

## Greening Education for Accelerated Climate Action by African Youth

By Fiona Mutembei and Irene Nyamu

### Key Highlights

Climate literacy ensures that states and their citizens are adequately prepared to anticipate, plan, and implement appropriate and transformative responses rather than being reactionary victims of the adverse effects of climate change. Climate literacy needs in Africa can be addressed by greening education, a strategy that integrates climate change knowledge into all facets of the teaching and learning processes to make learners climate-ready. It targets sustained eco-friendly behaviours and choices and builds a critical mass of climate change advocates on the African continent. This policy brief highlights factors affecting realization of this aspiration and pathways that can accelerate greening education efforts. The key highlights include:

- (i) Climate variability and adverse weather patterns have devastating effects on teaching and learning processes, and significantly sets back government commitments towards providing quality education for sustainable development. Droughts and floods affect schooling in prone areas through increased absenteeism, low and, or delayed enrolment, poor retention, transition, and progression. The effects on education are worsened by increased food insecurity, water scarcity during droughts and school inaccessibility during floods; poor health due to water borne diseases; conflicts that cause insecurity, damaged schools, and transport infrastructure.
- (ii) The potential for education to drive effective responses to climate change remains untapped due to low climate literacy levels and limited innovative strategies for developing and harnessing green skills among young people to combat environmental degradation and climate crisis.
- (iii) Making African youth climate-ready ought to be the new strategic goal of education today if Africa is to overcome the planetary crisis of climate change and biodiversity loss. This calls for greening education systems by paying attention to empowerment of learners on green learning technologies and imparting eco-friendly values to build a vibrant movement of climate action ambassadors.
- (iv) The call for action is for Africa and global development partners to institute coordinated education reforms and accelerate funding towards climate literacy.

### Introduction

Climate literacy supports the development of learners' capacities to understand causes and the magnitude of climate change risks, equips them with skills and knowledge for improved climate mitigation and adaptation practices. It enables states and citizens to adequately anticipate, plan, and execute "appropriate and transformative responses" rather than being reactionary victims of the adverse effects of climate change (Simpson and Rosengaertner, 2023). Acquisition of green skills by youth is projected to yield a threefold dividend of accelerating realization of the net zero goal; reducing inequality caused

by disproportionate impacts of climate change on different social groups; and giving youth skills that enhance employability particularly in the green economy (UNICEF, PwC, and Generation Unlimited, 2022).

Despite the expected benefits and urgency with which the world needs to act, acquisition and levels of green skills remain an ideal in many countries. A survey by UNESCO covering 100 countries showed that only 53 per cent of the national curricula have a focus on climate change and, even then, the topic is given low priority (UNESCO, nd)<sup>1</sup> in terms of resource allocation. Furthermore, the survey observed that

