently justify the building of the SGR through the NNP

ESIA experts all seemed to agree that there were grave deficiencies in the report, and that it misinformed NEMA, giving it a green light for the SGR Phase 2 across the park. The justification for the route and the proposed mitigation measures to reduce the negative impact on wildlife and environment, were not convincing.

Firstly, there are no examples anywhere in the world of major railways being built within nationally significant nature reserves once the area has been declared a national park. Railways similar to the SGR running through the NNP are primarily tourist railways, such as in the Grand Canyon National Park and the World Heritage area of Queensland (The Kuranda Railway) and are not commuter or freight lines. Tourist or scenic railways are typically slower and less frequently used than regular railways, with fewer negative

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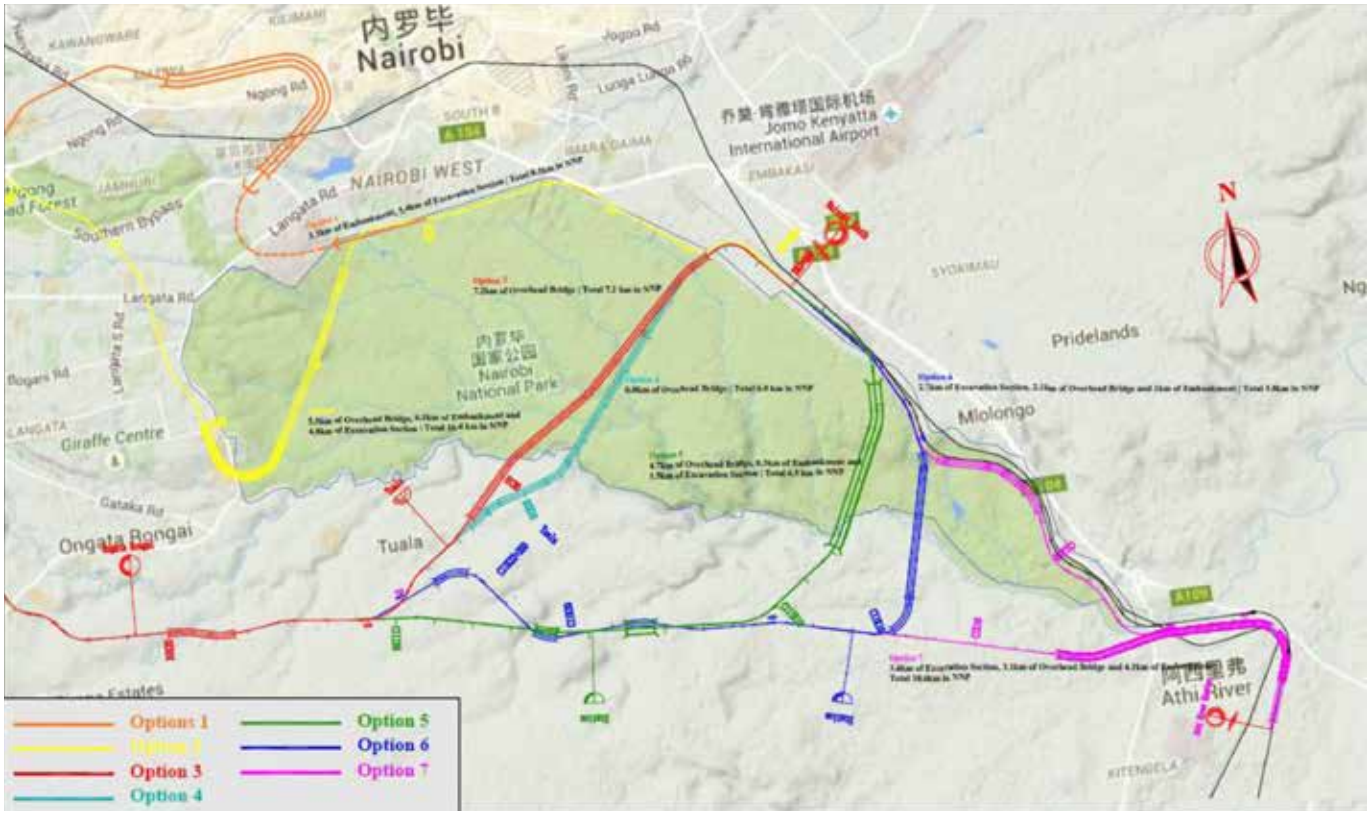
impacts on wildlife. These examples should not be used to justify the construction of a commuter and freight railway through a national park.

