

# ENVIRONMENTAL ACTION-BASED LEARNING PROGRAMS ON CLIMATE MITIGATION: A CASE OF ECO-SCHOOLS IN KENYA

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## **Abstract**

*While there is emerging awareness of the current and potential impacts of climate change on education provision and learning, it is clear that education, both formal and non-formal, from primary through to tertiary and adult education has an important role to play in addressing climate change. Climate Change Education (CCE) at present is still a peripheral topic in both educational research and practice. In research literature, CCE has been addressed almost exclusively as a domain of science education. However, to ensure that there is effective learning and deep understanding of the subject matter, climate change education need to be integrated across school curricula at all levels. The complexities of climate change require it to be addressed using a holistic approach that draws upon a range of disciplines and areas of expertise, including climate science, policy, law, ethic, sociology, economics and culture, with the aim of an effective and inclusive knowledge sharing approach. In addition, knowledge of climate change, its science, impacts and coping measures has to be adapted to address and relate to specific target groups. Therefore, specific activities have to be developed and tailored according to age, school type and level as well as contexts and particular needs. It is against the aforementioned discourse that this paper seeks to examine the role of environmental action-based learning programs on climate mitigation in Eco-Schools in Kenya. The findings may help more schools to engage in environmental action-based learning programs to mitigate some of the effects of climate change in Kenya.*

**Key Words:** *Climate Change Education, Environmental Action Based Learning Programs, Climate Mitigation, Eco Schools*

### 1.1 INTRODUCTION AND BACKGROUND TO THE STUDY

Climate Change Education (CCE) has not emerged as an independent field, but rather as an integral part of Environmental Education (EE) and Education for Sustainable Development (ESD). According to UNESCO (2012), CCE has gradually developed its own identity since 2009. This development is driven by government initiatives concerning climate change. Recent research according to Kwauk and Winthrop (2021) show that if only 16 percent of high school students in high- and middle-income countries were to receive climate change education, we could see nearly 19 gigaton reduction of carbon dioxide by 2050. Kwauk and Winthrop (2021) assert that when education helps students develop a strong personal connection to climate solution, as well as a sense of personal agency and empowerment, it can have consequential impact on student's daily behavior and decision making that reduces their overall lifetime carbon footprint.

There is growing momentum around the world to harness the power of education to combat and adopt to climate change and ensure young people, especially those boys and girls from the most marginalized communities, have the critical thinking, problem-solving and collaboration skills needed to take action (Kwauk & Winthrop, 2021). According to UNESCO (2012), a number of successful practices have emerged in the education sector that address different aspects of climate change adaptation and mitigation. In Australia for example, the National Solar School initiative began in 2008. The objective of the scheme was to allow schools generate their own electricity from renewable sources. The goal was for all Australian schools to be solar schools by 2016. Educational outcomes have been seen as an important aspect of this initiative, supplementing the environmental benefits of reduced greenhouse gas production and stimulation of the national renewable energy industry.

In South Korea, climate change has been considered as a key theme in ESD and has been included in school topics and subjects such as climate (Geography) energy (Science) and global warming (Environment). However, a national curriculum or guide line for CCE has not yet been established. It is worth noting that there are several ministries in Japan since 1997 that have collaborated on an Eco-School program established to promote environmentally friendly designs and constructions.

In rural Zimbabwe, frequent drought and increasing school dropout led to the community together with CARE Zimbabwe to install a solar-power water system on school grounds to feed a school vegetable garden. Using these projects to inspire hands-on lessons in engineering, aquaponics, agriculture, accounting, and project planning has led to a number of positive outcomes, including increased girls' school attendance, leadership and empowerment, increased overall student performance and increased community resilience to drought (Kwauk & Winthrop, 2021).

In one study with primary school students in Nigeria, experimental learning approaches were used to help students understand and address local environmental problems from deforestation to desertification. Students in the program performed significantly better than those in the control group on measures as diverse as environmental knowledge to skills needed to solve immediate and future environmental problems (Kwauk & Winthrop, 2021).