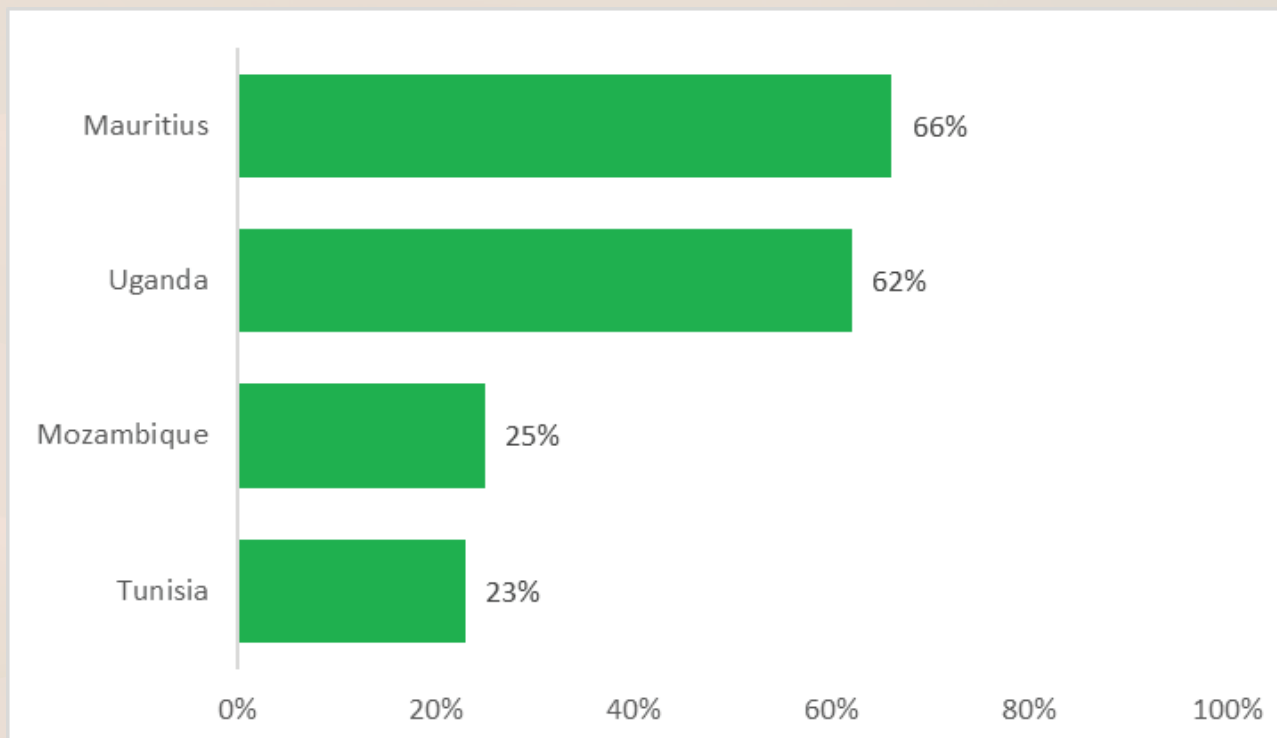
fewer than 40 per cent of the teachers had confidence to teach about the implications of climate change, while 30 per cent indicated they were not conversant with suitable pedagogies for teaching climate change (UNESCO, nd). Furthermore, about 75 per cent of the learners reported fearing for their future, while 70 per cent said they did not possess solid knowledge of climate change matters (UNESCO, nd). Other studies report high expectations among young people regarding the urgency to address climate and sustainable development, their enthusiasm to be involved, but this is against a context of limited opportunities, and unmatched commitments by state and non-state actors (PwC, 2023).

Within the African continent, evidence shows that perceptions of the serious threats posed by changing weather patterns are high, but few people relate the changes directly to climate change, which implies the continent has low climate literacy levels. The literacy levels are not only low compared to other regions, but they also vary widely within the continent. Estimates using data from Afrobarometer indicate variances of between 23 per cent to 66 per cent across 33 countries in Africa, with an average of 37 per cent (Simson et al., 2021). The average for Africa is low compared to North America and Europe combined at an average of over 80 per cent (Simson et al., 2021). Figure 1 below illustrates inter-country variations. Mauritius, an Island nation, has high level of awareness compared to climate change than Uganda, which is a landlocked nation.

Disparities are even worse within each country, with Nigeria registering the highest variance between Kwara at 71 per cent and 5 per cent in Kano in the North (Simson et al., 2021). In the case of Kenya, the ninth round of Afrobarometer Survey conducted in 2023 shows that only 53 per cent of population has heard of climate change.<sup>2</sup> This suggests that half of 50 million Kenyans know nothing about the planetary risks the country faces. This limited knowledge contrasts sharply with the country's high literacy level of 87.5 per cent (Huho, 2015), and is likely to negatively impact risk preparedness and response strategies at the community and individual levels. It is also a contradiction considering that 80 per cent of Kenya's land mass is characterized as Arid and Semi-Arid Lands (ASALs) and suffers the greatest impacts of climate change (Amenya and Fitzpatrick, 2022).

Positive predictors of climate literacy include education and mobility, being male and living in urban areas, while poverty and being a woman undermine climate change literacy, with average gender climate literacy gap in Africa at 12.8 per cent (Simpson and Rosengaertner, 2023; Simpson et al., 2021). This gap is a concern given the already noted disproportionately higher levels of climate change vulnerabilities among women (Yavinsky, 2012), rural dwellers, and low-income groups (Global Centre for Climate Mobility and Africa Climate Mobility Centre, nd).<sup>3</sup> The high likelihood of climate change increasing inequalities in Africa provides a strong justification

**Figure 1: Climate literacy rates in selected African countries**



Source: Extracted from Simpson et al. (2021)

for focusing on comprehensive and equitable climate education policies and programmes. These strategies are part of what the Intergovernmental Panel on Climate Change (IPCC) refers to as climate services and climate literacy, which it considers critical for bolstering adaptation and mitigation measures (IPCC, 2022). Therefore, deepening access to credible and up-to-date knowledge on climate risks, impacts, and consequences, and adaptation options can facilitate effective and holistic societal and policy responses (IPCC, 2022). Sound climate literacy efforts should take account of indigenous and local knowledge, citizen science, and utilize a variety of strategies and platforms for information dissemination (IPCC, 2022:27).

