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Advancing Industrial Development in Kenya through Innovation Spaces: The Case for the North Rift Green Industrial Park in Baringo County

PLANERY 3 - INDUSTRIAL DEVELOPMENT DRIVEN BY INNOVATION SPACES

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EXECUTIVE SUMMARY

The North Rift Green Industrial Park (NRGIP) in Baringo County is a transformative initiative aimed at positioning Kenya as a regional leader in industrialization and high-tech manufacturing. Powered by renewable geothermal energy from Paka Hills, NRGIP will integrate advanced manufacturing, smart city infrastructure, and sustainable industrial practices to drive economic growth, job creation, and regional trade. Global experience demonstrates that science and industrial parks play a critical role in fostering innovation-driven economies. NRGIP builds upon lessons from Konza Technopolis, Kenya's flagship smart city, integrating best practices in digital infrastructure, research-industry linkages, and public-private partnerships. This paper explores NRGIP's strategic importance, its alignment with Kenya's Vision 2030, and its potential to drive industrial transformation, offering a model for sustainable industrialization in Africa.

By leveraging best practices from global innovation parks such as Malaysia's Penang Science Park, South Korea's Daedeok Innopolis and experience from Konza Technopolis, NRGIP will accelerate Kenya's transition to a high-value, knowledge-based economy.

INTRODUCTION

Kenya is rapidly positioning itself as a regional industrial powerhouse by strategically leveraging science and technology, guided by its long-term development blueprint, Kenya Vision 2030. This ambitious plan aims to transform the nation into an upper middle-income, industrialized country by 2030, focusing on key sectors such as manufacturing, agriculture, and financial services. The economic pillar of Vision 2030 seeks to achieve an average GDP growth rate of 10% per annum, emphasizing macroeconomic stability, infrastructure development, and energy cost reduction.

Significant investments have been made in infrastructure projects, including the expansion of critical infrastructure including digital network, power and road networks across the country, modernization of the railway system, and development of technological hubs, positioning Kenya as Africa's "Silicon Savannah."

The Government through the Bottom up Economic Transformation Model; under the fourth medium term development priority identifies six pillars that are critical to accelerate the country's vision towards a middle-income industrialising economy. These are Agricultural Transformation and Inclusive Growth, Micro, Small, and Medium Enterprise (MSME) Development, Housing and Settlement, Healthcare and the Digital Superhighway and Creative Economy. These pillars are shaping the country's investment towards a sustainable economy anchored on research, science and technology.

The Konza Technopolis, a flagship project under Vision 2030, is currently accelerating its development as a world-class smart city and innovation hub, aiming to attract technology industries and research institutions. With the establishment of the Kenya Advanced Institute of Science and Technology (KAIST), a post graduate research University complemented by two undergraduate universities, Konza Technopolis is developing into a specialized training in engineering and scientific fields, fostering a skilled workforce to meet industrial demands. Identifying Konza Technopolis's promise. The Government has moved to expand its mandate to become a leader in the development of other Technopolis's in the country. Leveraging its experience, lessons learnt and skills to ensure other potential innovation parks are accelerated.

The North Rift Green Industrial Park (NRGIP) in Baringo County is one such extended development, curated to become a landmark industrialization project, integrating renewable energy, smart city infrastructure, and high-tech industries to create a globally competitive industrial hub. Learning from international best practise and with the support of the developing Konza Technopolis, the North Rift Green Industrial Park (NRGIP) presents an opportunity to extend the investment and position of the country as a hub of technology and manufacturing for the Africa continent.

This paper seeks to share insights on

- The role of innovation spaces in driving industrial transformation.
- Lessons from Konza Technopolis in developing innovation-driven industrial parks.
- Key components of NRGIP and its potential impact on Kenya's economy.

THE ROLE OF INNOVATION SPACES IN INDUSTRIAL DEVELOPMENT

The International Association of Science Parks (IASP) emphasizes the importance of aligning scientific innovation with industrial development. Science and technology parks (STPs), innovation districts (IDs), and areas of innovation (AOIs) are critical enablers of economic transformation.

In their comprehensive literature review, Phan, Siegel, and Wright (2005) highlight the multifaceted roles of science parks in fostering regional economic development. They emphasize that successful science parks not only provide physical infrastructure but also facilitate knowledge transfer between universities

and industries, nurture innovation ecosystems, and attract high-tech firms, thereby enhancing regional competitiveness. The authors also discuss the critical importance of strategic planning and management in the development of science parks, noting that alignment with regional strengths and active collaboration among stakeholders are pivotal for achieving sustainable growth and technological advancement.

Globally, Science parks have served and continue to position as catalysts for economic transformation, bridging the gap between research institutions, industries, and entrepreneurs. The Silicon Valley hosts a dense network of startups, venture capitalists, and research institutions, leading to groundbreaking advancements in various industries, including semiconductors, artificial intelligence, and biotechnology. Similarly, Germany's Fraunhofer Institutes have played a critical role in translating academic research into industrial applications, enhancing the country's reputation as a leader in high-tech manufacturing and engineering. These examples highlight how well-structured innovation ecosystems can accelerate industrial growth by ensuring a seamless flow of knowledge, talent, and investment.