In Kenya, the National Climate Change Response Strategy (NCCRS) noted that the major concern was inadequate climate change information, knowledge and data to researchers, planners and policy makers. The National Climate Action Plan Change Action Plan (NCCAP, 2013-2017) therefore recommended that developers of the primary school curriculum make a conscious effort to introduce climate change and its impact into primary school subject matter by integrating it into all subjects to extent that it is possible (Republic of Kenya, 2020).

It is worth noting that Kenya Organization for Environmental Education (KOE) already implemented Eco-Schools from 2003 growing from a pilot of 12 schools to over 1000 primary and secondary across Kenya as at 2019. The fundamental value in the Eco-Schools program is the promotion of education for sustainable development. The Eco-Schools program aims at achieving educational goals as well as sustainable development through schools as entry points to communities. The current study will therefore endeavor to investigate how environmental action-based learning programs may mitigate climate change in Kenya.

### 1.2 Rationale

Mobilizing children in Climate Change Education programs, encouraging child-led initiative both in and out of school and at community level is an area where major gaps currently persist. Programs are still designed mainly for children, rather than with them. Despite much advocacy on the benefit and necessity of children's participation in the development of climate change-related initiatives, there are still few child-led CCE programs. The effects of climate change are already being felt in Kenya and therefore the education sector can play a critical role in imparting relevant knowledge, skills and competencies to respond to climate change. Curriculum developers should design curricula that integrates climate change education for community resilience, climate proofing and empowering learners to respond to climate change. Learners need basic knowledge of the history, the science, causes and consequences of climate change as well as mitigation and adaptation practices that can contribute to building resilience and sustainability. The current study therefore seeks to examine the role of environmental action-based learning programs on climate mitigation in Eco-Schools in Kenya.

### 1.3 Statement of the Problem

Despite much advocacy on the benefit and necessity of children's genuine participation in the development of climate change related initiatives, there are still very few children-led climate change related activities (UNESCO, 2012). Regrettably progress in tapping into such potential for climate change education has been insignificant. According to UNESCO (2022), the quality of the current climate change education is in question. Seventy per cent of young people from 166 countries spread across all regions say that they cannot explain climate change or can only explain its broad principles or do not know anything about it, putting into question the quality of climate change education in our schools today.

Developing countries, Kenya included, have least contributed to the current climate change education compared to developed countries. They are however the most exposed and vulnerable to the risks of climate change and hence the need to take all necessary actions to ensure that the citizenry is adequately prepared to face the challenges of climate change (Republic of Kenya, 2020) It is against the aforementioned reality and arguments that the current study sought to examine the role of environmental action-based learning programs on climate mitigation in Eco-Schools in Kenya.

#### 1.4 Research Questions

The study reviewed literature guided by the following research questions:

- 1) What are the types of environmental action-based learning programs in Eco schools?
- 2) How have the environmental action-based learning programs affected individual student behavior?
- 3) What are the effects of environmental action-based learning programs on community living?
- 4) What strategies can be put in place to scale up environmental action-based learning programs in schools?

#### 1.5 Theoretical Framework

The study was guided by Theory of Change (ToC) proposed by Pringle and Thomas (2019) since this theory encourages contextual analysis on how change happens in a given location, sector or social group, and it identifies barriers and assumptions in a given context. The theory can also connect diverse projects and programs and enhance linkages across climate change adaptation sectors and scales. The theory of change is also designed to be iterative and flexible and allows projects to respond to changes in the social, political and natural environment. This is vital for adaptation programs which need to accommodate dynamic and emerging conditions. The theory of change becomes a valuable tool for monitoring and evaluation as well as adaptation planning. If the theory of change is used as part of project or program planning with stakeholders, it can encourage a more open dialogue regarding perspectives and values leading to shared vision and stronger relationships with partners and stakeholders.

Due to the long-term nature of climate change, it can be difficult to determine whether outcomes are achieved. Theory of change would therefore give evidence of where changes may be needed at key points in the project process. It is not however without its critics. There are concerns that if misapplied it might become an onerous (and potentially confusing) bureaucratic requirement rather than a vehicle for transformation. The aforementioned strengths of theory of change made the researcher adopt it as a guide to the study.