### **Harnessing Climate Literacy to Accelerate Mitigation and Adaptation Measures**

Greening education for sustainable development will require well-designed education systems and delivery mechanisms that impart green skills, green digital skills, and embed lifelong learning possibilities so that as economies make energy transitions, the changes are in tandem with the human capital demands. As such, green skilling, upskilling, and re-skilling the workforce must be the main priorities of climate literacy efforts (UNIVEF, PwC and Generation Unlimited, 2022) to ensure citizens possess climate smart capabilities, behaviours, and attitudes. Several limitations must be overcome, key among these being the minimal integration of climate education into national curricula; low climate literacy levels; need for better strategies for climate proof teaching and learning processes; lack of green pedagogical skills among teachers to support learner acquisition of green skills; and limited investments in research and development to expand both local knowledge on climate science and opportunities for learners to participate in the green economy. We analyze the three factors below.

#### **Climate literacy levels and curriculum relevance**

Overall, literacy levels (reading and numeracy skills) have increased tremendously in most developing countries, but grave concerns remain on the relevance of education curricula to equip learners with 21st century skills to confront 21st century challenges such as climate change. The key skills include communication, collaboration, critical thinking, and problem-solving skills (González-Salamanca et al., 2020). Demand for these 21st century skills has resulted in curriculum reforms aimed at embedding these skills and ensuring better learner outcomes (GESCI, 2023; Nsengimana et al., 2022). Several Sub-Saharan countries, including South Africa, Mozambique, Nigeria, Tanzania, Rwanda, Ghana, and Kenya have adopted the competency-based education approach as a response to the changing

human capital demands that support realization of sustainable development (Nsengimana et al., 2020; Boateng et al., 2023). A competency-based education (CBE) aligns theoretical knowledge with practical skills, is learner-centred, and prioritizes experiential learning to enable learners to navigate work and overcome everyday life challenges through the application of creativity, self-efficacy, and critical thinking skills (Simon, 2022; Nsengimana et al., 2020; KICD, 2017). Analysis of Kenya's competency-based curriculum (CBC) curriculum indicates that the designers paid attention to climate change by including it in subjects such as agriculture, social studies, and science and technology (KICD, 2017). Over the 12 years of basic education cycle, Kenyan learners are exposed to knowledge on environmental education accompanied by practical activities from the lower primary to senior secondary school, with attention given to age-appropriate content and choice of delivery methods.

Despite concerted efforts at integration of climate literacy competencies in national curricula, several impediments have constrained the overall aspirations of CBE. Limited teaching and learning resources, weak preparation of teachers (Mogere and Mbataru, 2023), poor planning and resistance to parental involvement (Simon, 2022), gaps in quality assurance standards and education governance were observed in Kenya (Presidential Working Party on Education Reform in Kenya, 2022). Similar challenges have beset other African countries. Nsengimana et al. (2023) noted poor quality teaching of especially science subjects; over-reliance on teacher-centred pedagogies such as lecture method for delivery and assessment of concept mastery instead of knowledge application; limited teacher preparation and training for a transformed curriculum; limited options of the language used as the medium of instruction, which limits learners' capacity to engage in self-directed learning.

The above evidence reinforces the need for further educational reforms to ensure young African learners acquire skills for sustainable development, including green skills. Failure to achieve this goal will vastly curtail efforts to combat climate change and its impacts on the continent.