Secondly, there were numerous examples of underpasses cited by the ESIA from North America, Western Europe or Australia; unfortunately, there is no specific information on the rate of use of underpasses by the species within the NNP. Only one wildlife underpass in Africa has been monitored for use by wildlife and published in a scientific blog (Journal of Applied Ecology). This underpass is used by elephants and passes under the A2 Highway near Mt Kenya. Therefore, there is no reliable basis for assuming that all,



7 Alignments/Options proposed for SGR Phase 2A through the NNP. Photo by Kenya Railways

Photo: Marco Pruiksma

many or some of the animals in the NNP will pass under the proposed railway.

Thirdly, the fragmentation of habitat is one of the primary drivers of the decline and extinction of biodiversity globally. Studies of daily and seasonal migration of wildlife in and around the NNP should have been undertaken to investigate where animals crossed each of the proposed alignments. In line with international best practice — the precautionary principle — the consequences for wildlife if the railway becomes a barrier to movement should have been discussed in more detail before the route was decided.

Fourthly, it is a well-documented fact that the effects of linear infrastructure such as roads and railways can extend far beyond the infrastructure itself. A landmark study showed that between 15 per cent and 22 per cent of continental USA was affected by roads, despite only 1 per cent of the area being paved. This 'effect-zone' is a useful way of assessing the size of the area that could be affected by the proposed linear infrastructure and is particularly useful for assessing and comparing different alignment options. Therefore, the size of the area within the NNP that would be affected by the railway for all alignments is likely to be significantly higher than those given in the ESIA, which only quantifies the size of the area to be cleared.

Fifthly, in areas outside the NNP, the report proposes the use of electronic whistles and lights on the front of trains or stationary systems along the track to detect and deter wildlife. There is little evidence that such deterrent systems are effective — either because of background noise and other disturbances, or because, in the long term, the wildlife becomes habituated to the deterrents. Furthermore, there are numerous technical challenges that must be overcome for such systems to be effective. Relying on train drivers to operate these detection and deterrent systems is also prone to failure as complacency sets in over time.

Recommendations

The ESIA claimed on numerous occasions that the alignment of the railway along the boundary of the park would have a greater ecological impact than an alignment through the park. However, it is recognized global best practice that:

1. It is preferable to locate multiple types of linear infrastructure within the same corridor, rather than have multiple corridors;

2. It is always best to avoid placing infrastructure within high-value conservation areas and;

3. When disruption is unavoidable, it is always better to place infrastructure around

the edges of conservation areas, rather than through the middle.

Avoiding high-value wilderness or conservation areas should be the first option considered when planning for infrastructure development. The first road or railway through such areas leads to a host of significant deleterious impacts, including weed invasion, increased poaching and hunting, further development, changes to animal behaviour, etc. The proposed railway through the NNP and other natural areas along the route will inevitably result in some of these negative impacts and should therefore have been avoided.

In situations where important wildlife habitats cannot be avoided entirely, it is generally preferable to place developments around the edge of the habitat, rather than through the middle. This is because the effects that extend out from the development only affect the habitat in one direction. Furthermore, if the development presents a barrier to animal movement, it should not split the park into two areas; rather it should keep the original area intact (as far as possible), with only small tracts of land split off from the main area. This is particularly critical in the NNP because of its relatively small size.

Route options 1 and 7 are much more in line with best practice (above) than options 2 to 6. An alternative alignment completely outside the park, potentially to the south, would avoid all these impacts, and should have been included in the ESIA report. Furthermore, the upgrading of the existing railway line (i.e. using the same alignment in part or in whole), should have been considered in more detail.

Conclusion

Infrastructure development is critical to the economic growth of Kenya and the region. Because of its proximity to the capital and the relatively low costs, the route through the Nairobi National Park offered an easy option. But as the review of the Environmental Impact Assessment shows, specifically the analysis of the seven options, there were alternative routes, but these were completely ignored by the proponents of the project.

Now that SGR Phase 2A is under way, it is imperative that mitigation measures are strictly adhered to in order to safeguard the wildlife and ecosystems of Nairobi National Park for future generations.

Africa Network for Animal Welfare (ANAW) is a Pan-African non-governmental organization which works to sustain animals as sentient beings through showing them compassion, care and appreciation. We do this by influencing policy, community empowerment, advocacy and attitude change. Our mission is to work with communities, governments, partners and other stakeholders across Africa to promote humane treatment of all animals, with the vision of a world where people show compassion, protection, and care for all animals.