##### 1.5.1 Theory of Change in Climate Change Education

Theory of Change (ToC) is a critical thinking approach to program design, monitoring, and evaluation which has become increasingly influential in international development. It is described as “a roadmap, a blueprint, an engine of change, a theory of action and more” (Stein and Valters 2012, p. 5). ToC outlines the building blocks and the relationships between them that would lead to the accomplishment of a long-term goal. When done well, this approach enables stakeholders to embed an intervention within a larger strategy and broad transformative analysis. It is flexible and practical insofar as it clearly articulates a vision of meaningful social change. It systematically maps out specific steps towards achieving change.

ToC is especially well-suited for the design, monitoring, and evaluation of complex, multifaceted, long-term endeavors and ‘wicked problems’ like climate change, conflict transformation, and gender equality. The benefits of working with ToC include the following: the emphasis on contextual analysis lends itself to program design and evaluation research that is tailored to local conditions; climate change may be global, but adaptation to it is fundamentally local; there is no ‘one size fits all.’ ToC can tie together diverse projects and programs into a coherent and strategic portfolio that enhances linkages across (Climate Change Adaptation) CCA sectors and scales. ToC processes are inherently iterative and flexible. Periodic reflection exercises allow stakeholders to respond to changes in the social, political, or natural environment. This is crucial for monitoring and evaluation of adaptation programs, which need to accommodate dynamic and emerging conditions. ToC processes articulate assumptions that underlie a program and thresholds that identify what is needed to advance along a causal pathway. This clarifies the logic of an intervention and helps evaluators’ capture why and how an intervention is – or is not – effecting change. This in turn helps an organization update its adaptation strategy.

ToC encourages an open dialogue regarding perspectives and values resulting in a shared vision and stronger relationships with partners and stakeholders. This is crucial for climate adaptation projects which often require trade-offs to be made in terms of who benefits and who bears the cost. ToC evaluations highlight an agency’s contribution and impact towards long-term change in a way that clearly acknowledges the work of other agencies as well as the evolving adaptation context. ToC approaches are well-suited to identifying ‘lessons learned’, which is crucial to build the evidence based on climate change adaptation. Since it is impossible to predict the social, economic, and political consequences of climate change, the flexibility of ToC accommodates the uncertainties that are inherent in adaptation processes.

#### 2.1 Review of Related Literature

According to UNESCO (2023) Education for Sustainable Development (ESD) gives learners of all ages the knowledge, skills, values and agency to address interconnected global challenges including climate change, loss of biodiversity, unsustainable use of resources, and inequality. It empowers learners of all ages to make informed decisions and take individual and collective action to change society and care for the planet. ESD is a lifelong learning process and an integral part of quality education. It enhances the cognitive, socio-emotional and behavioral dimensions of learning and encompasses learning content and outcomes, pedagogy and the learning environment itself.

### 2.1.1 Environmental Action-Based Learning Programs in Eco-Schools

Eco-Schools' mission is to empower students to be the change a sustainable world needs through fun and action-oriented activities. A fundamental value in the Eco-Schools program is the promotion of Education for Sustainable Development (ESD). As a strategy for implementing ESD, the program aims at achieving educational goals as well as sustainable development through schools as entry points to communities. For a quarter of a century, the Eco-Schools program has been engaging young people in taking positive actions that transform their lives. From its modest beginnings in a few European countries, the program has expanded to effect change in some 59,000 schools in 73 countries across the globe (Eco-Schools, 2024).

The Eco-Schools program is a testament of a good EE and ESD development program that has been able to demonstrate its effectiveness in different contexts. The strength comes from the way it was conceptualized, a process of child-centered and child-lead pedagogy, symbolized by Seven Steps that can be adapted and contextualized by teachers around the world. The process ensures making a positive difference every day along with a focus on long term impact. Over the years, the experiences have been codified into a handbook, which is still more of a guide with the flexibility to make the program the schools' own without compromising essential values and characteristics. It can link well to the Curriculum for Excellence and its international dimension is highly valued (Foundation for Environmental Education, 2019).