In Africa, innovation spaces are emerging as vital enablers of industrialization, particularly in technology-driven sectors. Nigeria's Co-Creation Hub (CcHub) has facilitated the growth of fintech, health tech, and e-commerce enterprises, transforming Lagos into one of Africa's most vibrant digital economies. South Africa's Innovation Hub in Pretoria has successfully linked academia, government, and industry, resulting in advancements in biotechnology, clean energy, and smart manufacturing while in Kenya, the "Silicon Savannah," anchored by Konza Technopolis, aims to position the country as a hub for ICT innovation, attracting multinational tech companies while nurturing local startups. Africa's growing network of innovation hubs demonstrates the continent's commitment to leveraging technology and entrepreneurship for industrial transformation, making innovation spaces an indispensable pillar of economic development.

Beyond providing physical infrastructure, innovation spaces continue to contribute to industrial development by strengthening value chains, promoting skills development, and encouraging policy-driven collaboration while acting as testbeds for emerging technologies, offering a platform for prototyping, commercialization, and scaling of industrial innovations. These spaces not only provide access to infrastructure and funding but also foster a culture of problem-solving and entrepreneurship, enabling African economies to leapfrog traditional industrialization pathways through technology-driven solutions.

Governments and private sector stakeholders play a critical role in sustaining these ecosystems by ensuring access to funding, regulatory support, and market linkages. In Kenya, the Government is committed to develop a competitive investment landscape that delivers a network of viable investment locations all focussing on selected priority areas to enable economies development.

The North Rift Green Industrial Park (NRGIP) is envisioned as a hub of excellence designed to catalyze industrial development through innovation and sustainability. It aims to serve as a critical bridge between research institutions, academia, and industry, thereby accelerating the commercialization of emerging technologies. The park is strategically positioned to promote high-value manufacturing sectors, with a focus on electronics, semiconductors, and clean energy technologies that align with global industrial trends. Additionally, NRGIP champions green industrialization by integrating renewable energy systems, adopting advanced digital technologies, and implementing sustainable urban planning principles. This comprehensive approach underscores its potential to contribute significantly to Kenya's transition toward a knowledge-based, low-carbon economy.

LEVERAGING LESSONS FROM KONZA TECHNOPOLIS TO DEVELOP NRGIP

Konza Technopolis is a flagship project under Kenya's Vision 2030, designed to drive industrialization and digital transformation. Spanning 5,000 acres, with a 150,000-acre buffer zone, it is one of Africa's largest and most advanced smart city projects. At full development, it is expected to contribute 2% of Kenya's GDP and support over 240,000 workers.

Built on global best practices from Silicon Valley, South Korea, Singapore among others, Konza Technopolis is developing as a center of excellence, hosting high tech firms, R&D institutions, innovation hubs, and manufacturing clusters. It also serves as Kenya's digital transformation platform, supporting a knowledge-based economy through Konza Cloud, the national data center, and the Silicon Savannah innovation ecosystem.

As a gazetted Special Economic Zone, Konza offers competitive incentives to investors, positioning Kenya as a regional technology hub. The project exemplifies sustainable, smart city development, integrating research, industry, and innovation to drive economic growth.

As a member of IASP, Konza offers a strategic blueprint for newly developing science parks in Kenya and Africa such as

1. **Strategic positioning to attract Global and Local Investment:** Konza has positioned Kenya as a tech investment hub, a model that can be replicated for other science parks like NRGIP's
2. **Integration of Research and Industry:** Konza Technopolis has prioritised a focus on industrial, R&D collaboration, which will be essential other developing industrial parks like NRGIP's
3. **Sustainable Urban Development:** Konza's low-carbon, high-tech smart city model serves as a framework for NRGIP's green industrialization.
4. **Strategic Master Planning:** Konza Technopolis elaborate masterplan with international benchmarking offers a strong example for the development of new parks with integrated approach borrowing from global best practises.
5. **Global Recognition and Networking:** Konza Technopolis linkage to world science parks and selection to host the 41st International Association of Science Parks (IASP) World Conference in 2024 highlights the significance of international collaboration and exposure for emerging science parks. This will be enhanced as it collaborates with the New Park to advance an ecosystem that fosters innovation.
6. **Educational Integration:** Initiatives like Jitume Digital skilling and jobs, the Kids Tech Boot Camps and innovation challenges championed by Konza Technopolis to which introduce technology to young students, demonstrate the value of integrating educational programs to cultivate future innovators as avenues for Talent development in the country.
7. **Phased Development Approach:** Konza Technopolis phased infrastructure approach indicates the effectiveness of phased development, allowing for manageable growth and continuous assessment and evolution in development of science and industrial parks.
8. **Sustainable development approaches:** Konza Technopolis hosts some of the regional best infrastructure promoting sustainable development in Energy, water and ICT systems. These present solid case examples for the newly developing parks not only in Kenya but also in Africa. Currently hosting Timbktoo Innovation Hub.