#### **Climate proofing teaching and learning processes for the most vulnerable**

Globally, regions with fragile environments, such as low lying coastal areas, ASALs, wetlands, deserts and glacier covered regions are more prone to climate shocks. This means that greater disruptions to teaching and learning processes are likely to occur more frequently and with greater intensities, hampering the delivery of quality education, and disadvantaging learners from these regions. The immediate effects on education include destruction



of school infrastructure, displacements and forced migration of communities, famine, floods, and consequently the displacement of learners; obstruction of access to schools; reduced learning capacities among learners, exposure to waterborne diseases in flooded areas; and exposure to extreme heat-related discomfort, which disrupts learning (Amenya and Fitzpatrick, 2022; Njogu, 2020). A study by KIPPRA on the effects of the 2017 and 2018 flooding in Kenya found that schools, health facilities, and market centres were the most vulnerable to the destructive effects of flooding and strong winds. The use of poor-quality building materials and inferior roofing workmanship were blamed for the high vulnerability.

Absenteeism and disrupted school attendance are linked to food insecurity resulting from crop failures and livestock losses among pastoralists; insecurities arising from natural resource conflicts over water and grazing lands; water scarcity requiring people to walk long distances to collect water and wood fuels, which often demand children's time and labour (Amenya and Fitzpatrick, 2022; Sims, 2021). All the above factors compromise the physical and mental well-being of learners, resulting in poor learning outcomes, high school dropout rates, and in the long term, low educational attainment as children's participation in the household's daily family survival activities undermine schooling (Sims, 2021). Studies on education in disaster-prone areas such as ASALs in Kenya indicate high dropout rates, low attention span and frequent absenteeism, which are directly or indirectly associated with drought (CARE Kenya, 2022; Ameny and Fitzpatrick, 2022; Save the Children, 2022). Similarly, Lai and Greca (2020) found that 50 per cent of children affected by natural disasters exhibit post-traumatic stress and anxiety during post-recovery, which negatively impacts learning outcomes.

Paradoxically, it is learners from communities experiencing increased incidences of frequent and intense negative weather events that are most in need of climate literacy but suffer the greatest disruption to teaching and learning processes. These constraints reduce opportunities for learners to gain important skills, hence climate proofing measures can safeguard learning institutions in risk-prone areas. The Comprehensive School Safety Global Framework (2017) notes that climate proofing should be based on important elements such as offering safe learning facilities; having in place school disaster management and risk reduction plans; and ensuring resilience education. Similarly, UNESCO recommends that governments need to prioritize preparedness policy measures in their education sectors by having contingency funds and school disaster preparedness policy frameworks (UNESCO, 2020).

In the context of global crises such as COVID-19 and climate change-induced disasters, building resilience in learning institutions has transformed with deployment of E-learning resources to optimize learning. Such shifts guarantee continuity of learning processes and ring-fences intended learning outcomes against disruptions. Further, optimization of learning spaces that pays attention to climate-related disasters now demand greening of built-up facilities using eco-friendly engineering designs, processes, site selection and other related aspects of architectural considerations. Embedded within this should be the ability to rapidly transition from disaster to recovery, and sustainable teaching and learning operations whenever a disaster occurs. After Storm Daniel hit Libya in September 2023, all schools closed but, with support from development partners, the country rapidly re-established learning in over 200 schools using box kits in the affected areas (OCHA, 2023). School feeding programmes have also been crucial in mitigating hunger among learners in disaster prone areas (World Education Forum, 2000).