Eco-Schools are well established in Central and North Europe. In 2003, the Flemish Government launched the Environmental Education Program which included the coordination and implementation of an EE policy and the testing of innovative EE methodologies and programs. Belgium is a federal state and consists of three regions: Flanders, Brussels and Wallonia. Each community organizes its own education system. Twenty practitioners were assigned to build capacity and implement training on EE.

North and Southern America have also well-coordinated Eco-Schools. For example, in Brazil the Eco-Schools program started in 2008. Brazil has a "Sustainable Schools National Program" developed by the Ministry of Education, which supports Brazilian schools in their transition process towards socio-environmental sustainability and turning into sustainable education settings and contributing to better life quality within the communities. The program actions are implemented within the curriculum, management, facilities, and the school-community relationship, and are developed through five lines taken in steps, in a similar way as the seven steps in the Eco-Schools program. Those five steps are: learning processes and pedagogic practices; diagnoses and research; communication; management and infrastructure; articulation and interface with other national policies and professional development.

The Eco-Schools Program was implemented in Kenya in 2003, growing from a pilot of 12 schools, to over 1000 primary and secondary schools across Kenya as at 2019. The pilot phase was based on five key components of environmental action learning, namely environmental policy, cross-curriculum teaching and learning, micro-projects, school-community partnerships and networks. The main focus themes were water, energy, health, agriculture, biodiversity and waste. Crosscutting themes including HIV/AIDS, entrepreneurship, and disaster preparedness and management were also addressed. The pilot phase was funded by DANIDA and implemented in partnership with Danish Outdoor Council (DOC).

### 2.1.2 Environmental Action-based Learning Programs and Individual Student Behavior

Eco-Schools is a growing phenomenon, which encourages young people to engage in their environment by allowing them the opportunity to actively protect it (Eco-Schools, 2024). It starts in the classroom and expands to the school and eventually fosters change in the community at large. Through this program, young people experience a sense of achievement at being able to have a say in the environmental management policies of their schools, ultimately steering them towards certification and the prestige which comes with being awarded a Green Flag. The Eco-Schools program is an ideal way for schools to embark on a meaningful path towards improving the environment in both the school and the local community while at the same time having a life-long positive impact on the lives of young people, their families, school staff and local authorities.

Among countries that have environmental action-based learning programs, Estonia has long traditions in teaching about nature and EE. EE and ESD have been a compulsory part of general education since 1996 (Eco-Schools, Estonia, 2024). They are cross-curriculum themes that have to be integrated in every subject. All national curricula for general education, including preschool childcare institutions, basic schools and secondary schools stress ESD. The National Curriculum for Preschool Childcare Institutions sets five learning fields, including the relationship of students with the environment. The national curriculum is ultimately a core curriculum on which each educational institution bases its own curriculum in accordance with the guidelines. Beside cross-curriculum themes, schools can add optional subjects and many schools have themselves chosen or compiled courses on different ESD issues.

The Eco-Schools team in Estonia created learning/teaching material for 15-18-year-old students which covers 35 lessons on the UN Sustainable Development Goals. The material can be integrated into different school subjects or taught in separate learning courses. There are stories every day in Estonia about children exploring nature, discussing environmentally friendly ways of management, and actions towards a more sustainable future. The most popular topic is biodiversity. NPO HARED finds it very important that children and youth care about nature, can name different species, know their habitats and needs, and see their interconnections and relationships. This helps build the understanding of ecosystem balance and the need of sustainable management in the society - growing food, reusing, reducing food waste and using fewer materials.