STRATEGIC RATIONALE FOR BARINGO COUNTY AND NRGIP

The development of globally competitive high-tech industrial parks hinges on a combination of spatial, institutional, and infrastructural enablers that work synergistically to support innovation-led growth. Central to this is the integration of research capacity through close linkages with universities and R&D institutions, which not only stimulate innovation but also cultivate a skilled talent base. The geographic positioning of such parks within well-connected trade and transport corridors enhances their

attractiveness by facilitating efficient access to local and international markets. At the same time, the availability of modern infrastructure—both physical and digital—ensures reliable operations and enables the adoption of advanced manufacturing technologies.

Equally important is the presence of a regulatory framework that promotes ease of doing business and encourages private sector investment through clear, predictable incentives. Human capital remains a defining asset, particularly in fields aligned with industrial innovation, such as engineering, data science, and applied technologies. Industrial parks thrive where there is also a vibrant financial ecosystem that supports enterprise growth through funding, venture capital, and public-private partnerships. The ability to foster collaboration among firms, academia, and innovation hubs helps accelerate knowledge transfer and commercialization of ideas, while the integration of smart, green technologies strengthens environmental sustainability and long-term operational efficiency.

Beyond core production facilities, high-performing parks offer supportive environments that enhance productivity and quality of life, including well-designed workspaces, logistics services, and access to essential amenities. Long-term relevance is further sustained by aligning development strategies with evolving market trends and technological shifts.

Within this context, Baringo County offers a compelling case for industrial park development. Its location along the LAPSET Corridor, renewable energy potential, proximity to water bodies, and partnerships with academic and technical institutions collectively provide a strong foundation for the North Rift Green Industrial Park to emerge as a flagship model for green industrialization in Kenya and the wider African region.

EXPECTED ECONOMIC AND INDUSTRIAL IMPACT

The NRGIP is projected to make significant contributions to the Country's economic development as it enhances global business through the diversification of supply chain models, enhancement of global collaboration and opening opportunities for investments in Kenya. Further the industrial park will;

- Direct job creation of more than 10,000 jobs in manufacturing, R&D and high-tech industries.
- Improve regional trade integration, enhancing Kenya's economic partnership with Uganda, South Sudan and Ethiopia
- Sustainability: Kenya's first industrial hub powered by 100% renewable energy.
- Accelerate technology transfer and innovation, further solidifying Kenya 's role as a leader in industrial R&D and digital transformation in Africa.

AREAS FOR PARTNER ENGAGEMENT

The development of new industrial parks creates vast opportunities for economic growth, innovation, and job creation. Industrial Parks attract local and foreign investment by providing modern infrastructure, streamlined regulations, and sector-specific incentives, making them ideal locations for manufacturing, technology, and research-driven industries. Additionally, industrial parks drive employment by generating diverse job opportunities, from both small and medium-sized enterprises (SMEs) as well as highly skilled positions in research and engineering to roles in connecting services like logistics and administration. As economies transition towards technology-driven growth, well-planned industrial parks will serve as key enablers of industrial transformation and global market integration.

NRGIP presents numerous opportunities for international collaboration in areas such as;

- a. **Master Planning and Infrastructure Development for sustainable industrial parks.**

Including the development of an integrated master plan incorporating smart city principles and building of critical infrastructure such as transport, renewable energy, and ICT infrastructure to support high-tech industries.

b. Industrial Investment and Manufacturing

Including linkages and partnerships for global manufacturers in electronics, biotech, clean energy and logistics hubs to facilitate regional and global trade.

c. Research, Innovation, and Talent Development and Skills Transfer.

Leverage to expertise to integrate research hubs, accelerators, and incubators, collaboration with entities seeking to enter Africa Market in education and vocational training to develop a skilled workforce for industrial jobs.

CONCLUSION AND CALL TO ACTION

The development of the North Rift Green Industrial Park (NRGIP) presents a transformative opportunity for Kenya to advance its industrialization agenda through innovation spaces. By fostering collaboration between research institutions, industry, and entrepreneurs, NRGIP will serve as a catalyst for high-value manufacturing, technology commercialization, and sustainable industrial growth. Drawing lessons from global and African examples, and with the support of leading initiatives such as Konza Technopolis, NRGIP will position itself as a leading centre for green industrialization, leveraging renewable energy and digital technologies to drive economic transformation.

To realize this vision, international collaboration is essential. Governments, investors, and research institutions will need to work together to develop a thriving innovation ecosystem that attracts global expertise, funding, and technology partnerships.

Kenya calls upon global industry leaders in IASP to join hands with us to towards the establishment of NRGIP, as a benchmark for sustainable industrialization in Africa and a model for the next generation of science and technology parks