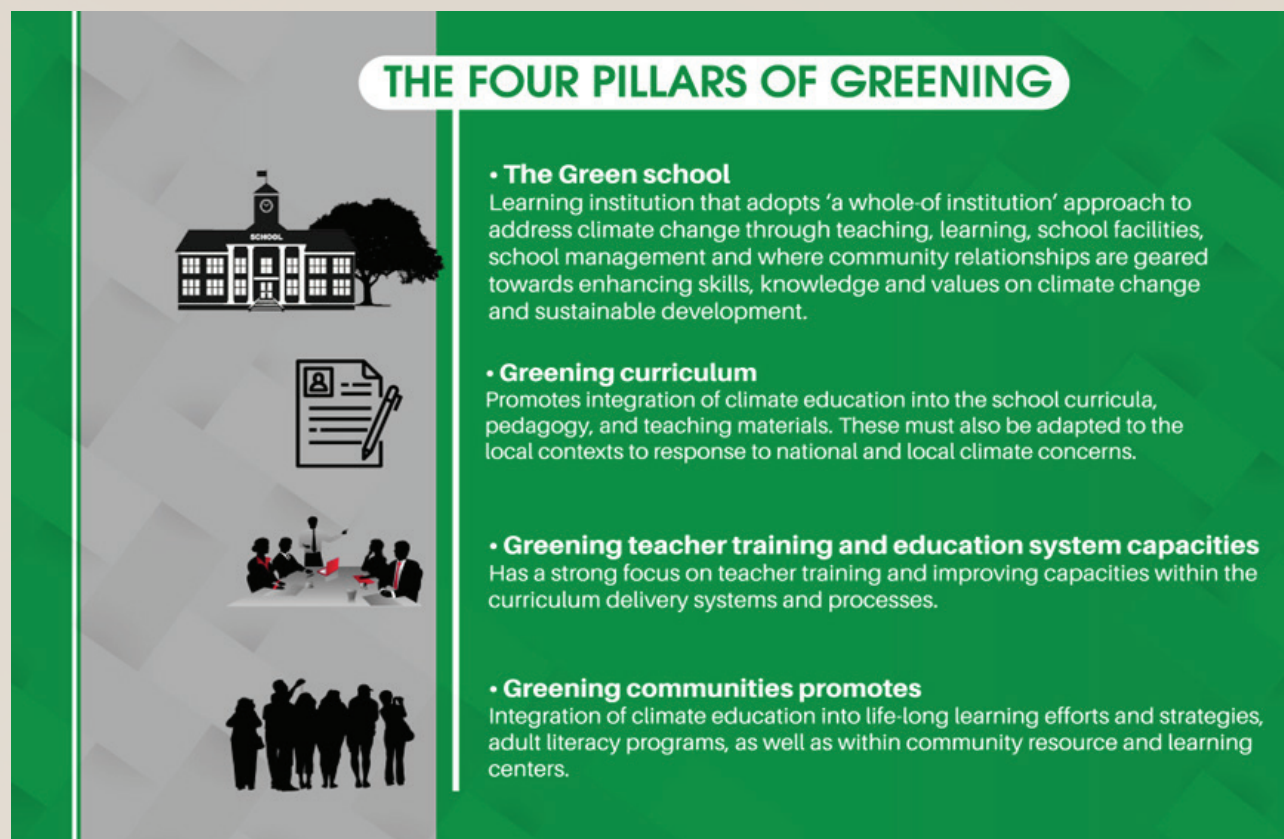
One of the most comprehensive approaches to achieving climate literacy have been proposed by the Greening Education Partnership (GEP) project, which is coordinated by UNESCO. GEP takes a holistic approach by drawing on the concept of education for sustainable development (ESD) to mobilize governments to get learners to be climate-ready for inclusive and sustainable economic development (UNESCO, nd). Figure 2 summarizes aspects of the four pillars.

Greening education has four pillars, namely: green school; greening the curriculum; greening teacher training and education systems capacities; and greening communities. Adopting a comprehensive approach such as GEP will therefore catalyze holistic accumulation of climate literacy skills.

### **Opportunities for application and demand for green skills**

Green skills can drive innovations and expand the labour market for young people's participation in the green economy. As economies transition to clean energy and adopt the use of eco-friendly services, there will be need for manpower that is aligned to the changing needs especially in the agricultural, manufacturing and production sectors. Beyond basic education, entrants into the market will need tertiary level education that makes them work-ready, which requires that industries work closely with training institutions. Higher education curriculum will thus need to also adapt to demands of competence-based curriculum, which is not the case currently. In addition, continuous research will be necessary

Figure 2: A summary of the four pillars of greening education



Source: Compilation by authors based on Greening Education Partnerships Project (UNESCO)

to ensure that industries and policy makers have accurate data to inform changes in policies and practice. Adequate investment in research and development facilitates advancement of climate science while promoting innovations, scaling up adoption and application of the knowledge in a contextually relevant manner.