In England, Taylor a learning mentor and family liaison asserts that when a child gets actively involved with Eco-Schools, they enhance their development further. They build upon their previously acquired knowledge and learn to use these skills. They understand that they have a voice and that they have a safe platform to use it. They become minute makers,



organizers, planners and influencers. Projects are inspired from their imagination, success is seen in a non-academic form, things get done and if they don't there is the understanding (Eco-Schools UK, 2024)

In Ireland, students had this to say, "being part of the Green-Schools project we have been able to promote a culture of proper waste management, energy reduction, water conservation, sustainable travel, an understanding of biodiversity and heightened awareness of global citizenship that was never there before. We are extremely proud of this culture and continue to encourage it through good behavior practice". Pupils learn by example and what better way to show this than by older pupils showing the young through healthy and positive environmental behavior practices. They have learned huge amounts about their environment, how it works and how to take good care of it. This knowledge they will carry with them forever. By continuing the good practice in relation to waste management, their schools will remain a cleaner and greener place in which to learn. This, in turn, promotes a positive, happy and healthy atmosphere for everyone. One of the main benefits of their recycling endeavors is their effort to support charities and people less well off than themselves. Also, by working together towards reducing energy costs in the school, they have managed to reduce domestic bills, thereby saving money from school funds. This money can then be channeled elsewhere (Eco-Schools Ireland, 2024)

In Jordan, the activation of the Eco-Schools program in schools has left a fingerprint on the students, teachers and part of the community. All are touched by this program and its interaction, communication and follow-up. The program also supports the confidence in sustainable development in schools and has an active role in linking with life issues, helps schools develop and reinforces students' behavior (Eco-Schools, Jordan, 2024).

In Comoros, Africa, the Eco-Schools program is an activity that requires patience and courage because of its particular character requiring involvement and personal changes. An attitude that is preliminary before considering to influence the change in others. It is work throughout life. The schools have made giant steps in their country, but the path that remains before them is still very long. They feel the need to multiply their efforts to achieve this (Eco-Schools, Comoros, 2024).

In Kenya, the Eco-Schools program is about sharing knowledge, experiences and challenges and finding a common solution to certain problems. Teacher in Eco-Schools work with the students because their idea is to inculcate in them good values to conserve the environment and the best way is to do by learning. Goibei in Kenya, is known as the green school because of its forest in the school compound. The school moved into rainwater harvesting in collaboration with the local community. In 2009, they embraced biogas technology. Through the program, the school has been able to realize great savings (Eco-Schools, Kenya, 2024).

### **2.1.3 Effects of Environmental Action-Based Learning on Community Living**

Many Eco-Schools in China are located in rural areas with very limited resources, but they do not give up. Instead, they perform EE within the local conditions and build the Eco-Schools program with the local socio-cultural features. An example is Bagan Primary School which is a rural primary school in the Qinghai Province, in China. They adopted the Seven Steps to protect the environment of the Qinghai-Tibet Plateau and incorporated the traditional Tibetan culture. In Beijing, "After being awarded the Green Flag in 2010, teachers and students pay more attention to Environmental Education and environmental protection practice. In recent years, classification of rubbish, as well as organic treatment of kitchen waste has been implemented in the school to reduce emissions. The schools have used environmental protection facilities such as solar energy, airpower source and reclaimed water treatment to save energy. In addition, teachers and students also actively participate in community environmental protection activities, such as tree planting, water source protection, etc." (Eco-Schools, China, 2024).

In India, Eco-Schools has helped bring about a systemic change in many of the schools. The students have started taking ownership of their school and are developing invaluable skills such as leadership and critical thinking through very simple activities. the dedication of students towards a sustainable environment is impressive. Students show lots of imagination and creativity to improve the environment through this program. Moreover, the opportunity of connecting to other countries through the twinning program in India is actually helping the students gain different experiences beyond the classroom experience. Students from grade 1 or 2 have been involved in cleaning campaigns for a green school campus. They explore environmental issues surrounding the schools while engaging in problem solving and taking action to improve the environment (Eco-Schools, India, 2024).

In Malaysia several Eco-Schools alumni in tertiary education, are currently involved in sustainability projects such as urban farming and some are pursuing courses related to environmental sustainability. It is evident that the students are growing into young adults who will become future leaders of sustainability (Eco-Schools, Malaysia, 2024). In Mongolia, the environmental benefits include reduced CO2 emissions by 10% and saving resources like energy and water. The economic implications of these initiatives are enormous, with local resource mobilization raising 4 billion tugriks (1.5 million USD) in support of Eco-Schools initiatives. This has demonstrated the local community interest in and support for sustainability. The schools and communities have been trained in various participatory assessment methods as part of the process encouraging inclusiveness and social equity (Eco-Schools, Mongolia, 2024).

In Kenya, The Ministry of Environment and NEMA used the Eco-Schools program as a best practice in environmental management and conservation in International Environmental conferences for example in COP 7 at UN Environment Nairobi, October 2005. The program was also used as a Regional Centre of Expertise (RCE) – Greater Nairobi flagship program to implement ESD. The program has been able to develop curriculum support materials to help teachers integrate ESD into the curriculum. The materials have been approved by the government to be used in all schools in Kenya. The program was also presented at the UNESCO and DESD Conference in Japan in 2014. It was recognized as a best practice in promoting the whole institutional approach and ESD in the education system (Eco-Schools, Kenya, 2024).

### 2.1.4 Strategies to Scale up Environmental Action-Based Learning Programs in Schools

According to UNESCO, 2012, in the context of climate change, there is often a need to reconsider or adjust existing approaches to education, especially their potential to provide learners with the necessary knowledge and training to help them respond to a diverse and rapidly changing world. In order to promote environmental education, decision makers need to develop and implement relevant policies and strategies, as well as integrate these in education plans and budgets. To adjust educational planning to climate change, it is also important to take into account the impacts of climate change on migration patterns and school enrolment, infrastructure maintenance and personnel, as well as disaster risk management.

To ensure effective learning and deep understanding of the subject matter, environmental action-based education should be integrated across school curricula at all levels. The complexities of climate change require it to be addressed using a holistic approach that draws upon a range of disciplines and areas of expertise, including climate science, policy, law, ethic, sociology, economics and culture, with the aim of an effective and inclusive knowledge sharing approach (UNESCO, 2012). In addition, knowledge of climate change, its science, impacts and coping measures has to be adapted to address and relate to specific target groups. Therefore, specific activities have to be developed and tailored according to age, school type and level as well as contexts and particular needs.

To promote environmental action-based learning programs in schools, it is crucial to strengthen teachers' and educators' capacities to deliver accurate information, integrate local content, promote critical thinking about and take action on climate change mitigation and adaptation. This includes increasing their understanding of climate and sustainability issues as well as helping them develop necessary skills and providing them with pedagogical support. Furthermore, teachers and educators need dedicated materials to support their learning activities on climate change. Examples of relevant materials include manuals, teachers' resource guides, lesson models and training modules, but also books, cartoons and videos (to name a few) to guide, inspire and empower students (UNESCO, 2012)

The physical learning environment can play an important role when promoting environmental action-based learning programs in schools. Environmentally speaking, sustainable schools provide ample natural light, good indoor air quality and ventilation. They are water and energy efficient, use non-toxic, locally available construction materials and run-on renewable energy. This way, they can develop the responsible and green habits of their attendees and their families, in an environment that models the principle of sustainability being taught. Therefore, sustainable schools and campuses should serve as learning laboratories for students to demonstrate and further deepen understanding of the principles learned in the classroom. The ambition is to make the school itself a physical model of sustainability. In addition, climate change proofing of educational infrastructure minimizes the risks and associated costs of weather-related damages and promotes adaptation. Other practices, such as the use of solar panels, can also reduce greenhouse gas emissions and contribute to mitigating climate change (UN CC:Learn, 2023).

### 3.1 Methodology

The paper was a desk review of published works from UNESCO, African Union Climate Change and Resilient Development Strategy and Action Plan, UN CC: Learn, Eco-Schools Program, Education and Climate Change among others. The search for accurate data pertinent to the topic both published and unpublished were systematically conducted. Literature was reviewed in the following areas; types of environmental action-based learning programs in eco-schools; environmental action-based learning programs and individual student behavior; effects of environmental action-based learning programs on community living and strategies to scale up environmental action-based learning programs in schools. The paper finally examined the findings and subsequently offered conclusions and way forward for environmental action-based learning programs in schools.