Sufficient revenue allocations to universities will be necessary to expedite research in areas that are relevant to the needs of developing countries. Research will also facilitate climate risk assessment for schools and communities at large, thereby enabling disaster preparedness capabilities (Report to Commonwealth Ministers of Education, 2022). Overall, investments in research and development in African tend to be small compared to those for developed countries. Nevertheless, African-driven, or collaborative research production has grown steadily despite limited financial flows (Naidu, 2023). Between 2013 and 2022, publications authored or co-authored by African scholars increased from 13,470 to 128,078 (Naidu, 2023). The Science Granting Councils Initiative (SGCI) was formed with the over-arching objective of supporting research and enhancing capacities of science funding bodies in Sub-Saharan Africa (Naidu, 2023).<sup>4</sup>

The promotion of STEM subjects among youth at basic and tertiary levels can bolster climate science literacy and increase potential for higher youth participation in the green economy. The green economy offers new avenues of employment for young people globally. A report by Plan International estimated that by 2030, approximately 24 million jobs will have emanated from innovations in energy production, and that by 2050 the jobs in renewable energy will have tripled to 29 million (Plan International, 2022). Higher education institutions, think tanks, and state agencies charged with training could create platforms for incubating new ideas and innovations for combating climate change.

The development of innovation hubs in universities that focus on climate change-oriented issues solidifies the leveraging of STEM as a measure of mitigating climate change. In addition, these innovation hubs cultivate a generation of youth who are actively involved in providing solutions to climate issues. Furthermore, collaborative research between think tanks and youth-led organizations creates important avenues through which the youth can contribute to evidence-informed policy making processes and, in turn, influence climate governance at various levels.



## Policy Recommendations

To address the challenges elaborated above, various policy recommendations are made targeting different actors, including governments, specific ministries, and state agencies and development partners.

- (i) Leverage education attainment and other creative economy mechanisms for promoting knowledge and information on climate change among younger learners. The Ministry of Education, non-state stakeholders in the education sector, and the media could collaborate to develop climate change children's awareness programmes and articles on television, radio and print media.
- (ii) Make the curriculum content relevant to the local context by using local, indigenous, and experiential knowledge. This could be encouraged through collecting-creating, documenting, and disseminating such knowledge in accessible forms and in collaboration with local communities.
- (iii) Increase African government investments in research and development. By allocating more resources to research and development, African governments could build capacity of their scientists and scholars to shape global climate knowledge, policies, and governance. In addition, there should be more commitment to set up dedicated climate change innovation hubs that will support, upskill, finance, and promote youth innovations and ideas.
- (iv) More African governments could join the UNESCO Greening Education Partnership effort that aims to prepare all learners to become climate-change ready. The initiative promises to deliver a framework for reforming the national education curricula for various countries to contextualize education for sustainable development, consistent with the needs of various geographical regions. This will ensure climate literacy is contextually relevant.
- (v) G20 countries could mobilize more resources towards the Greening Education Partnership Multi-partner Trust Fund.
- (vi) Climate-proof learning facilities and teaching and learning processes: African Governments need to increase national allocations towards education for climate proofing schools. There is need to allocate funds to the ministries in charge of education and training that will facilitate the building of climate resilient school infrastructure and

the development of Internet connections to support e-learning and hybrid learning.

- (vii) Develop a framework that provides oversight on the policies that provide the guidelines for climate proofing of schools, ranging from quality assurance of building material, assessing whether schools building sites are safe from disasters, and assessing the process of transition from disaster to rebuilding.
- (viii) Design common or foundation courses on climate literacy for the formative years of the tertiary education cycle. This would be similar to the concerted efforts that went towards increasing awareness on HIV/AIDS in African. African states may consider making climate literacy skills compulsory, and could work with their education ministries to ensure compulsory university courses on climate change and environmental conservation to promote awareness on climate literacy.
- (ix) Education ministries could design, support, and implement career mentorships for students who want to pursue fields that are environmental- and climate change-oriented. Concomitantly, the ministries could strive to upskill teachers with the relevant pedagogical and green skills by integrating related content in the teacher education curriculum.
- (x) There is need for governments to track the extent to which knowledge and research evidence generated by scholars in the continent is influencing climate actions at the global level.

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## Endnotes

1. See: <https://www.unesco.org/en/education-sustainable-development/greening-future>
2. See: <https://www.afrobarometer.org/countries/kenya/>
3. See: <https://cdn.sanity.io/files/pd7x7lde/productio n/2a4ad38091846247068faf2d2493413f88b607d8.pdf>
4. For details see: <https://sgciafrica.org/>

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KIPPRA Policy Briefs are aimed at a wide dissemination of the Institute's policy research findings. The findings are expected to stimulate discussion and also build capacity in the public policy making process in Kenya.

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