### 4.1 Findings and Discussions

According to UNESCO (2012), It is important for children to learn about natural and man-made phenomena, including their causes and how they can participate in response, mitigation and adaptation efforts. Given the human impact on the increasing frequency and intensity of disasters, it is crucial to encourage children to develop environmentally sustainable behaviors as individuals and as a group. Thus, environmental education for children should include the following: Develop children's sensitivity towards the environment, and an increase in their environmental awareness; Develop their understanding of the natural processes and the concept of sustainability; Develop their understanding of the impact of human activity on nature and how to reduce negative impacts; and Provide children with opportunities to practice working together locally and globally on environmental issues.

There are seven steps towards becoming an Eco-School according to Eco-School (2024). The Eco-Schools seven steps methodology is a series of carefully engineered measures to help schools maximize the success of their Eco-School ambitions. The method involves a wide diversity of individuals from the school community, with students playing a primary role in the process. The most important aspect for schools to remember is that every school is different and it is therefore critical that a school fits the seven steps around its circumstances and situation and not try to fit the school into the seven steps. Some key points about the individual steps are as follows: Step 1 is to form an Eco committee

The Eco-Schools Committee is the driving force behind the Eco-Schools process and will represent the ideas of the whole school. This is because it is student led, it ensures that the entire school knows about Eco-Schools and will receive regular updates, the composition can be: students, teachers, the principal, support staff, parents, Board of Management, interested and relevant members of the wider community. The Eco-community also meets regularly to discuss environmental and social actions for the school (Eco-Schools, 2024)

The second step is carrying out a Sustainability Audit. Carrying out a Sustainability Audit helps the school to identify its current environmental and social impact and highlights the good, the bad and the ugly. The aim is to investigate the environmental and social issues in the school and community. All main themes should be reviewed annually and here, the school is free to also choose other areas of concern that are more relevant to its needs and to devise appropriate checklists accordingly. The head of the school should make sure that the wider school community works as closely as possible with the Eco Committee to carry out any review. It is essential that as many pupils as possible participate in this process. The results of the Sustainability Audit will inform the schools' Action Plan (Eco-Schools, 2024)

The third step is the action plan. The Action Plan is the core of your Eco-Schools work and should be developed using the results of your Sustainability Audit. The head should use the Sustainability Audit to identify the priority areas in his/her school. To keep it manageable, the head of the school should focus on not more than three themes at a time. The head needs to create an Action Plan to resolve or improve those problems. It should include: the necessary tasks, the people responsible and time frame for actions in order to achieve the goals/targets. The head needs to make the action plan SMART (specific, measurable, attainable, realistic and timely). As with every aspect of the Eco-Schools process, pupils should be involved as much as possible in the drawing up of the Action Plan (Eco-Schools, 2024).

The fourth step is monitoring and evaluation. To find out whether or not the school is successfully achieving the targets set out in the Action Plan. One must monitor and measure your progress. As always, pupils should be given the responsibility for carrying out monitoring activities wherever possible. Results of monitoring should be regularly updated and displayed for the whole school to see. The monitoring methods that the school uses will depend on the targets and measurement criteria decided on in the Action Plan for the topics the school wishes to look at and the age and ability of the pupils and other individuals who carry it out. Evaluation follows on from monitoring. Evaluating the success of the schools' activities will allow one to make changes to their Action Plan if required.

The fifth step according to Eco-Schools (2024) is curriculum work. Besides increasing the status of the program, linking Eco-Schools activities to the curriculum ensures that Eco-Schools is truly integrated within the school community. Integrating the program into the curriculum can be done, either directly through specific classes or innovative teaching. Pupils from throughout the school should gain an understanding of how real life environmental and social issues are dealt with in a real life setting.

The sixth step is to inform and involve. Everyone should be brought on board! Actions should not just be confined to the school: for example, pupils should take home ideas to put into practice. It is essential that the whole school is involved in, and the wider community aware of, the schools' Eco-Schools program. Means of information provision and public relations to tell everyone about the program can include: school assemblies, school notice boards, school newsletters and websites, school plays, dramas and fashion shows based on environmental and social issues, letters to businesses and corporations, local and national press, radio and television among others. The school should also engage in global action days.

The seventh step is to produce an Eco Code. This is a statement that represents the schools' commitment to sustainability. It should be memorable and familiar to everyone in the school. The format should be flexible. It can be a song, drawing, model or a poem. The Eco-Code should list the main objectives of the Action Plan. It is crucial that pupils play a key role in the development of the Eco Code, as this will give them a greater sense of responsibility towards the values the Eco Code represents. The content of the Eco Code should be reviewed on a regular basis to ensure that it continues to reflect the school's ecological aims and targets. The Eco Code should be prominently displayed throughout the school.

In Kenya, Eco-Schools have responded to the Green Economy agenda through promotion of green enterprise development in schools and community. Eco-Schools is implemented through the following themes: Water, Sanitation and Hygiene, Energy, Waste/Litter, Biodiversity, Sustainable transport, Healthy eating, sustainable agriculture, School grounds, Climate change, Sustaining our world, Global citizenship and Enterprise development (KOE, 2024). The Eco-schools Program was implemented in Kenya since 2003, growing from a pilot of 12 schools, to over 1000 primary and secondary schools across Kenya as at 2019. The pilot phase was based on five key components of environmental action learning, namely environmental policy, cross-curriculum teaching and learning, micro-projects, school-community partnerships and networks. The main focus themes have been water, energy, health, agriculture, biodiversity and waste. Crosscutting themes including HIV/AIDS, entrepreneurship, and disaster preparedness and management have also been addressed. The pilot phase was funded by DANIDA and implemented in partnership with Danish Outdoor Council (DOC). Over 45 schools have been reached so far in Kenya and over 3,000 students and 200 teachers have been involved in this Campaign. The Campaign activities include waste management initiatives tackling various types of waste within and around participating schools; community action days for schools to showcase their work to the surrounding community; and joint communication campaigns by schools through social media platforms to create awareness on issues of waste management. More recently, KOEE has teamed up with Mr Green Africa and Unilever East Africa in the Uturn Project; an initiative that is promoting plastics recycling enterprise through Eco-schools. There are 24 schools in Nairobi involved so far and the project is looking to scale up to at least 140 schools (KOE, 2024).

It is worth noting that linking knowledge to action on climate change in curriculums will be more successful if educational institutions have operational policies that allow students to practice action competence. According to Knussen and Yule (2008), problem-solving and new behaviors only persist if they are practiced enough to become habits. Therefore, policies should encourage school campuses to operate as living labs or places where students are involved in co-creating solutions

and enriching them through real life behavior. A living lab is a place where education is tied to the operations, decision-making and community engagement of the institution (Vaughter, 2016).

### 5.1 Conclusion and Recommendations

Following the aforementioned findings and discussions on Eco-Schools, the education sector responses to climate change in Kenya are still in early stages, and building a culture of climate resilience at all levels is a long-term strategy. Environmental Action-Based learning is a critical link in the construction of this new culture.

Effective policy related to environmental action-based learning programs will require not only commitment to teach and learn, but a commitment to act. Research has shown that knowledge alone is insufficient for societies to change behavior therefore, policy makers must move beyond education systems that simply transmit knowledge to those that promote graduates who are engaged in systematic change.

There is need to emphasis action competence, not just knowledge in developing curricular and learning outcomes related to climate change literacy. Schools should therefore create learning environment in which students are able to practice action competence in responding to climate change by minimizing operational policies and practices that contradict competences being taught in relation to climate change.

Adult and senior learners should be targeted for climate literacy and building action competence with regard to climate change. Research confirms that a significant gap exists in climate change education in that the majority of the policies have focused on primary and secondary education without addressing the need for adult learners to engage with the topic outside of formal schooling systems. Globally, 40% of adults have never heard of climate change and among the 60% that have, little evidence exists that this knowledge alone has translated into action. If climate change education has to create a critical mass of change agents, then policies need to build climate literacy and action competences in adults and seniors.

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